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Foreword

Welcome to the inaugural volume of Innovation Academy: Innovation Management in Health & Social Care. This volume represents the culmination of rigorous research and practical insights derived from the efforts of our first cohort of postgraduate students enrolled on the MSc in MSc Advanced Health and Care Management (Health Innovation and Transformation) and the MSc Advanced Health and Care Management (Value Based) programs.

At the heart of this repository are practitioner-focused projects, which address contemporary challenges within the realm of value-based healthcare, innovation, and transformation. These projects not only showcase the academic prowess of our students but also underscore their dedication to driving positive change within their respective industries and, importantly, impact.

The diversity of backgrounds among our students - hailing from health, social care, the third sector, and the wider life sciences industry - enriches the breadth and depth of perspectives presented within this volume. Their collective expertise, coupled with a shared commitment to innovation, forms the bedrock upon which this publication stands.

We extend our sincerest gratitude to the Welsh Government for their invaluable support of the Intensive Learning Academies, which have provided a fertile ground for knowledge exchange, collaboration, and the cultivation of innovative ideas.

We extend our heartfelt appreciation to our curators of repository materials: Dr. James Bourne, Dr. Katie Gibbs, Hafwen Lewis, Harrison Rees, Edward Miller, and Ram Gurumoorthy. Their diligent efforts in organizing and collating the wealth of knowledge presented within these pages have been instrumental in bringing this publication to fruition.

"The Innovation Academy" series stands as a testament to Swansea University iLab Research & Innovation Center's commitment to fostering an environment of open-access and knowledge sharing.

Warm regards,

Editorial team

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An assessment of the potential for the Value-Based health and care paradigm, to act as a model for regional partnership board (RPB) resource allocation: A case study of the Cardiff and Vale RPB region.

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Abstract:

Background: The Cardiff and Vale health and care region faces significant challenges, including a generational squeeze on public funding exacerbated by the impact of COVID overspend and economic stagnation, alongside a documented deterioration in the health and well-being of its citizens. In response, the relationship between outcomes achieved and the resources utilized is under heightened scrutiny. This report presents a strategic assessment for the Cardiff and Vale Regional Partnership Board (RPB) regarding the awareness, strategic fit, and challenges associated with the adoption of the Value-Based Health and Care (VBHC) paradigm for resource allocation. While VBHC approaches are increasingly considered amid escalating demand pressures and constrained resources, the practical adoption of VBHC within Welsh health and care services faces notable challenges.

Findings: Findings from semi-structured interviews with RPB members reveal a gap between the philosophical suitability of VBHC and its practical implementation. Despite varying levels of awareness among RPB members, no inherent conflicts were found between VBHC and seminal policy frameworks. However, real-world challenges, including governance complexities, limited resources, and an immature digital ecosystem, hinder the effective deployment of VBHC. The report identifies systemic barriers to VBHC adoption, including attention drawn to acute front door pressures, existing commitments to additional services, and governance fragmentation. Nonetheless, there is a growing recognition of the unsustainability of the current system and the potential of VBHC to address systemic pressures through outcomes-focused approaches.

Conclusions: Recommendations include raising awareness of VBHC, emphasizing common challenges for consensus building, and leveraging national and regional VBHC expertise. Despite technical, political, and operational barriers, the defined scope and governance attention over RPBs offer favourable conditions for VBHC adoption. While further research across Welsh RPB regions and comparative studies with English Integrated Care Systems (ICS) would provide valuable insights, the Cardiff and Vale RPB are encouraged to consider and advance the findings and supported recommendations to address the pressing challenges in health and care resource allocation.

Keywords: Keywords: Cardiff and Vale, Value-Based Health and Care, Regional Partnership Board, Resource Allocation, Health Outcomes, Policy Frameworks, Governance, Implementation Challenges, Systemic Pressures, Sustainability

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1 Executive Summary

As the Cardiff and Vale health and care region faces a generational squeeze on public funding, following the impact of COVID overspend and economic stagnation, whilst in parallel comes to terms with an evidenced deterioration in the health and well-being of its citizens (Regional Partnership Board, 2022), the relationship between outcomes achieved and the resources used to achieve those ends is under increasing scrutiny.

This report offers the Cardiff and Vale Regional Partnership Board (RPB) a strategic assessment as to the awareness of, the strategic fit of and the challenges to the use of the Value Base Health and Care (VBHC) paradigm as a means of assessing and determining the deployment of RPB resources.

Value based approaches are increasingly being considered across health and care systems which are facing demand pressures for services, within a confined resource envelope. Within the uniquely pressured circumstances of Welsh health and care services, a philosophy of Value Based Health and Care has been nurtured, and governmentally supported as a suite of approaches, techniques, and capabilities through which to undertake evidence based, outcomes focused options assessment.

Findings, gathered across semi-structured interviews, conducted with members of the RPB, suggest that a gulf exists between the philosophical suitability of a VBHC approach to resource allocation, and the practical adoption of the paradigm.

Whilst it was established that awareness of the core tenets of VBHC varied across RPB members, it was also evidenced that both a common set of care delivery challenges was recognised and that no absolute issues of philosophical alignment existed between VBHC and the seminal policy frameworks of the Social Services and Well-being Act (Wales) 2014, and the Well-being of Future Generations (Wales) Act 2015.

Real world challenges of deploying VBHC as a tool within the current governance, structural, pressured and financially constrained context within which the RPB operates were highlighted, with suggestion that these barriers made practical implementation a hugely challenging prospect. These *challenge barriers* included:

- The attention (of members and RPB budget) which is drawn to ‘front door’ pressures which have immediate care impact and draw public attention.
- That RPB commitments to additional services, established through previous iterations of the RPB budget, accounting for much of the RPB discretionary spend.
- The complexity of governance, commissioning and performance reporting that exists across members (internal, governmental, professional, organisational). This included the perceived lack of cohesion that exists across Welsh Government departments, which was picked out as a particularly challenging matter when considering the use of a cohesive whole system paradigm across organisations whose governance and commissioning emanates from a government which does not yet adopt that same VBHC paradigm.
- The sheer volume of work involved in engaging leaders and services, re-engineering culture, and in the organisational challenge that exists in gathering VBHC data across pathways supported by an immature digital ecosystem in Wales.

Underlying the conversations, which gravitated towards these system barriers was however a wholesale acceptance that *the system* (delivery of health and care across statutory and non- statutory agencies) was unsustainable in its current manifestation, and that the VBHC approach, focussed as it is upon outcomes, the reduction in waste, and the prevention agenda, was a suitable suite of approaches which could be matured and adapted to help RPB member organisations to response to the delivery pressures they face.

A suite of recommendations has been drawn from this:

- Raising the common awareness levels and consensus building as to the suitability of VBHC as an evaluation model for RPB investment (fit to legislative and organisational imperatives)
- Emphasise to be placed on the common challenges, identified by members, as a rallying point and consensual pivot for the adoption of a common paradigm of value evaluation.

- Emphasise that repeating the approach of 'treating the symptoms', and pouring attention into acute front door services has little impact upon the systemic pressure challenges the RPB is tasked with addressing.
- Treating the limited scope, and relatively laboratory conditions of RPB allocation to trial the deployment of VBHC tools and techniques.
- Lobbying Welsh Government to reflect a focus upon VBHC across its commissions and performance measures, aiming to bring alignment and simplification to multi agency governance.
- Leveraging the knowledge and talents of the National VBHC team, alongside the emergent regional VBHC team to ease the many prosaic implementation challenges which exist for a VBHC model to be employed.

As such, we may conclude that there are technical, political, operational, and coordinative barriers to the adoption of VBHC as a means of RPB assessing value in its allocation of resource, alongside the requirement for the significant energy necessary to overcome the inertia of care sector change.

Whilst each of these barriers requires targeted and committed strategies to ease, mitigate or overcome them, it remains the case that due to the defined scope, budget, and governance attention over RPBs, the 'RPB remit' may be seen to offer idealised circumstances for the adoption of a VBHC approach.

Whilst further research across Welsh RPB regions, plus a comparative consideration within an English ICS would be illuminating and informative to both RPBs and Welsh Government (W.G), the Cardiff and Vale RPB are encouraged to consider and progress these findings, and supported recommendations.

2 Introduction

> *"We simply cannot keep doing things in the same way…. Whatever the overall envelope of funding, given current and future demands on the system, every pound spent must be more effective in improving outcomes for the users of service and for people of Wales"* (Welsh Government, *The Parliamentary Review of Health and Social Care in Wales*, 2018)

In 2023, Health and Care organisations of Wales are facing a financial and delivery crisis the likes of which has not been seen in living memory (to the tune of a c£900m overspend on a c£20bn devolved Welsh budget) (ITV News, 2023)

As demand for services continues to grow, waiting list targets are breached and costs rise, this report aims to consider whether the Value-Based Health and Care (VBHC) paradigm, nurtured in Wales, and promoted by Welsh Government (W.G), may offer the Cardiff and Vale Regional Partnership Board (RPB) an alternate 'value' model for directing its resources.

Considering the structures and gestation of integrated delivery across health and care in Wales, and the strategic challenges health and care in Wales faces, this report will examine opportunities and barriers that are seen to exist for these organisations through the Value-based health and care paradigm, and thematically consider whether that paradigm is a tangible tool for RPB partners to deliver against their objectives as set out in the Social Services and Well-being (Wales) Act 2014, and the Well-being of Future Generations (Wales) Act (2015).

2.1 The Methodological Approach

This assessment took a four-stage approach to its methodology:

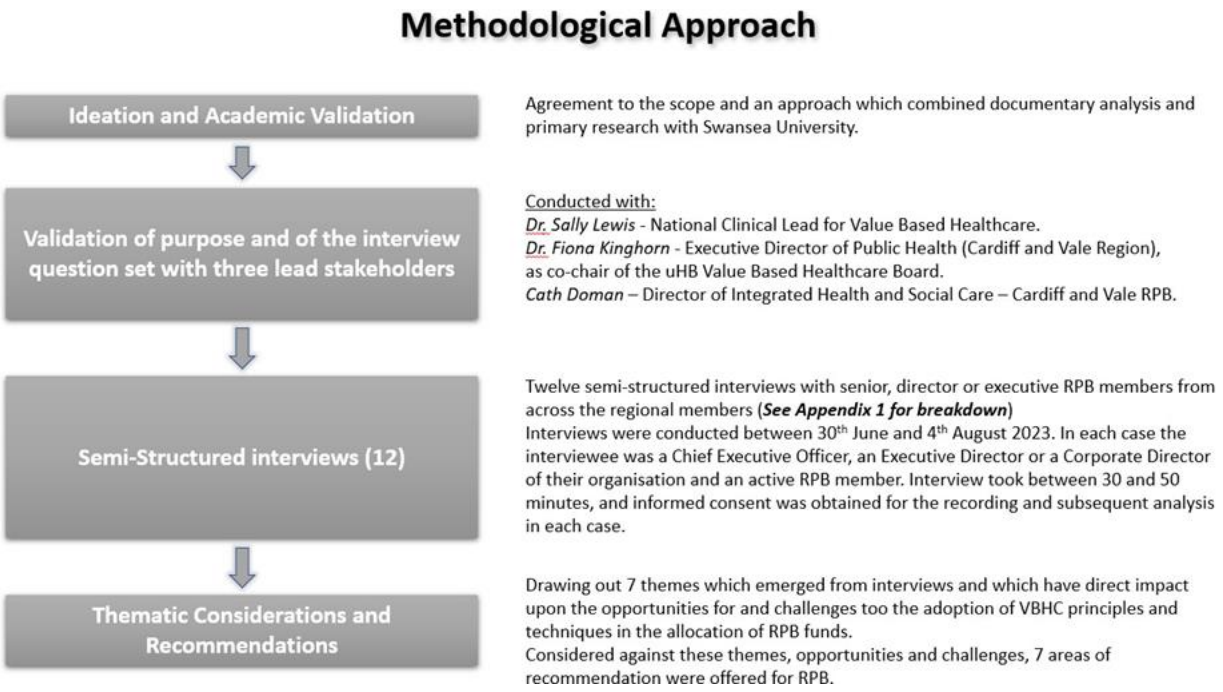

Figure 1. Methodological Approach to this research

3 Client Requirement

This study sets out to determine the potential for the VBHC model to be utilised for the relative evaluation of RPB investment. To consider this, it is necessary to consider the context of the Welsh Health and Care ecosystem within which RPBs operate, some contextualisation of the ecosystem pressures, structures and concepts which will frame the research findings.

'Value-Based' health and care models have become increasingly attractive to a range of health and care systems experiencing pressure of delivery. Within Wales, there is evidence of a focus upon a value-based approach being promoted by the Welsh Government and being contextualised and adopted within Welsh regions (Aneurin Bevan uHB, 2020; Cardiff and Vale University Health Board, 2021; Government, 2019).

Primary research has been undertaken to explore these pressures as conceived by RPB members, to consider the fit of VBHC with Welsh legislation and capture a range of challenges which may exist to the deployment of VBHC techniques against RPB funding.

3.1 Challenges facing Health and Social Care (UK)

The Health and Care delivery ecosystem is well recognised as complex, interdependent and experiencing a wide range of systemic pressures (OECD, 2016). Several recent studies have been conducted that have illuminated the most prevalent of these challenges.

Table 1. Challenges facing Health and Social Care publications review (Source: Authors Own)

Organisation	Core Challenges	Publication
The Health Foundation	• Funding • Workforce • Population Health • Performance measurement	Top line facts on the big issues in health and Social Care (2019) Top line facts on the big issues in health and social care
Deloitte Consultancy – Centre for Health Solutions	• Funding • Workforce • Digitisation • Effective pathways • Flexibility in bed capacity	The facts and figures about the challenges facing the NHS in (2023) The facts and figures about the challenges facing the NHS in 2023 - Thoughts from the Centre | Deloitte UK
National Library of Medicine (U.S)	• Funding • Workforce • Population Health • Health Inequalities • Backlogs/Waiting Lists	The Emerging Challenges and Strengths of the National Health Service: A Physician Perspective (2023) The Emerging Challenges and Strengths of the National Health Services: A Physician Perspective - PMC (nih.gov)
NHS Confederation	• Funding • Workforce • Health Inequalities	Briefing for the Senedd debate on the current challenges facing the health and social care system in Wales (2023) Briefing: Current challenges facing the health and social care system in Wales | NHS Confederation
The Kings Fund	• Funding • Workforce • Population Health • Suitable Estate • Backlog/Performance	What are the health and care challenges for the next prime minister (2022) What are the health and care challenges for the next Prime Minister? | The King's Fund (kingsfund.org.uk)
Wales Centre for Public Policy	• Workforce • Population Health • The System (funding, Structures)	Challenges and Priorities for Health and Social Care in Wales (2021) Challenges-and-Priorities-for-Health-and-Social-Care-Wales-Briefing-Note-.pdf (wcpp.org.uk)

Funding, workforce, and health of the population are near universal challenges. Whilst workforce vacancy and vacancy rate data are not captured in NHS Wales (Welsh Centre for Public Policy, 2021). Figure 2, below, illustrates the extent of the workforce challenge as sagely projected by the Health Foundation, Kings Fund and Nuffield Trust collaborative study in November 2018. COVID impact upon early retirement, flexible working and burnout in health and social care has since exacerbated this challenge further (GOV.UK, 2022).

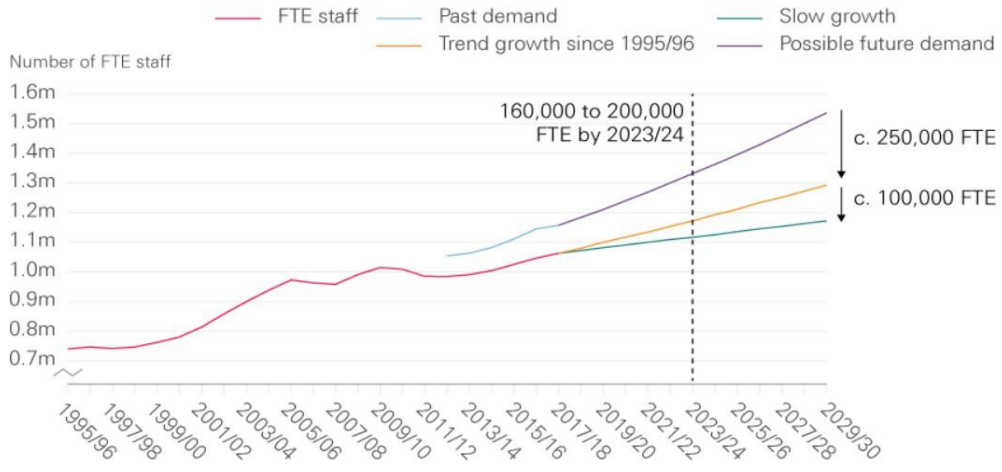

Figure 2. Workforce projection challenges being faced within NHS England (The Health Foundation, 2019)

Funding is also a prevalent theme. Whilst overall Wales is the poorest region of the UK, with Gross Value Added (GVA) per head in 2010 of 74 (against an index where UK = 100) (Lewis, 2015), the per capita spend on health in Wales has been the highest of the UK nations for the majority of the past 20 years (Appendix 2), and cuts to Social Care seen in England have been restricted in Wales (Reed, 2021), which holds some reflection of the party of government in Wales, but arguably also is a reflection of the relatively high demand of a relatively unwell population in Wales.

In regard to population health, the National mortality rate for citizens with treatable conditions is currently the worst of the UK nations (Appendix 3). As such, systemic issues may be seen to exist within Wales, which enhanced funding alone does not deliver correlative results against.

Wales may also be seen as laggard in backlog, performance and effective pathway delivery against its closest neighbours in 26 week, and 36 week waiting time targets, and in the average length of hospital stay (Nuffield Trust, 2022). Both reflections of condition severity and process efficiency (Appendix 4 and 5).

Considering the ultimate gauge of a nation's health, it can be seen in Figure 2, that over the period 2011-2019, 'Healthy' life expectancy at Birth across Cardiff and the Vale of Glamorgan dropped across both Male and Female groups.

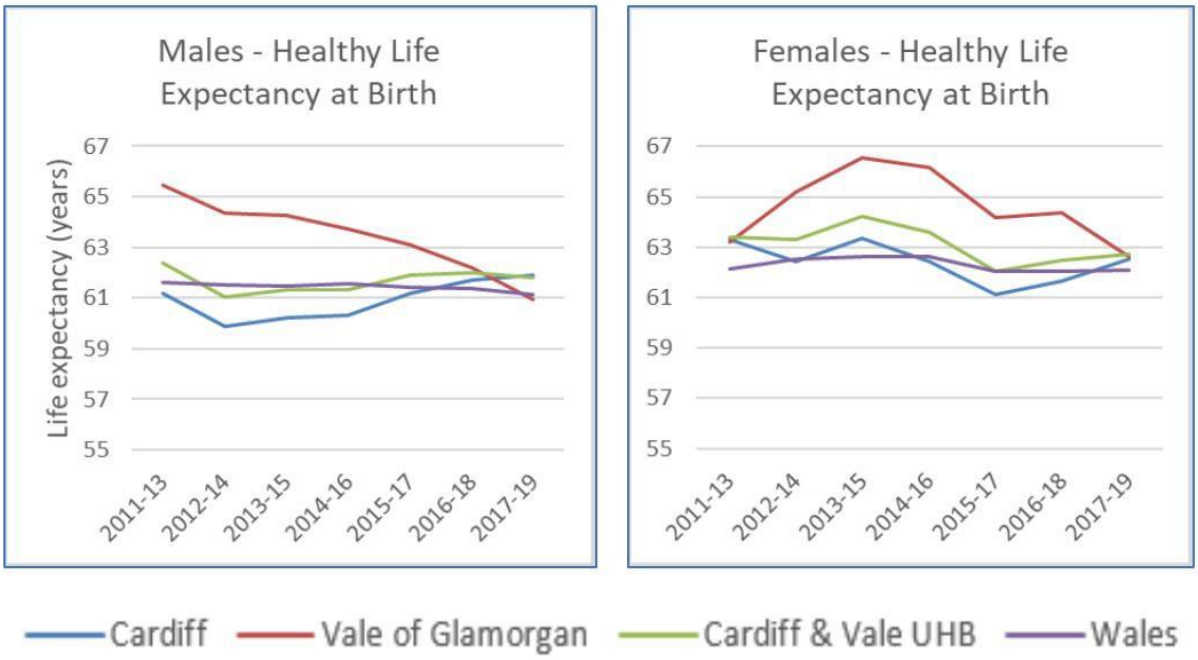

Figure 2. Healthy life expectancy at birth across Cardiff and Vale region, as of 2021 (Regional Partnership Board, 2022).

These metrics however, may be argued to offer a reflection of Wales as a relatively old and relatively unwell population. The population of Wales is ageing, including an expected increase of 90% in the number of people over 80 by 2033 (Lewis, 2015) and 21.1% of people above 65, compared to 18.6% across the UK, driving a level of co-morbidity and complexity of care which underpins all comparative analysis.

3.2 Welsh Integrated Health and Social Care Agenda:

Post devolution in Wales, there has been an emphasise upon collaboration and partnership across agencies.

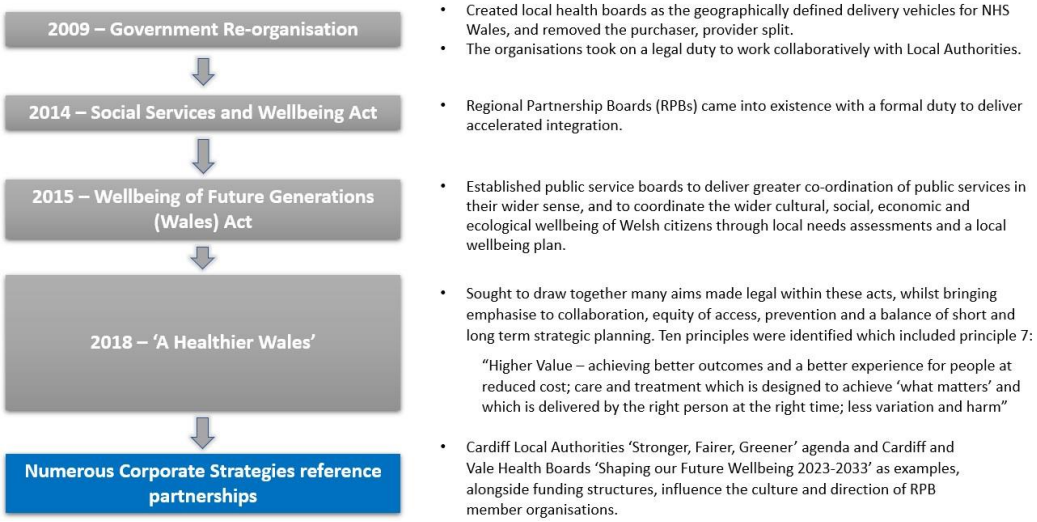

Figure 3. Timeline of Welsh Integrated Health and Social Care Agenda (Source: Authors Own; Cardiff and Vale University Health Board, 2023; Cardiff Council, 2023)

This multiplicity of internal and external strategies, policies, and arena specific guidance has influence on the decision making and parameters within which the RPB may operate, as will be seen later in the paper.

3.3 The Regional Partnership Board (RPB)

Partners from Health, the two local authorities and 3rd sector organisations make up the Cardiff and Vale RPB. It holds responsibilities to work in collaboration to deliver better care services addressing the health and well-being needs of population as identified via a population needs assessment and informed by a market stability report against the care marketplace.

Cardiff and the Vale uHB delivers Acute, Community services, Primary, Mental health services, and health centres to the region. It is also responsible for a range of specialised services (tertiary services) for the whole of Wales or the U.K. The health board also houses regional public health services, whom deliver against a local public health plan, consulted upon by all regional partner organisations.

With an estimated 6,174 3rd sector organisations (voluntary, charitable or social enterprise) operating in the Cardiff and Vale region (WCVA, 2023), representative leads from the 3rd sector councils of both Cardiff and Vale of Glamorgan geographies enjoy membership of both the RPB and the regional Strategic Leadership Group (SLG) of senior executives.

3.4 The Value-Based Healthcare concept

This concept has gained traction in Wales, alongside a number of challenged health and care systems worldwide (Antonio Bonaldi & Sandra Vernero, 2015; Scottish Government, 2022; Slow Medicine International, 2023).

The concept is generally considered to have taken shape following the formative work of Michael Porter and Elizabeth Teisberg within Harvard Business School, which led to their foundational book 'Redefining Healthcare' 2006. They argued that the nature of competition in US healthcare was a source of value destruction, or at least zero-sum outcomes, rather than creating value for patients.

> *"Patient value is defined as patient-relevant outcomes, divided by the costs per patient across the full cycle of care in order to achieve these outcomes. Value-Based Healthcare focusses on maximising the value of care for patients and reducing the cost of healthcare"* (Porter & Teisberg, 2006)

Whilst flavours of these core principles exist, they all focus upon a shift from supply-driven systems, orchestrated around clinical activity, towards a patient-driven system where provider-defined outcomes or quality indicators are delivered to patients and are costed to derive value.

VBHC, viewed from this U.S perspective, may be considered to be a relatively narrow 'price based' concept, considered through a more European lens (from Nations who often offer universal healthcare), as is has now been, a more comprehensive and wider consideration of value has emerged against '4 value pillars':

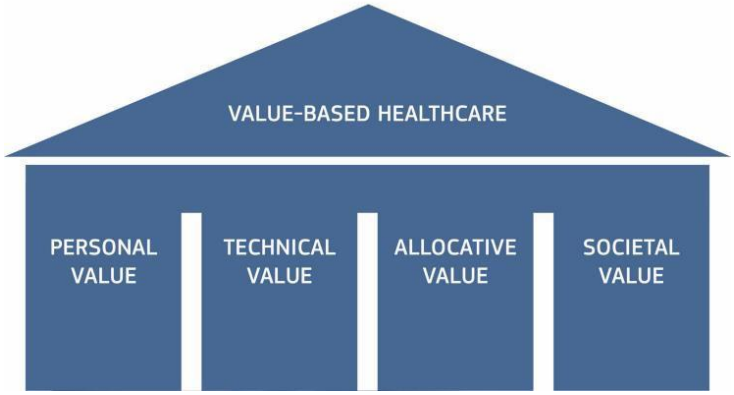

Figure 4. Value-Based Healthcare pillars of value (European Commission, *Expert panel on effective ways of investing in Health (EXPH), Defining value in "Value-Based Healthcare"*, 2019).

- Appropriate care to achieve patients' personal goals (**personal value**)
- Achievement of best possible outcomes with available resources (**technical value**)
- Equitable resource distribution across all patient groups (**allocative value**)
- Contribution of healthcare to societal participation and connectedness (**societal value**)

More recently defined by the centre for evidence-based medicine as 'the equitable, sustainable and transparent use of the available resources to achieve better outcomes and experiences of care for every person' (CEBM, 2019), these concepts of VBHC have come to influence systems, policy and governments across Europe, including the Welsh Health and Care Ecosystem.

3.5 Welsh Government and the Value-Based Agenda

The modern concepts of Value-Based health and care in Wales may be traced back to the Prudent Healthcare agenda (Bradley et al., 2014) (See Figure 5).

Figure 5. Prudent Healthcare concepts (Welsh Government, 2015).

A shift in language and a normalisation towards these international recognised definitions and core pillars has been achieved during the past decade.

> *"The implementation of Value-Based healthcare is a large cultural and transformational change that has grown from the grass roots in Wales, as a delivery mechanism for Prudent Healthcare."* (Value in Health Centre, 2021)

Immediately pre-pandemic this shift from prudent to value-based delivery was gathering pace with the publication of the Chief Medical Officer for Wales annual report entitled 'Valuing our Health', which dedicated an entire chapter to Value-Based healthcare principles (Government, 2019)

Welsh Government funding aimed at the embedding of Value-Based design in Wales has seen the formation of the Value-Based academy within Swansea University and support for the National Value-Based Healthcare Team, which in turn have funded posts and progress within each Welsh Health board.

3.6 Public Health 'Delivering better outcomes for people through a Value-Based approach' (2021)

The 2021 annual report of the Director of Public Health for Cardiff and the Vale brought together the philosophy and pillars of the Value-based approach, with a consideration of how these objectives may be delivered through tools and techniques, and a focus upon both equity and consistency of approach across arenas of care.

The pillars of VBHC can be identified within that proposition, identifying all of, the Personal Value (demonstrating delivery against the needs of local people), the Technical Value challenges (being able to measure the difference made), the Allocative Value (local people and the people of Wales),

and the Societal Value (Impacts on the wider population/commons of Wales) lenses of the VBHC approach.

The paper represents a call to arms for the local health and care region to embed the philosophy and practical tooling of VBHC into its transformational efforts across partner agencies.

These RPB *client considerations* are underpinned by the funding and accountability model of RPBs in Wales. As can be seen, each RPB is constituent of Health and Social care members, accountable and beholden to Welsh Government for its funding.

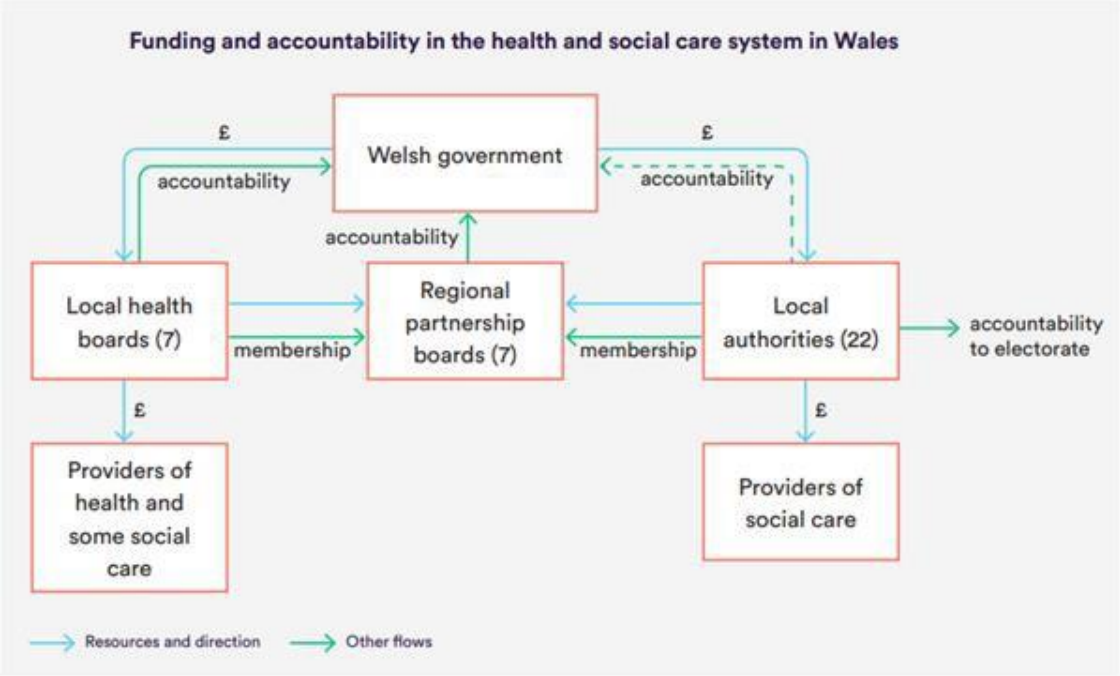

Figure 6. Diagrammatic illustration of funding and accountability in the health and social care system in Wales (Source: Reed, 2021).

As outlined, RPBs are faced with stark and complex choices as to how they may maintain services, facing an elongated period of austerity, whilst in parallel, experiencing growing care demands, and operating within a unique Welsh political and performance ecosystem.

To consider the VBHC framework as a means of allocating RPB resources, twelve members of the Cardiff and Vale RPB were posed a series of questions through interview (Appendix 6) which have been considered and gathered into a range of thematic findings.

4 Main Analysis - Thematic findings

Through interview, senior officers of the RPB partners were able to identify thematic considerations of the potential for VBHC to be utilised by the RPB for resource allocation:

Table 2. Summary of thematic findings (Source: Authors Own)

Theme	Summary of findings
Theme 1: Significant variation in RPB members awareness of the VBHC paradigm exists.	Awareness is highest within Health. Concern exists as to the language/nomenclature and 'health' ownership of the concept.
Theme 2: A common set of key challenges are faced across RPB member organisations.	5 major challenges were identified, 4 of which were common across nations (funding, workforce, population health and deprivation), the 5th is a challenge of the political structures and focus within Wales.
Theme 3: Philosophical fit of VBHC to both the legislative agenda and objectives of RPB agencies.	The philosophical fit existed, more so against the SSWB Act, however this was likely due to awareness levels of non-health organisations as to both the VBHC agenda and the wellbeing of future generations Act. No fundamental issues with policy clash were identified at a policy level, universal agreement that barriers existed at the practical (local pressures, local politics) and implementation level.
Theme 4: Pressures of operational/front door delivery (**barrier**)	Huge (arguable traumatic) pressures of immediate and visible pressures in A&E, on housing and acute services is both distracting for a shift to a preventative agenda, and absorbing of RPB resources.
Theme 5: Funding: Limited non-allocated funds and performance management (**barrier**)	Much of the annual RPB finance is pre-allocated to sustain services established through earlier iterations of the RPB. Performance frameworks in health and care remain traditional and rooted in delivery against demand, which is unhelpful to VBHC adoption.
Theme 6: Complexity of governance, organisational structures (**barrier**)	Numerous initiatives and guidance coming from arms of WG is unhelpful to implementation of an over-arching, cross organisational paradigm. Structures are complex and seemingly ill designed, and there are a huge range of contending pressures.
Theme 7: Technical and Implementation challenges with the VBHC approach (**barriers**)	The workload to instigate VBHC is off-putting in the extreme, especially considering the relative dearth of digital pathway data for evaluation. Concern exists that VBHC may be the latest vogue, without WG announcing its centrality as a framework for Wales.

4.1 Theme 1 - Significant variation in RPB members awareness of the VBHC paradigm exists

Figure 7 illustrates a consistently high level of VBHC paradigm awareness across the CaV Health RPB members exists (a 7.75 average), which is not reflected in the responses from Local Authority members, who scored a 5.66 average. Nor within the 3rd sector group, who recorded the two lowest scores of just 3 out of 10, and an average of 4.5. This low awareness score was a self-reflection offered just months after the Public Health paper was published to members.

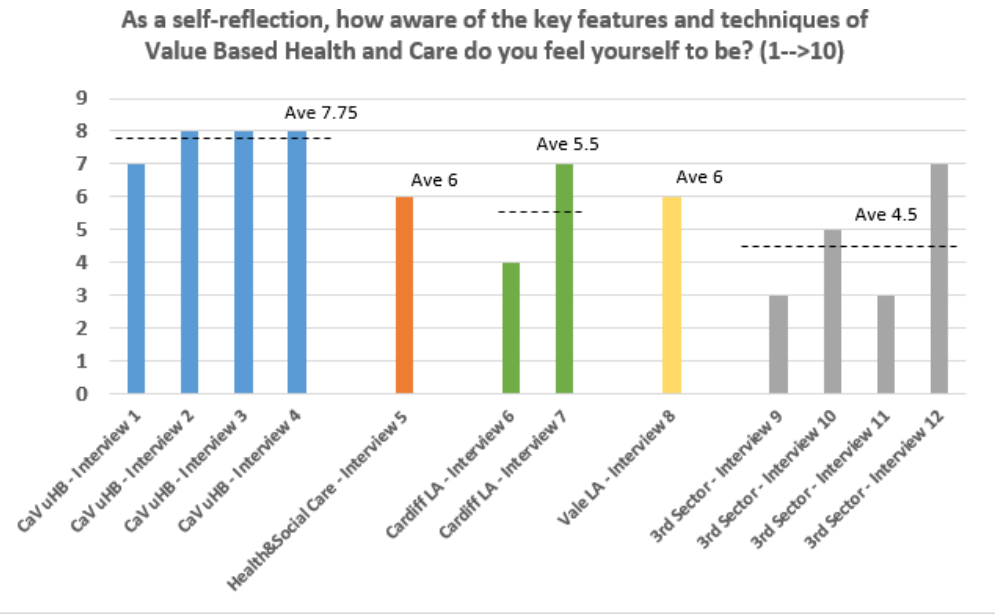

Figure 7. RPB awareness of key features of VBHC.

Adoption of VBHC paradigm is arguably hamstrung with such a stark variation of self-assessed awareness across partners. Steinmann et al. offer a potential explanation for this however, pointing out that the VBHC paradigm is strongly associated with the 'healthcare' arena, not aided by the naming convention of 'Value-Based *Healthcare*', but also suffers from a perceptive conceptual ambiguity as to its remit and purpose.

> *"To some scholars, VBHC is primarily a management concept (such as Fredriksson 2015), or a management innovation, …other see it as a 'governance regime', or a health policy framework to integrated care (such as Groenewoud 2019)… Against this background, some suspect VBHC to be another one of those management concepts in health care (e.g. like Lean), whose promising start eventually grows into little more than a buzzword"* (Steinmann et al., 2020)

Commentary from interviews provided nuance to the scoring data and made it clear that an organisational relevance and language/nomenclature challenge exists with the VBHC paradigm beyond the Health Board.

> *"To start with we cannot call it 'Value-Based Healthcare', whilst it has application in health and is talked about widely within health, I just don't feel it resonates in Social Care. It almost needs to be translated into a different articulation."* (Interviewee No.3)

> *"Language is a problem, firstly as its phrased 'Value-based Healthcare'... and we often see 'and care' referenced in the conversation but not the wording, secondly, it's not in the nomenclature of Social Services Directors. The uHB has recently received the annual report from its Local Authority partners, and whilst the principles will be seen within these, the language of VBHC won't be a concept which is in their language as it stands".* (Interviewee No.1)

4.2 Theme 2 – A common set of key challenges are faced across RPB member organisations

Whilst language varied marginally across interviews, 21 identifiable 'key challenges' emerged. These are ranked by frequency in Figure 8 below, with organisational detailing in Appendix 7.

12 of the 21 challenge areas were picked out only once, which is perhaps understandable given the breadth and special interest of interviewees and organisations represented in the RPB. However, 6 challenges were highlighted on 3 or more occasions. One of these, 'COVID Impacts', may be taken as an existential shock event, that's served to exacerbate the many longer term structural challenged faced across Health and Social care, as opposed to being its own challenge (The Health Foundation, 2022; The Kings Fund, 2020, 2023). The remaining 5 challenge areas received 4 or more mentions, and as such represent a statistically significant suite of common key challenges.

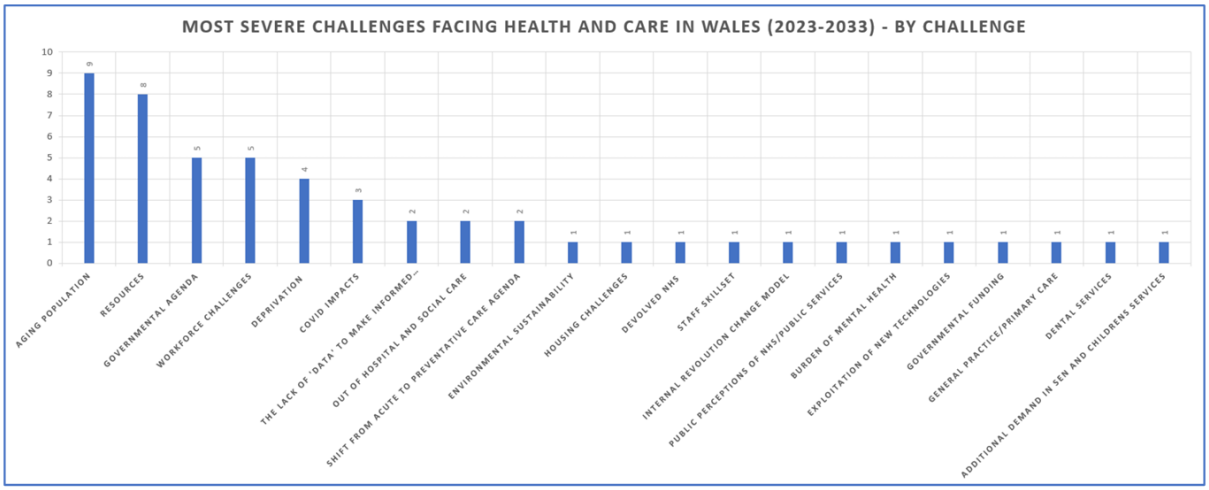

Figure 8. Challenges facing Health and Care in Wales.

Many of these challenges are well recognised demand or capacity matters, against which the Value- Based Health and Care agenda has been formed (see Table 3):

Table 3. Most commonly identified challenges to VBHC (Source: Authors Own)

An aging population	Brings with it an array of classic health and care pressures such as increasing levels of co-morbidity and chronic ill-health.
The impacts of deprivation	Is core to the established *equity* agendas held by all the agencies of the RPB, and embedded within the VBHC equity paradigm.
Resource restrictions	Has always, and will always exist as a rate throttling challenge to public services, and is at the heart of the 'return on investment, assessed through the lens of the subject' VBHC philosophy.
Workforce challenges	This matter is more indirectly addressed within the VBHC paradigm, as it can be assumed that care professionals are eager to be delivering the greatest beneficial impact with their labour, and acting at the top of their professional licences. Against this assumption, a range of delivery improvements can be value assessed, such as improved digital capabilities (virtual consults, replacing face to face clinics for example), which reduces care delivery costs, and, travel 'down time' for the clinician, allowing care organisations to entice staff with improved renumeration schemes. (BMA, 2023; Nuffield Trust, 2022; Senedd Cymru Welsh Parliament, 2022)

The 'Governmental Agenda' however, which gathered the equal third most mentions, is the outlier here, as it represents perceived challenges that exist within the structures, culture, measurement, incentives and governance practices which direct delivery organisations feel they're asked to operate within. As such, this is not a challenge of macro socio-economic influences, but rather a challenge of the organisational and governance dynamics and political constructs of Care in Wales.

4.3 Theme 3 – Philosophical fit of VBHC to both the legislative agenda and objectives of RPB agencies

Scored responses suggest a common view across statutory services that the tenets of VBHC are well suited to the principles of the SSWAct. A higher confidence score within Health Board members marries neatly to the heightened sense of VBHC understanding that exists in that organisation, and as such, taken alongside interview commentary, does not necessarily suggest a greater synthesise of tools and techniques within health environments, but rather a more greatly informed awareness and confidence in the suitability of those tools and techniques.

Across local authority members a 6.33 score represents reasonable confidence despite the relatively low VBHC awareness scores noted in theme 1. A similar level of suitability and fit existed across 3rd sector members with a 6.5 average score (see Figure 9).

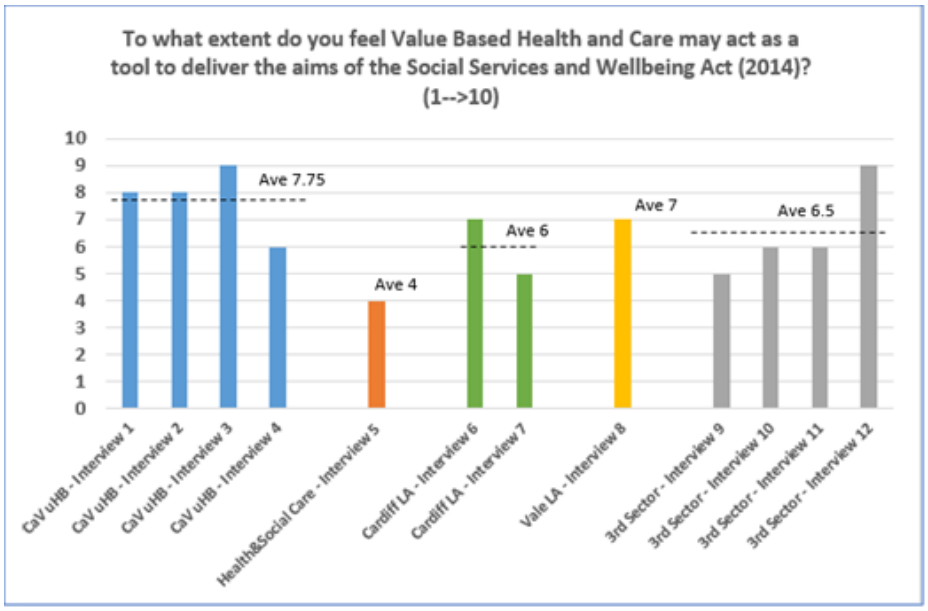

Figure 9. Extent VBHC may act as a tool to deliver the aims of the SSWAct (Wales) (2014).

Commentary from RPB members however suggested a level of perceived synergy existed that exceeded the quantitative scores offered.

> *"VBHC thinking works really well…. Equity build in, …a focus on prevention, …and the idea that you need to measure what you're spending your money on… this all resonates with the Social Services and Well-being Act."* (Interviewee No.3)

Turning to the alignment with the Well-being of Future Generations (Wales) Act 2015, a marked drop of alignment confidence occurred across health board members, with a level of scoring similar to that recorded for SSWAct across local authorities and 3rd sector members (see Figure 10).

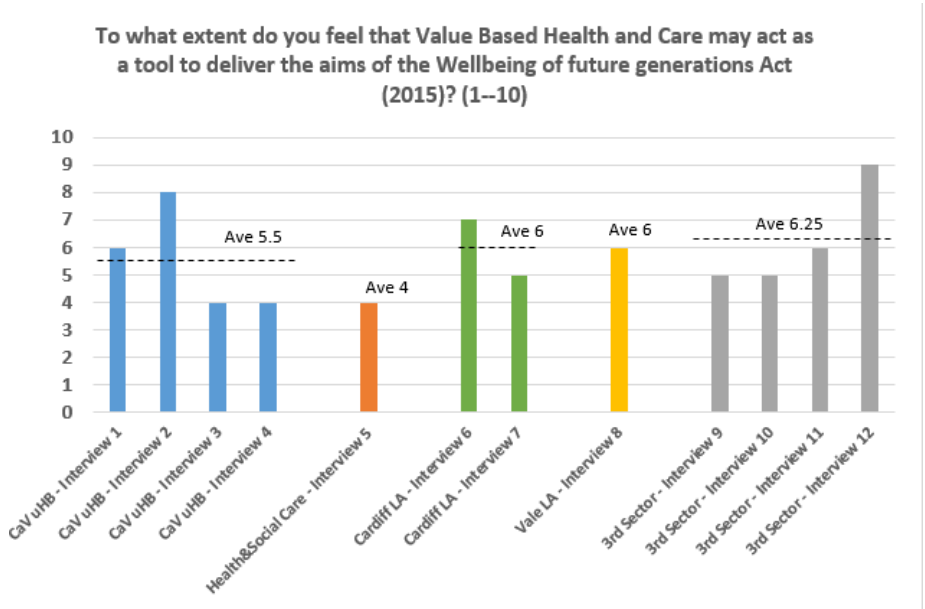

Figure 10. Extent VBHC may act as a tool to deliver the aims of the WFGAct (Wales) (2015).

Common commentary suggested that cautious scoring was due to the WFG Act being relatively 'visionary and philosophical legislation', but which was perhaps short of implementable substance. Despite this, there was no commentary to suggest a misalignment of the principles of VBHC and those of the Act.

> *"Whilst this is undoubtedly ground-breaking legislation, how you can measure adoption isn't straightforward or perhaps agreed nationally."* (Interviewee No.11)

> *"Whilst the WFGAct is well recognised and its principles are hugely laudable, its presence isn't particularly referenced or translated in day to day policy and delivery. Arguably it's too high level for any approach (...such as VBHC) to particularly deliver against it."* (Interviewee No.2)

A key finding from interviews was commentary suggesting that not only does there exist a read across from the language and techniques of VBHC into the SSWAct, but that the landscape of Social Care in Wales has been attuned and accustomed to a 'Value-Based' approach for some time, increasingly so since public sector austerity bit hard, post the 2008 global financial crisis.

> *"Value-based healthcare is coming in through (via) Health, ….and is working hard to find 20- 30 areas that we can identify outcomes in health… what the Social Services and Well-being Act is very clear about is a value-based lens on spend, and they (Social Services) are probably more attuned to delivering against this agenda than health are right now".* (Interviewee No.3)

In summary, whilst nuance may exist, and non-health partners exhibited lesser confidence and assurance in their detailed knowledge of the VBHC paradigm, alignment with policy does not appear to represent a significant hurdle to the adoption of VBHC across the RPB partners.

> *"We're all trying to do the same thing… If you did a mapping of the language of VBHC, SSWAct, principles of Health and Social Care, the Local Authority Strategy… You'll see that there is absolute read across, it's in the practical delivery of those objectives that the challenge exists… whilst we have gotten some things right, there are many that we have not… it's a complex world!"* (Interviewee No.5)

Building upon theme 2, the overwhelming learning from conversation became of the 'practical barriers' that are seen to exist in the adoption of a VBHC model.

4.4 Theme 4 - Pressures of operational/front door delivery (*barrier*)

A universal view was that whilst philosophically members accept that Wales must take on a more preventative well-being posture, the sociological pressures to manage against the immediate public challenges of front-line healthcare (A&E, Bed management, plus the Social Care capacity this requires) are overwhelming.

> *"Statutory partners are in absolute overwhelm. It's not about blaming and shaming those partners, they're not getting it wrong, they are just under such front door pressures, that that is where the attention goes, rather than having the capacity (time) to step back and consider alternates… the system is in trauma."* (Interviewee No.10)

> *"There's a lot of investment in high demand and urgent services, and far less targeted at prevention it's very difficult to avoid this, as there is real crisis and real overdemand in the system, so to say i think we should put half that pot into wider preventative work, that may bear fruit in 5 years' time, that's difficult to argue!."* (Interviewee No.3)

Aligned to this 'squeakiest hinge gets the oil' challenge, was commentary that the agencies of the region are extraordinary in many ways. As examples, Cardiff Local Authority delivers to a population twice as large as any other local authority in Wales, the Health Board is a tertiary centre for services across Wales and the wider U.K and is co-aligned to a Russell group university organisation. These attributes require management attention which arguably diminishes the time and headspace for a wholesome re-evaluation of approach upon value-based principles.

4.5 Theme 5 – Funding: Limited non-allocated funds and performance management (*barrier*)

The funds which RPB manage, are the latest iteration of 'change' funds that have seen various manifestations since at least 2005.

> *"Most of it is historic and builds on previous years, since RPBs were formed and gained oversight on numerous pots (Intermediate care fund turned into Integrated care fund turned into Transformation Fund turned into Regional Integration Fund) because this funding arrived in parallel to austerity hitting Local Authorities, you get into a place of replacing cuts made by aust9erity. So, bringing in new ways of working gained little headroom following this propping up of core services."* (Interviewee No.5)

These historic funds have brought new service models/teams into existence to absorb the *underlying* growth in demand for health and care. As such, a large proportion of the annual RPB funding allocation is *pre-allocated* to maintain services which are, in effect, now, 'core/business as usual' delivery (having existed for several years).

> *"There has been inclusivity of the conversation around those (RPB) resources, but it still feels like there is a 'well this is what we have to do, so £18m of the £21m has to go here, now lets discuss the rest'"* (Interviewee No.12)

> *"My observation is that the way W.G try to manage this is a little unrealistic, …we need to have incremental innovation, by getting the current mainstream services to work better together, rather than looking at things as discrete 'projects', which you then stop funding... it's never going to work."* (Interviewee No.9)

This phenomenon is not unique to RPB 'additional Welsh Government allocations', but rather extends across numerous areas of Health and Social Care. Annual 'Digital Transformation' funds are a good example of this. Over time, this has led members of RPB to question the model wholesale.

> *"I've often wondered, having worked in this arena in a number of organisations, dealing with these kinds of funds that are short term enabling funds, that allow you to shift your core investment, … and I think I've come to the conclusion over the past 10yrs of playing with this, that this additional funding probably isn't helpful."* (Interviewee No.5)

> *"The issue of this additional money is that it's free money, with little or no risk. It avoids the fundamental questions of how do we shift our (wider) money around to improve outcomes."* (Interviewee No.5)

Performance management was also highlighted as a driver of the existing paradigm, and thus, arguably, inertia to change to VBHC principles.

> *"… still we are driven by the drum beat measures within our organisations. dictated by W.G or Social Care Wales., ultimately, the organisations will measure what they are told to measure. Unless the measures of our organisations change to be Value-Based measures, then this is unlikely to change"* (Interviewee No.5)

4.6 Theme 6 – Complexity of governance, organisational structures (*barrier*)

Aligned to theme 5 is the complexity and non-alignment of organisational commissioning and incentives across the RPB partners. As identified by Malcolm Lewis in his 2015 paper 'Integrated Care in Wales':

> *"Current performance management arrangements are frequently criticised for being inconsistent, and between health and Social Services, demanding performance across too may targets, and for being too dominated by financial performance targets"* (Lewis, 2015)

These themes were picked up within the 'silo working' and 'funding uncertainties' sections of the recent Kings Fund review of work to create an integrated health and care system in the Cardiff and Vale region (Wenzel et al., 2022), and also by the Oxford Centre for Evidence Based Medicines (CEBM) within their 2019 foundational paper 'Defining Value-Based Healthcare in the NHS':

> *"The absence of accountability, levers and incentives for value in a system with a collective 'rescue' culture make it challenging to make value a priority"* (CEBM, 2019)

RPB funding being aligned to yet another set of measures and reporting models from Welsh Government, beyond the core/heritage corporate reporting models for statutory health and care organisations in Wales, was highlighted as a prime example of siloed governance and non-alignment at the macro commissioning level.

> *"The regional integration fund, is a microcosm of the issue, .. the RIF is a relatively tiny pot of money, with a tiny team in W.G supporting it, and they have come up with measures unique to that programme. so there are many suites of outcomes/performance asked of by differing parts of W.G, whereas what you need is a coherent approach".* (Interviewee No.5)

> *"Social Services and Well-being Act shapes the strategies of a Local Authority, but it is one of many policies and both statutory and governance drivers in a very complicated delivery framework"* (Interviewee No.7)

RPB members highlighted frustration that the aspirations of Welsh Government to re-engineer health and social care services was being enacted (or devolved) to the RPBs, which are not legal entities of themselves. These RPBs may guide through consensus and negotiation alone and cannot in themselves deliver change to the governance and performance regimes of Wales, which is the role of Welsh Government.

> *"The RPB can be seen as a bit of a fudge, ...it's expected to all come through there, but the RPB has no statutory powers, so it's all done on consensus realistically. It's probably the only thing we could do, given the current statutory position of our organisations."* Interviewee No.1

> *"It (incumbent organisational structures, performance frameworks and regulation) is seemingly designed to ensure progress is very difficult to achieve… so even in a perfect world where no staffing issues or finance issues existed, making progress would remain very difficult. You can layer upon this all the issues we have with increasing demand"* Interviewee No.5

4.7 Theme 7 – Technical and Implementation challenges with the VBHC approach (*barriers*)

A range of practical and technical matters related to the actual techniques of VBHC were identified across members comments:

Normalisation of data and data/record capture across partners

The capture of consistent, standards-based record/data across elements of, or full care pathways is both a well-established requirement, and challenge of VBHC (CEBM, 2019; Leading Health Care, 2021; Rees et al., 2021; Wenzel et al., 2022)

Whilst numerous comments attested to the efforts that have been made by RPB to deliver its Regional Outcomes Framework (ROF) facility, acknowledgement existed as to the volume, linkage and specificity of data that is required to offer intelligence to the RPB.

> *"What you want is a combination of insight and intelligence. A huge gap of information exists for Value-Based decision making, and so to serve up those value informed options, we must have far greater information"* Interviewee No.6

> *"Having said that, each organisation should be capturing this data… how quickly are we referring to a service, so information around the pathways. The minute you start collecting data, it always poses more and more questions. But you could, with all that data, have a genuinely informed conversation about where we are and what we should be investing in"* (Interviewee No.7)

The dearth of structured and *pathway identifiable* data is seen as a key challenge to the current priorities, culture and infrastructure (information infrastructure) both within partner agencies, exacerbating the issues of decision making based upon trusted and robust record across partners.

> *"If you look at simple straight forward data collection, our organisations will all calculate those figures differently …'Medically fit for discharge' for example. Instead of having a common (defined) data-set, which would really help the RPB to be able to more clearly appreciate data, we are (having too) interpret it. This would allow us to use a 'value' base as our tool of choice."* Interviewee No.3

Value attribution across a system

The value concept in VBHC traces back to Porter & Teisberg's equation evaluating the outcomes over the cost of inputs.

$$\text{VALUE} = \frac{\text{Outcomes}}{\text{Cost}}$$

Figure 11. Value equation.

This evaluation can however become fiendishly complicated in a complex and multi-input system, such as is health and social care.

> *"In mapping the input/s responsible for the outcome. I read a Human learning system report on a person with obesity, and they mapped the inputs, …there were 47. It made me realise that every impact report i have ever written was effectively meaningless."* Interviewee No.11

As an example, reaching a person's aspired outcome of being able to walk their dog on the beach again, following the deterioration of an arthritic knee, is delivered by many organisations/services/teams (see Figure 12).

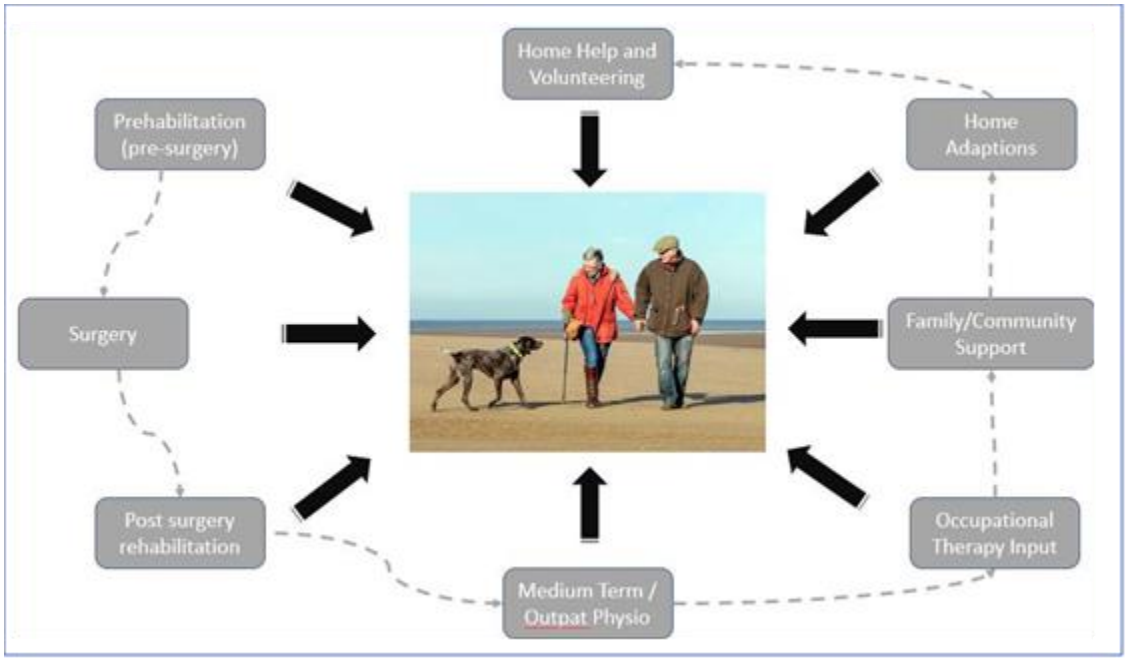

Figure 12. Common attributions of a successful outcome of surgical procedure and recovery (Source: Author's Own).

> *"It's difficult for third sector to prove our role in that outcome, ... if we have enabled communities to thrive, then that's not just us, …so how do you measure that"* (Interviewee No.12)

Workload to adopt a VBHC Approach

A number of executive observations, draw out the workload and practicalities of moving VBHC from 'academic papers to operational protocol', it belies a wise understanding of the scale of health and care operations, the personalities involved, the unique cultural barriers of change within public sector Wales, and the energy, tools, intellect and endurance that would be required to make use of VBHC to accurately and repeatedly evidence allocation of RPB funds.

> *"I think there are more optimal models (of RPB funding) …our challenge is that we don't do the modelling (of X leads to Y, invest A, and you see B improve), …we don't do it as we don't have the skills, and it's hard to do... So, you make decisions on assumptions and you size things according to the resource you have, not what it may need."*
>
> *"I don't think we've necessarily set out what a VBHC 'good model' would look like practically yet, and so are we aligned at the strategic level with that aim, prior to commissioning major modelling works"*

> *"I think technically VBHC is an enabler… is it a practical enabler? If you look at programme budgeting and marginal analysis, ...it takes a heck of a lot of work to implement a tool like that, … By the time you have the people around the table, it would take about a year, and, in the real world, with policy constantly shifting, then there are so many competing demands for this time and funding. So, it's about weaving into the fabric of the NHS and social care policy environment, the data capabilities, the measures you are expected to be collecting".* (Interviewee No.3)

In conclusion, the range and depth of interviews has drawn out a strong correlation of challenges across RPB members, alongside a positive view as to the suitability of the VBHC paradigm to deliver against the core and relatively generic tenets of Welsh Health and Social Care legislation. Challenges have been identified as the attention that can be placed, especially by statutory members, upon anything but immediate front door pressures; the pre-commitment of RPB funds to services brought into existence through historical RPB funding allocations; and the hobbling of attempts move to new paradigms of delivery by a complex, historic and disjointed commissioning.

5 Conclusion

In the recent independent review of integrated care systems, the Rt Hon Patricia Hewitt noted that,

> *"Funding remains over-focussed on treatment…rather than prevention,… and ICS partners struggle to work around over-complex, uncoordinated funding systems and rules in order to shift resource to where it is most needed" (The Hewitt Review, 2023)*

Whilst the organisation of health and care services in Wales has been influenced by devolution, this suite of challenges to implementing a 'Value-Based' model are starkly resonant to the findings of this research paper.

These challenges being present within a paper focussed upon England, and which mentions 'Value- Based Healthcare' only once across its 88 pages, allows us to conclude that these challenges are broader *enabling challenges* to the delivery of modernised 'well-being' services in a U.K context.

As a conclusion therefore, the barriers to the Cardiff and Vale region in adopting a VBHC approach to RPB resource allocation are broadly the same *wicked* barriers faced in the re-setting of health and care services across the U.K:

1. Cultural adoption of a common concept of 'value' across care organisations.
2. Cohesive political/commissioning policy.
3. Heritage and embedded ways of working (exacerbated by relatively inflexible workforce professional standards).
4. Performance/incentive management that entrenches a focus upon heritage delivery.
5. Enabling data/care delivery information which enables regions to take informed decisions.

Whilst the value and purpose of a structural framework (such as VBHC) for that future working model is undiminished by these conclusions, and holds a basis of support amongst RPB members, the barriers identified are broadly non-particular to the framework of VBHC.

It is both crucial that the RPB members identify what a value-based model would look like for them:

> *"I don't think we've necessarily set out what a VBHC good model would look like practically yet, and so are we aligned at the strategic level with that aim, prior to commissioning major modelling works"* (Interviewee No.3)

And also take steps of conviction, to use this 'vision' to work through identified barriers, which otherwise suggest that VBHC adoption will occur at a pace heavily influenced by wider political and cultural change across government, professions and organisations.

6 Key Recommendations

These recommendations recognise the barriers and opportunities identified within the 'Thematic Findings' section, and purposefully adopt the structure of 'regional/internal' and 'external' ownership which those findings suggest.

Table 4: Summary of Recommendations (Source: Author's Own)

Theme	Summary Recommendations
Theme 1: Significant variation in RPB members awareness of the VBHC paradigm exists.	An awareness raising workshop across the regional partners. Influence upon WG commissioning groups/teams to embed practical VBHC referencing and language in future guidance.
Theme 2: A common set of key challenges are faced across RPB member organisations.	Use commonly agreed challenges to weight and prioritise the value of initiatives within the region. Establish formal feed forward and feedback between regional VBHC team and WG commissioning teams.
Theme 3: Philosophical fit of VBHC to both the legislative agenda and objectives of RPB agencies.	The perception gap identified through interviews to be addressed through communications from the regional VBHC team Risk manage VBHC being a passing WG policy in commonly agreeing the fit, enablement and lineage from both health and social care policies.
Theme 4: Pressures of operational/front door delivery (**barrier**)	Drive acceptance within RPB that the severe issues now being experienced have been coming for a very long time, and that address of this acute challenge cannot be found in acute services. Discuss and agree a model for increased upstream/preventative allocation of funds from the RPB budget over 1, 3 and 5 years.
Theme 5: Funding: Limited non-allocated funds and performance management (**barrier**)	Apply VBHC evaluation against a range of the initiatives that are absorbing the lion's share of RPBs c£20m budget. Engage with WG to establish this regional assessment of VBHC evaluation as a pathfinder for Wales. A potential route to top up funding.
Theme 6: Complexity of governance, organisational structures (**barrier**)	Leveraging the assets of the recent PH 'Value-Based' delivery paper and the existence of a regional VBHC team to generate greater awareness. Engage with WG to consider establishing VBHC as a framework for policy in Wales, and not as a competing area of policy.
Theme 7: Technical and Implementation challenges with the VBHC approach (**barriers**)	Leveraging the works of National VBHC team and the implementation learning from other Welsh regions to mitigate barriers identified. Tap into the zeitgeist of Welsh Health and Social Care being in an era of trauma from 2023, and *having* to take radical new directions of delivery.

6.1 Theme 1: Significant variation in RPB members awareness of the VBHC paradigm exists

As highlighted within VBHC implementation resources (Aneurin Bevan uHB, 2020; CEBM, 2019; Scottish Government, 2022), adopting a common terminology so as all regional actors have a shared understanding of what VBHC is, is foundational to any successful implementation.

Findings suggest that significant work remains in order to raise conceptual awareness of non-health organisations across the regional partnership.

Regional/Internal:

A 'RPB VBHC workshop' could drive awareness and perhaps work through:

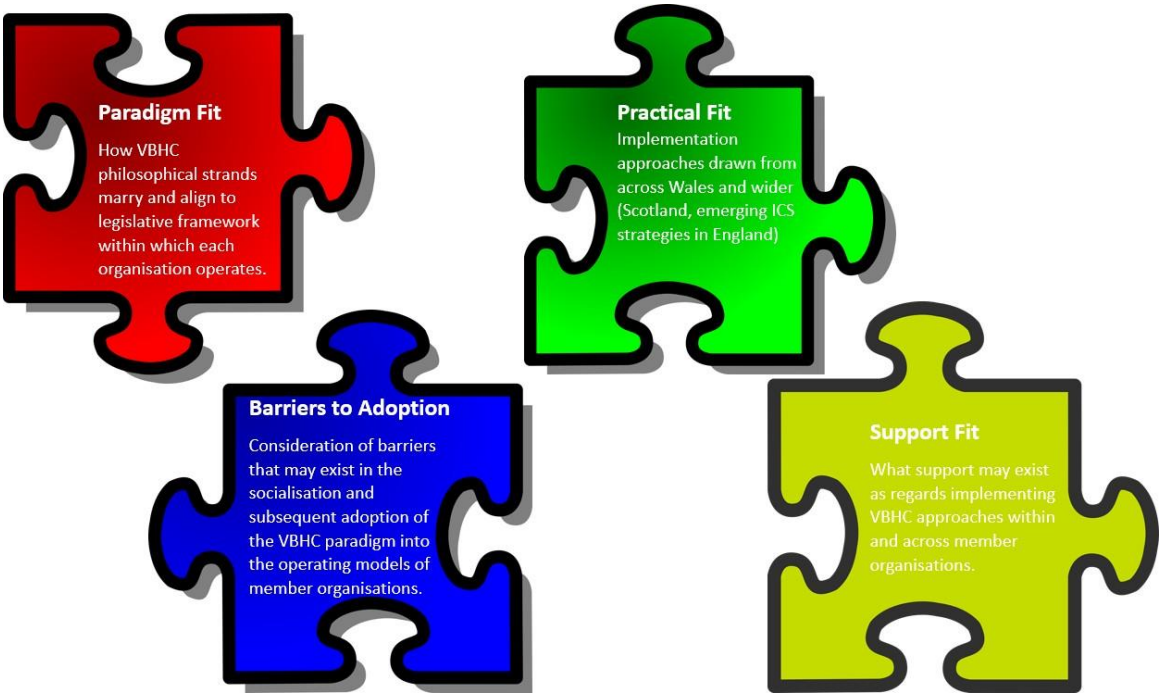

Figure 13. Regional VBHC Workshop Structure (Source: Author's Own).

External:

For the organisations offering governance to regional partners (including Welsh Government and Social Care Wales), then the RPB should encourage them to embed the language of VBHC within ongoing guidance and communication of current and future health and care policy, as a value partner.

6.2 Theme 2 – A common set of key challenges are faced across RPB member organisations

Significant optimism may be taken from the commonality of challenges identified by the regional RPB members. Whilst not diminishing the scale of these challenges, the existence of a common set allows the region to focus a suite of value metrics against these commonly held issues.

Regional/Internal:

Taking this finding as a starting point for regional VBHC, RPB may consider establishing a regional Value-Based Health and Care resource which adopts these findings to assess the 'Technical' and 'Societal' value weightings against initiatives the region may choose to pursue.

Societal and Technical value is challenging to assess; however, these common issues allow a finite range of assessing such value. For example, the impact of an initiative upon the reduction in resource commitment, or the elongation of a person's period of being able to live safely in their own home, would directly play against the regionally identified challenges, and as such should be weighted suitably.

External:

The Welsh government may have their attention drawn to these challenges. Playing into themes 5 and 6, those commissioning agencies may be called upon to consider whether their commissioning is aligned to the challenges commonly faced.

The development of a regional 'value-based health and care' team would allow for common feedback and playing forward of commissions in value-based language, as a driver of common corporate culture change over time.

6.3 Theme 3 – Philosophical fit of VBHC to both the legislative agenda and objectives of RPB agencies

Encouragement should be taken from the perceptive policy synergy and wholesale lack of philosophical challenges to the VBHC paradigm that was voiced.

> *"Value is a thread that runs through most, or all of the major policies we enact… so if you look at the Social Services and Well-being Act, you will find the theme throughout, …. lots of different ways of naming these ideas/initiatives".* (Interviewee No.7)

Regional/Internal:

This perceptive alignment is a solid 'taking off point' for the socialisation of VBHC amongst Executives, senior management, and ultimately all layers of regional staffing. The perception gap evidenced between health and Social Care organisations will need communications attention from the regional VBHC team, however, succeeding in positioning VBHC as a common set of implementation principles for pan organisational legislative delivery is a major prize to pursue.

External:

Due to historically elongated timescales of public sector change, there is some risk that VBHC may be viewed as no more than the latest management technique.

> *"A lot of those organisations involved would also probably say that they do 'value-based investment'... but I'm not really sure we do this point gets used to shut down conversation on value straight away 'we already do it', and how do you disprove that? So (VBHC) is a really good idea, but it's such a massive overhaul it may take 20yrs to embed, at which point another doctrine will be vogue trying to achieve the same thing"* (Interviewee No.5)

If, however, within the ongoing RPB negotiations with W.G, alignment of VBHC can be agreed to exist, both against current legislation, and the underlying values and sentiment of Welsh public sector vision, then this risk VBHC being a transitory philosophy may be mitigated.

6.4 Theme 4 - Pressures of operational/front door delivery (*barrier*)

The 'perfect storm' facing Welsh Health and Care in Winter 2023 (Budget cuts (Furet, 2023), systemic demand increases, post-COVID backlog, post-Brexit staffing shortages, and a spike in both flu and COVID-variant illness) are too immediate and severe to mitigate through VBHC at this point, however the VBHC team being brought into the region may be assigned to value assess the RPBs responses to these winter pressures.

Implementing VBHC tracking and assessment in a finite number of initiatives which will now be established through necessity would offers a containable suite of pathfinding evidence as to 'value' attainment.

Further practicable options were raised which the RPB *should* now commit to, at significant front door pains, in shifting the emphasise of RPB spend upstream into preventative services. These include committing to finding the 20% allocation to the 3rd sector that W.G have suggested for RPBs, over the next funding cycle.

Whilst opportunity exists, the bravery to accept that the 'acute care battle' cannot be fought in acute, arguably requires extreme bravery from a regional management team operating as they are, within a structure of performance and funding which may be considered ill-suited to encouraging such a brave shift of resources.

6.5 Theme 5 – Funding: Limited non-allocated funds and performance management (*barrier*)

Regional/Internal:

Whilst it was universally confirmed by members that much RPB funding is, in effect, pre-allocated to services substantiated through 20 years of such 'top up' regional allocation. Opportunity exists for these initiatives to be reviewed and assessed through a VBHC lens (tools and techniques).

Arguably the c£20m of RPB funding across the statutory agencies of the region, who carry a combined budget of £3bn, provides an ideal 'goldilocks' scale to trial VBHC evaluation. It further provides a contained

laboratory arena for 'VBHC cross organisational assessment', visible to senior executives of all regional agencies, and reportable through established RPB channels.

External:

As both the challenges, and RPB models are common across Wales, Welsh Government may be persuaded by CaV RPB to advocate for these findings to be considered and re-run to identify the salience of VBHC in assessing pathfinding work across RPBs. Opportunity exists for additional VBHC or Welsh Government funding to support this.

More widely, conversation should be held with W.G to a re-set its performance framework to become more value based. Incentivising the more to preventative services and not the ability to deal with higher-end care demand.

> *"What is a waiting List?... it's a failure to deliver provision against demand. We need to focus (or be focussed) upon prevention and not symptom"* (Interview No.3)

6.6 Theme 6 – Complexity of governance, organisational structures (*barrier*)

Internal:

The consensual nature of RPB relationships is similar to that which exists in England, Scotland and further afield. Successful adoption of 'value' frameworks and techniques can readily exist in such ecosystems (Scottish Government, 2022; Slow Medicine International, 2023), suggesting lessons should be taken from these and other examples closer to home, including those in Aneurin Bevan (Aneurin Bevan uHB, 2020) and Hywel Dda (Hywel Dda, 2023).

Carrying through the conversation driven within the RPB paper 'Delivering Better Outcomes for People Through a Value Based Approach' (2021) (Cardiff and Vale University Health Board, 2021), is crucial if the region is to undertake a cultural shift to the VBHC paradigm.

Married with the recent creation of the VBHC team and programme lead within the uHB, the circumstances are favourable for such a matured consideration of barriers, and foundational establishment of VBHC approach, levering upon this learning and support.

External:

VBHC principles call for an agility of organisational model (Rees et al., 2021). The ability to review, assess and re-fashion working models of care are central to organisational ability to apply VBHC approaches. To achieve this, it may be argued that VBHC has to become a far more central policy position of Welsh Government.

> *"Whilst there is illusion to this being required, i don't see anything set out as to how you go about doing that in those strategies (Healthier Wales, WFGAct, SSWAct)"* (Interviewee No.5)

Whilst Scotland enjoys a governmental value framework within which to operate, Wales finds VBHC embedded within communications such as 'Valuing our Health' (Government, 2019), as a 'concept' as opposed to the 'framework' within which condition or challenge specific arenas of National focus may be considered.

RPB Executives, in conjunction with the National VBHC team, should engage in robust discussions with the Welsh Government to bring change to the conditions present across organisations to implement a value-based agenda.

6.7 Theme 7 – Technical and Implementation challenges with the VBHC approach (*barriers*)

Fortunately for the region, circumstances in Wales for a Value-based approach to be taken forward are both more supported and, unfortunately, more suited than has ever been the case.

More Supported:

With the establishment of the National VBHC Team within the new NHS Wales Executive function, and grant funding for a VBHC resource at its highest point to date within Health Boards, the RPB.have expertise to

call upon. Added to this the Aneurin Bevan Implementation toolkit (Aneurin Bevan uHB, 2020) is a core resource for implementations.

These hard learned lessons, resources and tools should be engaged formally by the RPB in a 'regional VBHC coalition' to engage the interests of W.G, the National VBHC team and CaV RPB in a coherent task force to address the use of VBHC tooling for RPB initiatives.

More Suited/Necessary:

The perfect storm of winter pressures identified in this paper represents a cathartic moment for care services in Wales. Growth of demand which was once affordable through efficiency savings upon medicines and non-statutory services, has been masked and exacerbated during the period of COVID ill-health incubation, and enhanced COVID spending. As reality bites in Wales and across the RPB region, organisational and RPB decisions will become increasingly emotive and challenging. For this, a technique of relative value is highly suited, giving opportunity and motivation for the region to determine a VBHC based future, driven by its RPB.

To conclude, this research has identified a range of 'wicked' circumstantial, adoption, technical, cultural and structural challenges to the deployment of a VBHC approach for the assessment of RPB spend. It has however, also identified a uniformity in the realisation of challenges across the system for such an adoption, which offers RPB the opportunity to target a range of recommended next steps.

Across the discussions with RPB members was a clear acceptance of the central finding of the Parliamentary review into Health and Social Care, that we cannot keep doing things in the same way. As such, the opportunity clearly exists for the region to become a beacon site for 'VBHC regional working' which currently has a limited footprint across Welsh regions.

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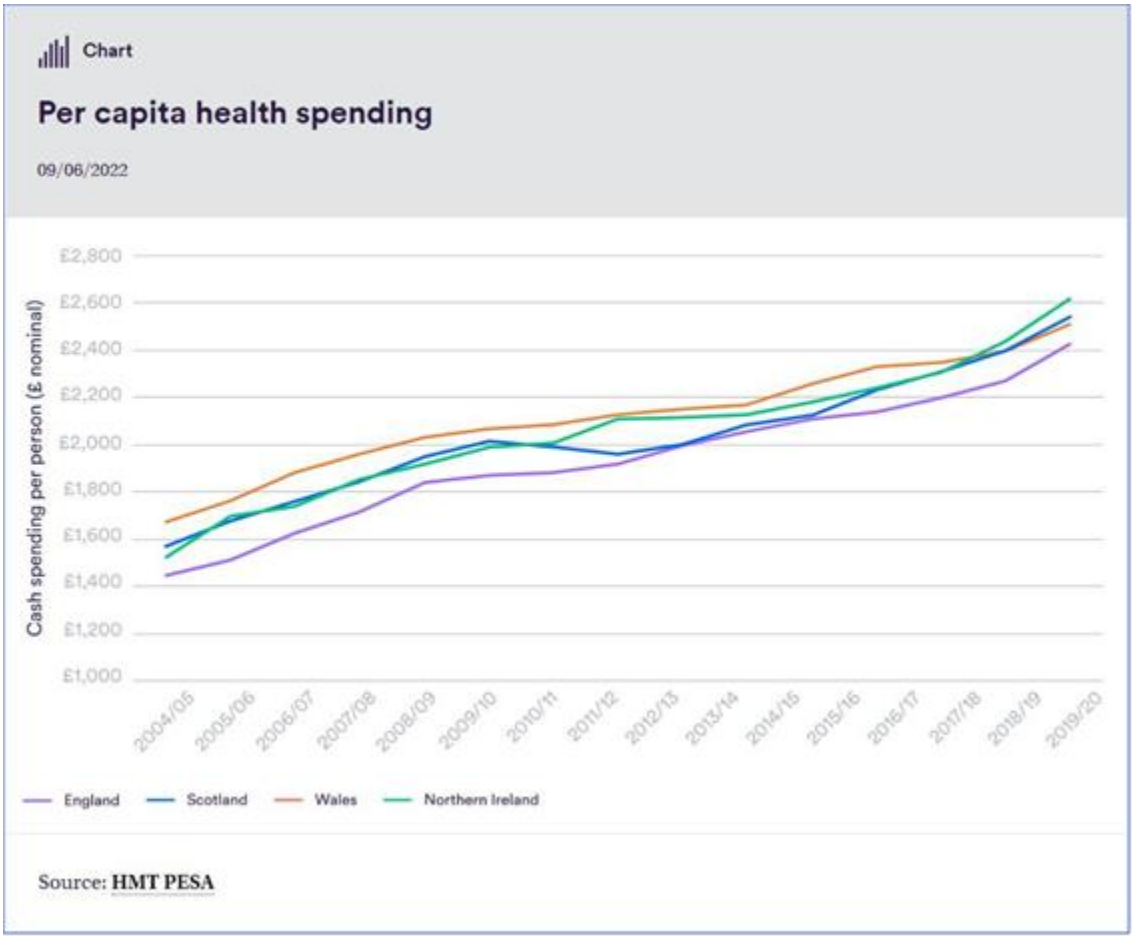
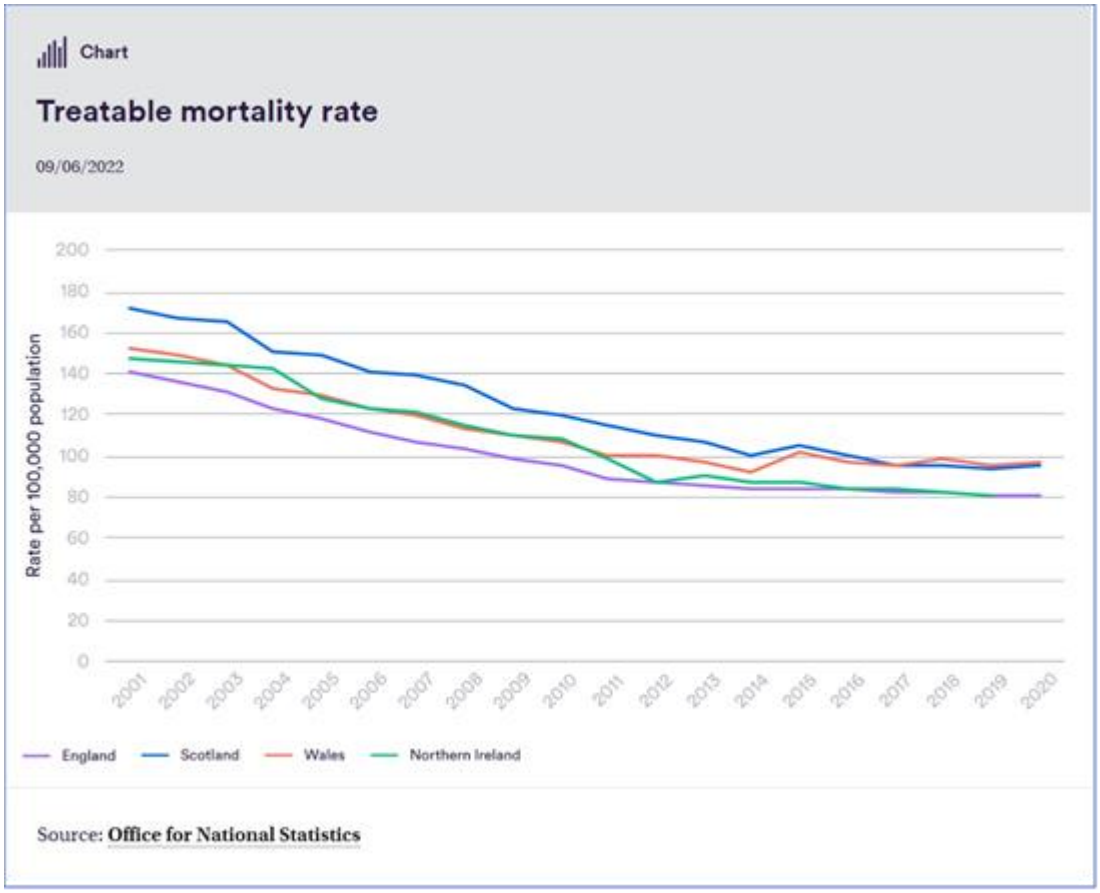
8 Appendix A: Breakdown of RPB staff interviewed

Interviewees Organisation	Count of Interviewees
Cardiff and Vale uHB	4
Integrated Health and Social Care	1
Cardiff Local Authority	2
Vale of Glamorgan Local Authority	1
3rd Sector	4

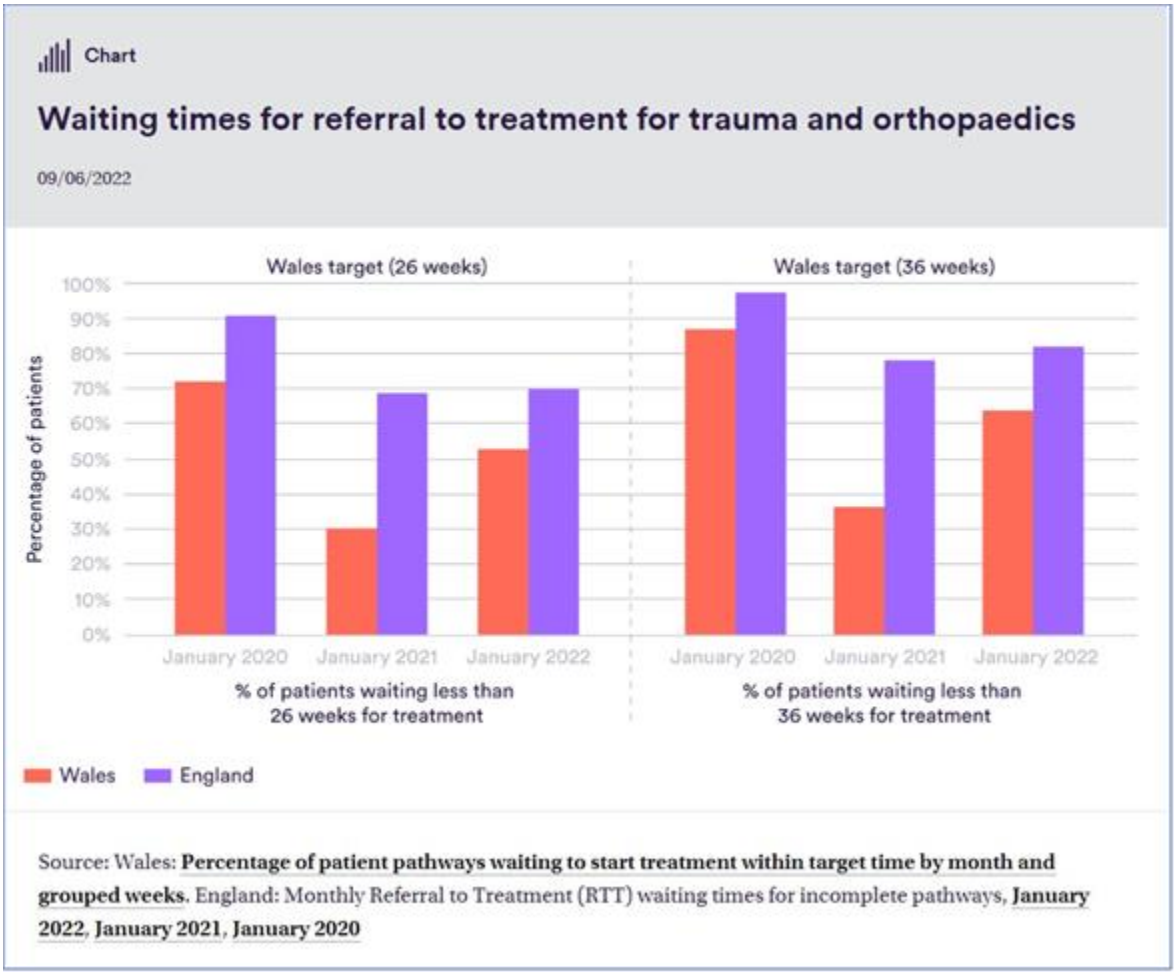
9 Appendix B: Per capita health spending across UK



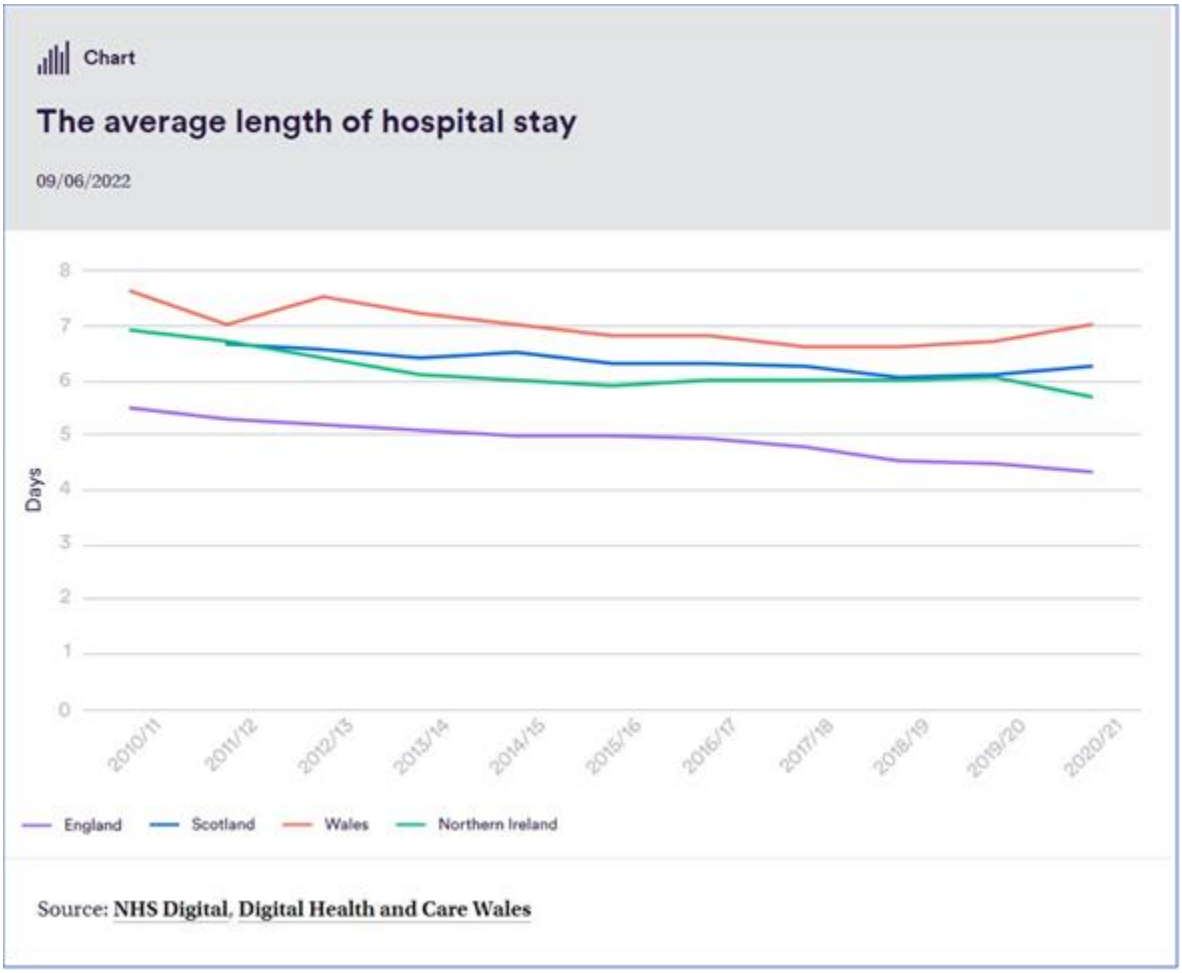
10 Appendix 3: Treatable mortality rates across UK



11 Appendix 4: Referral to Treatment (RTT) waiting times for Trauma and orthopaedic across UK



12 Appendix 5: Average length of stay in hospital across UK



13 Appendix 6: Semi-Structured Interview Questions

Q1. Have you had chance to read the Public Health report that went to the last RPB group, and was distributed with the invite**? (Y/N)**

Q2. Did you have chance to undertake the on-line video learning provided by Swansea University**? (Y/N)**

Q3. As a self-reflection, how aware of the key features and techniques of Value-Based Health and Care do you feel yourself to be?

If I asked you to rate this (1 being no understanding, to 10 being fully in touch and aware of Welsh and Internationally related concepts of Value-based health and care), where would you rate your personal awareness on a **score of 1 to 10 ?**

Q4. Clearly there are many challenges facing Health and Care in Wales. What would you suggest are the most severe *Health and Social Care challenges Wales* faces over the 2023-2033 period**?**

…..you may agree that there are numerous, and so a **top 5** would be ideal.

Q5. Thinking more organisationally, what would you suggest are the most severe challenges facing

your specific organisation over the 2023-2033 period**?**

. again you may feel there are many, so a **top 5** would be ideal.

Q6. What would you suggest are the *core or main policies* that you feel drive *the strategy* of your organisation (be those laid down from Westminster, Welsh Government or elsewhere)**? List**

Q7. Considering one particular policy,….*to what extent* do you feel Value-Based Health and Care may act as a tool to deliver the aims of the Social Services and Well-being (Wales) Act 2014?

If I asked you to rate this (1 being 'wholly at odds' and 10 being 'perfectly aligned and an enabler'),

where would you rate the synergy on a **score of 1➔10 ?**

Q8. Again, policy specific…. *to what extent* do you feel that Value-Based Health and Care may act as a tool to deliver the aims of the Well-being of future generations (Wales) Act 2015?

If I asked you to rate this (1 being 'wholly at odds' and 10 being 'perfectly aligned and an enabler'),

where would you rate the synergy on a **score of 1➔10 ?**

Q9. *To what extent* do you feel that the Value-Based Health and Care paradigm **could** be adopted as a **common approach** for statutory Health and Social Care partners of a Welsh region….. addressing **both** the aims of the Social Services and Well-being (Wales) Act 2014and the Well-being of Future Generations (Wales) Act 2015.

… I'd appreciate if you could outline your thoughts, ….and *if* you feel there are challenges, what may these be**?**

Q10. Can I ask you how you would *characterise* the approach currently taken by the Cardiff and Vale RPB as regards the allocation of regional (or RPB) resources?

…for example, do you feel this is undertaken on a simple 'population served' calculation, or is based upon an assessment of 'return on investment' from proposed initiatives?... or any form of other model that may be being employed**?**

Q11. For a potentially 'common' and 'organisationally impartial' approach to be adopted, such as Value-Based Health and Care, …a common approach to measuring 'outcomes' is required…. what, if any, do you feel are the *barriers* to implementing common outcome measuring across the regional partners (be these barriers practical, or legislative or cultural for example), and how do you feel these barriers may be overcome (if they can be)**?**

Q12. Value-Based Health and Care arguably carries a lineage forward from 'Prudent Healthcare' principles, in that it seeks to limit 'unnecessary variation'. Considering the focus upon

'personalisation' and the 'right outcome for the circumstances of the person' within the Social Services and Well-being (Wales) Act 2014, do you feel this results in a *fundamentally* variant or incongruent objective, that may impede the *adoption* of a Value-Based Health and Care approach across the RPB**?**

Q13. Do you feel there's an optimal model for the allocation of Regional Partnership Board

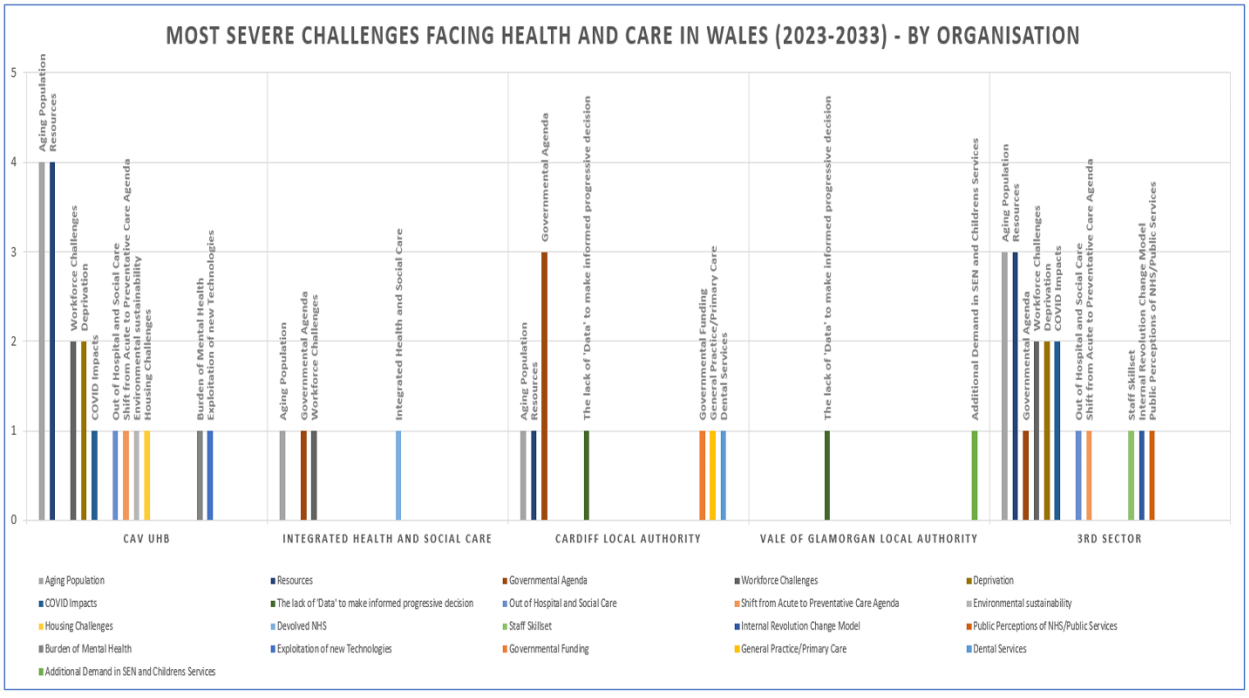
resources? ….and how would that differ from the *current* model**?**

Q14. So, Healthcare have been receiving an increasingly large allocation of the devolved Welsh budget…. To what extent do you feel the principles of Value-Based Health and Care may offer a means of redressing any imbalance this *may* be causing**?**

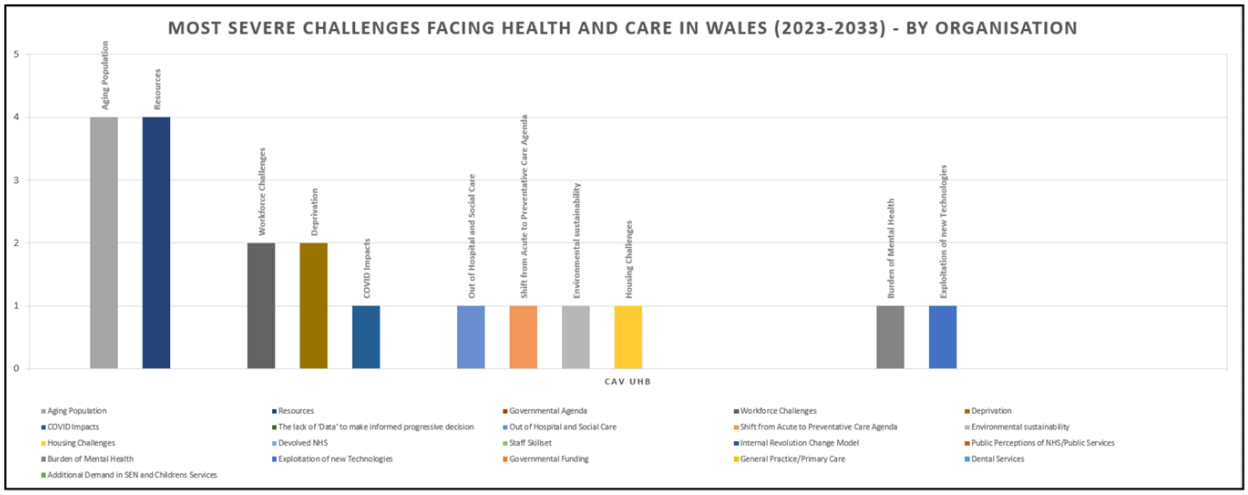
14 Appendix 7: Identified challenges breakdown - By interviewee organisation

Interviewees Organisation	Aging Population (Co-Morbidities, increasing complexity of care)	Resources (Funding)	Governmental Agenda i) System Fragmentation (Separate Planning, Commissioing and Delivery) ii) Complexity of the Legislative and Performance environment	Workforce Challenges (Recruitment, Retention)	Deprivation (Leading to inequality of Wellbeing outcomes)	COVID Impacts (Long term M.H and Physical Wellbeing)	The lack of 'Data' to make informed progressive decision	Out of Hospital and Social Care	Shift from Acute to Preventative Care Agenda	Environmental sustainability	Housing Challenges
CaV uHB	4	4		2	2	1		1	1	1	1
Integrated Health and Social Care	1		1	1							
Cardiff Local Authority	1	1	3				1				
Vale of Glamorgan Local Authority							1				
3rd Sector	3	3	1	2	2	2		1	1		
Totals	9	8	5	5	4	3	2	2	2	1	1

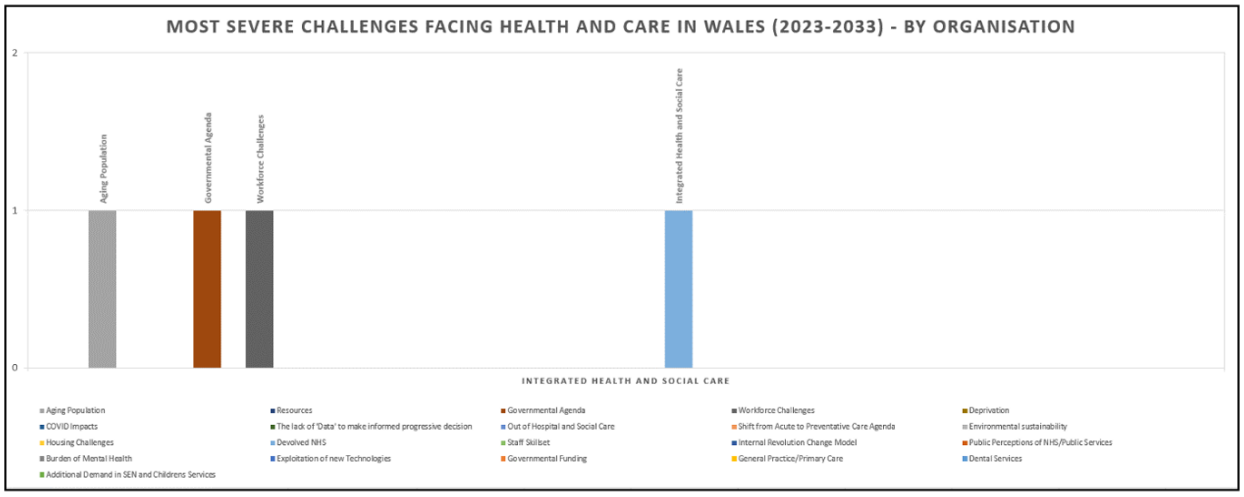
Interviewees Organisation	Devolved NHS (Budget unable to keep pace)	Staff Skillset (Degree of professional silo and inflexibility that can exist	Internal Revolution Change Model (Managers of the system/machine asked to change what they manage.	Public Perceptions of NHS/Public Services (Result of a nurtured popular understanding that the NHS is there for *every* need	Burden of Mental Health (Working Age and Younger Person)	Exploitation of new Technologies	Governmental Funding (The number and range of funding pots to juggle	General Practice/Primary Care (Staffing and Remodelling	Dental Services (Re-Designing/ Commissioing Model	Additional Demand in SEN and Childrens Services
CaV uHB					1	1				
Integrated Health and Social Care	1									
Cardiff Local Authority							1	1	1	
Vale of Glamorgan Local Authority										1
3rd Sector		1	1	1						
Totals	1	1	1	1	1	1	1	1	1	1



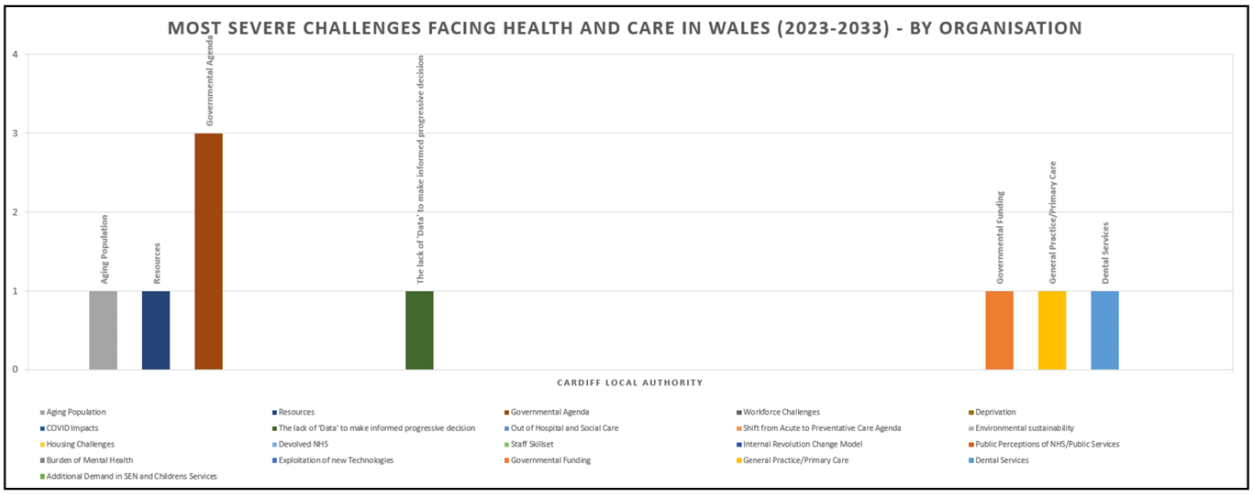
Cardiff and Vale University Health Board:



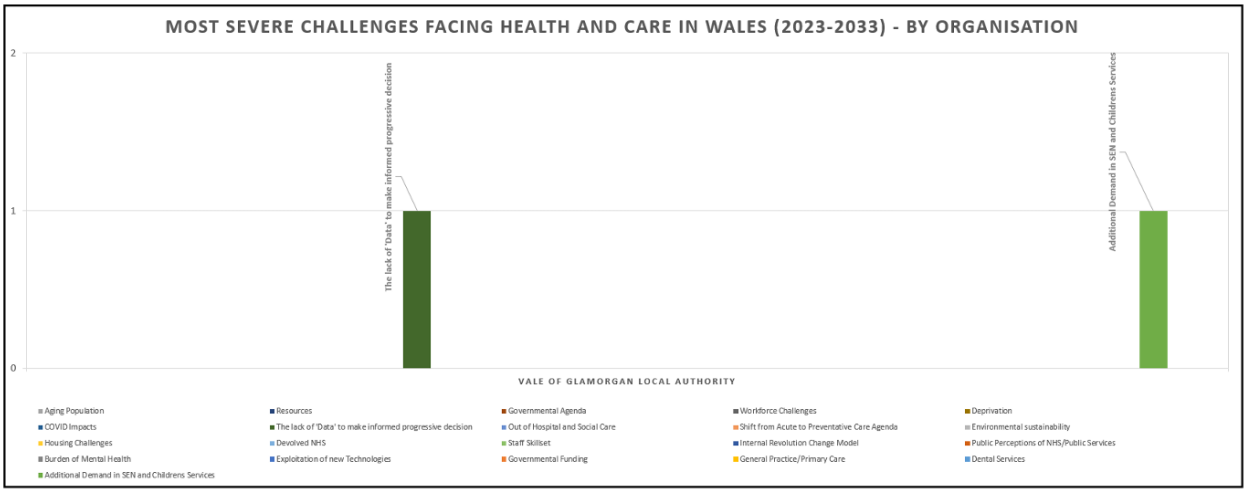
Integrated Health and Social Care:



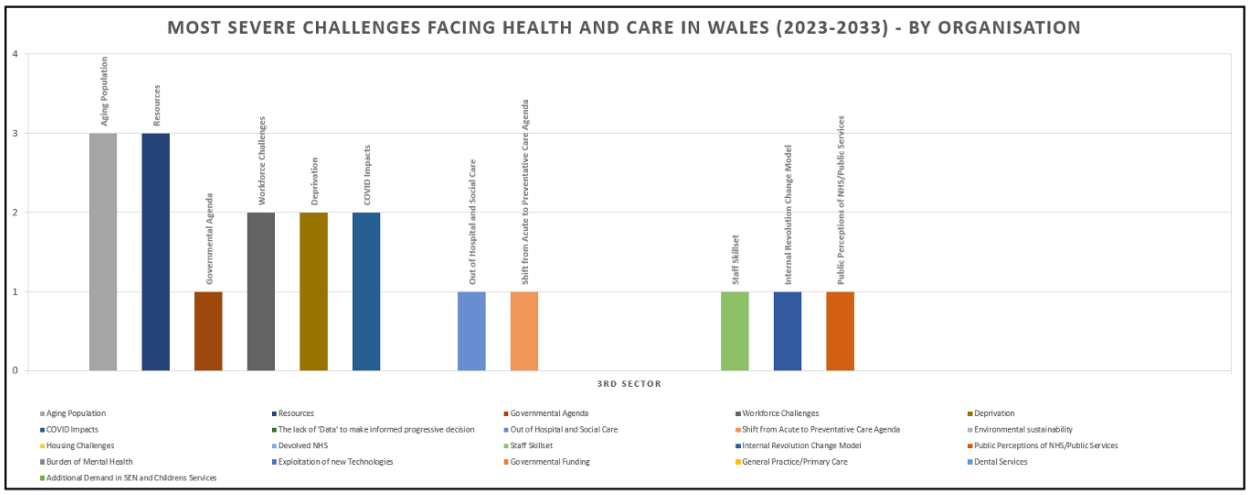
Cardiff Local Authority:



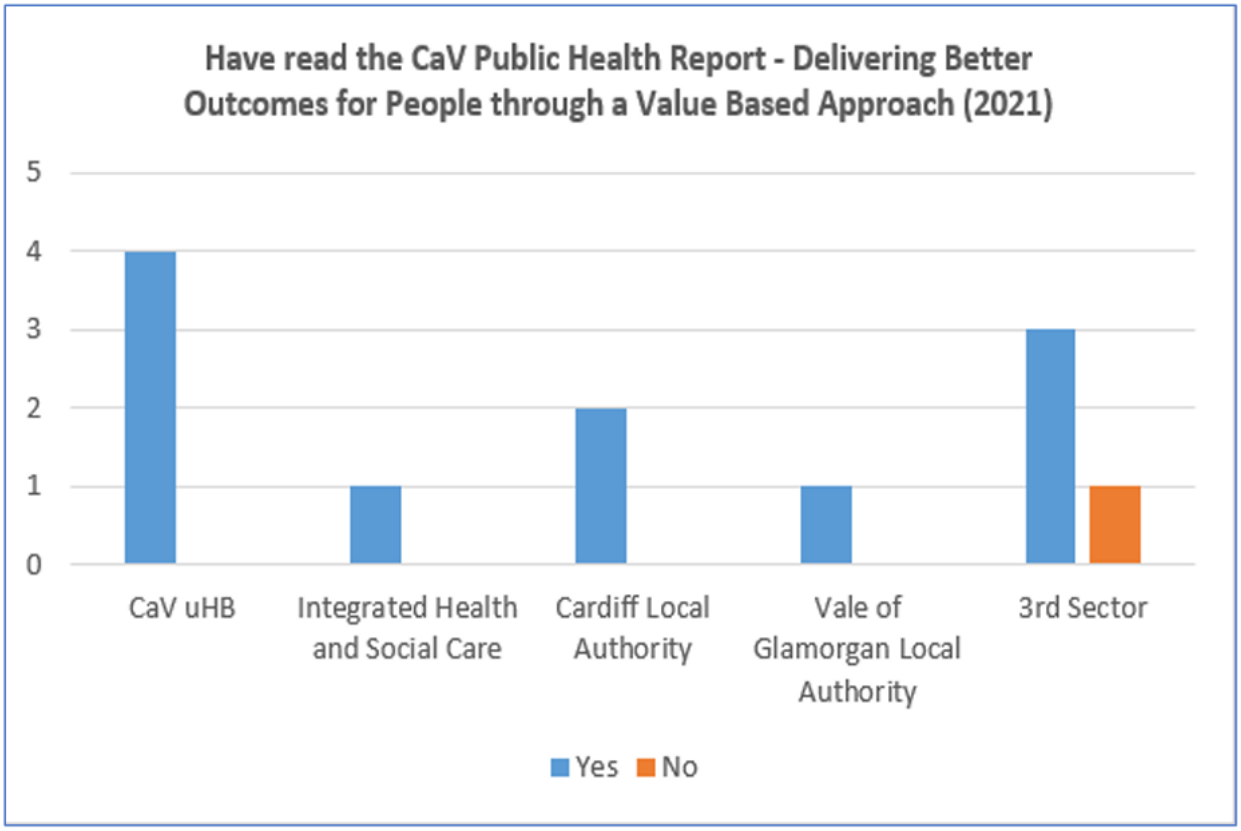
Vale of Glamorgan Local Authority:



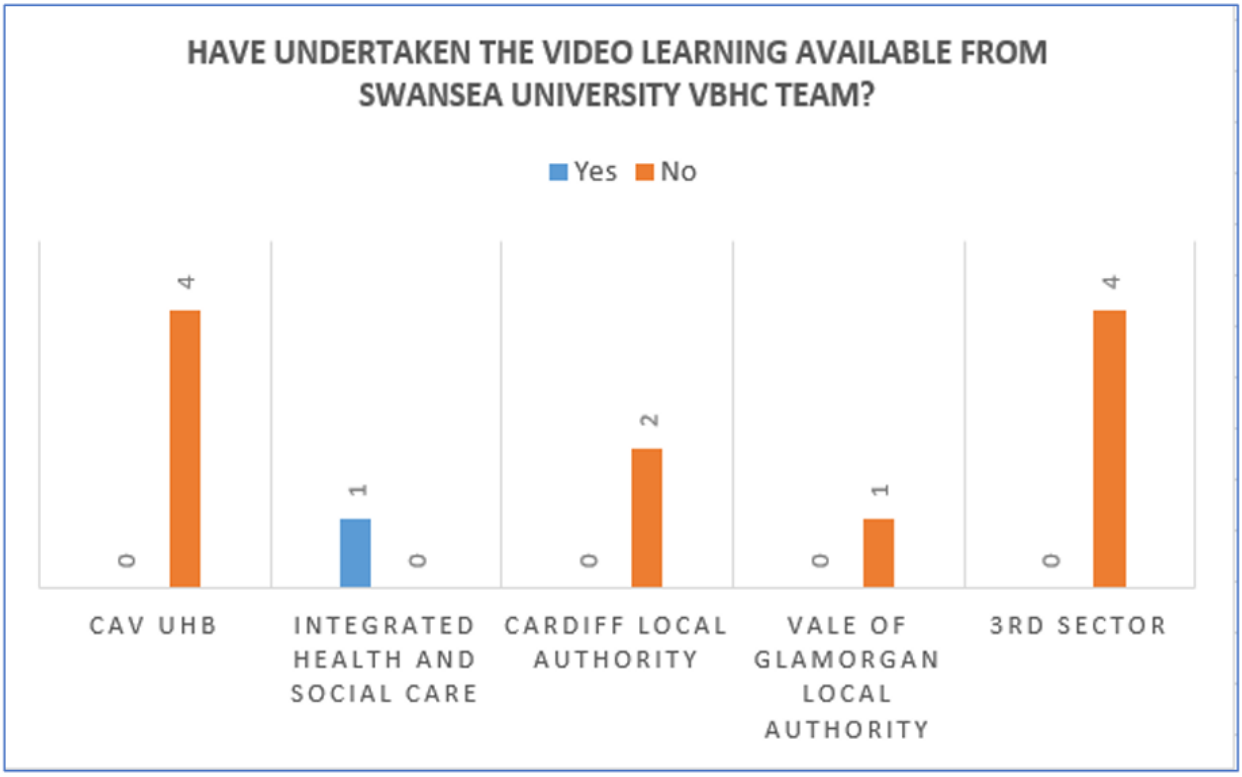
3rd Sector:



15 Appendix 8: Interviewees whom have read the Public Health paper 'Delivering Better Outcomes for People through a Value Based Approach (2021) – By Organisation



16 Appendix 9: Interviewees whom have undertaken the video learning available from Swansea University VBHC team – By Organisation



17 Appendix 10: Further background on the funding and accountability model for RPB organisations in Wales

Calls for collaboration across Welsh Health and Care partners dates back to the formation of the modern NHS and beyond, however in 2009 health re-organisation in Wales established seven local health boards with a duty to work collaboratively with local authorities to plan services. Formal orchestration of this was legislated for in the 2014 Social Services and Well-being Act with the establishment of RPBs covering the public health and social care organisations within each health board's footprint. Pooled budgets and the opportunity for health and social care organisations to delegate a number of their functions were legally enabled.

Whilst Health Boards took on the remit of both commissioner and provider, the commissioning responsibilities of Health boards and Local Authorities remained split (other than in relatively niche areas such as Learning Disabilities, Carers and family support services and Children with complex long-term needs).

In response to the 2018 parliamentary review finding that collaborative delivery had a 'way to go' and lacked a clarity of vision in regards to how it would address population needs (The Parliamentary Review of Health and Social Care in Wales, 2018), further legal and structural amendments to the powers of RPBs has been muted (such as making RPBs their own legal entity with direct powers to commission), however, as yet, these maturity steps are yet to be set down in a legal instrument by Welsh Government, following the COVID pandemic system shock.

Each RPB receives a settlement figure (a budget) particular to its population, 'top up' funds also exist for delivery against a range of Welsh Government initiatives and innovation areas (typically linked to policy initiatives). In all, the CaV RPB receives approx. £20m of RPB directed funds from Welsh Government on an annual basis, sent to the statutory organisations and managed by the RPBs Integrated Health and Social Care team.

18 Appendix 11: Participant information sheet issued to interview candidates

Swansea University
Prifysgol Abertawe

PARTICIPANT INFORMATION SHEET

Research question: An exploration of the potential of the Value based health and care paradigm to act as a model for regional resource allocation – A study of the Cardiff and Vale Health and Care region.

You are being invited to take part in some research. Before you decide whether or not to participate, it is important for you to understand why the research is being conducted and what it will involve. Please read the following information carefully.

What is the purpose of the research?
We are conducting research to explore whether the value based health and care paradigm may act as a model for regional resource allocation within the Cardiff and Vale region. The study is part of an MSc in Advanced Health & Care Management (Value Based Health and Care). The research will include undertaking Qualitative Research with members of the Regional Partnership Board (RPB) alongside a review of existent models/frameworks of regional resource allocation. Mark Cahalane will undertake the interviews and evaluation. The results will be published to support further development in this emergent and important field. Your participation in this study will take approximately ***90 minutes*** *(circa 45 minutes pre interview on-line video learning and 45 minutes of interview).*

Who is carrying out the research?
The data will be collected by Mark Cahalane, MSc Student at Swansea Universities School of Management. Mark can be contacted at 121822@swansea.ac.uk. The research has been approved by the School of Management Research Ethics Committee.

What happens if I agree to take part?

By agreeing to take part you will be asked a series questions in regards to your awareness of the Value Based concept, and how it may relate to regional operations in the region. The approach will seek to gain insight into the challenges and the barriers facing it adoption in addressing RPB challenges.

Are there any risks associated with taking part?
The research has been approved by the Swansea University School of Management Research Ethics Committee. There are no significant risks associated with participation.

Data Protection and Confidentiality
Your data will be processed in accordance with the Data Protection Act 2018 and the General Data Protection Regulation (GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher/research team.

All electronic data will be stored on a password-protected computer file on a laptop. All paper records will be stored in a locked filing cabinet at the School of Management. Your consent information will be kept separately from your responses to minimise risk in the event of a data breach.

Swansea University
Prifysgol Abertawe

Please note that the data we will collect for our study using a voice recording device and will be made anonymous, following a 24hr settling period. Thus, it will not be possible to identify and remove your data later, should you decide to withdraw from the study. Therefore, if at the end of this research you decide to have your data withdrawn, please let us know before completing the interview, or within 24hr of interview.

Should you wish for your data to be destroyed prior to anonymisation during the 24hr settling period- please contact the researcher by email at 2132650@swansea.ac.uk

What will happen to the information I provide?
An analysis of the information will form part of our report at the end of the study and may be presented to interested parties and published in scientific journals and related media. *Note that all information presented in any reports or publications will be anonymous and unidentifiable.*

Is participation voluntary and what if I wish to later withdraw?
Your participation is entirely voluntary – you do not have to participate if you do not want to. If you decide to participate, but later wish to withdraw from the study, then you are free to withdraw at any time, without giving a reason and without penalty.

Data Protection Privacy Notice
The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data, and can be contacted at the Vice Chancellors Office.

Your personal data will be processed for the purposes outlined in this information sheet. Standard ethical procedures will involve you providing your consent to participate in this study by completing the consent form that has been provided to you.

The legal basis that we will rely on to process your personal data will be processing is necessary for the performance of a task carried out in the public interest. This public interest justification is approved by the College of Human and Health Sciences Research Ethics Committee, Swansea University.

The legal basis that we will rely on to process special categories of data will be processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.

How long will your information be held?
We will hold any personal data and special categories of data for no longer than is necessary for purposes stated above.

Automated decision making and profiling [only required if applicable]
No automated decision making, or profiling will be used for this study.

Swansea University
Prifysgol Abertawe

What are your rights?
You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights.

Any requests or objections should be made in writing to the University Data Protection Officer:-

University Compliance Officer (FOI/DP)
Vice-Chancellor's Office
Swansea University
Singleton Park
Swansea
SA2 8PP
Email: dataprotection@swansea.ac.uk

How to make a complaint
If you are unhappy with the way in which your personal data has been processed you may in the first instance contact the University Data Protection Officer using the contact details above.

If you remain dissatisfied then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: -

Information Commissioner's Office,
Wycliffe House,
Water Lane,
Wilmslow,
Cheshire,
SK9 5AF
www.ico.org.uk

What if I have other questions?
If you have further questions about this study, please do not hesitate to contact us:

Mark Cahalane
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Swansea University
121822@swansea.ac.uk

Dr. Paul Davies
School of Management
Swansea University
paul.g.davies@swansea.ac.uk

19 Appendix 12: Participant consent form issued to and returned from all interview participants

Swansea University
Prifysgol Abertawe

Participant Consent Form

Project title: An exploration of the potential of the value based health and care paradigm to act as a model for regional resource allocation – A study of the Cardiff and Vale Health and Care region.

Name and Contact details of the principal researcher: Mark Cahalane, MSc Student at Swansea University, 121822@swansea.ac.uk

		Participant initial
1.	I (the participant) confirm that I have read and understand the participant information sheet for the above study (dated 30/05/2023) which is attached to this form.	
2.	I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reasons.	
3.	I understand what my role will be in this research, and all my questions have been answered to my satisfaction.	
4.	I understand that I am free to ask any questions at any time before and during the study.	
5.	I have been informed that the information I provide will be safeguarded.	
6.	I am happy for the information I provide to be used (anonymously) in academic papers and other formal research outputs.	
7.	I am willing for my information to be audio recorded.	
8.	I have been provided with a copy of the Participant Information Sheet.	
9.	I agree to the researchers processing my personal data in accordance with the aims of the study described in the Participant Information Sheet.	

Thank you for your participation in this study. Your help is very much appreciated.

Print name of participant	Signature	Date
Print name of researcher	Signature	Date

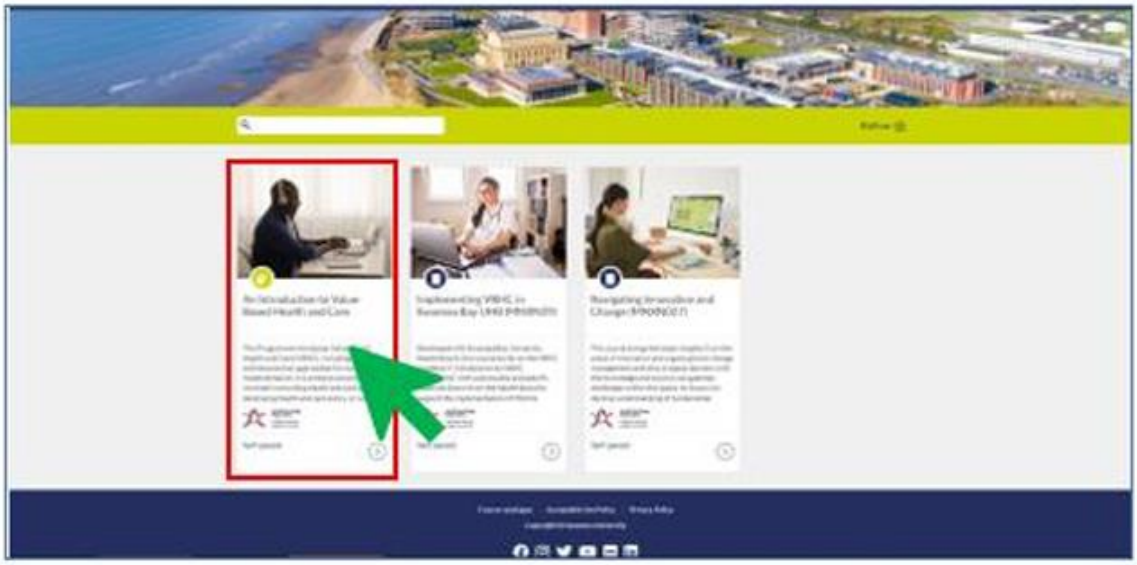
This study is being conducted by Swansea University, School of Management.

When complete: Original copy for participant, one copy to be retained by researcher

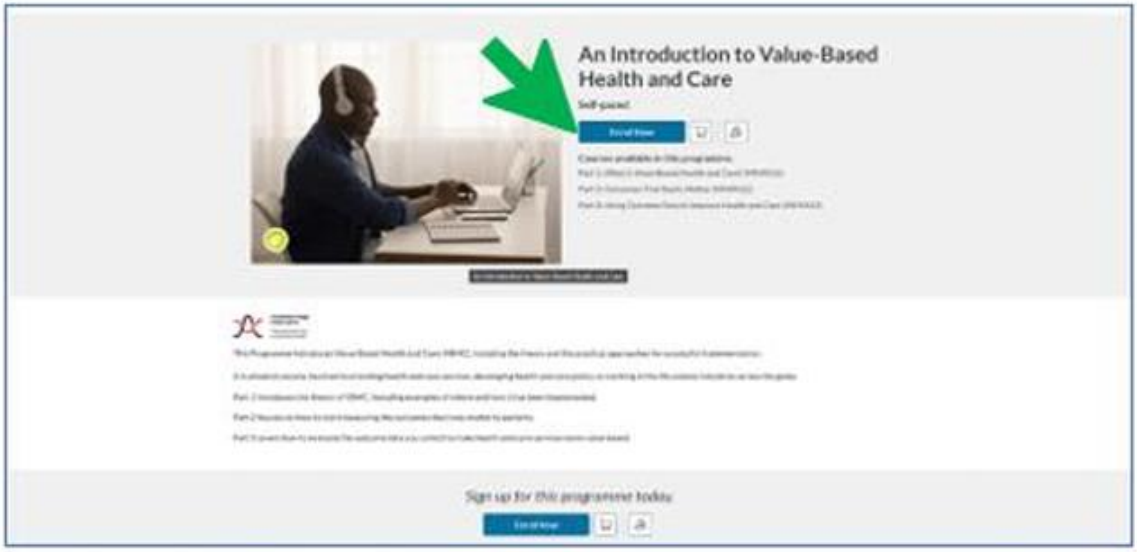
20 Appendix 13: Guidance written by author and issued to participants invited to interview

Guidance on accessing the Swansea School of Management VBHC e-learning

1. Hold Ctrl and click the following link: Swansea Learn (canvaslms.com)
2. Select the **'Introduction to VBHC learning'**:

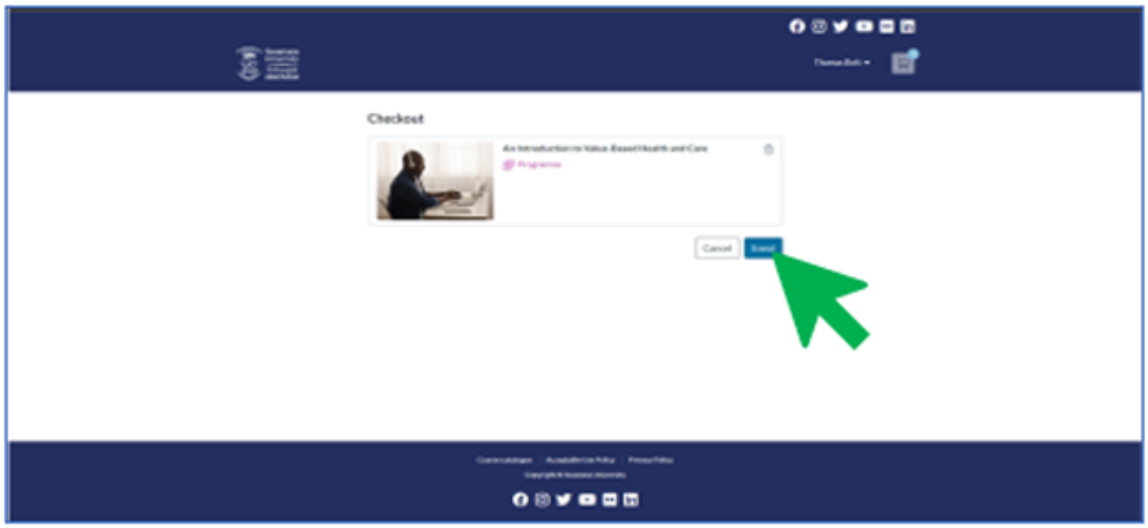


3. Click **'Enrol Now'**

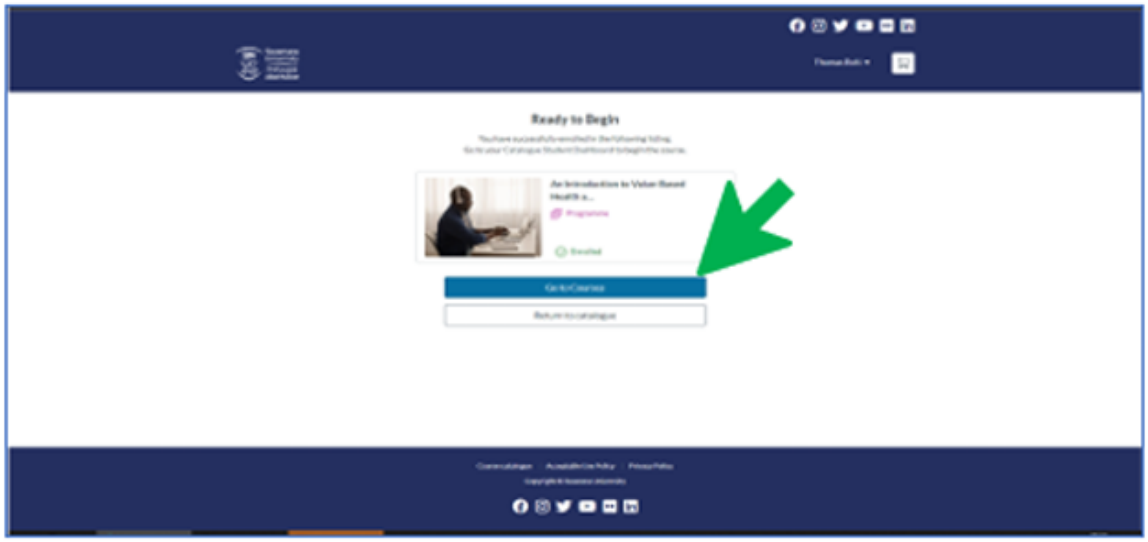


4. Create a login account:

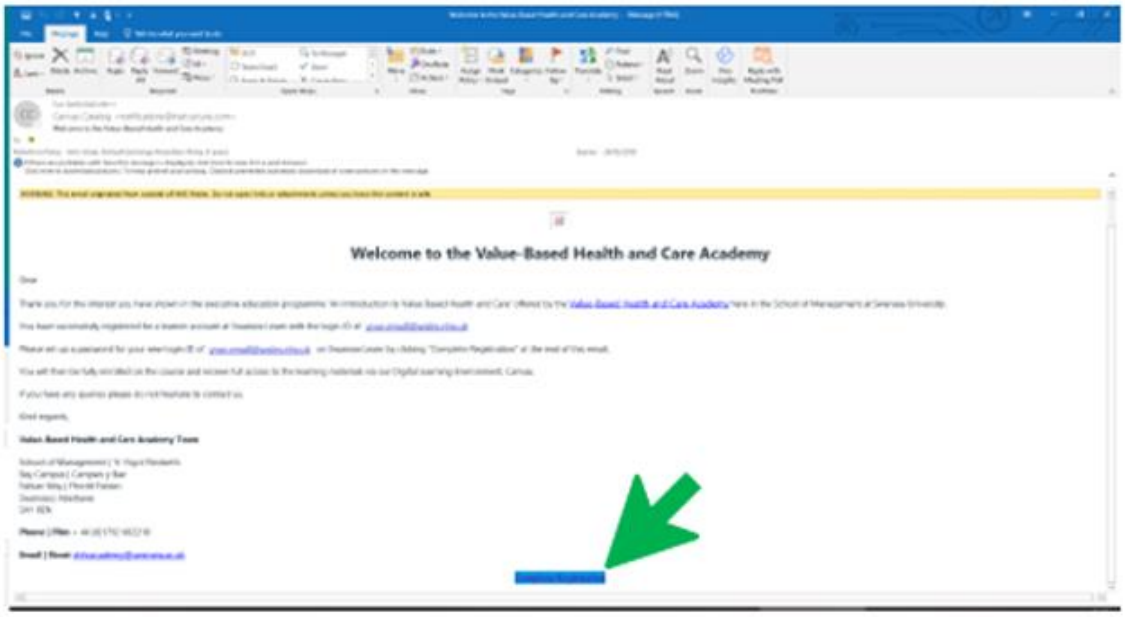
5. Click **'Enrol'**



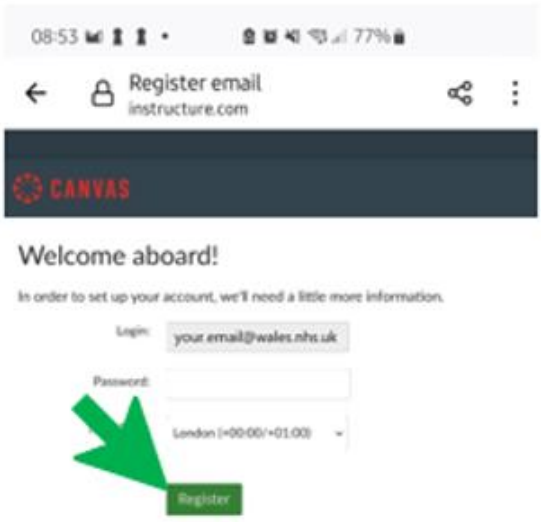
6. Select **'Go to course'**:



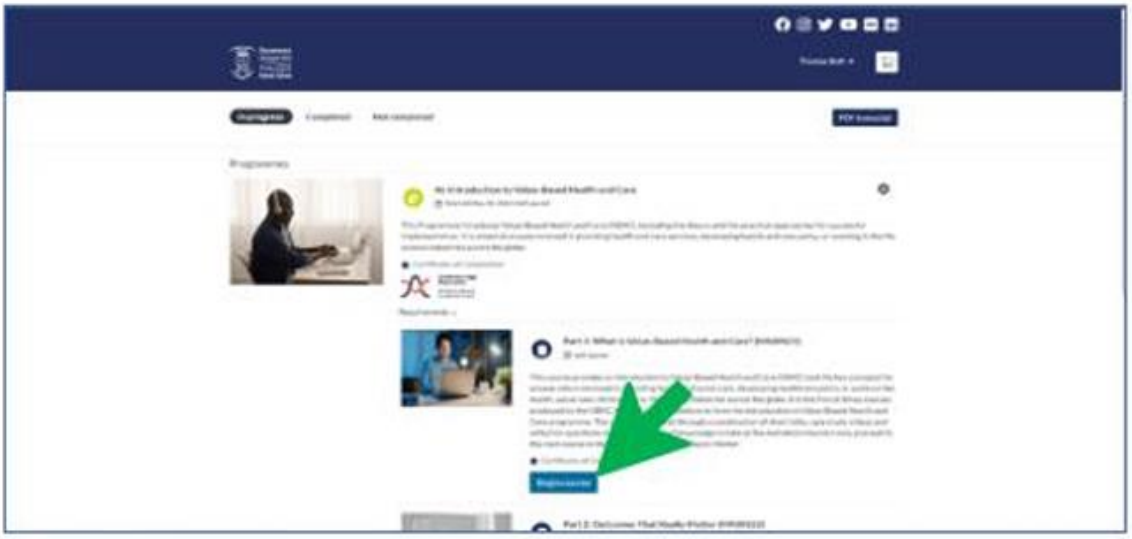
7. You will have to confirm your email account at this stage for authentication. Go to the email account you signed up with and find an email from **'Canvas Catalogue'** titled **'Welcome to the Value-Based Health and Care Academy'.** Scroll to the bottom and click **'Complete Registration'.** Set up a password and login.



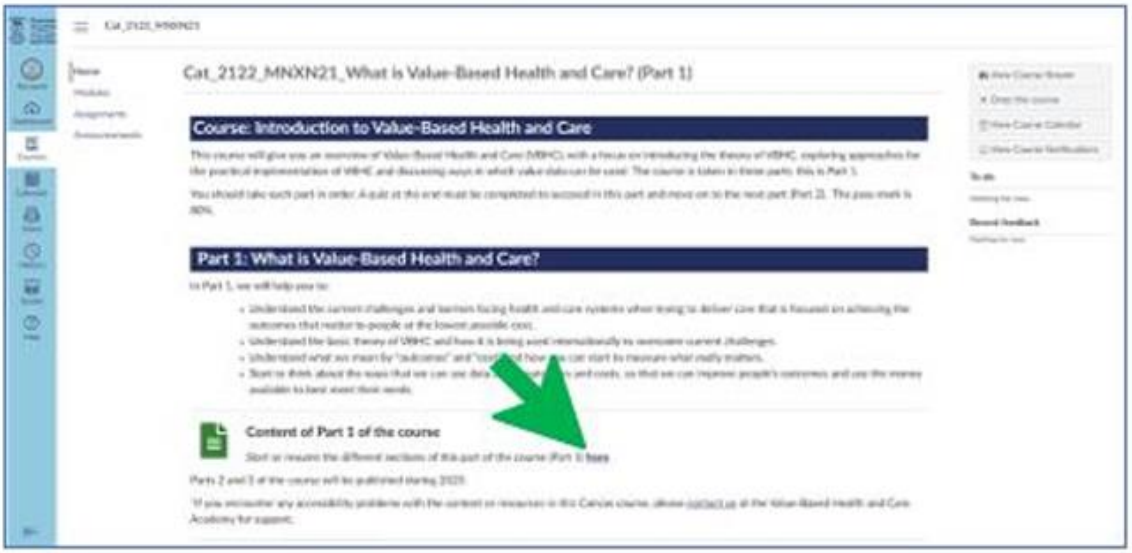
8. Enter a memorable password and click **'Register'.** This will take you to the student dashboard.



9. From the dashboard, select your **'in Progress'** button and the **'begin course'** button for Part 1: What is Value Based Health and Care



10. Click on the blue underlined **'here'** to start the part 1 section of e-learning.



21 Appendix 14: Interviewee Log – Organisation, interview dates, information provision and consent gained log (Identification redacted)

Interview Participants Record Sheet				
Interviewee Organisation	**Did not wish to participate/Withdrew (Date)**	**Date of Interview**	**Information sheet provided (Y/N)**	**Consent form returned**
Regional Partnership (Integrated Health and Care Team - Housed by Cardiff and Vale NHS)	No	31st July	Y	31/07/2023
Cardiff and Vale NHS	No	2nd Aug	Y	07/08/2023
Cardiff and Vale NHS	No	10th Aug	Y	11/08/2023
Cardiff and Vale NHS	No	28th July	Y	06/08/2023
Cardiff and Vale NHS	No	2nd Aug	Y	02/08/2023
Vale of Glamorgan Council	No	31st July	Y	31/07/2023
Cardiff Council	No	21st July	Y	26/07/2023
Cardiff Council	No	24th July	Y	31/07/2023
Taff Housing	No	24th July	Y	24/07/2023
Llamau	No	31st July	Y	31/07/2023
Platfform	No	30th June	Y	30/06/2023
Cardiff 3rd Sector Council	No	4th Aug	Y	04/08/2023
Non Responses				
Cardiff and Vale NHS	No			
Vale of Glamorgan Council	No			
Cardiff Council	No			
Welsh Ambulance Service NHS Trust	No			
Care Forum Wales	No			
Glamorgan Voluntary Services	No			
Declined				
Vale of Glamorgan Council	**Yes** (Withdrew consent on 29th June'23)			
Vale of Glamorgan Council	**Yes** (Withdrew consent on 7th June'23)			

The Enablers and Inhibitors of Implementing Digital Care Planning in Social Care/ Integrated Services

Carol Haake
Registered Reablement Manager, Vale Community Resource Service
Vale of Glamorgan Council, UK
Email: carolhaake1@gmail.com

Abstract:

Background: Resources in health and social care are under constant pressure. Digital change is being explored and exploited to enable services to deliver more effective and efficient care. Existing research has helped to understand the barriers and enablers to implementing digital change and the reasons why innovations fail to be adopted and spread, mostly focused on secondary care in the NHS. This research focusses on the barriers and enablers of implementing digital care planning in social care/integrated care, an area that is under- represented in current research.

Methods: A case study was carried out in a community resource (integrated) service in South Wales where digital care planning was being implemented. Perceptual questionnaires were used from a representative sample of the team to test a conceptual model developed from the existing literature. Semi-structured interviews were carried out with subject experts from two other organisations who were implementing digital care planning in social care/integrated care to explore whether the findings could be generalised.

Results: The result of the study challenges the assumptions in current literature about people being resistant to digital change and the impact of digital literacy as these were not found to be significant factors. This research found the importance of leadership and early engagement with the team to shape the vision, see the perceived benefits and create tension for change were key enablers along with timely training, pacing the change and ensuring good feedback loops during the implementation.

Conclusion: The main findings were that attention to the human factors of change when implementing digital change was key to its success in social care/integrated care. The conceptual model held up well under scrutiny and has been further developed and adapted as a result of this study. It is hoped that the conceptual model will be used, in the future, so further research can be undertaken in this area to support successful digital transformation in social/integrated care.

Keywords: Digital Services, Technology Acceptance Model, Change Management, Conceptual Model.

Table of Contents

List of Acronyms, Figures and Tables

Acronyms

Acronym	Definition
CIW	Care Inspectorate Wales
CVUHB	Cardiff & Vale University Health Boards
LA	Local Authority
NHS	National Health Service
OT	Occupational Therapist
OTA	Occupational Therapy Assistant
RC	Reablement Co-ordinator
RSW	Reablement Support Worker
TAM	Technology Acceptance Model
UTUAT	Unified Theory of Acceptance and use of Technology
VOGC	Vale of Glamorgan Council
VCRS	Vale Community Resource Service

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5.6	Responses about Leadership
5.7	Responses about Resources
5.8	Responses about IT Literacy
5.9	Responses about Resistance to Change, Memory and Attitude
5.10	Responses about Perceived Benefits
5.11	Responses about Training
5.12	Other key themes emerging from the perceptual questionnaire where no specific question was asked on a Likert scale (answers from open ended questions such as what are the barriers/enablers)
5.13	Key Information on expert informants and organisations
5.14	Enablers of digital care planning in social care/integrated care
5.15	Inhibitors of implementing digital care planning in social care/ integrated care
5.16	Observed benefits of implementing digital care planning in social care/integrated care
6.1	Identified enablers and inhibitors of implementing digital care planning with social care/ integrated services
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1 Introduction

1.1 Background and context

The health and social care sector face many challenges in delivering services that are both efficient and effective within limited resources. The aftermath of the COVID-19 pandemic has further increased demand for secondary care creating further pressure and reliance on primary and social care to create and absorb more capacity.

Integrated services, such as Reablement Teams, are at the forefront of this challenge as they enable the flow from secondary to primary care and buffer the demand for hospital admissions by providing therapy and support to enable people to recover in their own home.

Vale Community Resource Service is a multidisciplinary team providing reablement therapy and support to citizens in the Vale of Glamorgan. Integration brings its own challenges with different data systems leading to duplication of records and potential impact on safety of citizens, timely record keeping, and clinical decision making. It is important to have efficient systems and processes to address these challenges to ensure we can make best use of our limited resources.

With the move, in the general population towards digital solutions could exploiting technology be the answer. If so, why are social care and primary care so slow to innovate. This research aims to look at the enablers and inhibitors of implementing digital solutions to understand the key ingredients for implementing transformational digital care in these settings.

1.2 The Strategic Importance

Over the last 10 years the strategic context in Wales has been focused on developing joined up services that deliver the outcomes that matter to citizens. Table 1.1 outlines the key documents that have shaped the landscape of primary and social care. The key themes are early intervention, prevention, co-production, providing person centred care, promoting equality, being outcome focused, joined up working and being evidence based.

Table 1.1 Key Documents Outlining the Policy Context in Wales for Health and Social Care

Title	Year	Publisher	Main Recommendations
Social Services and Wellbeing (Wales) Act	2014	Welsh Government	Legislation that sets out to improve the wellbeing of people in need of care and support and their carers by understanding 'what matters' to them. Incorporates a code of professional practise using 5 key principles: Voice and control Prevention and early intervention Wellbeing Co-production Multi-agency Creation of Regional Partnership Board
Prudent Healthcare Principles	2015	The Bevan Commission	Philosophy / way of working following on from Bevan Commission report (2023) 4 Principles of Prudent Healthcare – person, population, policy level Public and professionals are equal partners through co-production. Care for those with the greatest need first. Do only what is needed and do no harm. Reduce inappropriate variation through evidence-based practice.
Well-being of Future Generations (Wales) Act	2015	Welsh Government	Not focused specifically on health and social care Legislation on sustainable development A Healthier Wales was one of the 7 wellbeing outcomes
Informed Health and Care A Digital Health and Social Care Strategy for Wales	2015	Welsh Government	Access to own records using digital tools. Professionals using digital tools to improve quality, safety, and efficiency – interoperability. Improvement and Innovation – data enabled decision making. Digital as a key enabler for transformation in health and social care 'Digital First' philosophy.

Regulation and Inspection of Social Care Act	2016	Welsh Government	Personal Plans are kept up to date and reviewed. Personal Plans are available in a clear format to inform staff how they should provide care and support daily
A Healthier Wales (One of the 7 well-being aims from Wellbeing of Future Generations Act)	2018	Welsh Government	Quadruple Aims Improved population health and wellbeing Better quality and more accessible health and social care services Higher value health and social care A motivated and sustainable health and social care workforce. Achieved by Integrated working between health and social care – seamless service Improving safety Personalised services Focused on early intervention and prevention. Investing in technology to make a difference to citizens and staff, digitally enabled services, evidence driven. Driving change and improvement – innovation, scaling up, improving leadership Aspiration for single digital care record Community based services minimise hospital stays. Engagement with the workforce/public

A Healthier Wales (Welsh Government, 2018) brings all the elements together to form 'a long-term plan for health and social care' and outlines the roles of the Regional Partnership Boards, (created by the Social Services and Wellbeing (Wales) Act (2014)), in driving change forward. Digital is identified as a key agent for transformational change to embrace new ways of working, increase efficiency and deliver services in a cost-effective way. It advocates digitally enabled models of care to support sharing of information, improve safety, enable joint decision making and deliver better outcomes.

A Healthier Wales also puts a focus on the role of leadership, engagement and the development of the health and care workforce to deliver on the vision using evidence-based practice.

The published journal articles and reports will be discussed in the next chapter.

1.3 Research Question, Aims and Objectives

"What are the enablers and inhibitors of implementing digital care planning within social care and/or integrated services (primary healthcare and social care)?"

1.4 Personal Motivation of the Researcher

The researcher is an experienced senior leader and operational manager in social care/integrated service delivery. She has a keen interest in developing person-centred services which exploit the use of technology to enable efficient and effective service delivery.

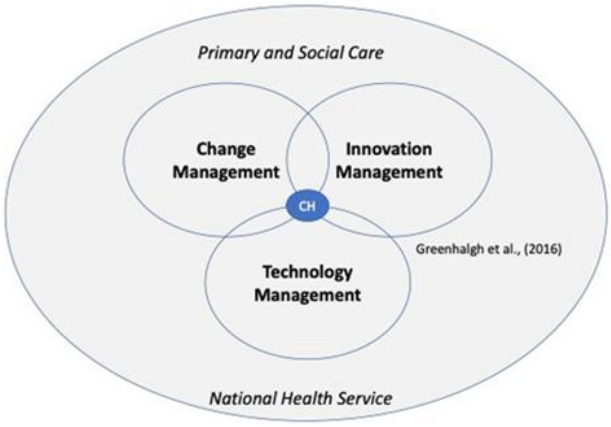
This research work is theory-building and has major implications for the way in which innovation is managed within social care/integrated care setting in Wales.

1.5 Conclusions and the structure of the report

This chapter has presented a brief introduction to the research question. The next chapter (2) will provide a review of the existing literature in this field of study before defending the chosen research design in Chapter 3. Chapter 4 will present a brief overview of the case study of Vale Community Resource Service and Chapter 5 will present the findings of the research conducted. The final chapters will then discuss the findings and implications of the study before presenting the conclusions and recommendations because of this research.

2 Literature Review

2.1 Introduction and Purpose



Source: The Researcher, 2023

Figure 2.1. Area of Research.

The purpose of the literature review is to examine the current thinking and evidence base on the subject and to identify any gaps. In this case, the researcher focused on enablers and inhibitors of implementing digital technologies in integrated services and social care to build the conceptual model (see Fig 2.2). The literature review focused on the intersection of technology management, innovation management and change management within the context of primary and social care as illustrated in Figure 2.1.

2.2 Methodology and search terms

The following search terms were entered into the EBSCO host search engine.

Table 2.1. Search terms for Literature Review

Search Terms in EBSCO host			
Health and Care Technologies	Implementation	United Kingdom or UK or England or Britain or Scotland or Northern Ireland or Wales	Social Care

The search found n=75 articles, this was refined by selecting articles from 2013 onwards that had been peer reviewed n=51. The researcher then read the abstracts and used the following exclusion criteria:

- Not about implementation
- About assistive technology
- About wearable devices
- Secondary care setting

Table 2.2. The enablers/inhibitors.

Table 2.2

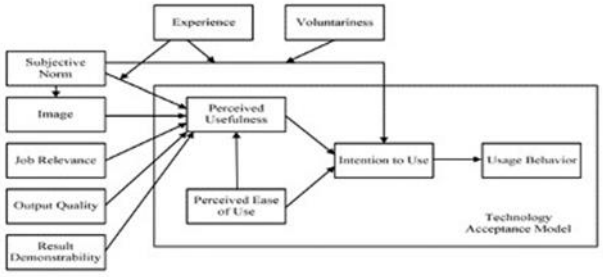
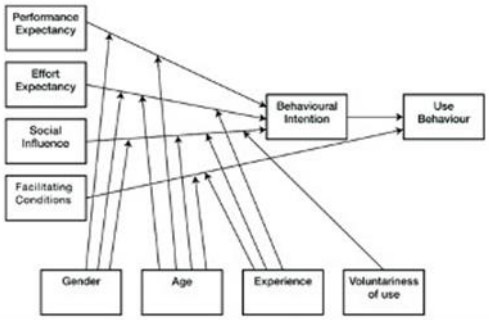
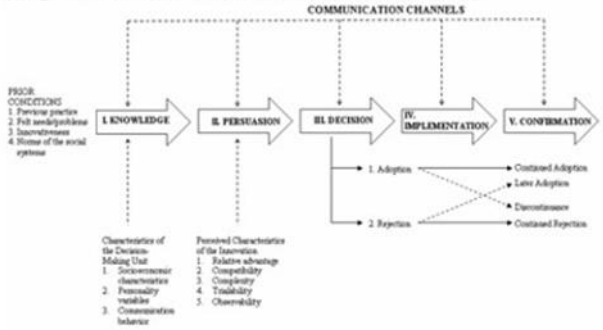
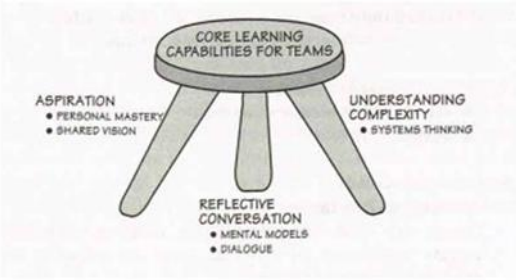
The enablers/inhibitors of implementing digital technology – existing research

Reference	Enablers	Inhibitors
(Greenhalgh et al., 2017) Beyond Adoption: A New Framework for Theorizing and Evaluating Non-adoption, Abandonment, and Challenges to the Scale-Up, Spread, and Sustainability of Health and Care Technologies. Uses NASSS Framework to examine complexity and adoption/implementation – applies more to technologies for patients rather than service wide technologies – uses 7 Domains	• Unlikely to have significant effect on care • Ease of use – simple set of instructions • Interoperable with other systems • Clear business case, adds value, cost effective • Doesn't change role of staff • Organisation has 'slack resources' • Good leadership • There is a tension for change • Shared vision • Scope for adapting technology over time	• Poses challenge to care planning and service provision • Requires advanced training to use • Interoperability Barrier • Threatens scope of professional practice, job loss • Complexity • Privacy • Resistance from users • New routines/pathways conflict with existing practice • Severe resource pressures • No tension for change • Distrust of technology
(Brittain, 2020) Electronic Care Planning and Care Worker Engagement Identified benefits of electronic care planning (Technology acceptance; Engagement with staff improved; Improved motivation; Improved productivity; Benefits of continuous feedback; Improved recording; Time saving voice to text; More time with service users; Better handover)	• Referenced TAM (Davis, 1989), UTUAT (Venkatesh & Davis, 2000) &– Diffusion of technology (Rogers, 2003) • Training – one to one training helped for those struggling	• Financial and time restraints (Doyle et al 2014) • staffing levels and discomfort with technology (Doran et al 2010) • complexity of healthcare environment and culture (Greenhalgh, 2005; Greenhalgh et al, 2008; Bezboruah et al, 2014)
(Edwards et al., 2021) The Use of Smart Speakers in Care Home Residents: Implementation Study	• Normalisation of technology • Voice activation (ease of use)	• Internet connectivity • Staff capacity – lack of time/resource • Staff skills • Privacy & Data protection concerns
(Blanchard et al., 2017) UK Health and Social Care Case Studies: Iterative Technology Development	• Early and ongoing engagement strategy • Collaboration with stakeholders • Flexible technology design – adaptable to needs of service/ workflows	• Lack of engagement • Lack of internal resources for implementation
Reference	**Enablers**	**Inhibitors**
'Each implementation is unique' pg. 87 'shared learning process and flexible system design allows adaptability for changing organisational needs. It is essential to design technologies to suit services and the complexity of their workflows and cultures to maximise success'	• Interoperability and integration with existing systems • Perceived benefits – see value in the tool • Dedicated internal resources	
(Greenhalgh et al., 2020) The NASSS-CAT Tools for Understanding, Guiding, Monitoring, and Researching Technology Implementation Projects in Health and Social Care: Protocol for an Evaluation Study in Real-World Settings.	• Inter stakeholder negotiation • Identifying complexity – Understand, reduce, and respond to complexity (using toolkit) • Adopters -super users, shadowing (social learning) • Organisation – regular feedback channels (team meetings, audit, and feedback processes)	• Complexity • Oversimplifying the challenge
(Jeffries et al., 2017) Understanding the implementation and adoption of an information technology intervention to support medicine optimisation in primary care: qualitative study using strong structuration theory	• *take into consideration existing local practices and the ambitions and attitudes of those who will use the technology*	• Resistance - Perception of system as 'new' – preferring to do things the old-fashioned way • Perception of requiring technical competence • Not compatible with existing routines
(Greenhalgh & Abimbola, 2019) The NASSS Framework - A Synthesis of Multiple Theories of Technology Implementation Complex adaptive systems -fuzzy boundaries – learning to work with uncertainty	(See above re NASSS framework) • Live with complexity • Strengthen leadership • Compelling vision • Tolerate stakeholder perspectives • Identify and talk about uncertainty • Slack resources • Co-design pathways/ work routines with users	
(The King's Fund, 2018) Digital change in health and social care Digital tools improve quality outcomes, free up time	Training (mandatory) Engagement Sufficient Resources Time Organic approach Realistic leadership Implementation Plan Modify technology Phasing vs big bang approach to implementation Implementation support from providers	Lack of organisational memory Lack or resources Finances Complexity Lack of interoperability Culture Poor engagement Lack of awareness of benefits Information Governance

Other well-known technology acceptance models and change models were also examined during the literature review (Table 2.3).

Table 2.3

Technology Acceptance Models and Change Management Models

Reference	
(Venkatesh & Davis, 2000) TAM 2 	UTUAT (Venkatesh et al., 2003) 
(Rogers, 2003) Diffusion of innovation theory  • It has value to the participants (compatibility) • Be better than current practice (relative advantage • The greater the perceived compatibility and relative advantage = increased rate of adoption • Visible outcomes (observability) • Adaptable – can be altered – can be trialled	(Senge, 1997) The Fifth Discipline  1. Systems Thinking 2. Personal Mastery 3. Mental Models 4. Building Shared Vision 5. Team Learning

2.3 Discussion

The King's Fund (2018) report highlights the need for new technologies to be implemented to respond to the growing pressure on resource s finances the health and social care sector faces. It was of interest to the researcher that many of the articles, in the literature reviews, documented research in healthcare settings with few studies in social care settings. Blanchard et al. (2017) point out there is a lot of research around technology design but not many case studies giving practical advice on implementation of technologies in real world situations. Greenhalgh et al. (2017) cite that during their early work studying the diffusion of innovation in health care they found most literature focused on simple innovations and there were few studies where organisational change and ongoing financial investment were required. Greenhalgh and Abimbola (2019) also noted there were few studies on sustainable technology change in health and social care.

There are existing well known theoretical tools (Table 2.3) to determine whether technology will be accepted by end users. TAM2 (Venkatesh & Davis, 2000) focusses on the perceived usefulness, ease of use and attitude towards technology whilst UTUAT (Venkatesh et al., 2003) extends this to include demographic

variables and facilitating conditions. Legris et al. (2003) as cited by Greenhalgh et al. (2017) criticise these models for not considering human and social factors in the change process. These frameworks also come under criticism for not taking into consideration the organisational context to which the technology is being applied (Greenhalgh et al., 2017).

During the literature review, only one study was found specifically on implementing digital care planning in social care (Brittain, 2020). The focus of this study was whether digital care planning improved staff engagement rather than the enablers and inhibitors of implementation. It has been included in this literature review to consider the actual benefits found in relation to the perceived benefits anticipated by this case study. These will be discussed in Chapter 6.

Jeffries et al. (2017) use structuration theory in their research concluding it is a unique interaction between the technology itself, the users' actions and social and organisational factors that influence the success of digital transformation. Furthermore, Greenhalgh et al. (2017) cite their 2004 research arguing implementation success is not about the individual factors but the "dynamic interaction between them". Their work focusses mainly on the reasons for non-adoption and spread of innovation (NASSS framework). This framework includes 7 domains (the individual condition, technology, value, adopters, organisation, wider system, embedding and adaptation over time).

Both viewpoints consider the complexity of health and social care settings. These are reinforced by Greenhalgh et al. (2020) who note; introducing technology into health and social care settings is not a linear process and "involves not only technical implementation but also the ongoing judicious management of interacting subprojects characterized competing values, goals, stakeholder interests, and local and national politics—all against a shifting contextual baseline" (p. 2). The revised NASSS_CAT tool (Greenhalgh et al., 2020) takes account of this and looks at structural, socio-political, and emergent complexity to comprehend the whole picture without attempting to oversimplify. The aim of the tool is to understand complexity so that it can be addressed during the implementation.

Whilst acknowledging complexity and interdependencies, the literature review identified distinct technological, human, and organisational factors that influenced successful implementation of digital technologies. These will be discussed thematically below.

2.4 Technological Factors

In line with the technology acceptance models the literature review supported digital technologies are more likely to be implemented if they are **easy to use** rather than requiring specialist training and understanding (Greenhalgh et al., 2017). For technologies to be sustainable and successfully implemented it is important they are **interoperable** with existing systems (Greenhalgh et al., 2017; Jeffries et al., 2017) therefore interoperability or compatibility (Rogers, 2003) can be seen as an enabler of digital change.

Blanchard et al. (2017) identified collaboration between the technology provider and end user was an enabler as technology could be **adapted** to suit the end user and enhance usability to extend its use within the organisation. It was also noted technology which was designed to suit complex workflows and cultures of the organisation, could easily integrate into current work practices, (Blanchard et al., 2017; Jeffries et al., 2017) and could be adapted and embedded over time to meet the needs of the service was more likely to be successfully implemented (Greenhalgh et al., 2017). The King's Fund (2018) noted from their case studies that organisations felt there was a role for the suppliers to play in the sharing their expertise about how other organisations had implemented the technology to accelerate learning which was not always forthcoming. **Privacy** concerns were seen as an inhibitor of technology implementation as were issues with internet connectivity (Edwards et al., 2021; Greenhalgh et al., 2017).

2.5 Human Factors

Tension for change and dissatisfaction with existing ways of working were found in the literature review to be key enablers for implementing digital change (Greenhalgh et al., 2017). This was in line with Kotter (2007, p. 5) who recommended 'establishing a sense of urgency'.

The literature highlighted **resistance to change** and negative attitudes of end users as inhibitors of implementing digital change. This was particularly noted when people perceived their clinical scope of practice was being compromised, there was a perceived risk of job losses or they had negative experiences

of technology in the past (Greenhalgh et al., 2017). Additionally, where the technology was seen as 'new' people tended to resist and hold onto ingrained practices of working (Jeffries et al., 2017).

To overcome some of these barriers Jeffries et al. (2017) identified the need to focus on the interactions between users and their relationships and Greenhalgh et al. (2020) recommended using early adopters as champions during implementation and creating opportunities for social learning such as shadowing.

The role of **training** and ongoing support during implementation of digital technology was inconclusive in the literature review. Edwards et al. (2021) offered support to providers during implementation of smart speakers in care homes through digital health champions but found there was poor uptake (less than 10%) for this. Conversely, Greenhalgh et al. (2017) found software that came with helpdesk support was more likely to be successfully implemented implying the need for support. A possible explanation for this could be the more complicated the technology, the more advanced training and ongoing support becomes a success factor. Brittain (2020) also noted the value users had placed on face-to-face training to build their confidence with the new technology and some case studies recommended making training mandatory for all staff (The King's Fund, 2018). Personal mastery and team learning are two of the five disciplines Senge (1997) advocates for a learning organisation reinforcing the need for ongoing learning on both a personal and team level.

One study found that the perception of technology being complex was an inhibitor as people felt they needed 'proper teaching' (Jeffries et al., 2017). Another highlighted the importance of allowing users to be able to try out and learn the new digital technology through a good risk-taking strategy and by encouraging learning together (Greenhalgh et al., 2017).

IT literacy was a common theme in the literature review with lack of skills and confidence in technology being identified as a barrier to digital change requiring time to allow users to adjust to the new technology (Edwards et al., 2021). The NASSS tool (Greenhalgh et al., 2017) identified that more complex technology requiring active data entry by users was less likely to be adopted than more simple devices that could auto generate the information required. The literature also identified the perception of the system as requiring technical expertise could be a barrier as it affected their attitude to the system (Jeffries et al., 2017).

A key enabler to successful digital change was seen to be strong leadership which was described as an "antecedent to change" (Greenhalgh et al., 2017) needed to create a powerful and persuasive shared vision (Greenhalgh & Abimbola, 2019; Senge, 1997). The King's Fund (2018, p. 11) described the importance of leaders demonstrating their understanding of the challenges and being "forceful and realistic".

The literature places a strong emphasis on engaging with key stakeholders, in particular end users to enable digital change. The King's Fund (2018) suggests an 'organic approach' is needed with sufficient time for engagement with staff and end users. One of the indicators for success or failure suggested by Greenhalgh et al. (2017) was the amount of work required to create a shared vision with active **engagement** as the channel for doing this. The literature advocated for early engagement with stakeholders and identified this would lead to a better understanding of the digital system and how it could benefit the individual worker and organisation (Blanchard et al., 2017). The importance of listening to and tolerating the different perspectives of stakeholders and identifying and discussing uncertainty was also identified as an enabling factor in order to co-design work routines and pathways with the people who will be using the technology (Greenhalgh & Abimbola, 2019) and ensuring there was ongoing opportunities for **feedback** and to continue to 'shape the technology' (The King's Fund, 2018, p. 43).

2.6 Organisational Factors

Jeffries et al. (2017) referenced structuration theory and suggested that any implementation required a detailed understanding of the context into which it is being introduced. This is particularly important so structure and culture can be considered within the organisation and an understanding of how the technology will fit with and facilitate current work practices and relationships can be developed. They suggest it is important that technology supports legislative monitoring requirements.

Dedicated internal **resources** are required to ensure successful implementation of digital technologies in organisations (Blanchard et al., 2017). Greenhalgh et al. (2017) describe the need for 'slack resources'; in other words, enough resources to dedicate to the implementation without compromising the day-to-day operations of the organisation. These resources are often lacking in complex public sector organisations

and can lead to slow progress in implementation. Others suggest '**organisational memory'** can be an issue as some organisations do not have in-house change management experience (The King's Fund, 2018, p. 5). Edwards et al. (2021) point to a lack of time and resources as being a barrier for implementation of digital technology with Jeffries et al. (2017) adding to this that users perceived they didn't have time to get the best out of the system.

2.7 Outcomes

Perhaps one of the key enablers identified by the literature review for implementation of digital change was end users being able to perceive the benefits to both their own role and the organisation. It was seen as a vital part of building the shared vision so people could see the value in adopting the system and ensured buy-in from end users (Blanchard et al., 2017). It is important that the system is better than what is already in place and provides solutions to some of the issues currently being experienced so a 'relative advantage' (Rogers, 2003) can be seen. End users being able to see the perceived benefits and the compatibility of the digital system to the organisation and workflows lead to quicker adoption of technology (Greenhalgh et al., 2017; Rogers, 2003). The King's Fund (2018) findings support this, saying staff need to have a good awareness of the benefits to meaningfully engage with the change process.

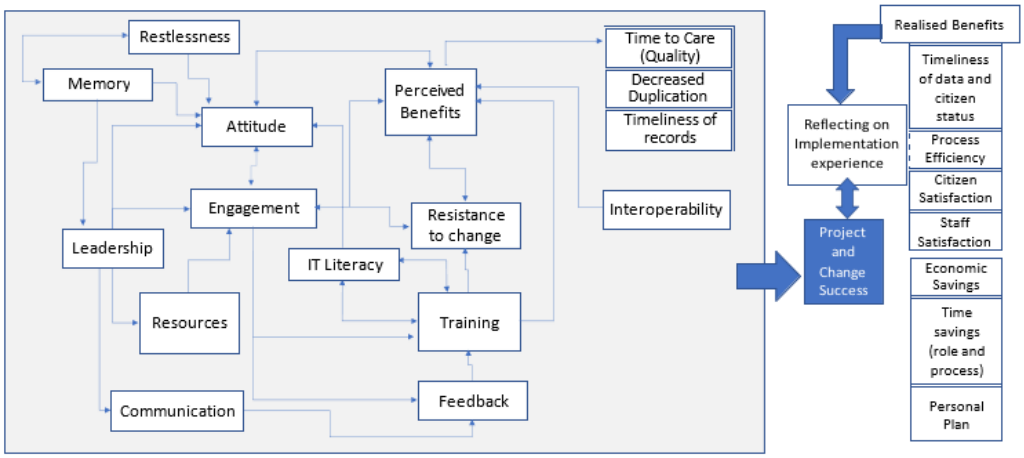
2.8 Conclusion from literature review

The King's Fund (2018) is clear, for successful implementation, adaptive change management is needed as well as concentrating on the technological aspects of change. Greenhalgh et al. (2020) also emphasise that consideration is needed on the human elements of the change process. However, the review of the existing literature found mostly a focus either on the technology itself, rather than implementation, the change process in isolation from digital technology or the reasons for non-adoption rather than key enablers.

This research is examining the enablers and inhibitors of implementing digital care planning within social care and/or integrated services (primary healthcare and social care). As most of the research focusses on healthcare, there is an identified gap in the research for applying digital change within the context of social care and/or integrated care which this piece of research hopes to address. It will also look at the how the digital change process is implemented and perceived in the context of integrated care by using a case study in a real life setting to address the lack of research in this area.

2.9 Conceptual Model

Figure 2.2 shows the conceptual model the researcher has put together based on the literature review that will be tested during this piece of research.



Source: The Researcher (2023)

Figure 2.2 Conceptual Model of inhibitors and enablers of implementing digital care planning in integrated care.

3 Research Methodology and Design

3.1 Introduction and Purpose

In this section the chosen research methodology will be presented and defended to explain and justify how the research has been designed to address the chosen research question.

3.2 Definitions

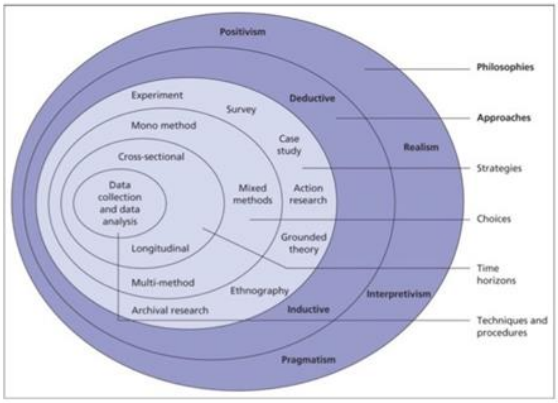
The table below defines the terms and features used in this chapter.

Table 3.1 Table of Terms.

Term	Definition
Pragmatism	'shows an acute interest in action'(Kelemen & Rumens, 2008, p. 43), 'It strives to reconcile both objectivism and subjectivism, facts and values, accurate and rigorous knowledge and different contextualised experiences' (Saunders, 2019, p. 151). Pragmatism focusses on using research to solve and understand a problem to improve future practice by finding practical solutions and outcomes. A mixture of methods is often used.
Methodology	The design of the research and the methods used.
Empirical	'based on, concerned with, or verifiable by observation or experience rather than theory or pure logic' (Simpson & Weiner, 1989).
Abductive approach	An approach where 'data collection is used to explore a phenomenon, identify themes and patterns, locate these in a conceptual framework and test this through subsequent data collection and so forth.
Case Study	'a case study is an empirical enquiry that investigates a contemporary phenomenon in depth and within its real life context' (Yin, 2009).
Perceptual Questionnaire	Used to gain insight into the attitudes of a group of people about a particular subject.
Conceptual Framework	A diagram that sets out the main concepts and their relationship to each other on the subject.

3.3 Overall Research Design

Table 3.2 Research Design and Methodology Used.



Source: *Saunders (2019, p. 130)*

Research Design & Methodology Used	
Philosophy	Pragmatic approach used to examine the research problem/ question in a practical manner
Approach	Abduction (combination of deductive and inductive approach) to modify exiting theory by exploring a given context
Strategy	Case study – to gain an in-depth insight by studying a real-life setting
Choice	Qualitative – multi-method approach
Time Horizon	Longitudinal
Techniques and procedures	Perceptual Questionnaire Semi-structured interviews Thematic analysis

Source: The Researcher (2023)

Figure 3.1 The Research Onion.

Figure 3.1 shows the research onion (Saunders, 2019) which was used to consider the overall design of this research. Table 3.2 shows the research design and methodology selected for this project which is explained and defended below.

When studying phenomenon in a real-life setting (rather than a laboratory setting or as part of a large-scale survey), context is of paramount importance. The intention of this research is to examine a real-life context to test the conceptual model developed during the literature review. As pragmatism focusses on using research to solve and understand a problem, to improve future practice by finding practical solutions and outcomes, it is well suited to this project. This research aims to discover the enablers and inhibitors to

implementing digital technology in a practical way to refine the conceptual model. This will provide a practical framework to enhance future adoption of technology in social/integrated care settings. An abductive research approach is taken using a literature review to build a conceptual model and practical research to test and refine this model.

3.4 Conducting a Literature Review

A literature review was undertaken at the beginning of this study to establish what has already been written about the inhibitors and enablers to digital care planning within integrated care and to build the conceptual framework. The search terms and results are detailed in Chapter 2.

The literature review was conducted and drew from repositories held under Swansea University iFind system. The dates used were to search back to 1999 and publications in top journals. From these works a conceptual framework was developed which is presented in Chapter 2.

3.5 Case Study Strategy and its benefits

The most effective form of research strategy to support a pragmatic approach is that of the case study strategy (Saunders, 2019). The case study is being used to gain an in-depth insight of the influencing factors of implementing digital technology in a natural integrated health and social care setting. It enables the conceptual model to be tested to ascertain whether it can be applied within a specific context and if there are additional factors that need to be added to the model. This approach enables analysis of how theory translates in practice and to suggest changes in approach that could be used to enhance the uptake of digital technology in these settings in the future.

The selected case study will be reviewed in the next chapter. The study took place in South Wales and was selected as the organisation were embarking on implementing a digital care planning solution in an integrated service. A multi-method approach was used to ensure breadth and depth in the information collected.

A longitudinal approach has been used by the researcher gathering data pre, during and post implementation of the digital care planning solution. The generalisability of the case study was tested by comparing the findings with that of other organisations that have also been implementing digital care planning.

3.6 Case Study techniques and procedures

3.6.1 Participant Selection

Participants were selected based on the basis that they either worked at Vale Community Resource Service or they were subject experts who were implementing or had recently implemented digital care planning within their organisations.

3.6.2 Perceptual Questionnaire Design

There are many types of questionnaires with various advantages and limitations – see Table 3.3.

Table 3.3 Questionnaire Types.

Questionnaire Type	Definition and Usage
Closed Questions	Useful to explore topics where there are definite yes/no answers. Not useful in research that is reliant on people's views and opinions – discounted for this research project.
Perceptual Questions	Used to assess the views of participants. Ideal for this study based on the themes identified from the literature review that formed the initial conceptual model.
Open ended Questions	These are questions that allow participants to write about their own experiences, views, and ideas by allowing free text. It can be more challenging to categorise/code answers but helps to build a depth of understanding. In this research these types of questions may draw out additional themes that are not in the original conceptual model and could prove valuable.

A perceptual questionnaire (Appendix A) was developed using a 5 stage Likert approach on Qualtrics with some additional open-ended questions. The questionnaire was sent to 150 people who all work within the Vale Community Resource Service (VCRS) in a variety of roles.

3.6.3 Interviews and Types

An interview gives an opportunity to gain in-depth insight and information from participants about their experiences and opinions on a subject. It is also an opportunity to gain contextual information.

Table 3.4 Types of interviews and their purpose.

Interview Types	Appropriateness for this study
Structured	An interview technique that ensures standardisation by having identical interview questions for each participant and the researcher is mindful to use a neutral tone of voice to avoid bias. Not suitable for this study
Semi-Structured	An interview based on themes from the literature review (highly relevant to this study)
Informal Interviews	Unstructured interview that allows loose discussions around topic area. This is inappropriate to this study as we are attempting to test and add to the conceptual model developed in the literature rebview.as it is difficult to make sense of such discussions for pragmatic researchers

For this study semi-structured interview methods were selected (Appendix B). Interviews were designed to be undertaken on a 1:1 basis via Microsoft Teams and to last no longer than one hour (see example excerpt of transcript, Appendix C). Examples of the types of questions used and their purpose are included in Table 3.4.

Table 3.5 Examples of Interview Questions and their purpose.

Question	Purpose
What is your role? What is your role in the project implementation of digital care planning in your organisation?	To establish facts that can be used to make comparisons.
What role did leadership play?	To gain perception from participant on the validity of the conceptual model
What would you do differently if you were to do it again	To encourage reflective practice and pass on learning
If you have already implemented the system, what benefits do you see for you, your colleagues, and citizens?	To establish the observed benefits within that context

The number and job role of people interviewed is detailed in Table 3.6.

Table 3.6 Job Role, Number, and Purpose of Interviewees.

Job Role	No	Purpose
Subject Experts	3	To compare implementation experience and to further test the conceptual model for generalisation.

3.7 Other Research Methods that were discounted

During the research design, the following methods were reviewed and discounted from this study.

Table 3.7 Research Methods Rejected from this Study.

Alternative	Reason for Rejection
Grounded theory	More suited to an inductive approach and not relevant to this study, time constraints of MSc
Process Research and Action Research	Time constraints of MSc project.
Experiment	Not suitable as the research is not considering changes in independent variables to test a hypothesis

3.8 Analysis of Data

The researcher identified common themes from the questionnaire and semi-structured interviews. The data is represented in graphical form in Chapter 5 along with narrative responses to open ended questions which have also been thematically analysed.

3.9 Appropriateness of the Actual Research Design

The research design of a case study is a well-established means of researching in an organisational setting and for testing conceptual frameworks.

3.10 Limitations of the Study

It is limited to an integrated organisation (health and social care) in South Wales with limited comparisons made to other similar organisations.

3.11 Ethical Considerations

The relevant forms were also filled out to determine whether the study needed to be reviewed by the NHS Research Ethics Committee which confirmed the research would be considered as a service review (Appendix D1, D2). In line with Swansea University policy the School of Management Ethics checklist was carried out and the study was deemed as not requiring ethics permission in June 2023 (Appendix D3).

The case study uses participants within Vale Community Resource Service and subject experts from two other organisations who are over 18 who are taking part on a voluntary basis and can withdraw at any time. Participants can ask to review and amend transcript of their interviews. All records are stored confidentially and will be destroyed 6 months after completion. No individual is named or identified within the report.

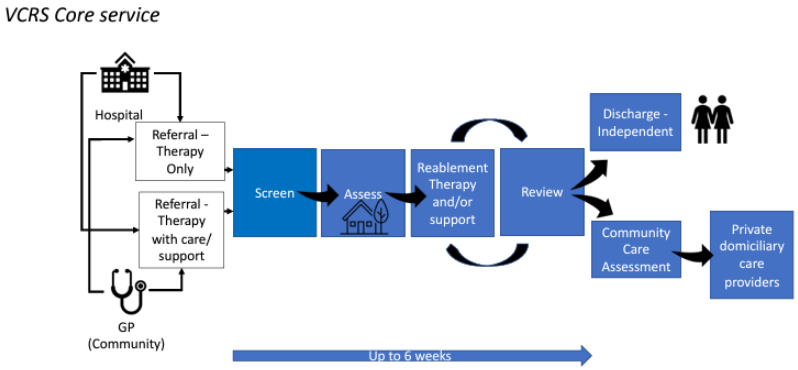
3.12 Chapter Summary

The previous chapters have highlighted the need for a move toward digital solutions in social care/ integrated care in line with Welsh government guidelines and policies and the existing literature on the enablers and inhibitors of digital change. The next chapter will present the case study of the implementation of digital care planning at Vale Community Resource Service.

4 Vale Community Resource Service

4.1 Introduction to Vale Community Resource Service

Vale Community Resource Service (VCRS) is an integrated service between Vale of Glamorgan Council and Cardiff and the Vale University Health Board. It provides reablement therapy and support services to adults living in the Vale of Glamorgan when they are first discharged from hospital or to prevent a hospital admission.

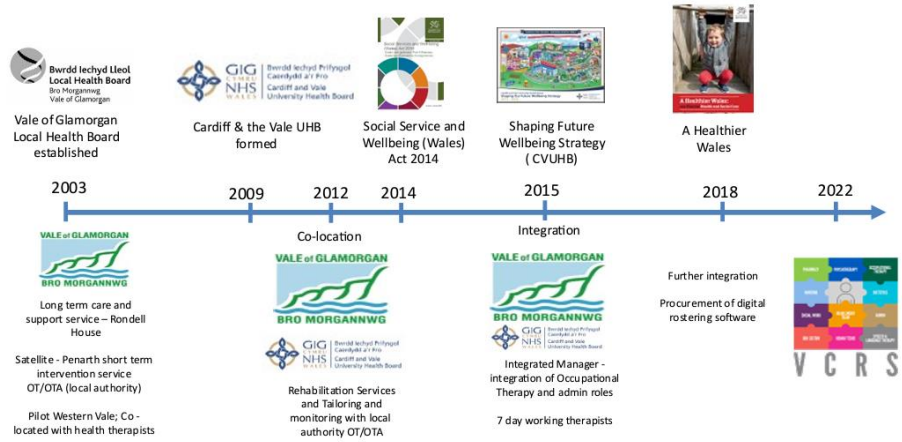


Source: The Researcher (2022)

Figure 4.1 VCRS Core Service.

Fig 4.1 shows the flow through VCRS' core reablement service for citizens requiring therapy only and those requiring care and support in addition to therapy.

4.2 History of VCRS



Source: The Researcher (2022)

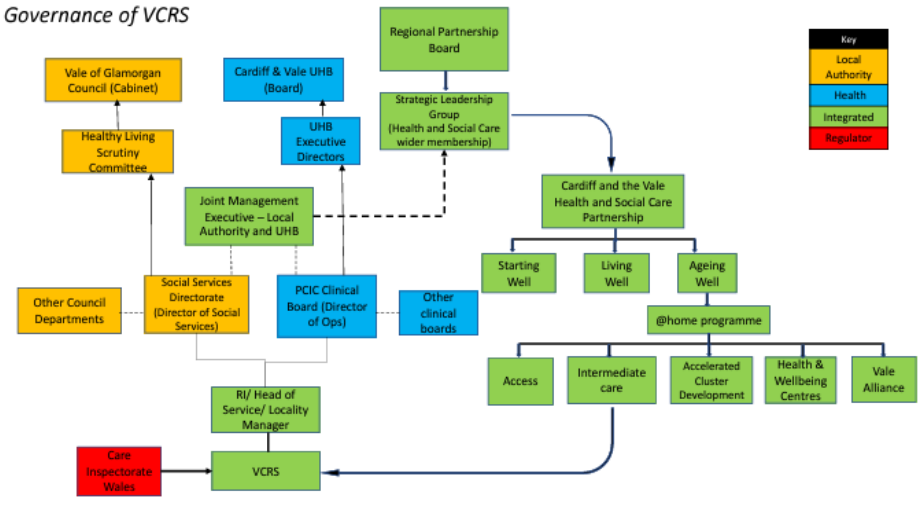
Figure 4.2 History of Vale Community Resource Service.

Figure 4.2 shows the history of VCRS over the last 20 years and gradual integration of the service in context with the developing Welsh political context during this time.

4.3 Structure and type of service

The service is low volume, high variety service supporting people with a vast range of health conditions in a wide range of social conditions. The demand for the service can be variable and the service is highly visible, provided within the person's own home. As such it is classified as a professional service where specialist skills are required to co-produce bespoke packages of therapy and support with citizens based on their individual needs and aspirations.

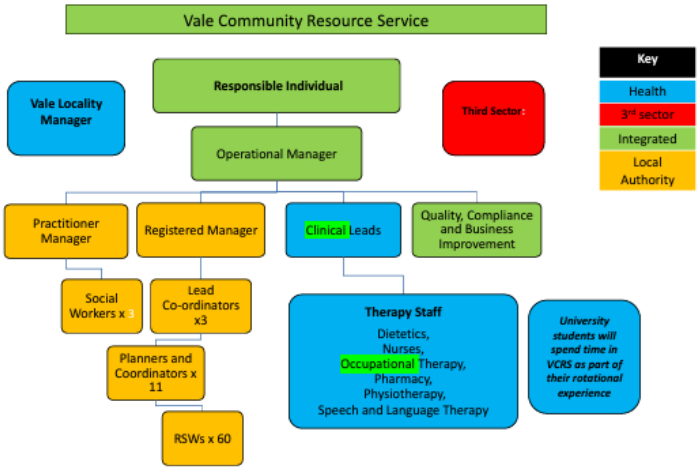
The structure of the organisation is complex with governance from both the local authority and health (see Figure 4.3).



Source: The Researcher (2022)

Figure 4.3 Governance of VCRS.

The structure of the service is hierarchical (see Figure 4.4), reliant on spans of control and standard operating procedures.



Source: Adapted from VCRS slide deck (2022)

Figure 4.4 Structure of VCRS.

The service is required to monitor its performance through outcome measures for Welsh Government, the local authority, and the health board. Figure 4.5 shows some of the limitations this type of structure imposes.

Source: The Researcher (2022)

Figure 4.5 Potential Issues with Hierarchical Structure.

4.4 Key Stakeholders

Table 4.1 Key Stakeholders VCRS.

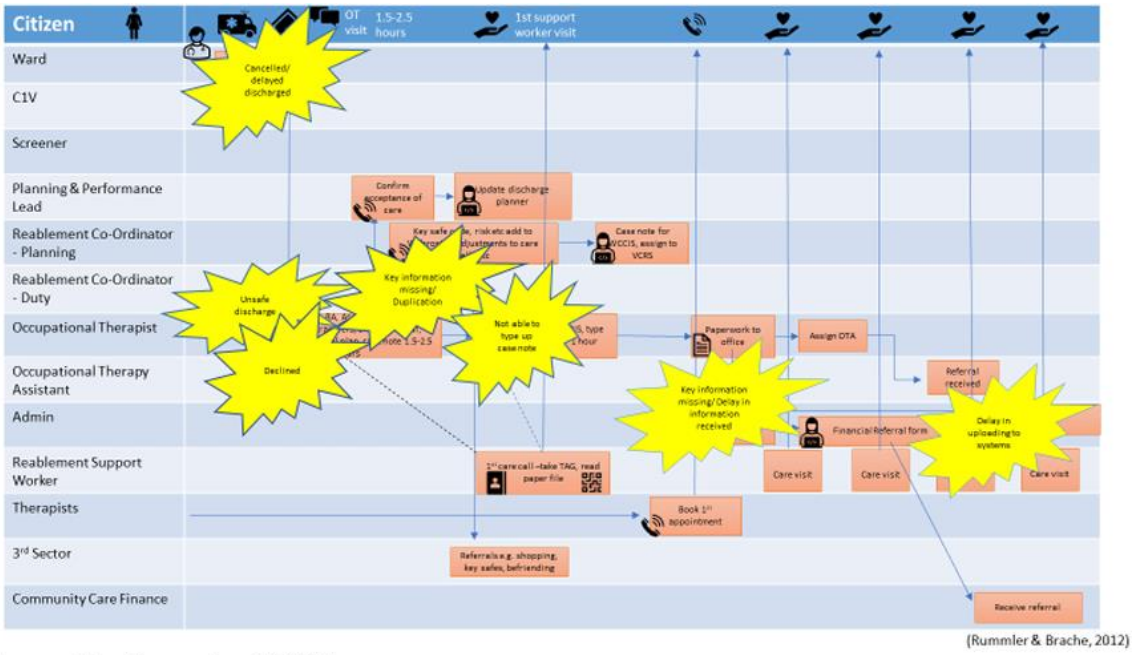
Economic	Social/Political	Technological	Community and society	Internal
Welsh Government		ICT team VOGC	Citizens	RI/ Head of Service
Regional Partnership Board		PARIS support	GP/DN's	Leadership Team
	Care Inspectorate Wales	WCCIS team	WAST	OT's
	Social Care Wales	Software Provider	C1V	Reablement Managers
	The Health and Care Professional Council	Information Governance	Referrers – primary care, secondary care	RSW's
	Chartered Institute of Physiotherapists		Families of people supported	Other therapists
Cardiff & Vale UHB			Media	Admin
	Trade Unions			HR
	MP's			Procurement
				Legal team

Source: The Researcher (2022)

Table 4.1. shows the range of key stakeholders VCRS needs to consider when planning any change initiatives.

4.5 Key Issues and Challenges

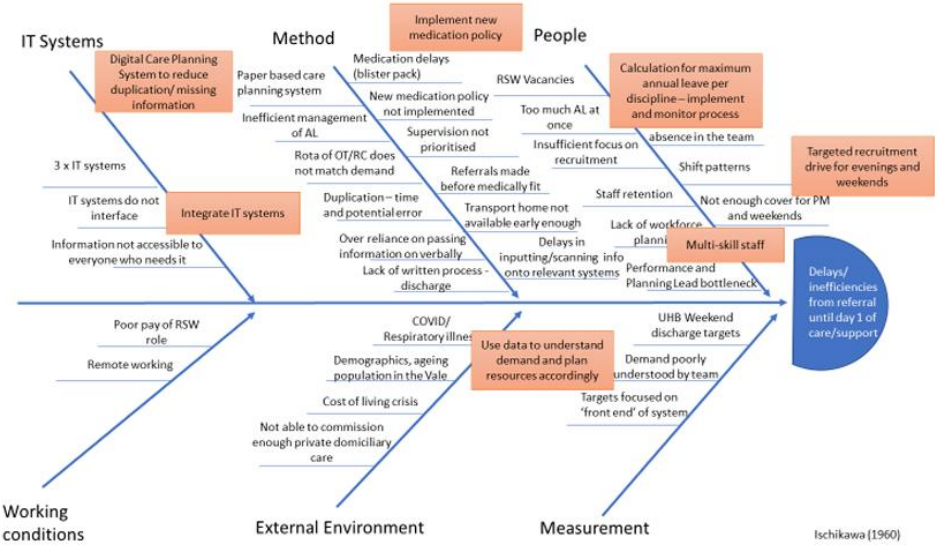
A variety of diagnostic mapping tools have been used within the service over the past year to understand key issues and challenges the service faces and root cause analysis was used to gain a deeper understanding of the issues. Figure 4.5 shows an excerpt of the swim lane map that was used to show the citizen's journey through VCRS from the point of referral to the start of care. The yellow lightning flashes identify key issues with the process.



(Rummler & Brache, 2012)

Source: The Researcher (2022)

Figure 4.6 Swim Lane Mapping – Citizen's journey for initial visit VCRS.

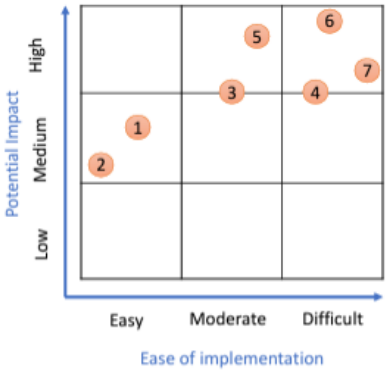


Source: The Researcher (2022)

Figure 4.7 Fishbone Diagram – Route cause analysis of issues VCRS.

Root cause analysis (Figure 4.7) was undertaken on each of the themes identified in the swim lane map. The orange boxes in Figure 4.7 identify potential solutions to the issues VCRS are facing. These were then rated into short-, medium- and long-term solutions and their potential impact was assessed (Figure 4.8).

	Potential Solutions	Issues addressed	S/M/L Term
1	Use data to understand demand and use RC/OT resources flexibly during the week to increase slots on busy day	• Demand poorly understood by team • Rota of OT/RC does not match demand	S
2	Calculation for max AL for each job role and share throughout team, monitor	• Too much AL at once	S
3	Multi-skill other member of the team in the Duty Hub (such as Reablement Co-ordinators) to ensure resilience and write up key process flow	• Performance and Planning Lead bottleneck • Lack of written processes/ training	M
4	Implement new Medication Administration Policy to reduce demand on pharmacy for blister packs	• Medication delays (blister pack) • New medication policy not implemented	M
5	Recruitment campaign using social media and focusing on weekends/evenings	• RSW Vacancies • Insufficient focus on recruitment • Lack of workforce planning • Not enough cover for PM and weekends	M
6	New Digital Care Planning System to reduce duplication, minimize errors and increase efficiency	• Paper based care planning system • Duplication – time and potential error • Over reliance on passing information on verbally • Remote working • Information not accessible to everyone who needs it • IT systems do not interface • Delays in inputting/scanning info onto relevant systems	M
7	Integration of data systems commissioned by Regional Partnership Board	• IT systems do not interface • Information not accessible to everyone who needs it	L



Source: The Researcher (2022)

Figure 4.8 Potential short, medium, and long-term solutions for VCRS and its impact.

4.6 The Rationale for using Digital Care Planning in VCRS

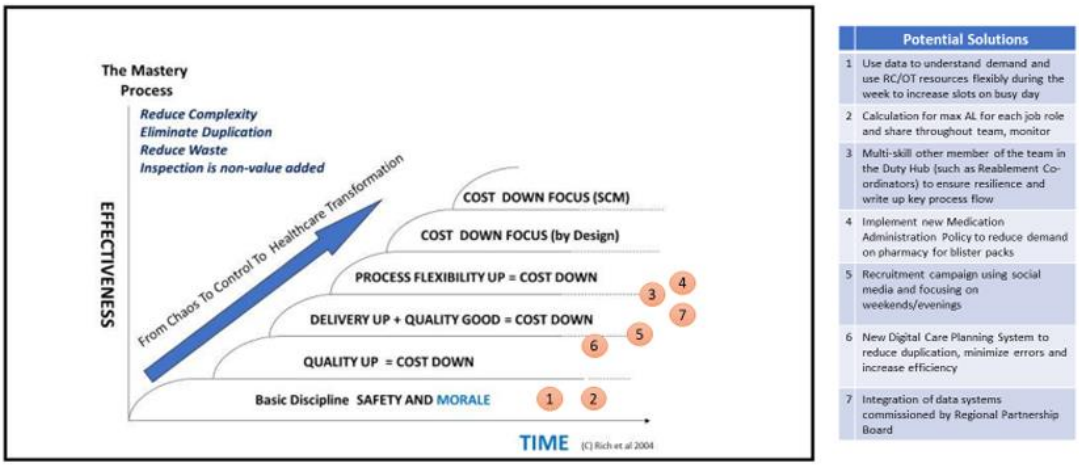
As can be seen in Figure 4.8 one of the potential solutions was to procure and implement a new digital care planning system in VCRS. The potential benefits of such a system are further analysed in Table 4.2 below.

Table 4.2 Potential benefits of new digital care planning solution.

	New Digital Care Planning Solution
Quality	Vastly reduce duplication, passing on of information verbally, rekeying of information 1st hand records – improves accuracy of records More time with citizens for frontline and therapy staff
Speed	Allow care information to be updated 'live' and seen by MDT at VCRS Eradicates waiting time for information to be shared Reduce time for OT first visit/paperwork
Dependability	Produces tracked workflow Improves citizen/patient safety – less room for error/omission
Flexibility	Able to automate a range of activities including accident and incident reporting
Cost	Cost benefit analysis prediction shows the system lowers processing costs by saving OT/ Reablement Co-ordinator time Reduces delays in process by enabling flow of information

Source: The Researcher (2022)

The procurement and implementation of a digital planning system had the potential to contribute to transformational change in VCRS by driving up quality and eliminating waste (Figure 4.9 – bubble number 6).



Source: adapted from Rich et al. (2006, p. 29)

Figure 4.9 Driving Transformational change in VCRS.

4.7 Timeline of Implementation of Digital Care Planning in VCRS

Table 4.3 Timeline of Implementation of Digital Care Planning in VCRS.

Date	Key activities
June 2022	Initial consultation and engagement with Teams in VCRS looking at what's working, not working with the existing paper-based system and to scope out what we would need in the future
June-August 2022	Business case for digital system
August – September 2022	Procurement process for digital planning system
October 2022	Contract signed
November – December 2022	Initial super user training and end user training from software provider
January-February 2023	Bespoke set up of system for VCRS – back-office functions – internal resource
March 2023	Further end user training for office-based staff from software provider
April -June 2023	Bespoke forms and workflow – internal resource
July 2023	Face to face training for RSW's Go live for RSW's
July-August 2023	Further Face to face training for Co-ordinator's and OT's Go live date for Co-ordinators
September 2023	Go live date for OT's

5 Findings

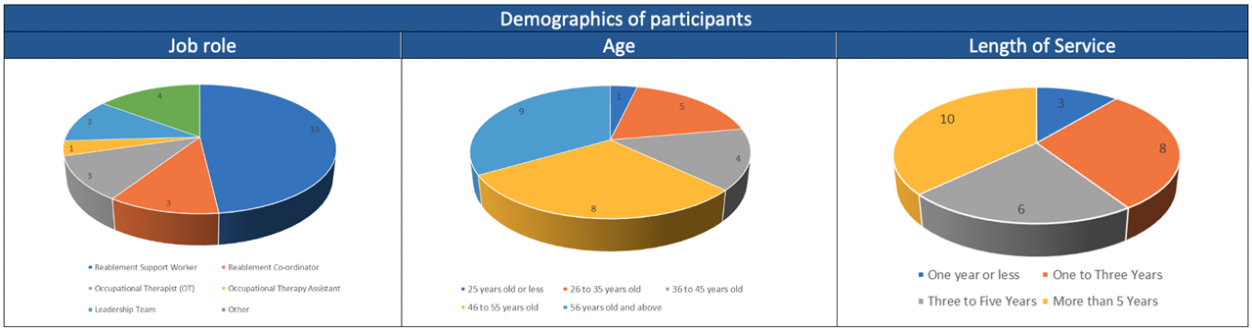
This chapter will detail the findings from the case study which will then be discussed in Chapter 6.

5.1 Perceptual Questionnaire - Results

This was sent out to 150 staff working at VCRS. There were 27 responses.

5.2 Demographics of Participants

Table 5.1 Demographics of Participants.



The respondents to the perceptual questionnaire are a representative sample of the team. As Table 5.2 shows almost half the respondents were frontline staff, most of the team are 46 years or older and there is a mixture of length of service from the respondents.

A series of perceptual questions were asked about the current system and the new digital care planning implementation project using a Likert scale with a few open-ended questions (see full responses in Appendix D) to ascertain how people were feeling about the new system, their perception of the enablers and inhibitors and what they perceived the benefits of the project to be to themselves, their colleagues, and the citizens they support.

5.3 Thematic Findings in relation to the conceptual model

Restlessness

Question A1-A11 on the Likert scale focused on ascertaining whether restlessness was influencing driving forward systematic change.

Table 5.2 Responses about existing system – Likert Scale.

Column1	Questions about the existing system	Mode	Mean	Std Deviation	Variance	Count
A1	I can access information about the people I support/patients in a timely manner	2	3.26	1.26	1.6	27
A2	I have enough information about the people I support to do my job well	4	3.81	0.98	0.97	27
A3	I can easily access an up to date copy of the person's 'personal plan'.	4	3.07	1.33	1.77	27
A4	I currently spend quality time with the people I support/ staff	4	3.52	1.29	1.66	27
A5	I am happy with the current system (paper based care planning), I think it meets our needs	2	2.62	1.04	1.08	26
A6	I feel I can pass on information in a timely manner	4	3.63	1.13	1.27	27
A7	It is easy to share information within the team	4	3.12	1.4	1.95	26
A8	I am able to record my involvement in a timely way	4	3.63	1.16	1.34	27
A9	I can record information without duplication	2	2.52	1.13	1.29	27
A10	Accidents and Incidents are being recorded and reported in a timely manner	4	3.52	1.13	1.29	27
A11	I am confident my feedback about the people we support/patients is passed onto the relevant person	3	3.48	1.17	1.36	27
A12	I feel confident that my communication to the MDT will be acted upon.	4	3.74	1.07	1.16	27
A13	I get feedback on the actions undertaken by the MDT (based on my communication to them).	4	3.15	1.3	1.68	27
A14	The current system is efficient	2	2.7	1.01	1.02	27

Key	
1	Strongly disagree
2	Somewhat disagree
3	Neither agree nor disagree
4	Somewhat agree
5	Strongly agree

Table 5.3 Responses regarding 'Restlessness'.

Section B of the perceptual questionnaire focused on potential enablers and inhibitors of the implementation of the digital care planning system in VCRS. Table 5.4 documents the questions asked in this section and the mode, mean and standard deviation of the responses. The results will be detailed in relation to the themes in the conceptual model on the following pages.

Table 5.4 Responses about Implementation – Likert Scale.

Question No	Questions about the implementation of the new digital care planning system	Mode	Mean	Std Deviation	Variance	Count
B1	I worry about my job changing as a result of this project	1	2.41	1.23	1.5	27
B2	I have been kept informed about the implementation of the new digital care planning system	4	4	0.82	0.67	27
B3	I have had the opportunity to give my views and opinions on this this project	4	4.19	0.86	0.74	27
B4	I have used a digital care planning system like this before	1	2.07	1.36	1.85	27
B5	I have received good training on the new system	4	3.48	1.26	1.58	27
B6	I would value more training on the system	5	3.78	1.03	1.06	27
B7	I think the new system will benefit me in my role	5	4.48	0.74	0.55	27
B8	I think the new system will benefit the people VCRS supports	5	4.56	0.68	0.47	27
B9	I think the new system will reduce paperwork and give me more time to focus on the parts of the job I value most (face to face support, therapy, supporting staff)	5	4.26	1.04	1.08	27
B10	The new system will improve efficiency	5	4.44	0.79	0.62	27
B11	The new system will improve our safety	5	3.85	1.08	1.16	27
B12	The new system will improve the speed of passing on information.	5	4.56	0.5	0.25	27
B13	I feel positive about this change	5	4.33	0.9	0.81	27
B14	VCRS has the resources it needs to implement a new digital care planning system	4	3.7	0.85	0.73	27
B15	I am confident in the leadership in VCRS to implement this change	5	4.37	0.73	0.53	27
B16	I am highly IT literate	4	3.48	1.13	1.29	27
B17	I have had a positive experience of implementing change in the past	5	4.04	0.88	0.78	27

Key	
1	Strongly disagree
2	Somewhat disagree
3	Neither agree nor disagree
4	Somewhat agree
5	Strongly agree

Table 5.5 Responses about Communication, Engagement, Feedback and Awareness.

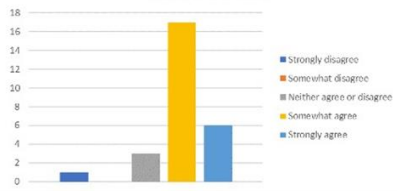
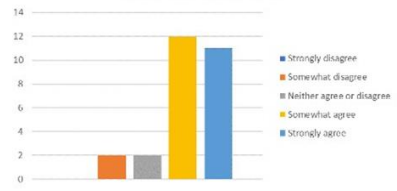
Communication, Engagement, Feedback and Awareness - Responses to B2-B3		
B2 I have been kept informed about the implementation of ACP 	B3 I have had the opportunity to give my views and opinions on this project 	*Success will depend on whether staff actively engage in using the system (Other)*

Table 5.6 Responses about Leadership.

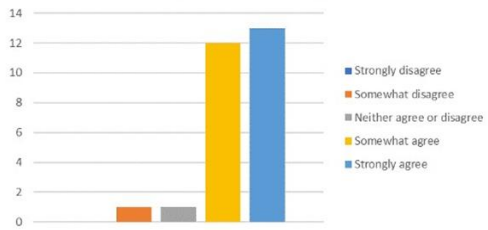
Leadership – Response B15	
B15 I am confident in the leadership in VCRS to implement this change 	*It's good that the positive change is coming from the top (RSW)* *The patience of management is needed to expect glitches and some errors (RSW)*

Table 5.7 Responses about Resources.

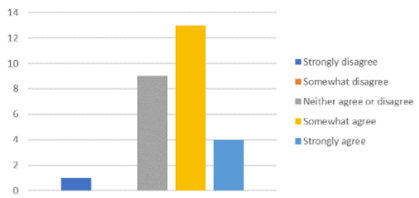
Resources – Response B14	
B14 VCRS has the resources it needs to implement a new digital care planning system 	*Robust IT infrastructure needed (Other)* *Increased staffing levels needed (Other)*

Table 5.8 Responses about IT Literacy.

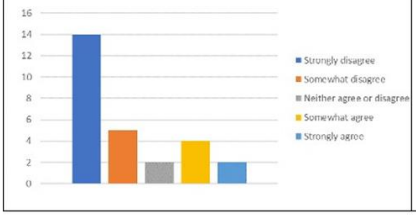
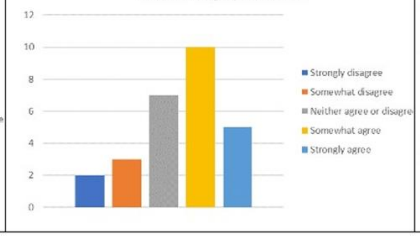
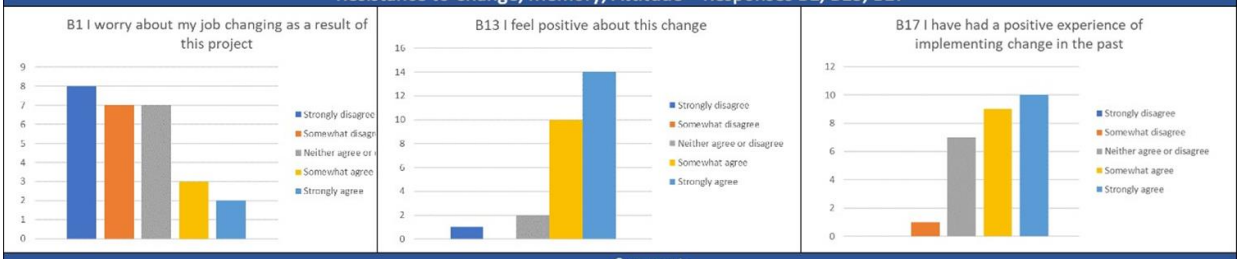
IT Literacy – Responses B4 & B16		
B4 I have used a digital care planning system before 	B16 I am highly IT literate 	*My computer skills are not as advanced as other Practitioners younger than myself (OT)* *I think that some staff may not feel confident with their IT skills which could be a barrier and time (RC)* *Working together and supporting each other which has been the case so far, I have been offered a lot of support as I find the IT side of things difficult (OTA)*

Table 5.9 Responses about Resistance to Change, Memory and Attitude.

Resistance to Change, Memory, Attitude – Responses B1, B13, B17



Comments

Positive about change

Change is a good thing and about time we embrace the digital age (RSW)

A positive step forward (OTA)

I think that this is a positive change and will improve the service that VCRS can deliver within the community (RC)

I think it is a right way forward, it was coming as everything in life is becoming digital. We just need to embrace the change (RSW)

It's a good idea to integrate the systems and to allow staff from LA and Health to access the info freely (OT)

I think it's a great project and I am keen for it to start. I think when things settle and we all know what we're doing, it'll be great (RC)

I feel that this will be a positive move forward I think that everyone working together as a team will be key to making this a smooth transition within the team (RC)
It is something that is long overdue (Other)

Nervous about change

Apprehensive of change, but sure it will be easy and beneficial after learning curve (RSW)

Very nervous (RSW)

I think it is going to have a teething period which I am currently apprehensive about. Current discharge visits take up to 2 hours and during the teething period I worry this could take longer and patients might get frustrated impacting therapeutic rapport (OT)

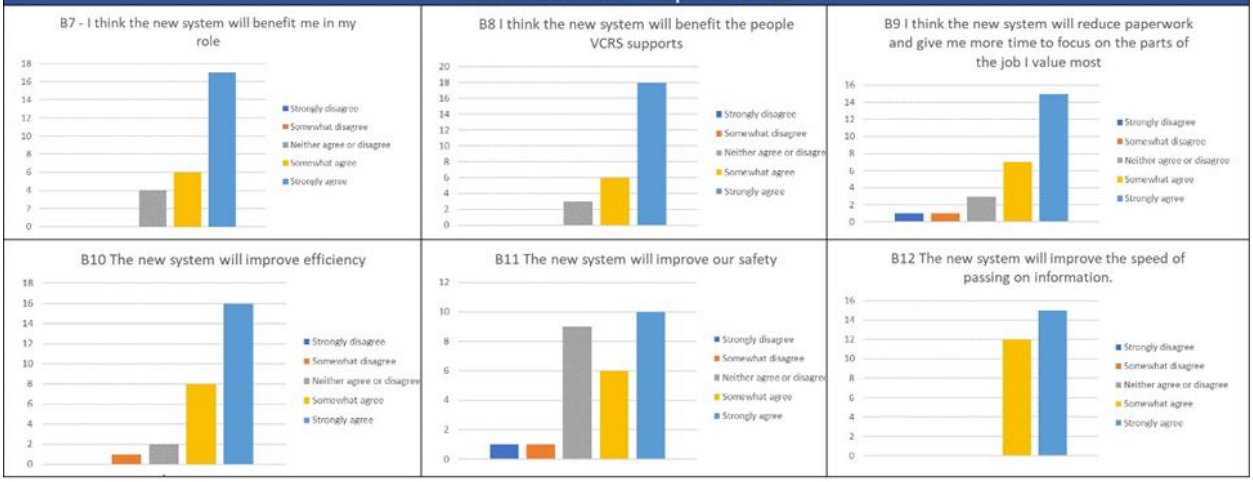
I am anxious about not being able to sort any problems out, potential time wasting whilst at a clients house if the system is out of signal (OT)

Resistant to change

Changes always seem to be rushed through (RSW

Table 5.10 Responses about Perceived Benefits.

Perceived Benefits – Responses B8-12



Perceived Benefits (themes from open ended questions)	
Timely access to information • *we will have the information to hand (OTA)* • *Sharing information instantly (RSW)* • *All the teams, departments have access immediately to plans /concerns/incidents (RSW)* • *Staff more informed before they go into call what has happened in the last few calls (RSW)* • *Immediate view of updates/ changes and access to all plans and risk assessments (RC)* • *No delays in information being shared (RC)*	**Ease of use** • *Easy way of completing forms (OTA)* • *It will be much easier to access up to date information (Other)* **Safety** • *Faster response to Incidents/accidents (Leadership Team)* • *Efficient recording of patient information reducing clinical risk (Other)* **Confidentiality/Privacy** • *Increased confidentiality - rather than carrying paperwork with sensitive material on it (OT)* • *Less paperwork round house confidential (RSW)*
Process Efficiency • *We can add/ remove tasks at visits, often phone calls are time consuming and difficult in the person's home (OTA)* • *I think it will be much more efficient and allow us to get direct feedback from rehab support workers (OT)* • *More information to hand, no need for all phone calls (RSW)* • *More efficient, feedback getting to where it needs to be is a key element (RSW)* • *Simplifies putting new supported people on the system (RC)*	**Speed** • *a digital system has the potential to speed up discharge visits (OT)* • *shortening the time in copying the info from the computer onto the blue file (OT)* • *information can be passed on quickly and effectively (RSW)* • *It will speed processes up and it will help everyone manage their time more effectively (RC)*
Quality • *as it will require less duplication; therefore leaving more time for therapeutic intervention (OT)* • *we can now spend less time reading and writing and more time with the service users (RSW)* • *Attention can be given to the service user on arrival instead of reading and trying to talk at the same time (RSW)* • *They will have more time with us so hopefully that means more improvements in their health (RSW)* • *We can give full attention during the call . Will make us look professional and leave the clients with a better view of our service (RSW)* • *More time to support staff management (RC)* • *positive impact on effectiveness & accuracy of recording patient notes (other)*	**Communication/ Team Working** • *Communication will also be improved within the team meaning feedback and concerns can be actioned and followed up sooner (OT)* • *It will hopefully make RSWs feel part of the whole team and that their feedback is valued and acted upon (RSW)* • *I feel that this will be a positive move forward enabling a more collaborative way of working (RC)* • *I think it will improve communication (RC)* • *I think it will provide a more integrated approach to those we support, whilst promoting MDT and citizen involvement (Leadership Team)*

Table 5.11 Responses about Training.

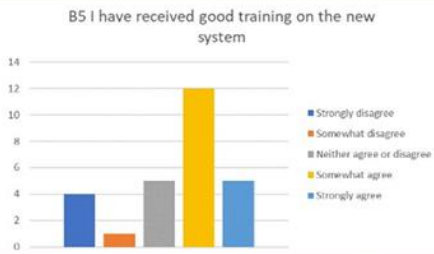
Training – Responses B5-6	
	
Comments	
Additional Training *More training needed before it starts (RSW)* *Feel I would need more training than other colleagues to work efficiently (OT)* *I think it would be beneficial to have a couple of sessions once the system is finalised with all documents we will need to fill out so we are more familiar and can have a practice completing prior to a real visit; to ensure the visits can remain as timely as possible(OT)* *We have not currently seen the system with all sections we will need to complete on a discharge visit. The current paper system is confusing with the amount of documents we must complete on an initial visit so it will be hard adjusting and relearning: what documents we have to complete et (OT)* *I think the staff need further training in the system (Leadership Team)* *I do feel and observe staff are not confident in using the new system so I think staff would definitely benefit from further training and appreciate it (Leadership Team)*	**Approach** *Training and **a slow approach** to implementing the new system (RSW)* *Continual monitoring and sharing. Supporting each other to learn and grow regarding what the system is capable of doing, capturing the positive outcomes (RC)* **Support** *I think as long as the staff are trained and feel they can come in for support with time set aside, it will go well (RC)* *I think everyone has a different level of computer literacy and at first this will prove to be difficult and time consuming for colleagues to help other colleagues but once this initial stage has passed I feel everyone will see that this system is effective (RC)* *Face to face meetings - One to one and group. Meetings/supervisions with staff. Allocating time for staff to come in (RC)*

Table 5.12 Other key themes emerging from the perceptual questionnaire where no specific question was asked on a Likert scale (answers from open ended questions such as what are the barriers/enablers).

Theme	Barriers	Enablers
Interoperability	• *Compatibility of IT systems across LA and UHB (Leadership Team)* • *Time delay in uploading data to different patient record management systems. One upload, one access system (other)*	• *If RSWs have the compatibility between phones and the new digital service then barriers can be overcome (RSW)*
Distrust of IT	• *Unreliable phone communication (RSW)* • *System failure would be a nightmare (RSW)* • *Staff mobiles might not work- what if someone is waiting for replacement or fix, how do you input info from each call (RSW)* • *Technology - it can be temperamental and doesn't always work (RSW)* • *Lost signal, tablet not working, not being able to fix a problem, lack of IT support if the tablet breaks which could incur loss of hours (OT)* • *IT access problems (Leadership Team)*	• *Appropriate back up systems when the tablet is not working - designated individual who is accessible to support, fix the problem - potential lost hours. Could paper be used should this occur? Working weekends when no support is available how would the team manage then? Would there be a spare tablet for emergencies (OT)*
Perceived issues	• *Some families may complain that they like to read what their mother/father are doing in regard to their reablement, some may worry over digital safety and the loss of traditional procedures (RSW)*	
Process	• *I feel the barriers will be that support workers will not fill out the end care notes to the full potential for the next worker (RSW)* • *Time to record notes (not enough) (RSW)* • *We have not currently seen the system with all sections we will need to complete on a discharge visit. The current paper system is confusing with the number of documents we must complete on an initial visit so it will be hard adjusting and relearning: what documents we have to complete, where we need signatures, what we need to upload to Paris, any paper documents we still need (OT)*	• *Give us more time between calls first week to get used to it (RSW)* • *The implementation of a set (template) format to document daily tasks and relevant information regarding the call . This would help standardised information and reduce confusion. (RSW)*
Phasing		• *A slow approach to implementing the new system (RSW)* • *Phased implementation (Leadership Team)* • *A long lead in time to encourage familiarisation with the new way of working (other)*

5.4 Semi-structured Interview Results

Semi-structured interviews were carried out with subject experts from two external organisation who have experience of implementing digital planning within their own organisations and compared/contrasted with the self-reflections of the researcher on the implementation experiences at VCRS.

Table 5.13 Key information on expert informants and organisations.

Key Information about participants/organisations			
Category	**Organisation 1**	**Organisation 2 – VCRS - Auto reflection**	**Organisation 3**
Job and role in implementation	Registered Manager – leading the implementation of digital care planning in a social care team. Procuring the system	Registered Manager – leading the implementation of digital care planning in an integrated team	Service Manager – supporting the role out of digital care planning in an integrated team
Stage of implementation	Started implementation August 2023 – support workers logging in and out using the phone App	Started implementation August 2023 Support workers logging in and out using the phone App and completing e-records Bespoke forms built and being tested	Started Implementation March 2023 with phone App, bespoke forms built, full implementation May 2023 with electronic care planning
Type of Service	Private domiciliary care agency (social care)	Integrated Reablement Service (Local Authority and NHS)	Integrated Enablement Service
Location	South Wales	South Wales	Northern England
Interoperability with legacy system	No, new rostering system purchased at the same time as care planning system	Yes – interoperable with rostering system Does not integrate with health and social care databases – investigating linking via API's	Yes – interoperable with rostering system Does not integrate with health and social care databases

Table 5.14 Enablers of digital care planning in social care/integrated care.

Enablers of digital care planning in social care/integrated care		
Organisation 1	Organisation 2 – VCRS - Auto reflection	Organisation 3
This organisation emphasised the value of spending **face to face training** time with each staff member to build confidence. **Bite size training**. Discussed the importance **of phasing it slowly** with the team, getting staff used to using the App, introducing forms one at a time to build up the system **Processes** - being able to give out **step by step guides** *'The management of change is more important than the change itself'* – the need for **strong leadership** was emphasised by this organisation **Ease of use** of the App - the support staff have found it easy to use – go to grips with it well	**Leadership** and deliberate focus **on communication** - Early **engagement** with staff, sharing the reasons for the change to get buy in. Attending **team meetings**, seeking **feedback**, communicating by **email**. **Face to face** training, **timely training, experiential learning.** Adapting training to meet the needs of the person/ group. Offering **additional training** sessions, **drop-in sessions. Bite size sessions** so not overloading people. **Pacing the change,** taking things slowly. **Phasing the implementation**, set-up, training/testing, support workers using phone App to scan and record notes, office staff, OT/OTA. **Implementation plan.** **Networking with other providers** – learning from their experiences of implementation and how to phase the project. **Processes –** developing processes and written guidance when appropriate for office-based staff. Seeking **feedback from staff** formally and informally and acting upon the information to improve forms/settings/ adapt implementation plan. Snowball effect with more suggestions. **Team Meetings, drop-in sessions, phone calls, survey.**	Emphasis on the **timely delivery of training** to ensure success. *'Not too far in advance or staff run the risk of forgetting it'.* **Ongoing training** not just one-off sessions. **Face to face training** with frontline staff, **drop-in sessions, Teams** (screen share) for office-based staff. **Bite size training** – with guidance notes to refer to. Using **'test'** (fake) clients to practice. Pilot study. Emphasised **phasing the implementation slowly** – they described **'layering'** their approach by gradually adding to the capabilities of the system, form by form. Having a clear **plan** – *'roadmap'* Developing written **processes** with screen shots that are bespoke to the service *'we've done a lot of work creating our own policies and processes'* Change forms/ processes based on **feedback from staff (emails/team meetings/ questionnaires)** **Weekly working party meetings** to review action plan and set pace. *'If we hadn't had **good leadership,** we wouldn't have the system'* **Skill mix** - Management Team with relevant technical skills, knowledge, and ability. Strong skills set and knowledge of the system It's very like the existing App the staff had; they have found it **easy** to adjust

Table 5.15 Inhibitors to implementing digital care planning in social care/integrated care.

Inhibitors to implementing digital care planning in social care/integrated care		
Organisation 1	Organisation 2 – VCRS - Auto reflection	Organisation 3
Change is the barrier - **staff resistance.** *'Everybody doubted it until it went live, nobody was really on board with it'* (office staff). **Lack of support from software provider** – ***'lacked understanding of my organisation'*** – did not sell me package that fully met my needs, had to buy additional modules (e.g., link to google maps). Poor implementation support. **Inflexible training dates and times** from the company, no clear guidance on training content. Inconsistency – dealing with too many people at the company. Hidden **costs** of additional elements to give required functionality– costs spiralling out of control. **Time/Resources** *'I've had to put my own work, which was already behind on hold, so that the barriers are huge in, you know, time to support staff to do it and its still ongoing'* **Technical understanding** - Staff can't come up with quick workarounds anymore. **Too much change** - Introducing 2 systems at the same time (new rostering system and new care planning system)	**Time/ Resources** – balancing implementation with operational demands particularly staff sickness. Needed to drive the project forward and undertake a lot of the technical work myself. Middle managers reluctance to take responsibility for key parts of the project. **Governance** – two sets of governance from local authority and health with slightly different perspectives on information governance and data impact privacy assessments. Delays caused by not getting feedback from each side in a timely manner. **Issues with support from software provider –** all training delivered upfront, would have been beneficial to have super user training, then time to set up system bespoke to the service and then end user training. This has meant we have had to **repeat the training** for these groups. **No direct support/guidance from provider** to phase the implementation of the system.	**Staff resistance - Reluctance** to move from paper-based system -middle managers. **Governance -** *'We had to jump through a lot of hoops'* Data Impact Assessment, Information Security etc. **Issues with support from software provider** - *'The information off the portal is never quite how you need it'* **Support is not flexible or consistent.** Not solution focussed, always seem to be trying to sell another product **Time delay on technical support** *'you just have to kind of do your own work around'.* Big company, lots of clients *'you don't necessarily feel like you're a priority'.* **Lack of operational understanding** of support services. **Interoperability** with legacy system. More testing needed between rostering system and care planning system needed – can be time delay of 20 mins to push the information across. **Family/ friends access to records** - We have not enabled family access to the system yet – need to get process in place for consent, they are no longer able to access records

Table 5.16 Observed benefits of implementing digital care planning in social care/integrated care.

Observed benefits of implementing digital care planning in social care/integrated care		
Organisation 1	Organisation 2 – VCRS - Auto reflection	Organisation 3
Reliability - *'Massive improvement seen already in logging in/out of this system – only 55% compliant before, now 99% compliant'* – fail safe – complete call log and log out linked together. **Timely access to care records.** Real time information **Communication** has improved. Frontline staff taking **initiative** to explore capabilities of the App	**Timely access to care records** -being able to see care notes in real time *'from Day 1 we all had more information about citizens and the support they are receiving'*. Staff can see information about the previous call before they go in. Positive effect on **morale of direct support staff.** Direct support staff can see on their phones who is going in next and share this with citizens (Something they regularly ask about). Frontline staff, therapist and co-ordinators taking **initiative** to explore capabilities of the App and software and suggesting improvements. Increased **efficiency** with Accident and Incident forms – alerted to them as soon as the form is filled in. We can see the value of workflow to improve efficiency and response time. Less phone calls to the office to provide general feedback on citizens.	**Timely access to care records** for office and frontline workers. Frontline staff have better awareness of risks, *'staff report they feel like they get to know the person before they visit'*. **Ongoing feedback log**. Helped with **auditing/QA.** **Safety** - Can see exact time medication given. **Efficiency** – Helped by automating workflow, reducing errors, ensuring accountability. Helped **with resource allocation** – e.g., allocating work from triage forms Promotes **agile working.** **Less time spent on paperwork**

6 Discussion

6.1 Introduction

The literature review (Chapter 2) has been used to build up a conceptual model which has then been tested using a real-life case study of implementing digital care planning at an integrated service VCRS (Chapter 3-4). The findings are detailed in Chapter 5 and are discussed in detail below. The conclusion of this chapter will directly answer the research question.

6.2 Analysis of findings against the literature and conceptual model

The case study identifies several technological, human, organisational and change management factors that influence the successful implementation of digital care planning in integrated care.

These findings have been analysed thematically and will be discussed in this Chapter, comparing, and contrasting them to the main themes identified in the literature review that were used to build the initial conceptual model. Although each of these has been split into themes the researcher acknowledges there are strong interdependencies between them.

6.3 Restlessness

The literature review pointed to restlessness or 'tension for change' (Greenhalgh et al., 2017) as a driving force to successfully implementing digital technologies.

Questions A1-14 of the perceptual questionnaire in this research project sought to understand participants views of the existing system to ascertain whether there was tension for change within VCRS.

The results can be seen in Table 5.2 with the questions asked and the mode, mean and standard deviation of the responses on the Likert scale. Table 5.3 represents these results graphically.

There is a wide variance in the range of answers given. This may be due to differences in the job roles of participants and the current information systems each role can access. Although the results are split it can be seen in Table 5.3 that some staff do not feel they can access information about the people they support

in a timely manner (A1); cannot access an up-to-date copy of the personal plan (A3), and don't find it easy to share information within the team (A7).

The survey identified some agreed areas of tension between participants with the current system.

- Duplication (A9) - 'I can record information without duplication'. The distribution of responses from participants was 55.5% negative and only 18.5 % positive suggesting that many staff see duplication as an issue with the current paper-based system.
- Dissatisfaction with the current paper-based system (A5) – In response to the question 'I am happy with the current (paper based) system, I think it meets our needs' 59.3% of participants responded negatively and only 22 % positively showing that a significant majority of people do not think the current paper-based system meets the service's needs.
- System efficiency (A14) - 'The current system is efficient'; the distribution of responses to this was 51.9% negative with only 25.9% staff responding positively. This suggests that more people see the paper-based system as inefficient.

This is supported by comments made by respondents to the open-ended questions in the perceptual questionnaire.

"With the current paper system patients regularly state "it's a lot of paperwork, isn't it?" (OT)

Further evidence for the tension for change can be seen in the process mapping completed with VCRS to look at the process for discharge visits using the paper-based system and the failure demand of duplication, increased risk of human error and reliance on phone calls to pass on information (See Chapter 4, Figure 4.5). The research points to restlessness being an enabling factor for implementing digital change in VCRS. However, it could be more adequately described as 'creative tension' (Senge, 1997) where the team can sense the gap between the vision and the current situation which supports the change process.

6.4 Leadership

The literature review highlighted the importance of strong leadership and pointed to a correlation between this and creating a shared vision. The findings from the case study support this and demonstrate there is a strong link with engagement (see 6.2.4).

Table 5.6 shows 93% of staff are 'confident in the leadership in VCRS to implement this change'.

"It's good that positive change is coming from the top" (RSW)

The subject experts agreed with this (Table 5.14) with one stating "the management of change is more important than the change itself" and the other "if we hadn't had good leadership, we wouldn't have had a system".

6.5 Engagement & Communication

Blanchard et al (2017) points to staff engagement being key in the implementation of digital systems. The auto reflection (Table 5.14) details that a deliberate strategy was used by VCRS of involving staff from an early stage and ongoing communication was used throughout the implementation.

The findings from the perceptual survey suggest this strategy was successful (Table 5.5) with most team members (81.5%) responding positively and confirming they had had the opportunity to contribute ideas on the project and (85.2%) had been kept informed about the implementation of the digital planning system. Looking at Table 5.4 there appears to be a positive correlation between staff engagement (B3), communication (B2) and staff feeling positive about the change (B13) where the mean scores were between 4 and 4.33 for each of these questions.

The results in this table also suggest that the engagement and communication may have supported staff to identify potential benefits of the system.

6.6 Resistance to change, memory, and attitude

The literature (Greenhalgh et al., 2017) identifies resistance to change as a key inhibitor of implementing digital change.

The case study did not find strong evidence of resistance to change within VCRS for the digital care planning project. Table 5.8 shows the responses to the perceptual questionnaire in this area with Table 5.4 showing the mean, mode, standard deviation, and variance.

There is a very high response to B13 with 88.9% of respondents confirming they feel positive about this change.

"*Change is a good thing and it's about time we embrace the digital age"* (RSW)

(Greenhalgh et al., 2017) attributes some resistance to change comes from perceiving the innovation will impact on professional scope of practice. B1 shows that only 18.5% of respondents worried about their job changing because of the new system being implemented.

B7 captures respondents' perceptions about whether the new system will benefit their roles, with 85.2% responding positively to this. This result could explain why the team are not resisting change as the digital care planning system is perceived as being beneficial to them in their role. This supports Greenhalgh et.al (2017) two enablers of technology being not changing the role of staff and being unlikely to have a significant effect on care.

This result appears to be different from the experiences of the other two organisations (Table 5.15) who reported experiencing resistance from staff despite implementing the same digital care planning system.

One factor that could have contributed to the positive response about the change in VCRS is that 70.4% respondents confirmed they have had a positive experience of implementing change in the past (B17) which may have been different for staff in the other contexts. It could also be that differences in the approach to implementation could contribute to staff resistance.

6.7 Perceived Benefits

The literature highlights having a compelling vision for change as enabling success (Blanchard et al., 2017; Brittain, 2020; Greenhalgh et al., 2017) with the Technology Acceptance Model (Venkatesh & Davis, 2000) and subsequent UTUAT model (Venkatesh et al., 2003) emphasising the value of ensuring people understand the (perceived) benefits of new technologies for successful adoption.

The case study supports the literature with responses B7-B12 (Table 5.9) showing strongly positive perceptions for the new system in improving quality (B8 - 88.9%), speed (B12 - 100%) and efficiency (B10 - 88.9%).

In the perceptual questionnaire, which was carried out before the 'go live' date of the system, participants identified a wide range of benefits the new system would bring which have been arranged into themes. These included timely access to information, increased efficiency, improved communication, increased confidentiality, more time with patients/citizens, improved speed of processes (Table 5.9).

*"I think it will be much more **efficient** and allow us to get direct feedback from support workers" (OT)*

*"I think as time goes on; a digital system has the potential to **speed** up discharge visits; patients will be able to relax sooner" (OT)*

*"**Communication** will also be improved in the team meaning feedback and concerns can be actioned and followed up sooner" (OT)*

*"Carers can focus more on the person, be more engaging and **make people feel more valued** as they will be the centre from the start" (RSW)*

These quotes show that during the planning and consultation stage of implementation that a strong shared vision had been established and goes some way to explaining the results discussed earlier in relation to staff feeling positive about the change.

The subject experts further reinforce the perceived benefits as being realised during and post-implementation including timely access to records, improved safety, and process efficiency (Table 5.16) in line with findings from previous studies (Jeffries et al., 2017) there was also a positive impact reported on staff morale.

6.8 IT Literacy/ Discomfort with technology / Distrust of ICT

Staff skills and discomfort with technology are seen as inhibitors to implementing digital technology (Brittain, 2020; Edwards et al., 2021).

The survey results in B4-B5 (Table 5.8) show the majority (70.4%) of staff hadn't used a similar digital planning system before and just over half (55.5%) considered themselves to be IT literate. Despite only 18.5 % disagreed or strongly disagreed that they were highly IT literate, there were some concerns raised by staff about IT literacy.

"I think that some staff may not feel confident with their IT skills which could be a barrier" (RC)

"My computer skills are not as advanced as other Practitioners younger than myself" (OT)

When asked what would help with the implementation of the system staff acknowledged the value of team learning and support.

"Working together and supporting each other which has been the case so far, I have been offered a lot of support as I find the IT side of things difficult" (OTA)

"I think everyone has a different level of computer literacy and at first this will prove to be difficult and time consuming for colleagues to help other colleagues but once this initial stage has passed, I feel everyone will see that this system is effective" (RC)

The research showed that IT literacy and distrust of technology was not a major barrier or enabler in this case study and could be addressed through good training and ongoing support for staff who were less confident. This was supported by the subject experts who reported that because the App had been easy to use it was readily accepted and staff had found it easy to adjust.

6.9 Training

The literature did not overly emphasise the role of training in the effective implementation of digital technologies. However, (Brittain, 2020) did identify the benefit of training in implementing digital care planning in social care.

The findings from this case study show staff place value on training in supporting implementation. Table 5.11 shows that most people feel they have received good training in the system but would also value more training. There are suggestions made for the provision of additional training sessions, drop-in sessions, and opportunities to try out the system before using it in the field to build staff competence and confidence in using the system which we subsequently acted upon.

"I think it would be beneficial to have a couple of sessions once the system is finalised with all the documents, we will need to fill out so we are more familiar and can practice completing prior to a real visit" (OT).

The findings from the semi-structured interviews support this with all three subject experts agreeing that timely training had been vital to the success of implementing digital planning in their organisations (Table 5.14). It is notable that the timing of this training needs to be carefully thought through so that staff receive the information at the right stage of the implementation so they can put their knowledge into practice as soon as possible. All three experts agreed there needed to be a variety of approaches to training including face-to-face sessions and drop-in sessions and it was important for ongoing training options to be available.

It was noted that software providers not being flexible about the timing and pacing of delivery of training had a detrimental effect on the learning style and retention of knowledge. The auto-reflective account (Table 5.15) details that training had to be repeated with some groups of staff as it was too long between training delivery and the 'go live' date. This experience was mirrored by the subject experts.

6.10 Feedback

The literature identifies opportunities for feedback and opportunities to shape the use of the technology as an enabler (The King's Fund, 2018). The findings from the case study and subject experts supported this with one saying they had incorporated feedback from staff into the development of forms and processes for the system. The auto-reflection identifies seeking formal and informal feedback and ongoing communication has led to several suggested improvements to the system that had been implemented and this has empowered staff to come forward with further ideas and suggestions (Table 5.14).

6.11 Interoperability

Interoperability was identified as a key enabler in the literature (Greenhalgh et al., 2017; Jeffries et al., 2017). In the perceptual questionnaire participants identified the lack of interoperability as a barrier to implementing the system as they aspired to be able to have one upload system that would be interoperable with LA and UHB systems. This is being looked at as part of a separate but linked project (see Chapter 4, Figure 4.7). Subject experts identified issues with lack of interoperability with legacy system with one organisation needing to procure a new rostering system as well as the digital care planning system and the other identifying a lag in time for the two systems to synchronise (Table 5.15).

6.12 Resources

The literature review identified the need for slack resources to be dedicated to the implementation and that these needed to be internal resources to understand the context in which change is being implemented. In the perceptual questionnaire 62.9 % of participants agreed VCRS had the resources to implement the new system with only 3.7% responding negatively to this.

However, the subject experts' responses suggest that resources and time is a barrier to implementation with both registered managers reporting that they had had to undertake a lot of the technical implementation themselves and reporting operational issues/ lack of resources as sometimes taking priority and delaying implementation (Table 5.15). Organisation 3 reported they had a management team with a good skill mix and technical expertise and this had been an enable of the implementation in their area. This suggests that in line with the literature having dedicated internal resources that are not necessarily operationally responsible for service delivery is an enabler.

6.13 Support from software provider

Although not identified in the initial conceptual model, collaboration with software providers was identified as an enabler of digital technology (Blanchard et al., 2017; The King's Fund, 2018). During the research the subject experts identified lack of support from the software provider as a barrier in the implementation of digital care planning. Common themes included lack of understanding from the support provider about the context into which it was being implemented, inflexible training dates and times, lack of implementation support and delays receiving technical support. This would suggest that timely support from software providers should be included in the conceptual framework as a key enabler to share expertise about implementation.

6.14 Phasing the change

This was not a common theme in the literature review with only The King's Fund (2018) making reference to considering whether to take things slowly or to use a 'big bang' approach. However, phasing the change was a strong theme from the both the perceptual questionnaire and the subject experts. During the case study, participants emphasised the importance of a phased implementation and having time to become familiar with the new way of working (Table 5.12). Subject experts described phasing or using a layered approach by increasing functionality gradually and allowing staff time to get used to the new system. Therefore, phasing can be seen as a key enabler for implementing digital care planning and needs to be added to the conceptual model.

6.15 Processes

This theme was not identified in the initial conceptual model with the literature review only indicating that the technology should take account/incorporate existing workflows. The answers given to the perceptual

questionnaire indicates staff feel that having written processes/ set templates support implementation. The evidence from the subject experts supports this where step- by-step guides with visual screen shots has enabled the implementation process.

6.16 Conclusion

This study set out to answer the research question discussed in Chapter 1

What are the enablers and inhibitors of implementing digital care planning within social care/integrated services (primary healthcare and social care)?

The discussion above is summarised in Table 6.1 with the enablers as the inverse of the inhibitors. The key enablers are highlighted in yellow.

Table 6.1 Identified enables and inhibitors of implementing digital care planning with social care/integrated services.

Enablers	Inhibitors
Creative tension for change	Dissatisfaction
Memory of change (positive)	Memory of change (negative)
Good leadership	Poor leadership
Engagement – early and ongoing	Lack of engagement
Feedback and action	No feedback channels
Good and consistent communication	Poor communication
Positive Attitude of staff	Negative attitude of staff
Perceived Benefits (Shared Vision)	Poor understanding of benefits
Training – good quality and timely	Poor quality or badly timed training
Feedback – acted upon	No opportunity to feedback or no action
Interoperability	Lack of interoperability
Dedicated Internal Resources	Poorly resourced
*Support from software provider	*Lack of support
*Phasing the change	*Too much change, too soon
*Good written processes	*Lack of written processes

Overall, the conceptual model has been held up under scrutiny with the case study and subject experts validating most of the themes. As resistance to change was not evident in the case study this has been removed from the conceptual framework, but memory of change (positive or negative) has remained. IT Literacy has also been removed from the conceptual framework as the evidence from the case study and subject experts does not support its inclusion. Three themes have been added to the conceptual framework: support from software provider, phasing the change and good written processes as the evidence from the case study and subject experts pointed to them needing to be included. The revised conceptual model can be seen below in Figure 6.1 with the interdependencies between each theme connected with hours and the key factors being highlighted.

6.17 Revised Conceptual Model

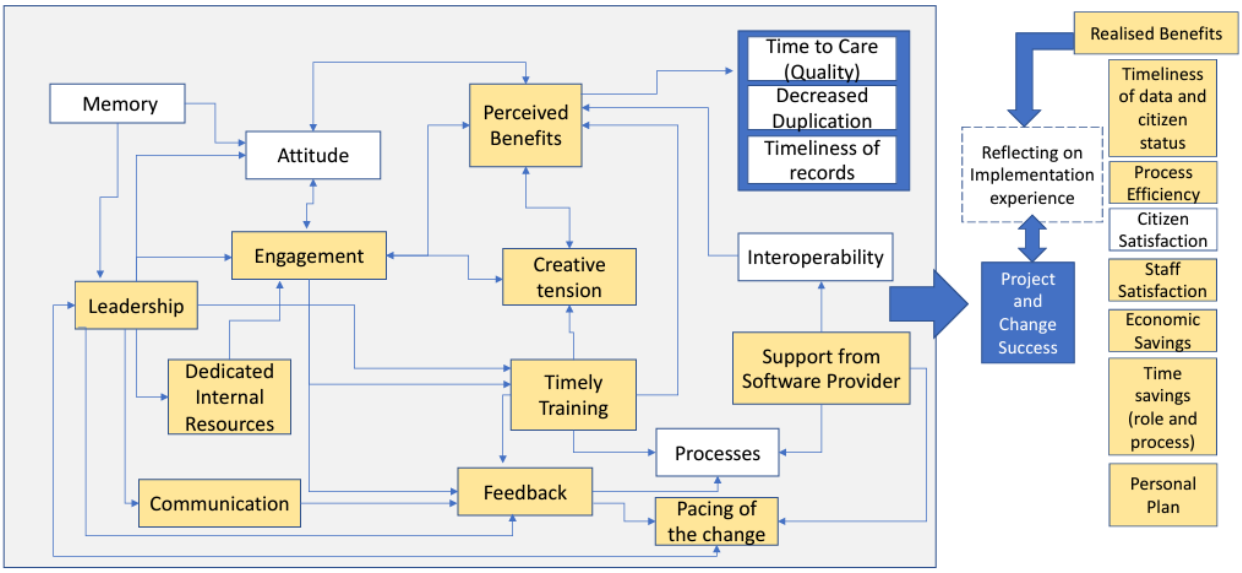


Figure 6.1 Revised Conceptual Framework – the enablers and inhibitors of digital care planning within social care/integrated care.

The different experiences during implementation of each subject expert and organisation support the conclusion of Blanchard et al. (2017) that "each implementation is different and unique and a shared learning process, and flexible system design allows adaptability for changing organisational needs".

The experience of VCRS can be seen through the lens of Senge's learning organisation (Senge, 1997) as the digital care planning project implementation has given the team the opportunity to take a more systemic approach to learning and implementation within the MDT "concerned with a shift of mind from seeing part to seeing the whole, from people seen as helpless reactors to seeing them as active participants in shaping their reality, from reacting to the present to creating the future" (Senge, 1990 pg.69). The observed behaviours of the team from self-reflection of the Researcher have been mapped into Table 6.2 below showing the team are moving towards becoming a learning organisation.

Table 6.2 VCRS Demonstrating Attributes of a Learning Organisation (self-reflection).

Learning Organisation (Senge, 1997)	Observed Behaviours/ Benefits	How has this project implementation or technology enabled this?
Building shared vision Genuine commitment, feedback loops	Team able to articulate perceived benefits of system throughout implementation Increased enthusiasm from team after training and implementation – other members of MDT actively asking when they can use the system	Early engagement and discussion of vision early on (prior to procurement) Consistent message By solving process issues, duplication, ease of access to information
Systems Thinking	Greater understanding of each element of MDT – can see the connections	Links together aspects of MDT into 1 system, can see the bigger picture, all contribute to the personal plan
Mental Models	Discussions on streamlining long established processes Handover meetings taking half the length of time Team becoming solution focussed and suggesting system improvements	Encouraged discussion on what we do and why we do it Trust in the system to hold the information, information more accessible to all Challenged assumptions about the manager having all the answers and encouraging people to shape the outcome, valued contribution
Team Learning	Ongoing dialogue within the team - MDT suggesting improvements and tweaks in the functionality Staff mentoring and coaching each other mentoring Open feedback, think outside the box Learning from each other	Can be adapted to be bespoke, helps to deal with the complexity of the service. Face to face and timely training, ongoing support Feedback loops in place with action taken on suggested improvements
Personal Mastery	Testing the system out, finding the best way, learning, and sharing learning Experimenting with the system Experts in their fields	Gives connection between the professions Able to practice on 'fake' citizens on system, learn from mistakes Technology allows more time to focus on their role and less administrative time

7 Conclusions

7.1 The purpose of this chapter

This concluding chapter will pull together the key learning points and recommendations from this study. The main findings are:

- The conceptual framework has been validated and revised following the results of the case study and discussions with subject experts.
- The key enablers to implementing digital care planning can be seen in Table 6.1 and the revised conceptual model in Figure 6.1.

7.2 Reflections

- I have thoroughly enjoyed conducting this piece of research and testing out the conceptual model. It was particularly enlightening to get the responses from participants to the perceptual questionnaire as this gave me insight into how the team were feeling prior to the implementation and gave an opportunity to use this feedback to make changes to the implementation plan and phasing of the project.
- There were time constraints on the MSc project. If time had allowed, I would like to have completed a longer study and carried out semi-structured interviews with participants in VCRS pre and post implementation to give a more rounded view of the whole process. I would also like to complete a cost-benefit analysis after the implementation of the project.

7.3 Implications

7.3.1 The Organisation/ Similar Organisations

- There is an assumption in the literature that digital change may be perceived as negative. This was not found to be the case in this study which proves technology can be harnessed to support organisational change.
- The study highlights the importance of early and ongoing engagement with staff when implementing change and how this can help people to see the perceived benefits and build a shared vision of the future.

7.3.2 The Government

- To help accelerate digital change there should be a conscious effort made to share best practice.
- To consider putting pressure on software providers to ensure systems can be interoperable.

7.3.3 Teaching

- Textbooks can teach models but not context, to support understanding of the importance of context teaching should use case studies.

7.3.4 Research

- Longitudinal studies of digital change implementation should be considered.
- Comparative studies of different organisations carrying out similar changes should be carried out to further test the model and understand how the main themes are linked.
- International studies could be carried out to see if cultural differences influence implementation and adoption of technology.

7.4 Concluding Remarks

This study has been a very rewarding process and the time invested by all involved should be recognised; the participants readily gave their feedback on the perceptual questionnaire and the subject experts gave up their time to allow the model to be tested across other organisations to establish if it was generalisable. The study and conceptual model have given a rare insight into how digital change can be implemented in social care/ integrated care settings which is not present in most of the existing literature. I hope other researchers will find the conceptual model useful and test it further within other social care/integrated care settings.

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9 Appendices

9.1 Appendix A – Perceptual Questionnaire

Digital Care Planning Implementation.

Please select 'by clicking on' the choice that best describes your view.

Q1 Thank you for taking part in this study, we are seeking to understand your views about the move from a paper-based to a digital service. There are no right or wrong answers! Just your views so please be as honest as you like. Your feedback is very valuable to us and will help inform how best to design/manage the service and will also be used by Carol Haake to complete her master's degree programme at Swansea University. Thank you.

Do you agree to take part in this study?

- ○ Yes (1)
- ○ No. Please exit the survey. (2)

Q5 What role do you hold VCRS?

- ○ Reablement Support Worker (1)
- ○ Reablement Co-ordinator (2)
- ○ Occupational Therapist (OT) (3)
- ○ Occupational Therapy Assistant (4)
- ○ Leadership Team (5)
- ○ Other (6)

Q2 Please indicate your age by selecting one of the following options:

- ○ 25 years old or less (1)
- ○ 26 to 35 years old (2)
- ○ 36 to 45 years old (3)
- ○ 46 to 55 years old (4)
- ○ 56 years old and above (5)

Q3 How long have you worked at this organisation?

- ○ One year or less (1)
- ○ One to Three Years (2)
- ○ Three to Five Years (4)
- ○ More than 5 Years (5)

Q4 Thinking about the current rostering system and the blue files in the property, please read the statements and pick the answer that best describes how you feel

	Strongly Disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I can access information about the people I support/patients in a timely manner (8)	○	○	○	○	○
I have enough information about the people I support to do my job well (7)	○	○	○	○	○
I can easily access an up-to-date copy of the person's 'personal plan'. (9)	○	○	○	○	○
I currently spend quality time with the people I support/ staff (10)	○	○	○	○	○
I am happy with the current system (paper-based care planning), I think it meets our needs (12)	○	○	○	○	○
I feel I can pass on information in a timely manner (11)	○	○	○	○	○
It is easy to share information within the team (15)	○	○	○	○	○
I am able to record my involvement in a timely way (14)	○	○	○	○	○

I can record information without duplication (16)	○	○	○	○	○
Accidents and Incidents are being recorded and reported in a timely manner (17)	○	○	○	○	○
I am confident my feedback about the people we support/patients is passed onto the relevant person (22)	○	○	○	○	○
I feel confident that my communication to the MDT will be acted upon. (32)	○	○	○	○	○
I get feedback on the actions undertaken by the MDT (based on my communication to them). (33)	○	○	○	○	○
The current system is efficient (35)	○	○	○	○	○

Q11 Thinking about the digital planning project in VCRS, please read the statements and pick the answer that best reflects the way you feel.

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree (3)	Somewhat agree (4)	Strongly agree (5)
I worry about my job changing as a result of this project (4)	○	○	○	○	○
I have been kept informed about the implementation of the new digital care planning system (5)	○	○	○	○	○
I have had the opportunity to give my views and opinions on this this project (6)	○	○	○	○	○
I have used a similar system to his before (7)	○	○	○	○	○
I have received good training on the new system (8)	○	○	○	○	○
I would value more training on the system (9)	○	○	○	○	○
I think the new system will benefit me in my role (10)	○	○	○	○	○
I think the new system will benefit the people VCRS supports (11)	○	○	○	○	○

I think the new system will reduce paperwork and give me more time to focus on the parts of the job I value most (face to face support, therapy, supporting staff) (12)	○	○	○	○	○
The new system will improve efficiency (13)	○	○	○	○	○
The new system will improve our safety (22)	○	○	○	○	○
The new system will improve the speed of passing on information. (23)	○	○	○	○	○
I feel positive about this change (15)	○	○	○	○	○
VCRS has the resources it needs to implement a new digital care planning system (16)	○	○	○	○	○
I am confident in the leadership in VCRS to implement this change (17)	○	○	○	○	○
I am highly IT literate (18)	○	○	○	○	○
I have had a positive experience of implementing change in the past (19)	○	○	○	○	○

Q9 How do you feel about the digital planning project?

Q6 Using your own words what do you think will be the barriers are to us implementing the new digital care planning system? (What will get in the way)

Q7 Using your own words what factors do you think will help us to be successful in implementing the new digital way of working?

Q8 What do you think the benefits of the new way of working will be for you and your colleagues?

Q12 What do you think the benefits will be for the people VCRS supports of using digital care planning?

Q13, do you have any other feedback or comments you would like to share about the project?

9.1.1 Appendix B – Semi-structured Interview Questions (Microsoft teams)

Participating in this research will not affect (positively or negatively) our working relationship and you are encouraged to be as honest in your answers and observations. There are no right or wrong answers, just your experiences!
Get consent for taking part and recording
1. What is your role? What is your role in the project/implementation. How have you been involved? How has that felt?
2. What stage are you at of implementing your digital care planning system? - planning, implementation, post implementation?
3. Did you experience any barriers/ issues whilst planning/ implementing the digital care planning system? What were these? How did you overcome them?
4. What do you think from your experiences has helped with the implementation of digital care planning in your organisation? What else do you think would help/ would have helped
5. Were there any specific groups that resisted the change? How did you get them on board?
6. What did you learn during the implementation about how to make it a success?
7. What would you do differently if you were to do it again?
8. What role do you think leadership plays?
9. What's been your experience of the training? Any lessons learnt about what would work better?
10. What were the team involved in the process? What worked well/ did not work well?
11. If you have already implemented the system – what benefits have you see so far for you, your colleagues, and citizens?
12. Show conceptual model? Anything missing from the factors identified (+IT Infrastructure/ interoperability)

9.1.2 Appendix C – Example of excerpt of Semi-structured Interview Transcript

Semi-structured Research Interview - implementation of digital care planning-20230809_150647-Meeting Recording

August 9, 2023, 2:06PM

39m 21s

HC Now, so just to confirm that you're happy for us to record.

Haake, Carol started transcription

BR Yet that's absolutely fine, yeah.

HC Yeah, yeah, that's OK. And that you've had the consent forms through and everything about the research. Have you got any questions about what it is that I'm doing at the moment? Anything you want me to answer before we start?

BR Yes, I have. And no, I don't think so. I know you've given me a brief a brief overview and I've read to documentation you sent through, so no, absolutely fine.

HC OK that that's lovely.
So first of all, if you can just tell me what your role is and what your role has been in the implementation of digital care planning in your organisation?

BR Yes so, I've just recently moved into assistant service manager role and before that I was a transitions manager. So, at the minute I'm managing our community team and as part of the [redacted] enablement team in relation to our role out of digital care planning, I've done a lot of work around the compliance side of it. I've done a lot of training with staff.

HC Yeah.

BR And we've done some work around building our own forms into the system. So, it's in line with our strength-based assessment process and it captures kind of our key questions as part of our assessments that we carry out. And I've done a lot of work around our medication auditing side of it as well, done a lot of work around automation within the system, which is then helped in terms of basically when a form submitted, it will send an e-mail to somebody or it will create another.
And yeah, I'm trying to think if there's anything else, a lot, a lot of training, a lot of compliance side of it and yeah. And a lot of actually building up the system to get it to where we need it to be. If that's kind of covered what you needed. Yeah.

HC And just to confirm, the stage of planning that you're at, you're post implementation, is that right?

BR Yes. So, we went live on, I think it was the 10th of May. It was the start of May but prior to our goal live we were kind of putting our electronic care plans onto the system. So, we filtered that through when we had new intakes and new intakes would be put onto the digital system rather than a paper record.
And so that was 10th of May onwards, but prior to that we had actually implemented the use of digital care planning with office-based staff in terms of using triage forms, compliments and complaints forms and that side of it. So, they kind of had some familiarity with the system before we before we went live, yeah.

HC And what about the phone app with staff? When did that bit go live?

BR And that was probably a couple of months before. I'm just trying to think off the top of my head. And yeah, it was probably about March time. So, we've done all of the training with staff February, March time done all the training with staff in terms of getting them set up on the phone and how to use the app, how they would be able to record notes. We had some very basic activities on their prior to go live around shopping, laundry support from Dosset box and support release medication that kind of thing. So, we already got them into the habit of.

HC Yeah.

BR Marking off and activities on the system as well, how to navigate around the forms and find the information from there as well as on the dashboard as well. So, we switched off the other app. Once we'd done all the training with staff, so it forced them to use the new app to get used to that, but it was quite handy because the new app and the original app very similar in terms of how they look and kind of how they function.

HC Hmm.

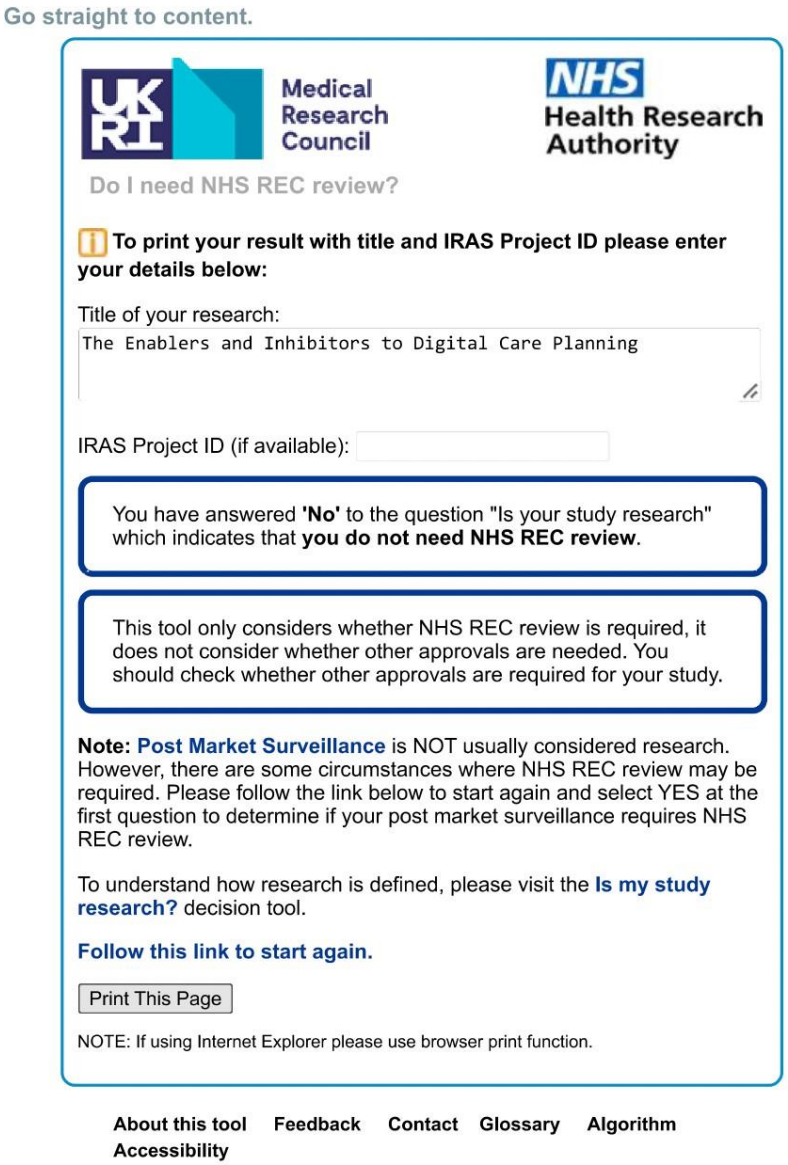
BR And so, staff seemed to transition to that well, yeah.

HC OK, lovely. Thank you. Did you experience any barriers or issues whilst you were implementing the system?

BR And yeah, and I guess probably from quite a few different levels and for staff and we've got a workforce of 250 kind of frontline staff. So obviously we had to make sure that we were able to put in face-to-face training to make sure they all had the app downloaded. They all got used to using the app. So that was a big task in terms of just delivering that first part of the training and kind of since that.
The majority of staff are really good with it, but you do find the odd few in terms of from a technical perspective they do struggle with certain aspects of it.
And so we still get some stuff that do still need that further support. So, we do have some ongoing kind of training sessions that we still have in place as well where staff can drop in and we've got our technical manager that will help out with that side.
And we've got some admin stuff that support as well.
And even then, we've I think we've still got a barrier in terms of staff using that. And I know I think we've talked about it when we met previously about staff having to continually update and do the clean sync on their phones as well on the actual app.

9.1.3 Appendix D – Ethics Approval

D1 – NHS Research Health Authority1



Go straight to content.

Medical Research Council

NHS Health Research Authority

Do I need NHS REC review?

To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

The Enablers and Inhibitors to Digital Care Planning

IRAS Project ID (if available):

You have answered **'No'** to the question "Is your study research" which indicates that **you do not need NHS REC review**.

This tool only considers whether NHS REC review is required, it does not consider whether other approvals are needed. You should check whether other approvals are required for your study.

Note: Post Market Surveillance is NOT usually considered research. However, there are some circumstances where NHS REC review may be required. Please follow the link below to start again and select YES at the first question to determine if your post market surveillance requires NHS REC review.

To understand how research is defined, please visit the **Is my study research?** decision tool.

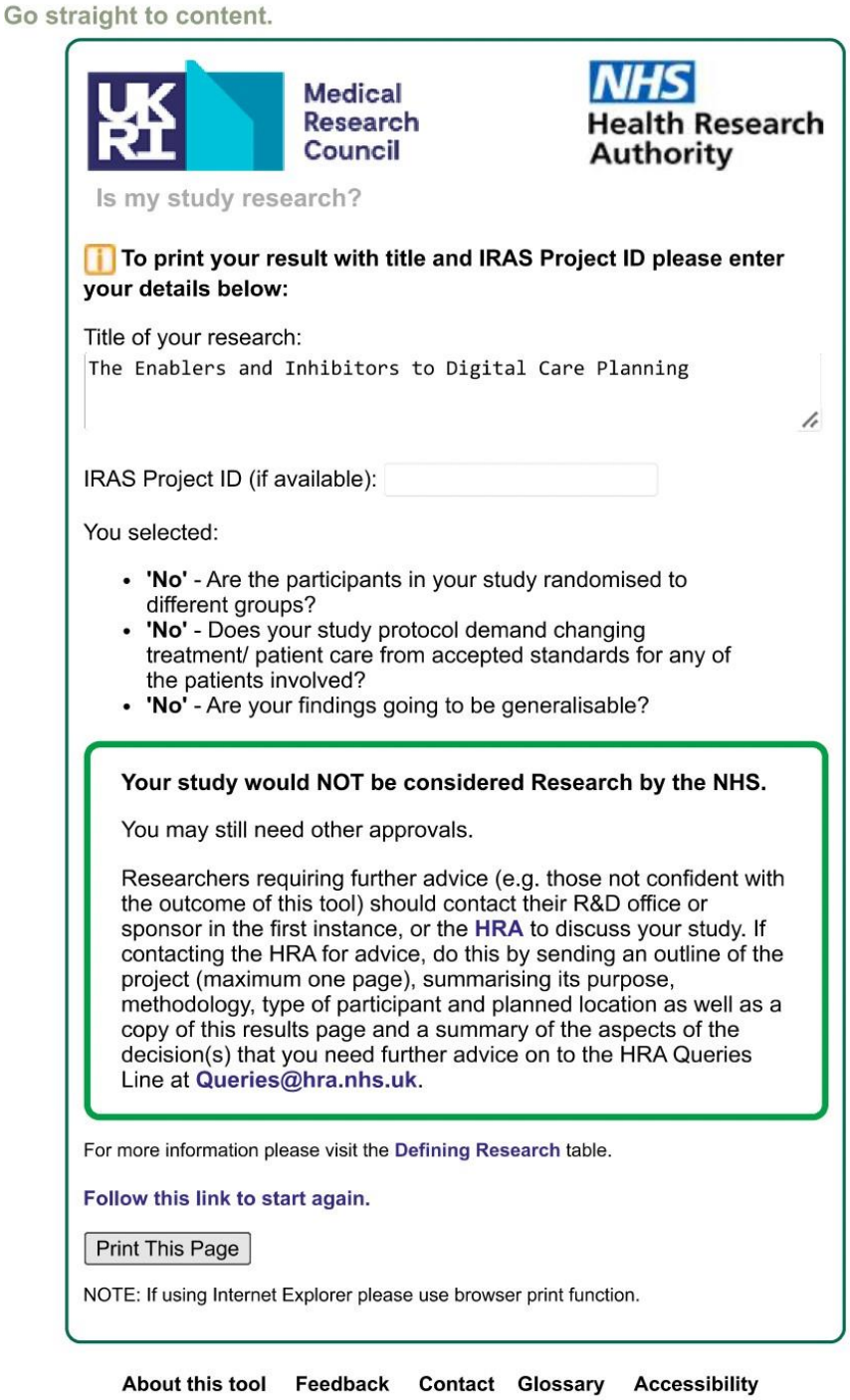
Follow this link to start again.

Print This Page

NOTE: If using Internet Explorer please use browser print function.

About this tool **Feedback** **Contact** **Glossary** **Algorithm** **Accessibility**

D2 – NHS Health Research Authority 2



Go straight to content.

Medical Research Council

NHS Health Research Authority

Is my study research?

To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

The Enablers and Inhibitors to Digital Care Planning

IRAS Project ID (if available):

You selected:

- **'No'** - Are the participants in your study randomised to different groups?
- **'No'** - Does your study protocol demand changing treatment/ patient care from accepted standards for any of the patients involved?
- **'No'** - Are your findings going to be generalisable?

Your study would NOT be considered Research by the NHS.

You may still need other approvals.

Researchers requiring further advice (e.g. those not confident with the outcome of this tool) should contact their R&D office or sponsor in the first instance, or the **HRA** to discuss your study. If contacting the HRA for advice, do this by sending an outline of the project (maximum one page), summarising its purpose, methodology, type of participant and planned location as well as a copy of this results page and a summary of the aspects of the decision(s) that you need further advice on to the HRA Queries Line at **Queries@hra.nhs.uk**.

For more information please visit the **Defining Research** table.

Follow this link to start again.

Print This Page

NOTE: If using Internet Explorer please use browser print function.

About this tool **Feedback** **Contact** **Glossary** **Accessibility**

D3 – School of Management Checklist, Swansea University

School of Management Ethical Review Checklist

This checklist should be completed with the assistance of project or dissertation supervisors.

Does the proposed research involve any of the following?

☐ Vulnerable people or participants unable to give informed consent.

☐ Deception, misrepresentation, or covert research.

☐ Any risk of harm, damage, or distress to anyone.

☐ Collection of personal or sensitive personal data as defined by GDPR.

☐ Data collection from participants without prior, recorded, informed consent.

☐ The sharing of data or confidential information beyond the initial consent given.

☐ A lack of anonymity for research participants. (i.e., it will identify participants).

☐ Interventions and therapies, including clinical and non-clinical trials.

☐ Study or exposure of illegal activity, or research that is likely to discover illegal activity.

☐ Financial inducements offered to participants.

☐ Collection or purchase of human samples including bodily fluids e.g., blood, saliva

☐ Other aspects that pose significant concerns such as:

- Coercion.
- Conflicts of interest.
- Research in countries where research integrity cannot be ensured.
- Data security.
- Use of administrative or secure data.
- Inappropriate inducements.
- Poor practice.
- Artificial Intelligence.
- Security-sensitive data or materials.
- Sensitive objects, artifacts, or topics.
- Potentially dangerous and/or illegal internet sites.

Postgraduate research undertaking any of the above will require ethical review using the online research ethics system. https://swansea.forms.ethicalreviewmanager.com

Students should also confirm that they will comply with Health and Safety guidelines and undertake risk assessment of the research as required. Students should also confirm that they understand that all projects and activities will be undertaken in accordance with relevant external and internal policies, regulations, codes of practice and other requirements, and that further information on these is available from University and Faculty research and teaching support services. For further assistance on ethical review contact FHSS-Ethics@swansea.ac.uk

Prof. Nick Rich

5 June 2023

9.1.4 Appendix E – Responses to open ended questions (perceptual questionnaire)

Q6 - Using your own words what do you think will be the barriers are to us implementing the new digital care planning system? (What will get in the way)

System failure would be a nightmare.

Time to record notes

I feel the barriers will be that support workers will not fill out the end care notes to the full potential for the next worker

Negative staff and unreliable phone communication. If RSWs have the compatibility between phones and the new digital service, then barriers can be overcome. Also, the patients of management to expect glitches and some errors.

Personally, for me just learning the IT side of things and something new i can already see how much of a benefit it will be

Lack of training at the RC level and LRC levels as this will hamper implementation. Team are NOT confident in the use of the new system

Compatibility of IT systems across LA and UHB

Staff mobiles might not work- what if someone is waiting for replacement or fix, how do you input info from each call etc. No direct messaging system like in a bee app could mean a lot of vital info gets missed by staff, anything urgent

Just happing to get used to a new system how to use it

Time delay in uploading data to different patient record management systems. One upload, one access system.

Time to fill in all information.

Technology - it can be temperamental and doesn't always work

More mature staff may struggle with new system, some families may complain that they like to read what their mother/father are doing in regards to their reablement, some may worry over digital safety and the loss of traditional procedures

Resistance to it

Phone signal1 IT

access

Success will depend on whether staff actively engage in using the system.

We have not currently seen the system with all sections we will need to complete on a discharge visit. The current paper system is confusing with the amount of documents we must complete on an initial visit so it will be hard adjusting and relearning: what documents we have to complete, where we need signatures, what we need to upload to Paris, any paper documents we still need.

I think the stage where it starts up and running, may be cause some barriers. I think that some staff may not feel confident with their IT skills which could be a barrier and also time. I think as long as the staff are trained and feel they can come in for support with time set aside, it will go well.

Lost signal, tablet not working, not being able to fix a problem, lack of IT support if the tablet breaks which could incur loss of hours.

I think everyone has a different level of computer literacy and at first this will prove to be difficult and time consuming for colleagues to help other colleagues but once this initial stage has passed, I feel everyone will see that this system is effective.

Q7 - Using your own words what factors do you think will help us to be successful in implementing the new digital way of working?

Using your own words what factors do you think will help us to be successful in implementing the new digital way of working?

Sharing information instantly. Seeing everything on my phone in one place, I can up familiarise myself before the calls with the client's information from other reablement support workers and ot etc.

Give plenty of time to use system we're not all it literate

That everyone takes time to fill out all notes fully

The implementation of a set (template) format to document daily tasks and relevant information regarding the call . This would help standardised information and reduce confusion.

working together and supporting each other which has been the case so far i have been offered a lot of support as i find the IT side of things difficult

Getting the team more training, getting other disciplines on board, phone capacity for data usage-this is untested, old phones, signal for Update especially in black spot areas

Phased implementation. Clear

communication

Give us more time between calls first week to get used to it Ensure

all staff implement and follow procedures.

Better privacy. and more secure. Knowing more information upfront. Training

and a slow approach to implementing the new system

All the teams, departments have access immediately to plans /concerns/incidents etc. That the positive

change is coming from the top

Knowing who been the clients house and who next to come

Better IT access for all staff

In providing easy to access training and a long lead in time to encourage familiarisation with the new way of working

More team training once the system is fully set up with the documents, we need to complete so we are more familiar with what we need to do.

Face to face meetings - One to one and group. Meetings/supervisions with staff. Allocating time for staff to come in.

less paperwork

I think that everyone working together as a team will be key to making this a smooth transition within the team. Nobody likes change but in order to make the service run more efficiently and effectively this system is required.

Transparency Inclusivity Robust IT infrastructure Training Increased staffing levels

Q8 - What do you think the benefits of the new way of working will be for you and your colleagues?

More information to hand, no need for all phone calls.

Info on client before we go there first time

It will be beneficial to read all notes/care plan before even arriving at the property

More up to date information that can be accessed prior to the call. Attention can be given to the service user on arrival instead of reading and trying to talk at the same time.

we will have all the information we need to hand, easy way of completing forms and we can add/remove tasks when at visits often phone calls are time consuming and can be difficult from a service users home

faster response to Incidents/accidents, no issues with file returns, more information available for staff on phones, less calls to the office? instant feedback available for therapists.

Easy access to citizen records, sharing/formulating risk, updates, personal plans. Citizen engagement. Central point for domiciliary visits and recording.

Less time spent writing Will be able to see info before going into the call, which is much better as you don't go in blind, especially if you haven't been in there before. Sharing information in more timely manner, cutting out the middleman No worry that we will ran out of paperwork, it will always be to hand- fresh med sheets, record sheets

Office will get information which we write in blue files a lot quicker

Patient information will simultaneously be assessable and instantly updated. Efficient recording of patient information reducing clinical risk. Reduced hard copy of information saving administrational handling.

Quicker in feedback and any new information on clients. When get used to navigating around can see it being quicker. Love the idea of all information upfront.

More time with service users, information can be passed on quickly and effectively, no papers getting lost, easier to find information

Access to notes before our visits informing us of any concerns / problems that may face us and especially on new client's history / illness, can help us decide beforehand on how best to deal with situations I'd it's a difficult call

More efficient, feedback getting to where it needs to be is a key element. More time with the person we support

Les paperwork

Improved communication. Instant access to information It

will be much easier to access up to date information.

I think it will be much more efficient and allow us to get direct feedback from rehab support workers. I think as time goes on, a digital system has the potential to speed up discharge visits and the amount of admin required, as it will require less duplication; therefore, leaving more time for therapeutic intervention.

Less calls. Easier access to support worker notes which can be useful if we need to see what has happened that day, especially if a family member phones in. Simplifies putting new supported people

Providing more information. No delays in information being shared Being able to support RSWs with direct access to all information Responding to any updates as necessary within job role More time to support staff management

shortening the time in copying the info from the computer onto the blue file

Q9 - How do you feel about the Digital Care Planning Project?

Think it will be amazing when in place and more training needed before it starts

Apprehensive

Fine

I feel it will be more efficient going forward

I am eager to use this new system and feel it can only benefit staff and service users. It will hopefully make RSWs feel part of the whole team and that their feedback is valued and acted upon

A positive step forward and once I'm used to the new system i think it will be a great benefit to the service users and the team

Apprehensive of change, but sure it will be easy and beneficial after learning curve

I think the system is great it will benefit the people we support and the team. I think the staff need further training in the system

I think it will provide a more integrated approach to those we support, whilst promoting MDT and citizen involvement. Access for all involved.

I think it is a right way forward, it was coming as everything in life is becoming digital. We just need to embrace the change. Like with everything new it might take time to get used to it, but once we do it will be all straightforward.

Hopefully it's a move forward be better once we are used to it

The digital care planning will have a positive impact on the effectiveness and accuracy of recording patient notes.

Feel very nervous

Really good, we can now spend less time reading and writing and more time with the service users

Look forward to it, better data security , probably be able to answer this question better when I have used it for a week or 2 but am expecting it to be an improvement

Change is a good thing and about time we embrace the digital age

Confident it will work

Sounds much improved from the current folder system It

is something which is long overdue.

I think it is going to have a teething period which i am currently apprehensive about. Current discharge visits take up to 2 hours and during the teething period I worry this could take longer and patients might get frustrated impacting therapeutic rapport. I think it would be beneficial to have a couple of sessions once the system is finalised with all documents, we will need to fill out so we are more familiar and can have a practice completing prior to a real visit; to ensure the visits can remain as timely as possible.

I think it's a great project and I am keen for it to start. I think when things settle and we all know what we're doing, it'll be great.

My computer skills are not as advanced as other Practitioners younger than myself. I am anxious about not being able to sort any problems out, potential time wasting whilst at a client's house if the system is out of signal. Feel I would need more training than other colleagues to work efficiently.

I think that this is a positive change and will improve the service that VCRS can deliver within the community. I think that once everyone starts to use the system it will be clear to see the benefits of the system.

It is definitely a step in the right direction to transparency in care planning going forward.

I feel that this will be a positive move forward enabling a more collaborative way of working. Being able to view all information for the person. Immediate view of updates/ changes and access to all plans and risk assessments.

it's a good idea to integrate the systems and to allow staff from LA and Health to access the info freely

Q12 - What do you think the benefits will be for the people VCRS supports of using digital care planning?

Better informed staff who have clear information on support needs instant requests to professionals via systems greater continuity as staff can see what's gone on at calls before better care support and understanding of level of support needed for person will be clear so can support person to independence quickly?

They will have more time with us so hopefully that means more improvements in their health

They will have added confidence that the team looking after them is working in a more efficient manner.

They will feel more confident with us as we will have read about them before and arriving. We can give full attention during the call. Will make us look professional and leave the clients with a better view of our service .

Staff more informed before they go into call what has happened in the last few calls

Sensitive information only shared with people that should be seeing it Confidentiality improves Carers can focus more on the person, be more engaging. It will make people feel more valued as they will be in a centre of care from the start

Safer ….

Quicker response to any requests? Not

sure.

No change

More efficient service More monitoring better communication amongst professionals' quicker response to issues/concerns raised

MDT approach to care and support. Citizen participation and access to personal plan. Shared approach to reablement focusing on individual's goals.

Less paperwork round house confidential

Instant forms and information at the ready. Errors easily rectified. Clear eligibility notes. Patient information will be Safe and secure and instantly accessible by all. Instant notification of alters and emergencies.

Information be there on your phone before going I go to the client

Increased confidentiality - rather than carrying paperwork with sensitive material on it

Improved communication across the team resulting in better care

I think the benefits will be that any requests from the people we support will reach the discipline the message is required for, more quickly. I think this will allow the people that we support to feel that they are more in control of their care and with the decisions that are being made as long at the digital aspects are user friendly and easy to use.

Currently patients are exhausted on discharge visits following a busy discharge day and practicing mobility and transfers. The current paper systems patients regularly state "its a lot of paperwork isn't it". Understandable many patients feel the visit drag on because of this. If a digital system is able to speed this up it will allow the patients to relax sooner. Communication will also be improved within the team meaning feedback and concerns can be actioned and followed up sooner.

Communication sharing, following on from previous carer Clear,

concise, up to date information sharing.

Can spend more time focusing on the service user than reading the care plan as I would have read it before hand

Arrive ready to start without reading care plans first or pages of daily sheets. Quick introduction and ready to go.

Is there a role for tele-health in the primary healthcare setting of the Welsh NHS?

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Abstract:

Background: The purpose of this report is to review the current literature available both academic and grey to evaluate the use and effectiveness of remote consultations vs traditional consultations in Wales when used in General Practice.

This report highlights that even though there are multitudes of studies in varying specialities using remote consultations little or no clinical safety and appropriateness nor fiscal analysis has been published to date for the use in General Practice.

Findings: There are clear arguments for the preference of use of remote consultation modalities such as ease of access for remote or housebound patients, reduction in travel which in turns reduces patient time and carbon footprint attending appointments. However, the appropriateness of conditions suitable for remote consultation is limited and can lead to exclusion of sectors of the population which are less digitally enabled by education, infrastructure, and disability.

Conclusion: This report concludes that further analysis must be implemented to review the appropriate use of remote consulting vs traditional consulting and to consider not only the financial and workforce provision in access to healthcare but most importantly the clinical safety and equity of access to all citizens as per the founding principles of the National Health Service.

Keywords: Telehealth, Telemedicine, Video Consultation.

Table of Contents

Abbreviations

Acronym	Definition
TH	Telehealth
TM	Telemedicine
FTF	Face to Face
VC	Video Consultation
TC	Telephone Consultation
EC	Electronic Consultation

1 Introduction

The purpose of this report is to analyse and put forth recommendations for the use of telemedicine in the context of community-based care, otherwise known as general practice in a post covid era. Posing the question of 'Is there a role for telehealth in the primary care setting of the Welsh NHS?'. Firstly, we must define Telehealth in the context of a post covid era and how the covid-19 pandemic opened the flood gates for innovation in access to healthcare.

Telehealth can also be known as Telemedicine, video or telephone consultations, remote consultations, and the use of individualised text-based health advice such as email and text messaging services such as e-consults. For this report telehealth will be used to represent all-encompassing terms stated as per fig 1:

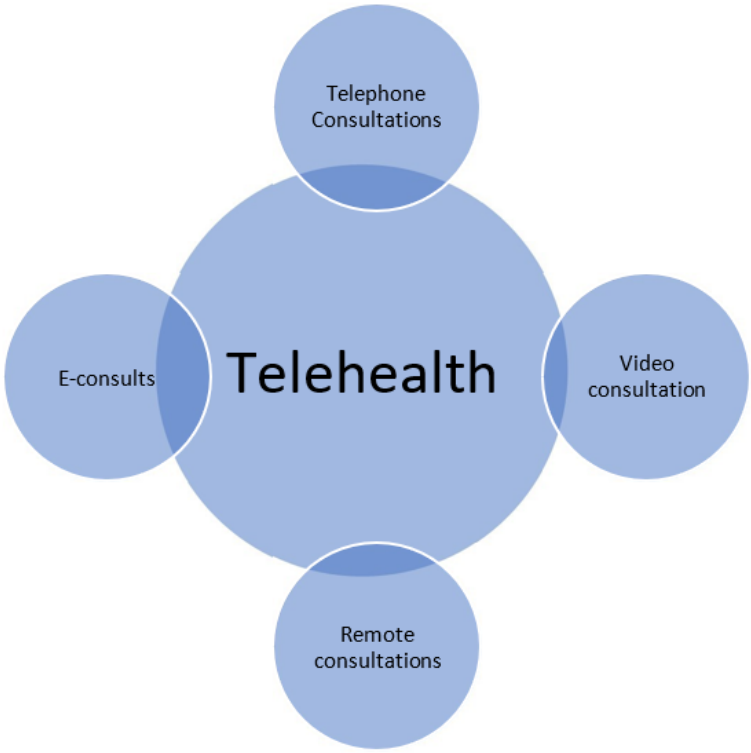


Figure 1. Telehealth diagrammatic representation.

This report aims to analyse the current literature regarding telehealth and community- based medicine to establish its future role in the Welsh NHS. This is a vast subject as this is a relatively new and innovative area of medicine which needs analysis regarding clinical effectiveness, cost analysis as well as patient and clinician user opinions.

To create focus, this report will concentrate on:

1. Reviewing the literature and establishing the types of studies which have been published to date within community healthcare in respect to Telemedicine and General Practice in relation to the effectiveness of telehealth in the Welsh National Health Service.
2. How this could be capitalised upon to improve access to healthcare in more rural and vulnerable patient populations.

2 Rationale for Project Report

During the Covid19 pandemic Telehealth was a necessary solution to physical lockdown of communities which prevented face to face consultations, unless clinical intervention is needed, and the benefit of contact outweighed the risk of viral infection being perpetuated.

In a post Covid19 era telehealth is now floundering and requires further evaluation in its efficacy both clinically and financially to determine its long-term future in NHS Wales. (NHS England» Remote Consulting,

2023). This report will review the current literature in respect to clinical effectiveness, safety, and financial analysis available.

With the current state of primary care services and resources which are ever dwindling in real terms, this report will also aim to explore the momentum for using technology be continued, improved, and become mainstream services, if shown to be a viable future option.

Telemedicine appears to have been born out of necessity of the Covid-19 Pandemic and lockdowns as an innovative way of enabling the public to access health care whilst complying with regulations of government of limited face to face interactions unless necessary. However as per Randhawa, 2019 there was a government funding scheme for using video technology in the healthcare sector via 'skype' as early as 2014 in the UK and yet ten years on from this initial funding we are still no further in development of a working NHS Digital service.

The relevance of researching this topic is emotive and in line with the ever-developing strategies for managing the health of the nations of the UK via the National Health Service which has evolved immensely since its inception in 1948 following the Beveridge report. The National Health Service and the population it serves is grossly different from the post wars era which can be demonstrated by reviewing the mortality rate of the UK. Mortality rate is a way of assessing the health of a country, this can then be age standardised. Pre-NHS the UK age-standardised mortality rate (per 100,000 population) was '2,243.8' in 1946 compared with '925.0' in 2019 (Office for National Statistics, 2021). These statistics demonstrate the increased health of the United Kingdom during the time of the NHS in position however does not extend to the covid19 era yet.

At present there are currently '26,629 FTE Qualified permanent GPs in the UK' (excludes GPs in Training Grade and Locums) – '1.3% (356) fewer than January 2022' according to NHS Digital, 31 January 2023.

Governmental plans to solve this access is to use varying telehealth solutions with a digital first approach however this is yet to be analysed in a care or cost benefit study.

During and post covid era there are also a growing number of private providers of health care available at a cost to the patient which can vary from £60+ for a 10-minute telephone call or video consultation. However, its use in the NHS is varying, the reasons for this are outlined and discussed in detail as part of the analysis section.

3 Research Question

3.1 Is there a role for telehealth in the primary care setting of the Welsh NHS?

Considering the current operating state of the NHS and in particular the Welsh NHS with diminished workforce (General Practice Workforce, 31 January 2023), investment in telehealth is being heralded as the saviour for addressing access to services. Hence the title of this report is to evaluate if there really is a role for telehealth in General Practice of the NHS.

A search of the main databases Medline, PubMed, Google scholar as well as grey literature searches were completed to ascertain the most up to date information available when considering the question posed.

When initial searches were conducted there was an overwhelming amount of literature with the key words United Kingdom, Wales, General practice, telemedicine, video consultation, remote consultation, resulting 70475 articles along with a Search of PubMed this added a further 7002 articles. These were then filtered by relevance and most recent publications and duplications removed from the search. This then brought the results to 241 articles. Further enhanced filtering for relevance and abstract reviews completed narrowing down to 51 articles. Final streamlining to 11 publications which were in line with the scope of this report which are detailed in Table 1.

When analysing the literature available a multitude falls into categories such as opinion pieces, letters, and grey literature, including research studies of opinions, expectations, and experiences from the patient and from the physician. There seems to be few overall analyses of the clinical and or cost effectiveness of telemedicine, in fact only one report attempted to address this cost analysis to date of face-to-face consultations compared with virtual consultations which took place in Australia (Butler, 2023). This is an important finding demonstrating that not enough research has been conducted or that a comparative evaluation is not appropriate due to the nature of the processes. Search parameters were altered to allow for a more global approach in considering appropriate literature to ensure a comprehensive scope when

considering the research question. The articles of particular interest when considering the research question for this report are noted in Table 1.

Table 1. Select Articles regarding TM.

Author	Year	Title	Purpose of study	country	Study
Wanderås, M. R., Abildsnes, E., Thygesen, E., & Martinez,	2023	Video consultation in general practice: a scoping review on use, experiences, and clinical decisions.	Scoping review to summarise Video consultations worldwide .	UK	Scoping Review
Greenhalgh, T., Ladds, E., Hughes, G., Moore, L., Wherton, J., Shaw, S. E., Papoutsi, C., Wieringa, S., Rosen, R., Rushforth, A., & Rybczynska-Bunt, S	2022	Why do GPs rarely do video consultations? qualitative study in UK general practice.	Explain why VCs are not used more widely by GP's	UK	Qualitative Study
Randhawa, R. S., Chandan, J. S., Thomas, T., & Singh, S	2019	An exploration of the attitudes and views of general practitioners on the use of video consultations in a primary healthcare setting	Understand the opinions of users	UK	Qualitative study
Anderson, J., Walsh, J., Anderson, M., & Burnley, R	2021	Patient Satisfaction with Remote Consultations in a Primary Care Setting	QI project for remote consultations	UK	Qualitative & Quantitative Study
Hammersley, V., Donaghy, E., Parker, R., McNeilly, H., Atherton, H., Bikker, A., Campbell, J., & McGinstry, B.,	2019	Comparing the content and quality of video, telephone, and face-to-face consultations: a non-randomised, quasi-experimental, exploratory study in UK primary care.	Comparison of quality of modality of consultations	UK	Qualitative & Quantitative Study
Wabe, N., Thomas, J., Sezgin, G., Sheikh, M. K., Gault, E., & Georgiou, A.	2021	Medication prescribing in face-to-face versus telehealth consultations during the COVID-19 pandemic in Australian general practice	Prescribing tendencies	Australian	Observational study
Parker, R. F., Figures, E. L., Paddison, C. A., Matheson, J. I., Blane, D. N., & Ford, J. A.	2021	Inequalities in general practice remote consultations	Review of services	UK	Systematic review
Butler, D. C., Joshy, G., Douglas, K. A., Sayeed, M. S. B., Welsh, J., Douglas, A., & Korda, R. J.	2022	Changes in general practice use and costs with COVID-19 and telehealth initiatives: analysis of Australian whole-population linked data.	Consideration of cost analysis of TM	Australia	Qualitative & Quantitative Study
Etz, R. S., Solid, C. A., Gonzalez, M. M., Britton, E., Stange, K. C., & Reves, S. R	2023	Telemedicine in Primary Care: Lessons Learned About Implementing Health Care Innovations During the COVID-19 Pandemic		USA	Review
Mueller, M., Knop, M., Niehaves, B., & Adarkwah, C. C	2020	Investigating the Acceptance of Video Consultation by Patients in Rural Primary Care: Empirical Comparison of Pre-users and Actual Users	Perceptions of Virtual TH	Germany	Qualitative study
Salisbury, C., Quigley, A., Hex, N., & Aznar, C.	2020	Private Video Consultation Services and the Future of Primary Care	Review of private services	USA	Qualitative Study

3.2 Current themes of publication

There are clear themes of research which have been conducted to date which are:

- Mental health

    - How mental health can be diagnosed and treated using digital applications, telehealth consultations and self-help information for the patient. Multiple studies have collated data regarding effective management and usability or effectiveness of therapy techniques via digital platforms. It has shown that overall, there is a place for mental health assessment and treatment digitally as patients can find it convenient, private, and easy access without the need for travel however face to face consultations are often rated as the preference when regarding the patient experience.
- Addiction
    - Like mental health use in a digital format which is promising.
- Paediatrics
    - Review of chronic health conditions in children or by utilising wearable technology equipment was found to be very popular with parents and physicians however as children, there needs to be strict guidelines of what is clinically appropriate and ethical in this population.
- Asthma
    - Utilising video consultations to demonstrate and evaluate inhaler techniques in patients who would otherwise need to attend in person. As this is a skilled task which is pertinent to treatment a telephone consultation with no visual would be of no use in this area of medicine.

When reviewing the search results, the above themes were considered but then removed from the results to focus on general practice in the UK and its use of digital healthcare. There were no results for Wales specific research in this area. This highlights the breadth of the topic but also how there is currently very little published in relation to Wales and its health care system in the digital world. Considering the Healthy Wales documentation and government planning for digital health services in Wales it is very disappointing to discover limited to no evidence of this to date.

As an overview there were themes evolving also of the types of studies published, these being mainly:

- Qualitative reviews.
- Quantitative reviews.
- Systematic reviews.
- Scoping reviews.

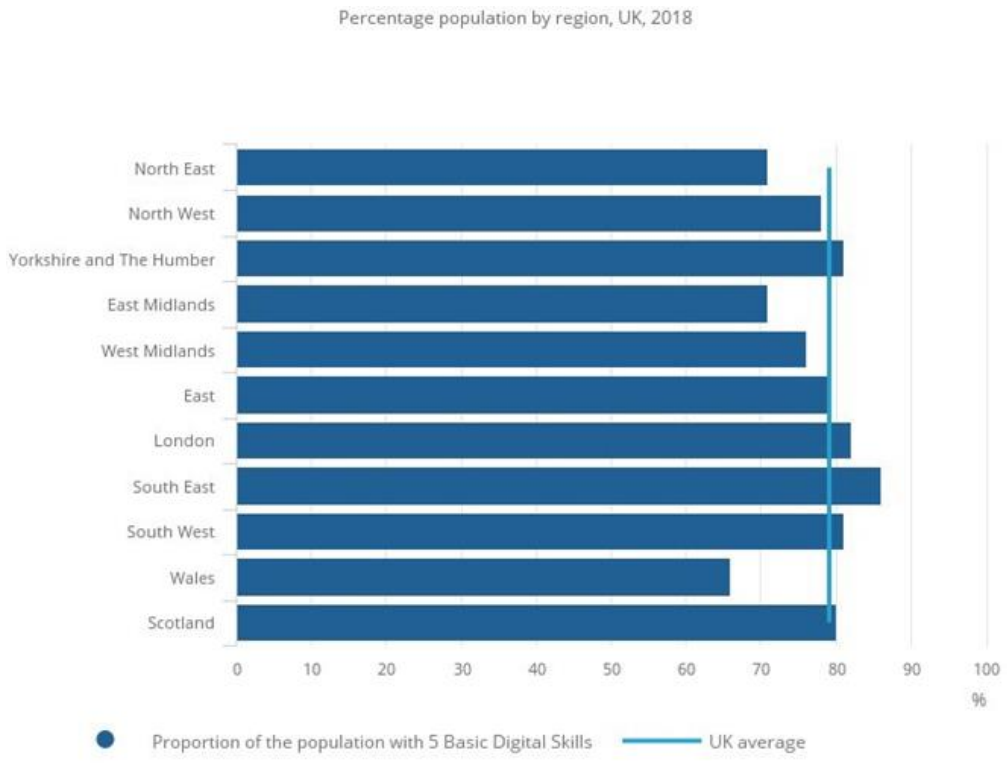
Very little quantitative analysis nor clinical care effectiveness or cost analysis bar the one Australian based research. This is astounding when this is realised that the government are blindly walking forwards promoting a clinical consulting method with no real analysis of its benefit or its harm. Clinicians are bound by their Hippocratic oath (Encyclopaedia Britannica, 2017) which is always at the forefront of their practice, this may be differing to the governmental plans when considering healthcare provision strategies.

Before delving deeper into the focused literature firstly the digital skills and use of technology to access health care in Wales is further discussed.

3.3 Digital skills in Wales

The Office of National Statistics and the National Survey for Wales have compiled data which is relevant to the question regarding the effectiveness of Telemedicine in Wales and exploring the digital exclusion, digital ability, and access to healthcare in Wales.

There are multiple pieces of work assessing and analysing the digital skills in Wales as a nation which overall are severely lacking in comparison to the rest of the UK according to these reports. To improve access to healthcare via a digital platform, digital skill training would be a prudent area to invest in for the nation.



Source: Lloyds Bank UK Consumer Digital Index, 2018

Figure 2. 'Regional Variation in the proportion of the population with the five basic digital skills' (Office for National Statistics, 2019).

The 2019 document 'Exploring the UK's Digital Divide' from The Office for National statistics explores and highlights the scale of digital exclusion and the barriers to digital inclusion. As well as when considering digital exclusion in respect to Wales. Exploring the UK's Digital Divide - Office for National Statistics. Ons.gov.uk. (2019) the UK Consumer Digital Index 2018 also shows, 'Wales had the lowest proportion of people with all five basic digital skills (66%)' as shown in fig.2 taken from the ONS and the 'highest proportion of those with zero basic digital skills (19%)'. This suggests that there is a significant digital divide in Wales in comparison to the rest of the UK, with a relatively large proportion of the population lacking basic digital skills.

Digital skills are paramount in the 21st century to enable people to live and work effectively, encompassing access to health information to financial management of the home. Those who are not digitally engaged, or proficient risk being left out regarding future developments in work and home life including access to healthcare.

The demographic composition of Wales as well as the landscape may be the reason for the digital divide and skills of the Welsh population. Factors such as age, education, occupation, and landscape are all contributing elements. Traditional farming communities of Wales may have previously had little necessity for digital skills in comparison to their physical and strategic skills for running the land. This is currently a very exciting evolving area where such businesses are exploiting the use of technology and innovation to improve their traditional business. There is also a disproportionate population of the elderly communities in Wales where many retirees move to from major cities to the countryside. This in turn can skew the statistics of digital skills in Wales.

The ONS reports highlight that to ensure all citizens can have the opportunity of societal participation then non-digital services need to be continued to be available. This could involve providing access to services in person or over the phone, as well as promoting the use of digital technology. From a prudent healthcare perspective this may be counter active to the cause of a digital first healthcare system where not only would

a workforce be needed for inhouse assessment and care, but there would also need to be an online presence of professionals serving the online community. This essentially would double the workforce and therefore make digital healthcare an added expense to the National Health Service instead of the intended solution to a reduced workforce and diminishing budget.

As longer-term goal it may be better to halt digital healthcare services until there is an increase in digital skills education and training of the Nation as well as adequate service coverage of internet, enabling the public to be fully equipped and happy in everyday life and use of digital technologies before potential harm caused to their health due to a fear of digital services or an inability to fully utilise it.

The National Survey for Wales provides insights of the data of personal internet use, the skills of the user and their engagement with public service websites during April 2019 – March 2020. The National Survey for Wales also touches on the Well-being of Future Generations (Wales) Act 2015. It demonstrates how the Welsh Government has been investing in digital health initiatives to improve access to service and there by improve patient care. (Accessing Information on Health and Wellbeing (National Survey for Wales): April 2019 to March 2020 | GOV.WALES, 2021)

There have also been efforts to improve the digital literacy of health care providers who were thrown into a completely new way of working due to the covid pandemic. Many Healthcare workers struggled to not only work and provide high level up to date clinical care they then needed to perform these skills via a new method of consulting and therefore had potential for reduced adoption of new technology.

Overall, the Welsh government's investment in digital health initiatives aim to improve:

- access to healthcare services,
- support patient care,
- improve the efficiency and quality of healthcare delivery in Wales.

As expected according to the National Survey for Wales, internet use increased during the coronavirus pandemic in Wales.

The report also states that the most visited public sector websites were those related to health which were ‘visited by 54% of internet users’. This demonstrates evidence that there is demand and a want for the Nation of Wales to access information regarding health online and this should be explored further and exploited for future generations.

Further analysis and reporting on the types of information which is accessed in regard to health and wellbeing was published in the report showing that ‘84% of people in Wales felt that they can access the right information, advice, and support when they are ill and in need of health care advice’ (National Survey for Wales): April 2019 to March 2020 | GOV.WALES, 2021). It was also noted that there is an increasing number of users using digital health care services, with ‘43% of people using online health information’ and ‘22% of people using virtual appointments’. This demonstrates increased uptake and utilisation of services available and is a change in the way health information is accessed by the public. ‘70% of the survey population also confirmed that they trust the information found online in regard to their health and wellbeing’ which suggests that people in Wales are trusting telehealth services.

However, there are still specific difficulties for personal access which are noted below from the survey.

- ‘16% of people say that they do not have access to the internet’.
- ‘10% of people say that they do not have the digital competencies to use online health modalities. (Accessing Information on Health and Wellbeing (National Survey for Wales): April 2019 to March 2020 | GOV.WALES, 2021).

As in Welsh farming traditions, essentially the seeds of telehealth in the Welsh NHS have been sewn but now needed to be nurtured and directed to harvest the best results possible for the future.

3.4 Review of main research papers of telehealth relevant to General Practise Service

Following the extensive searches and the vast number of articles which are currently available this report will concentrate on 5 main articles below which explore video consultations as a main medium of communication.

Table 2. Pertinent papers considered in the use of TM.

Authors	Year	Title	Purpose	Country	Study
Wanderås, M. R., Abildsnes, E., Thygesen, E., & Martinez,	2023	Video consultation in general practice: a scoping review on use, experiences, and clinical decisions.	Scoping review to summarise Video consultations worldwide.	UK	Scoping Review
Hammersley, V., Donaghy, E., Parker, R., McNeilly, H., Atherton, H., Bikker, A., Campbell, J., & McKinstry, B.,	2019	Comparing the content and quality of video, telephone, and face-to-face consultations: a non-randomised, quasi-experimental, exploratory study in UK primary care.	Comparison of quality of modality of consultations	UK	Qualitative & Quantitative Study
Mueller, M., Knop, M., Niehaves, B., & Adarkwah, C. C	2020	Investigating the Acceptance of Video Consultation by Patients in Rural Primary Care: Empirical Comparison of Pre-users and Actual Users	Discovering views of users of TH	Germany	Qualitative
Butler, D. C., Joshy, G., Douglas, K. A., Sayeed, M. S. B., Welsh, J., Douglas, A., & Korda, R. J.	2022	Changes in general practice use and costs with COVID-19 and telehealth initiatives: analysis of Australian whole-population linked data.	Consideration of cost analysis of TM	Australia	Qualitative & Quantitative Study
Salisbury, C., Quigley, A., Hex, N., & Aznar, C.	2020	Private Video Consultation Services and the Future of Primary Care	Review of private services	USA	Qualitative Study

A summary of the articles in respect to advantages and disadvantages of telehealth consultations is illustrated in Table 3.

Table 3. Summary Analysis of Pertinent papers.

Authors	Advantages	Disadvantages	Evaluation summary
Wanderås, M. R., Abildsnes, E., Thygesen, E., & Martinez,	• Increased access for housebound or remote patients. • Useful for triage and follow up appointments.	• Diminishing GP-Patient relationship • Limited use in non-pandemic times • No long term consensus of what should TH should be used for. • Medicolegal implications not clear in its use. • Technology failures common • User demographic young and simple queries – missing the older more complex presentations.	May be a role in future for Telehealth in General Practice however further work and definition of clinical suitability is needed.
Hammersley, V., Donaghy, E., Parker, R., McNeilly, H., Atherton, H., Bikker, A., Campbell, J., & McKinstry, B. ,	• Improved access for those working and living rural areas. • Time and travel advantages for the patient. • Time efficiency of TC and VC in comparison to FTF consultations • VC can overcome the TC non-verbal cue concern. • VC suitable for non-examination consultations	• Limited examination • Limited clinical scenarios when VC or TC would out rank FTF consultation for the same condition. • Patient – Doctor relationship • Non-verbal cues missed	May be a role in future for Telehealth in General Practice however further work and definition of clinical suitability is needed.
Mueller, M., Knop, M., Niehaves, B., & Adarkwah, C. C	• Improved access for patient in remote areas • Reduction of travel time and cost for patient and healthcare provider • Increased efficiency and productivity of physicians as able to see more patients in similar time scale. • Improved continuity of care. • Increased patient satisfaction due to convenience and flexibility of appointments.	• Limited ability for examination – leading to missed or delayed diagnosis. • Technical difficulties • Data protection concerns • Miscommunication due to missing nonverbal cues. • Limited technology infrastructure.	May be a role in future for Telehealth in General Practice however further work and definition of clinical suitability is needed.
Salisbury, C., Quigley, A., Hex, N., & Aznar, C.	• Majority of patients under 45 years of age – non complex health issues. • Ease of access to clinician • Reduced travel time for patient	• Equity of access to services by complex patients • Private service study demonstrates influence of insurance company and payment structure or disqualification from payment of services. • Only simple health concerns addressed. • Clinical safety, complexity and equality concerns.	The consideration of remote private services which cherry-pick young simple cases in comparison to the NHS which strives to be equitable to all patients and no barriers to entry of insurance cover or payment. Role for telehealth may indeed be for the young and non complex medical patient. If flexibility and quick access is a priority a payment scheme for such service may be of use in the Welsh NHS to alleviate the burden on struggling care systems.
Greenhalgh	• No advantages of TH discussed but does make suggestions to overcome barriers and perceived disadvantages.	• Perceptions that TH was advantageous to FTF consultation • TH consultations more demanding that FTF consultations for clinicians • Technical failures • Limited infrastructure • Lack of training • Medicolegal concerns	Further work needed to overcome the barriers perceived by clinicians and through training and readiness to accept innovation.

In Wanderas et al 2023, see Table 3, the article discusses how both the doctors and the patient can utilise video consultations and make sound clinical decisions using remote modality of consulting.

Potential benefits of using video consultations include increased access to healthcare for patients who are at elevated risk of infection or who live in remote areas, as well as the ability to provide out-of-hours and nursing home consultations. However, there are also some disadvantages such as the degradation of the GP-patient relationship, technological difficulties, and limited usefulness, these tie in with the Hippocratic oath of a physician and the ethical pillars of good medical practice.

Wanderas et al. 2023 concludes that further work is needed to research general practice and its use of video consultations as well as the possible consequences of creating a digital GP interaction and how this may erode the doctor-patient relationship.

The article highlighted that 'more than 88% of over 700 GPs felt that clinical decision- making was successfully achieved through Video Consultation (Wanderas et al. 2023)'. This is a huge positive for the use of VC in General practice however the quantification of what these clinical decisions were needs further exploration – it could simply be redirection to a FTF service and then creating a bottleneck of demand for services.

Wanderas et al. 2023 also explored the thoughts and feelings of GPs who were conducting video consultations and how they felt they were just as good or better as face-to-face consultations when assessing patients and the severity of their concerns.

Large numbers of surveying GPs were included in these studies and like similar other studies has similar outcomes however this was during an unprecedented time when extraordinary measures were in place in a bid stem the tide of the pandemic. Video consulting had its place and was useful, however post pandemic its' effectiveness and implementations may be limited and redundant. It would be interesting to repeat a cycle of the study post-pandemic times to evaluate the usage of VC.

Regarding user demographic which is explored in many of the papers in Table 1. Wanders et al 2023 demonstrated that video consulting was the favoured method of consulting by younger patients however there was no significant difference between male and female patients. They also noted no differences between population usage such as urban or rural patients – this would indicate the desired population of rural patients may not have been targeted as expected. There has also been a theme evolving that there was hope for the vulnerable and remote patients to benefit from increased access to healthcare via technology, this has not happened. They are still disadvantaged and less represented in the studies to date. Remote or and rural living in Wales is coupled with less digitally skilled residents and poor infrastructure. We are in danger of video consulting being most predominantly used by the worried well and the young who have grown to expect a quick and easy answer from many varying sources such as a professional to TikTok opinion of an influencer (Gordon, 2022).

As outlined above, even the basics of what can be safely assessed over VC is varying for every doctor. Video and remote consulting was alien in its approach to GP medical assessment and care prior to the pandemic and even now there are attempts at continuing to teach remote assessment in medical school curriculums however there is no clear consensus on what is safe and not safe to clinically assess.

Wanderås et al 2023, states the reduction in use of VC in general practice post pandemic days may demonstrate the choice of doctor to consult remotely or not. The traditional Face-to-face consultations in the surgery of past are felt to create strong GP-patient relationships, this relationship is thought of as the fundamental pillars general practice, these are instilled in medical education from day one of training and are rarely possible to build remotely (Department of Health and Social Care, 2021). The declining use of VC may indicate that these pillars are more important to GPs than the potential benefits of VC (Wanderås, 2023). This culture is an element that would need to be addressed for VC to become the primary modality of consulting.

For VC to be the mainstream modality of consulting, a culture change and review of perspectives of GPs and Patients must be addressed which leads to Mueller et al, 2020 research 'Investigating the Acceptance of Video Consultation by Patients in Rural Primary Care'. This study aimed to identify reasons which affect the use of remote consulting in primary care.

3.5 Benefits to VC

According to Mueller et al 2020 the potential benefits of using video consultation as a form of care delivery in rural areas include:

1. 'Improved access to healthcare for patients in remote areas who may have difficulty traveling to see a doctor in person.
2. Reduced travel time and costs for patients and healthcare providers.
3. Increased efficiency and productivity for healthcare providers, as they can see more patients in a shorter amount of time.
4. Improved continuity of care, as patients can see the same healthcare provider remotely over time.
5. Increased patient satisfaction, as patients may appreciate the convenience and flexibility of video consultations.' (Muller, 2020)

3.6 Drawbacks to VC

The potential drawbacks of using video consultation as a form of care delivery in rural areas include:

1. 'Limited ability to perform physical exams or diagnostic tests remotely, which may result in missed diagnoses or delayed treatment. Smart wearable technologies may be a solution to this type of drawback.
2. Technical difficulties or connectivity issues that may disrupt the video consultation.
3. Concerns about privacy and security of patient information transmitted over the internet.
4. Potential for miscommunication or misunderstandings due to the lack of nonverbal cues or physical presence. 'The hand on the door when leaving question' is often the most important and worry some question the patient may have but does not ask until just leaving.
5. Limited availability of video consultation in some areas due to lack of infrastructure or resources.' (Mueller, 2020)

Mueller et al 2020 were concentrating on perception and trust of Telemedicine and essentially concluded that those 'who had a higher level of health literacy were more likely to trust and use VC and those who trusted their GP who were familiar and confident with Telemedicine communication were more likely to embrace the technology' (Mueller, 2020). The acceptance and willingness to adapt to a change in how care is delivered is a significant contributing factor to successful adoption of a new technological approach to delivering healthcare. During the covid19 pandemic lockdowns readiness to change and perceptions of what was needed to be implemented was thrust upon the public with limited choice however now without these pandemic rules in place it returns to choose and willingness to trust and change the way in which healthcare advice is delivered in the future. As previously noted, the confidence and trust of the doctor and the patient both need to be aligned for innovative technologies to be adopted and used mainstream – again the pillars of general practice need to be considered and built upon to adapt to innovation and technology.

Hammersley et al. 2019, compared the media format of consultations, comparing video, telephone, and face to face consultations. Demonstrating how the use of video consultations are of greater clinical effectiveness than telephone consultations as patient nonverbal skills can be generally observed on video consultation however via telephone this is almost impossible to do. When patients are being assessed traditionally in the face-to-face modality all 5 senses of the doctor are in use as well as the '6th sense – of 'gut feeling' these are skills which are honed by the physician over years of training and experience which are then challenged by a change in consulting style and modality. Hammersley also noted like other studies noted in Table 3 that digitally based consultations can potentially improve access to appointments due to the flexibility of not needing to be physically present and so for working patients this can be a great advantage.

Hammersley et al. 2019, also noted like Wanderas et al 2023 that virtual consulting can potentially improve access to healthcare for patients who live in remote or rural areas, as they may not have easy access to a clinic.

3.7 Considerations to VC

According to Hammersley et al. 2019, they concluded that 'internet-based video consultations are suitable for conditions that do not routinely require contact examination' (Hammersley et al. 2019). However, the suitability of remote consulting is still in need of further analysis to review:

- Clinical complaint.
- Quality.
- Suitability of VCs for correctly assessing the varying conditions and always considering.
- Physicians training and skill in remote consulting.

For example, it is suggested that video consultations may be less effective than in- person consultations for certain types of conditions, such as complex or chronic conditions that require ongoing monitoring and management such as dementia - conversing with a computer screen may be distressing to a person with dementia when they were expecting a bed-side doctor review.

Overall, the suitability of video consultations for varying health conditions is likely to depend on a multitude of influences, including:

- Nature and severity of the condition.
- Patient's preferences and needs,
- Availability and quality of video consultation technology and support.

This gives the patient multiple options for the receipt of answers of their medical concerns.

If we were to consider a time in motion study regarding the comparison of the average Video vs telephone vs face-to-face consultation Hammersley et al. 2019 have already collated data which has been analysed and shown below (Hammersley, (2019).) they found that:

- 'The mean length of video consultations was 5.94 minutes (95% CI: 5.15 to 6.73), based on a sample of 45 consultations. The median length of video consultations was 5.42 minutes (SD: 2.63). Therefore, the average length of video consultations in this study was just under 6 minutes.
- The mean length of telephone consultations was 5.56 minutes (95% CI: 4.81 to 6.31), based on a sample of 53 consultations. The median length of telephone consultations was 4.93 minutes (SD: 2.72). Therefore, the average length of telephone consultations in this study was just over 5 and a half minutes.
- The mean length of face-to-face consultations was 9.61 minutes (95% CI: 8.34 to 10.89), based on a sample of 51 consultations. The median length of face-to-face consultants was 8.40 minutes (SD: 4.53). Therefore, 'the average length of face-to- face consultations in this study were just under 10 minutes.' (Hammersley, 2019).

The below data from Figure 3, if looked at as data and financial implications such as time and workforce provision and planning, conclusions could be made that telephone consultations are the way forward for access to healthcare advice in the community. However, every patient is individual as are their concerns and expectations of their condition and similarly the training, experience, and clinical ability of the physician. This is why the pillars of general practice are so important to the patient-doctor relationship and why governments should take the guidance from patients and clinicians over statistics and data. A headache may be a headache, or it could be the beginning of a long-term fatal health condition. AI assessment or triage bots at present cannot determine between the two reliably, whereas a GP with experience and knowledge or 'gut feeling' can on more occasions be further reliable at diagnosing and treating the condition correctly, this may change in time, but clinical safety is paramount. Such as trials in radiology interpretation with AI technology which at present is not as reliable as highly skilled radiologists (Oren et al., 2020).

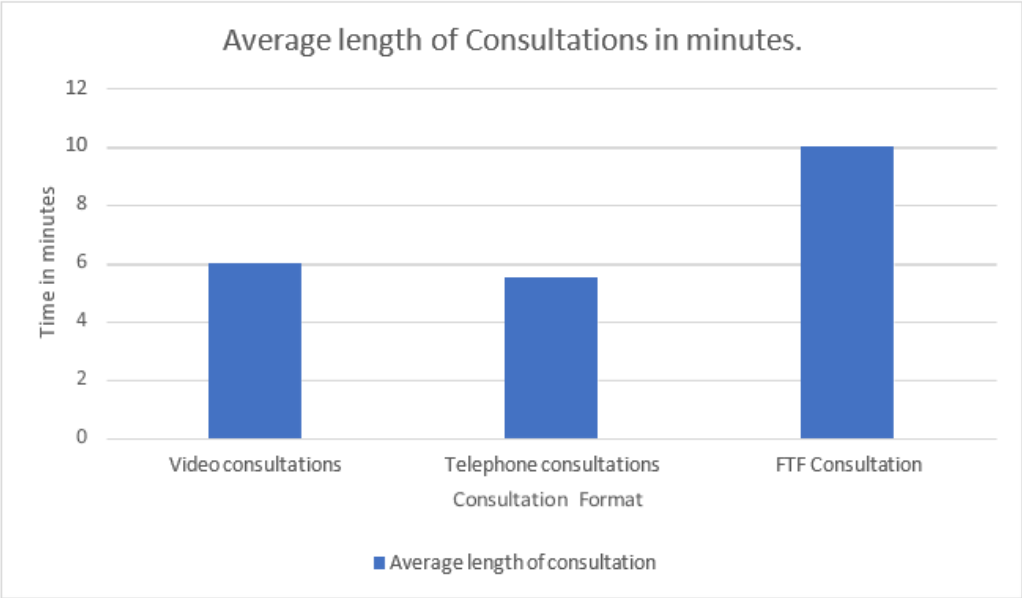


Figure 3. Tabular expression of Hammersley et al., 2019 data set of average consultation time per consultation format.

Leading on from Hammersley et al, 2019, Greenhalgh et al, 2022 has contemplated "Why GPs rarely do video consultations: A qualitative study" provides an in-depth analysis of the reasons behind the low uptake of video consultations in general practice in the UK. The study is based on qualitative research conducted with GPs, practice staff, and national stakeholders, and it highlights several barriers to the adoption of video consultations:

- 'The perception of clinicians that the advantages of video consultations over existing practices were minimal.
- Physicians declared that they felt VC's to be mentally draining in comparison to face to face or telephone consultations.
- Technical failures.
- Limited infrastructure.
- Lack of training and workflows to accommodate video consultations into business-as-usual.
- Some clinicians were anxious about the medicolegal concerns associated with video consultations.' (Greenhalgh et al. 2022)

Clinicians were described in their attitudes to clinical risk as 'anxious' to 'over-confident'. This is representative of the culture and nature of the profession where the skills and experience of the Doctor are individual and based up their education, experience, and the unique patient -doctor interaction.

Greenhalgh et al. 2022 suggests several potential solutions to increase the uptake of video consultations in general practice.

Potential solutions to barriers of GP's adopting video consultations as per Greenhalgh et al. 2022:

- 'To provide more training and support for clinicians to help them integrate video consultations into their practice.
- Providing support for clinicians to develop workflows that accommodate video consultations into their business-as-usual could help to increase the uptake of this technology.
- Address the technical barriers to adoption, such as limited infrastructure and technical failures.
- Providing technical support to clinicians could help to address technical failures and increase the reliability of video consultations.
- Addressing perceptions of usefulness of VCs with patients and doctors.' (Greenhalgh et al. 2022)

3.8 Why the Private Remote GP model of care is not fit for purpose in the Welsh NHS

Video consultations modalities are not widely used in the NHS however appear to be thriving in the private sector, where there is an opportunity to capitalise on the young and non-complex patient.

This is now proving to be less than profitable as expected by investors and companies such as 'GP at hand (a remote GP service)', and Babylon who are now entering talks to sell their practices and online consultation platforms as it has proven to become non profitable area of healthcare provision in the UK (Digital Health.com, 2023).

The controversy surrounding privately provided video consultation services for primary care is multifaceted.

1. That these services may not be as safe or effective as traditional face-to-face appointments.
2. Patients may not receive the same level of care or attention as they would in person consultation.

These concerns exist in the private sector as well as the National Health Service.

Another concern is that these services may prioritise speed of access over continuity of care. In many private online consulting services, continuity of care is actively publicised as something which is not part of their service. Episodic care is often the phrase coined for such online providers. Patients may be able to get an appointment quickly, but they may not see the same doctor each time, not have access to their full medical notes as would their NHS registered GP which could make it harder to build a relationship and receive consistent care. There is also a worry that these services could exacerbate existing staff shortages in general practices. Private companies offering video consultations currently compete with traditional practices for doctors and other healthcare professionals, making it harder for some practices to stay afloat in the NHS. In the UK and especially in Wales there is a broader concern that the privatisation of healthcare undermines the founding principles of the NHS which is the pride of the UK and will be greatly missed if appropriate management and change with the changing needs of the population it serves are not tackled. Some worry that these services could lead to further fragmentation of care, with patients receiving varying levels of care depending on their ability to pay for these services. So that the nation not only has to struggle to access care, of which the GP is the secondary care gatekeeper but also then must potentially be concerned with paying for services which have previously been free at the point of access.

According to Salisbury et al 2020, they concluded that only a small proportion of patients who are registered with the online provider are over 70 years of age – '0.28% vs 12%' (Salisbury et al. 2023) in the average traditional surgery. They also note that most patients registered with such remote practices are generally under the age of 45. When reviewing these registration ages, it can be deduced that remote GP services are more likely to be used by younger patients with non-complex concerns as opposed to complex poly-pharmacy concerns of the elder generation. Concerns of the ability of patients to access healthcare concerns as were put forth at the conception of the NHS would therefore be questioned with a remote only or digital first approach.

This could lead to a "two-tiered" healthcare system, with privately insured patients receiving perceived better care than those who rely on public services or insurance. Moreover, there are concerns that these services may not be accessible to all patients, particularly those who are older or have more complex healthcare needs. For example, older patients may be less comfortable with technology or have difficulty hearing or seeing during a video consultation. Patients with complex healthcare needs may require more comprehensive care than cannot be provided through a video consultation and may need to see a specialist or receive in-person care. Overall, the potential consequences of remote services being utilised for the future of primary care are complex and multifaceted which need to be approached with care of the nation's health and wellbeing firmly at the heart of any analysis or future developments.

4 Conclusion

On review of the current expansive research available which is extensive however is also limited regarding general practice telemedicine, in reference to point 1.1 of the introduction of this report it is apparent to say that there is no clear consensus at present as the effectiveness nor the clinical safety of the use of telemedicine as an effective method for delivering care to the nation of Wales.

During the Covid 19 pandemic there was a need for quick adaptation for safety of patients and carers to be able to still address health care needs, however now that the pandemic and lockdown situation have abated the need for clear scrutiny of clinical and cost effectiveness needs to be further evaluated.

From this report we can conclude that healthcare providers should focus on:

- Improving patients' trust in the technology and their GP, as well as their health literacy, to increase the adoption and continuous use of VC.
- Patients should be involved in the choice of modality for their consultation as well as the clinician. From this data a database of preferred appointment conditions could be formulated, this links back to point 1.2 of the introductions of this report where there is scope for capitalisation and competition to be exploited in the future instead of the hit and mis approach which is currently in action and proving to be less than profitable for companies such as Babylon.
- Digital technologies such as video consultations may have a role to play in improving access to care and supporting self-management, but their implementation needs to be carefully evaluated to ensure that they are effective and safe.

These sentiments are echoed by multiple other studies and yet this does not appear to have been considered for the future or even how this evaluation may occur. There are no definitive answers on how consultations in primary care might be best conducted in the future. However, there is a consensus that video consultations may have some precedence for patients who are working during surgery hours as well as those with mobility restrictions due to health or environment.

There is a need for a more nuanced understanding of the barriers to the adoption of video consultations in general practice. Policymakers and governmental bodies need to work together to address the technical, cultural, and organizational barriers to adoption and build upon the momentum of VC in the UK.

5 Key Recommendations

Key recommendations regarding the research question for this report 'Is there a role for telehealth in the primary care setting of the Welsh NHS?'.

When considering the main articles of this report there is a clear viewpoint that:

1. Further investment in education of digitals skills is required on a national scale.
2. Improvements to digital infrastructure is paramount to adhere to equity of all persons regarding access to digitally delivered healthcare service as per the NHS founding ethos.
3. Addressing the public culture and trust of remote services, perceptions, expectations of how care can be delivering in the future is needed.
4. Ensuring that persons who are vulnerable and digitally excluded are supported ensuring that they are not at a disadvantage with a digital first approach to health care in the community.
5. Exploration and sound evaluation of clinical safety and effectiveness of digitally provided consultations.
6. Fiscal analysis of sustainability of virtual consultations vs in person consultations is required in Wales. Clarity is needed regarding the medicolegal role in remote consulting, what was accepted during the pandemic may not be appropriate post-pandemic.
7. Clear guidance on conditions which are clinically safe to be addressed in a non- face to face capacity.

5.1 Solutions to Barriers of Virtual consulting:

- Development of digital platforms to enable a seamless and 'business as usual' workflow for general practice, there is currently too much variation and no clear front runner in digital healthcare platforms.
- Development and improvement of digital infrastructure across the country.
- Enabling choice of services for vulnerable and technically challenged people.

One of the clear improvements and guidance which have become evident on review of the current literature is the skilled determination of a general practitioner to evaluate risk of the concern of the patient. This must be the aim of triage:

1. To determine the risk of the concerns.
2. How it may be addressed.

3. If this can be addressed remotely or if a in person appointment is required to facilitate the safe treatment of the patient.

Through evaluation and learning that this report has highlighted below is a suggestion of common presentations which could be dealt with by a remote NHS GP via telephone or video consultation on the proviso that the clinician had adequate training and evaluation in their remote skills.

6 Proposal of remote appointment types in NHS which appointments can be dealt with as a telephone or video consultations. (Depending on the skill level of the physician)

- Medication reviews – with prior crucial information such as up to date blood tests, blood pressure, pulse, height, and weight documented.
- Discussion of results that do not require physical examination to make a clinical plan.
- Menopause discussions and prescribing.
- Contraception discussion and prescribing.
  - Note these conditions are not labelled as 'Women's Health' as this would imply physical examinations also.
- Mental health reviews – new and ongoing presentations.
- Sick notes.
- Acute illness which are out of the scope of allied health professionals.
- Simple urinary tract infections.
  - May still end up in FTF consultation.
- Sore throat
  - May still end up in FTF consultation.
- Cough
  - May still end up in FTF consultation.
- Rashes – provided image are uploaded to medical record prior to consultation.
- Medication advice

These suggestions are not exhaustive however are a starting point as guidance of what can be addressed remotely with no added technology that is already at the disposal of the clinician. The most important aspect of remote working is the teamwork of the clinical and administrative team to create a safe environment for the most advantageous treatment of the patient.

7 Key Learning from this project

Communication of remote GP is vital to work safely and efficiently – Teamwork is key from the physical site team, patient, and remote GP.

See diagram below of representation of how remote services can be ran and enhance the Welsh NHS for future generations.

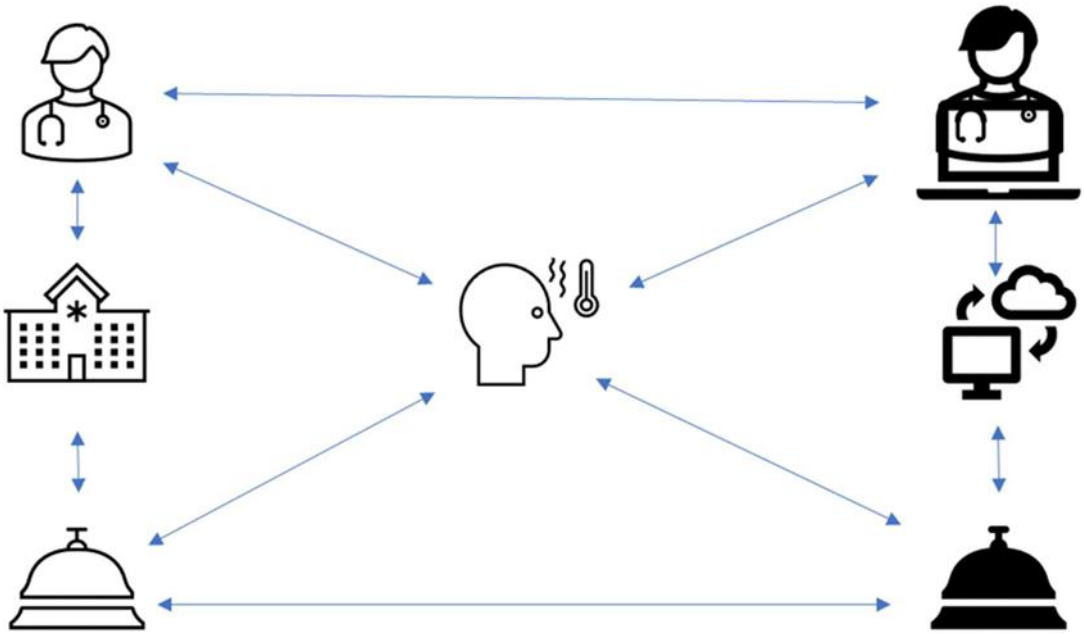


Figure 4. Remote Services to enhance the Welsh NHS for future generations.

Dedicated administration team member to co-ordinate with remote clinical staff throughout the day or shift.

Use of computer systems to send and receive dedicated – auditable tasks, for example checking of blood results, clinical letters, writing of referral letters.

Clear notification to remote clinician of the in house / physical team for capacity if triaging face to face appointments or home visits.

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IMPACT OF INTENSIVE LEARNING ACADEMIES ON PROFESSIONAL LEARNERS IN SWANSEA UNIVERSITY

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Abstract:

Background: As educational paradigms continue to evolve, intensive learning academies have emerged as a promising model to enhance professional education. This study investigates the impact of intensive learning academies on professional learners at Swansea University. The background section provides context for the growing importance of continuous professional development and the role of intensive learning academies in meeting the dynamic needs of professionals in various fields.

Method. Qualitative data was gathered through in-depth interviews, offering insights into the lived experiences of professional learners participating in these academies.

Findings: The findings reveal a positive correlation between intensive learning academies and professional development. Participants reported significant improvements in skills relevant to their respective fields. The transcript data underscored high levels of satisfaction with the academy format, emphasizing the immersive and collaborative learning experiences. Qualitative data illuminated nuanced aspects, including increased confidence, networking opportunities, and a heightened sense of adaptability among professional learners.

Conclusion/Recommendations: In conclusion, the study indicates that intensive learning academies at Swansea University have a positive impact on the professional development of learners. Recommendations include expanding the range of intensive learning programs, incorporating more hands-on experiences, and strengthening the integration of industry-relevant content. Moreover, fostering a supportive community and leveraging technology for flexible learning options are suggested to enhance the overall effectiveness of intensive learning academies for professional learners at Swansea University. This research contributes valuable insights for educational institutions seeking to optimize the impact of intensive learning initiatives on the professional growth of their learners.

Keywords: Intensive Learning Academies, Professional Learners, Swansea University.

Tables and Contents

1 Introduction

In the dynamic health and social care sector of Wales, the significance of continuous education and professional development cannot be underestimated. Empirical evidence from local studies underscores the transformative impact of ongoing learning on patient care and healthcare outcomes (Islam, Muhamad, & Sumardi, 2022). According to Groönroos (1982), two factors will determine the perceived complete quality of a service: what the client expects from the service and how the service is carried out in terms of its technical and functional characteristics. Hence it is imperative to remain innovative in healthcare practice. Beyond its direct impact on patient care, continuous education also yields substantial benefits for the sector. This indicates that a well-trained and motivated workforce is essential for addressing the challenges faced by the health and social care sector in Wales. Healthcare is becoming increasingly challenging to manage as insufficient and less effective services struggle to meet the rising demands of an aging population with chronic diseases, necessitating continuous delivery of improved medical treatment standards due to elevated living standards and expectations (Bakan, Buyukbese & Ersahan, 2014; Farahani et al.,2018).

"A Healthier Wales: Our Workforce Strategy for Health and Social Care" is a comprehensive approach to building a skilled and compassionate health and social care workforce. By focusing on recruitment, training, collaboration, diversity, leadership, innovation, and well-being, Wales can ensure its workforce is equipped to meet the challenges of the future. Embracing the principles outlined in the strategy will lead to a stronger healthcare system that delivers high-quality care to the people of Wales (WG, 2018; WG, 2023). The health and social care sector in Wales are constantly evolving, with innovative research and technologies emerging at a rapid pace. Embracing these advancements allows professionals to deliver cutting-edge and patient-centric services, positioning Wales at the forefront of healthcare innovation.

> *"Learning is the process through which experience causes permanent change in knowledge or behaviour"* (Woolfolk et al., 2012).

Professional learning refers to the continuing process of acquiring new knowledge that is pertinent to one's line of work. It encourages personal development, advances competence, and gives people the power to stay current with industry trends. Benefits include enhanced productivity, elevated job satisfaction, and greater adaptability (Vadivel, Namaziandost, & Saeedian; 2021). Individuals may improve their careers and contribute to their organizations more effectively by investing in professional learning, which eventually creates a workplace that is more innovative and dynamic. In a study on Librarians in Pakistan, Shahzad, & Khan (2023) came to the conclusions that, CPD and employee motivation are key indicators of successful job performance and a good degree of job satisfaction. To motivate librarians to provide value-added services using growing technological tools and to raise their level of job satisfaction, motivation is a crucial factor.

The Welsh government is dedicated to fostering continuous professional learning and development through a range of initiatives. These programs aim to empower individuals in Wales to acquire new skills and knowledge, benefiting both their personal growth and the wider economy (WG, 2023). By participating in these initiatives, professionals gain access to training opportunities, workshops, and resources tailored to their career objectives and industry demands. The government's investment in professional learning contributes to a more skilled and adaptable workforce, the Welsh Government invested nine million pounds (£9m) into creating Intensive learning academies that would be the first of their kind as announced by The Minister for Health and Social Services Vaughan Gething which will boost employability and driving economic growth in the region (CVUHB, 2021). These efforts also nurture innovation and competitiveness across various sectors, positioning Wales as a center for cutting-edge expertise. The emphasis on lifelong learning ensures businesses and industries are well-prepared to navigate dynamic market conditions. Addressing skill gaps and reducing unemployment, these initiatives promote social mobility and foster an inclusive and prosperous society. Minister for Health and Social Services, Vaughan Gething, said:

> *"Transformation and new ways of working have never been more important following the COVID-19 pandemic. We have already seen over the last year how the response to the virus has brought the best out of our NHS and social care services, who have worked tirelessly to adapt and innovate throughout. We want to continue this momentum, with the new academies looking at new ways to improve patient experiences and outcomes, while also increasing innovation and sustainability in our health and care services"* (CVUHB, 2021).

To achieve the above, the Welsh government created four Intensive Learning Academies that would revolutionize healthcare.

1.1 Welsh Government Intensive Learning Academies

In 2020, four (4) ILAs were established. Intensive Learning Academies (ILAs) in Wales are on the cutting edge of education, especially in health and social care. Backed by Swansea University, Bangor University, University of South Wales, and the Welsh Government, these academies offer more than just traditional courses (Life Sciences Hub Wales, n.d). Consider them as trailblazers, leading the way. They stand at the forefront as the world's pioneers in offering specialized credentials focused on "value-driven innovation," nurturing a fresh generation of leaders equipped with the expertise to enhance healthcare and social services for all.

Each ILA offers a comprehensive package, including world-class educational programs, cutting-edge research, and tailored consultancy services. The ILA initiative aligns with Wales' pioneering approach outlined in 'A Healthier Wales,' aiming to cultivate the transformative leadership necessary to address the challenges faced by the global health and social care sectors.

The ILA Academies include:

- The 'Value-Based Health and Care Academy' at Swansea University, focusing on research and consultancy in this field.
- Bangor University's 'ALPHAcademy' which was recently renamed Academy for Health, Equity, Prevention, and wellbeing (BU, 2023) promotes preventative health and addresses health challenges within an integrated ecosystem.
- The 'All-Wales Intensive Learning Academy for Innovation in Health and Social Care (IHSC),' developed with collaboration, emphasizes innovation and transformation in health, social care, and the third sector.
- The 'Leading Digital Transformation Academy' at the University of South Wales caters to digitally focused leaders.
- Nevertheless, these Intensive Learning Academies (ILAs) go beyond merely imparting theoretical information. They provide immersive experiences where participants work on real projects, overcome legitimate challenges, and get advice from eminent experts working at the forefront of their respective fields. They are fundamentally practical. Once concluded, the outcome is more than just a certificate; it also includes an arsenal of skills that have the power to profoundly change the way that people live their lives and produce real-world transformations.

They are not just teaching; they are inspiring a new generation of thinkers and leaders who are ready to tackle today's and tomorrow's challenges. With scholarships available and flexible learning options, they're open to anyone passionate about making a difference. Courses provided by the ILAs range from master's degrees to doctorate-level opportunities, and even short expert courses. Applications are welcome from individuals within global health, social care, and life sciences systems, offering case-based learning applicable to various organizations. Scholarships are available for those within the health, social care, and third sectors in Wales (LSHW, n.d).

In essence, the ILAs are driving a paradigm shift in health and social care education and practice, equipping professionals with the skills and knowledge needed to lead innovative change and tackle future challenges effectively. The ILAs' commitment to nurturing innovative leaders, advancing research, and driving meaningful change aligns with Wales' forward-looking approach to health and social care transformation. As a partner in promoting innovation, Life Sciences Hub Wales endorses and promotes these academies, recognizing their potential to shape the future of healthcare.

This paper would focus on the ILA initiated courses offered by Swansea University namely:

- Advanced health and care management (Value based) MSc pathway.
- Advanced health and care management (Innovation and Transformation) MSc pathway. These programs are spearheaded by the 'Value-Based Health and Care Academy and the 'All-Wales Intensive Learning Academy for Innovation in Health and Social Care (IHSC) respectfully.

It aims to assess how the ILAs have impacted on the professional learners taking these courses and how their work lives have changed.

2 Literature Review

In recent years, the health and social care business has been subjected to significant shifts and challenges, necessitating a continued focus on education and professional development for the workforce in these fields. The benefit of continuous education is becoming more apparent as the healthcare environment evolves. This is true not only to enhance the quality of care provided to patients but also to satisfy the diverse needs and requirements of the population. The purpose of this literature review is to study the role that programs for Continuous Professional Development (CPD) and Lifelong Learning (LLL) play in shaping the workforce in the Welsh Health and Social Care sector, with a particular focus on the impact that Advanced Health and Care Management courses have.

2.1 Continuous Professional Development as well as Lifelong Learning

Continuous Professional Development (CPD) and Lifelong Learning (LLL) are important aspects of modern healthcare since they ensure practitioners stay current on evolving advancements (Nanayakkara et al.,2022). According to the findings of a survey conducted by the Health and Care Professions Council (HCPC) in the United Kingdom, an overwhelming majority of healthcare professionals (89%) agree that continuous professional development (CPD) has a positive impact on their work. In addition, Karas et al. (2020) found that 94% of respondents agreed that CPD increased the quality of patient care. This demonstrates the universal acceptance of CPD's importance in sustaining competence and enhancing patient outcomes.

Research published in the *"Journal of Nursing Management"* supports the effect of CPD. According to the findings, nurses who participated in regular CPD expressed higher confidence in their skills and decision-making abilities (Hakvoort et al., 2022). As a result, patient care and safety have improved. Data from the Organisation for Economic Cooperation and Development (OECD) highlights the impact of Lifelong Learning (LLL) on worker adaptability. 78% of people in OECD nations engaged in learning in 2021, demonstrating a commitment to remaining current in an ever- changing environment (OECD, 2022). Furthermore, the Institute of Medicine identified a link between education and improved healthcare outcomes, finding that nurses with a greater education degree had lower patient death rates. This indicates the concrete effect of ongoing education on patient safety.

2.2 The Transformative Impact of Education on Healthcare Practice

A plethora of empirical data supports the transformational influence of continual education on healthcare practice. Raghupathi and Raghupathi (2020) performed local research that studied the relationship between skill development and ongoing education, indicating that 87% of healthcare workers reported better patient care outcomes after engaging in organized training programs. This represents a direct connection between education and improved healthcare practice in the local setting. Furthermore, worldwide research supports the idea that ongoing education is critical in tackling the issues provided by an aging population and rising demands. A study published in the "Journal of Healthcare Management" examined healthcare organizations worldwide and discovered that those with a strong emphasis on professional development had a 28% lower rate of medical errors than those with limited training opportunities (Ferreira et al., 2023). This considerable decrease in mistakes demonstrates the power of education to promote safer and more effective patient care.

Research by Pugh et al. (2021) on accepting new treatment procedures among healthcare professionals highlights the importance of education in skill development. According to their results, practitioners who participated in continuous education were 35% more likely to use new procedures, resulting in better patient outcomes and a 15% drop-in hospital readmission rates. The link between continuing education, skill development, and better patient outcomes emphasizes the need for healthcare workers to constantly update their knowledge and abilities to meet the changing needs of an aging population and heightened expectations.

2.3 Interdisciplinary Collaboration and Innovation

Interdisciplinary cooperation is a critical component of successful healthcare delivery, significantly influencing patient outcomes and healthcare innovation. Recent efforts in the Welsh healthcare environment demonstrate the need for teamwork. The strategy framework "A Healthier Wales" (2018), aiming at improving the nation's health and social care systems, displays a commitment to cooperation as a way of meeting complex patient requirements (Worthington, 2020). The Welsh Government's (WG) innovation plan

(2022) is equally important, emphasizing the critical significance of collaborative practices in advancing healthcare improvements (WG, 2022).

Statistics support the good effects of multidisciplinary teamwork. Research published in the "Journal of Interprofessional Care" found that collaborative healthcare teams reported a 30% decrease in medical mistakes compared to those with less coherent communication patterns (Rosen et al., 2019). This decrease in mistakes protects patients and leads to significant cost savings for healthcare organizations. In addition, embracing advances in research and technology via multidisciplinary cooperation leads to patient-centered treatment that aligns with current norms. According to an Institute for Healthcare Improvement (IHI) study, 89% of healthcare professionals indicated that collaborative efforts aided in adopting evidence-based practices (Gotham, Paris, and Hoge, 2022). This statistic emphasizes the transformational power of teamwork in converting research findings into concrete benefits in patient care. The figures highlight the importance of cooperation in delivering patient-centered care and fostering healthcare innovation by reducing medical mistakes and facilitating evidence-based practices.

3 Methodology

This section outlines the methodology employed to investigate the influence of advanced health and care management on professional learners. The research design, participants, data collection methods, data analysis procedures, and ethical considerations are described in detail. In the research methodology, thematic analysis served as the analytical framework for examining the collected data, and Nvivo software facilitated this process. Thematic analysis is a qualitative research method that involves identifying, analysing, and interpreting patterns of meaning ('themes') within data sets (Nowell et al., 2017; Braun & Clarke, 2006). This approach allows for an in-depth exploration of complex phenomena, adding layers of understanding that might be less accessible through other methods. Nvivo is a qualitative data analysis (QDA) software that aids in the organization, coding, and interpretation of unstructured data. It enhances the efficiency and rigor of qualitative research by providing tools for coding, text retrieval, and thematic and content analysis (Bazeley & Jackson, 2019; Paulus et al., 2017).

3.1 Research Design

A qualitative research approach was adopted to gain an in-depth understanding of the influence of advanced health and care management on professional learners. This research approach was adopted in this study because it allows for the exploration of complex phenomena in naturalistic settings, enabling the researcher to delve into participants' perspectives, experiences, and interpretations (Islam & Aldaihani, 2022).

3.2 Participants

The participants for this study were selected using purposive sampling, targeting individuals who were actively engaged in advanced health and care management training programs. A diverse range of participants from various healthcare disciplines, educational backgrounds, and stages in their careers were included to capture a comprehensive picture of the phenomenon under investigation. Participants were approached through educational institutions, professional networks, and online platforms.

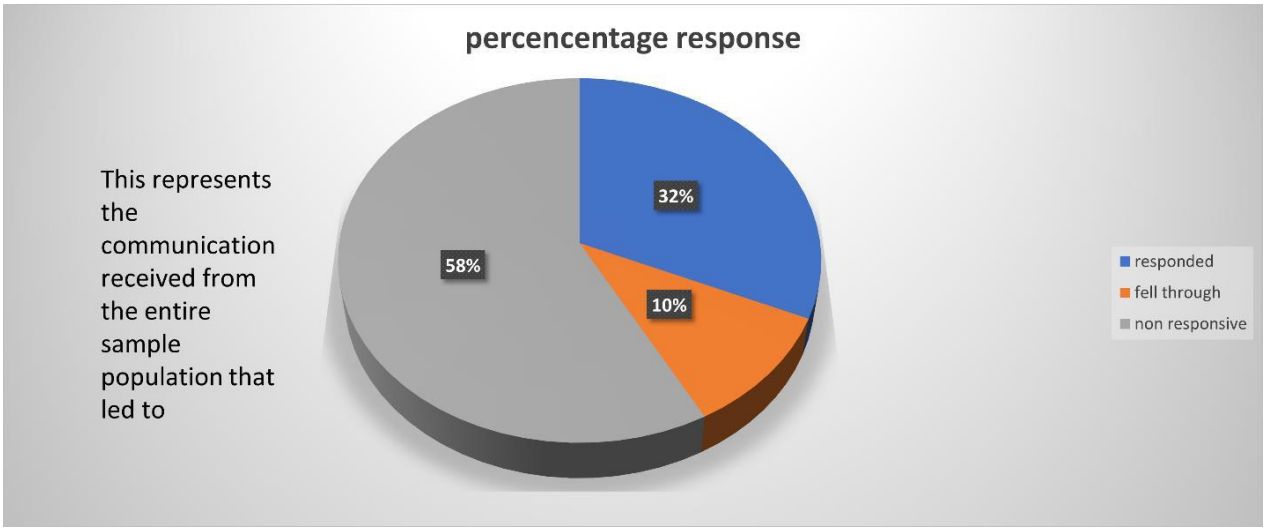

Figure 1: Pie chart showing participation levels in percentages.

3.3 Semi-Structured Interview Questions and Exploration of Impact

The interview questions used for this research serve as a strong foundation for revealing the complex interaction between education, practice, and the growth of the healthcare workforce. These questions include a comprehensive approach to understanding how education, specifically Advanced Health and Care Management Msc, contributes to developing talented and motivated healthcare workers in the Welsh Health and Social Care sector. See Appendix 1 for interview questions.

These questions, which begin with introductory queries about the interviewee's history and position in healthcare, provide the groundwork for a deeper investigation. The question concerning the motive for pursuing Advanced Health and Care Management courses provides insight into the individual motivations driving professional growth. It reveals the goals that drive healthcare practitioners' educational decisions, laying the groundwork for understanding the larger influence of education on their practice.

The following questions about the interviewee's experience with modules and delivery methods give a more detailed insight into how education is absorbed and assimilated. The follow- up questions go to the heart of what portions of the lesson were most effective and pleasurable. This method reveals the practical components of information transmission and the emotional and intellectual involvement created by education.

The relationship between education and the workplace is further examined via questions to determine the modules' applicability to real-world healthcare settings. This investigation on the practical application of learned knowledge tackles how education translates into actual changes in patient care, thereby bridging the theoretical and practical divide.

Furthermore, the interview questions concentrate on skill improvement, frameworks, and principles, examining how these parts of schooling have been incorporated into the interviewee's everyday practice. This investigation emphasizes the objective of developing healthcare professionals who are not only prepared with academic knowledge but also with practical tools that directly influence their job.

The interview questions used for this research show a thorough approach to comprehending the complex interaction between education, practice, and workforce development. These questions seek to elucidate the complexities of how Advanced Health and Care Management MSc influences healthcare workers' views, abilities, and contributions within the UK Health and Social Care sector via a deliberate and systematic investigation.

In the realm of professional development, CPD significantly influences the nursing workforce, evident from research such as Hakvoort et al. (2022). Their study underscores CPD's role in enhancing nursing professionals' skills and competencies. Yet, an unexplored niche exists in the literature, specifically regarding ILAs, notably IHSC, and their impact on the broader Welsh Health and Social Care workforce.

While Hakvoort et al. (2022) provide insights into CPD's effect on nursing, the distinct contribution of ILA-based education to the Welsh healthcare context remains untapped. The lack of research comprehensively analyzing the varied implications, outcomes, and adaptations resulting from ILAs, including IHSC, accentuates this gap.

This study embarks on an exploration of the intricate interaction between ILAs, particularly IHSC, and the evolving Welsh Health and Social Care workforce. By investigating ILAs' influence on workforce dynamics, skill augmentation, and the adoption of innovative practices, this research aims to bridge the existing gap in scholarly understanding. Ultimately, it aspires to offer a comprehensive portrayal of ILAs' integration into the Welsh healthcare sector, thereby presenting crucial insights to inform policymakers, educators, and practitioners.

3.4 Data Collection

Semi-Structured Interviews: Panel and Individual Interviews: A methodology employing both panel and one-on-one semi-structured interviews was adopted to gather qualitative data from participants. To maintain uniformity while accommodating participants' individual viewpoints, a semi-structured interview guide was designed following best practices outlined by Turner (2022). The focus of the interviews was threefold: to examine participants' experiences in advanced healthcare and care management education, to assess its perceived influence on their career development, and to understand any discernible shifts in their healthcare practices following the educational intervention. These interview styles align with the structured qualitative research paradigms identified by Kvale and Brinkmann (2018).

Observations: In addition to interviews, participant observations were conducted in relevant educational settings, workshops, or training sessions. These observations aimed to provide contextual insights into how advanced health and care management concepts were being integrated into the participants' learning experiences.

Interview and Transcription: The interview was multimodal (physical and online). While the online interviews were conducted in zoom platform, the physical interviews were recorded using media suite in the Bay Campus of Swansea University. There was a total of six (6) interviews done before reaching saturation point. These were transcribed using the grain application (www.grain.com). Furthermore, the transcripts were cleaned and encoded using NVIVO. The pie chart from Figure 1 shows the responses gotten from the cohort.

The sample size was nineteen (19) from which we were able to process six (6) responses which led to interviews and were eventually transcribed for data, two (2) responses fell through due to unforeseen circumstances and unfortunately could not be used as part of the research.

3.5 Data Analysis

The analytical process was conducted in the following steps: Data familiarization, Initial coding, Theme identification, Theme review, Theme definition, and finally Reporting Thematic analysis was employed to analyze the collected data using NVivo.

3.5.1 Familiarization

In this initial phase of our research, the research team focused on becoming intimately acquainted with the dataset. This process involved a systematic approach, wherein we engaged in repeated readings of transcripts and meticulously reviewed observation notes. Through these immersive encounters with the data, we aimed to establish a solid foundation for our subsequent analysis, enabling us to discern underlying patterns, themes, and noteworthy outliers. This initial step is pivotal as it sets the stage for a more profound exploration of the dataset, aligning with our research objective of uncovering meaningful insights. The familiarity gained during this phase will serve as our compass as we navigate through the intricate details of the phenomena under investigation.

3.5.2 Initial Coding

In this phase, our approach was to systematically code the data. Our objective was to identify recurring patterns, themes, and concepts that pertained to the influence of advanced health and care management on professional learners. Through a structured coding process, we aimed to categorize and organize the data, allowing for a more focused and in-depth analysis of the emerging themes and their relevance to our research objectives. This systematic coding approach served as a critical bridge between the raw data and

the subsequent analytical stages, enabling us to distill the richness of the dataset into coherent themes that would form the basis of our study's findings.

3.5.3 Searching for Themes

Following the initial coding process, the next step involved organizing the codes into potential themes. This categorization was driven by their relevance and significance to the research objectives. Codes that shared commonalities or conveyed related concepts were grouped together, allowing us to start identifying overarching themes within the dataset. This phase aimed to distill the coded data into more comprehensive patterns and insights, providing a structured framework for our subsequent analysis. It involved a meticulous examination of the relationships between codes and a critical assessment of their alignment with the research's central goals. The outcome of this step served as a foundation for the deeper exploration of these emergent themes, which played a pivotal role in shaping the narrative of our study and uncovering the insights related to the influence of advanced health and care management on professional learners.

3.5.4 Reviewing Themes

Once the initial themes were identified, they underwent a critical review and refinement process. This phase involved collaborative discussions between two researchers to ensure the coherence and alignment of the identified themes with the research questions and objectives. During these discussions, the researchers assessed the themes for their consistency, relevance, and depth. Any discrepancies or ambiguities were addressed through iterative dialogue, aiming to enhance the clarity and accuracy of the themes. This rigorous review process was instrumental in refining the thematic structure and ensuring that it accurately captured the essence of the data in relation to the research goals. It also facilitated a more comprehensive understanding of the nuanced relationships between themes and sub-themes, ultimately strengthening the foundation for subsequent analysis and interpretation. The collaborative nature of this phase added robustness to the thematic framework.

3.5.5 Defining and Naming Themes

Following the review and refinement process, the final themes were meticulously defined, named, and described. This phase marked the culmination of our thematic analysis, where we sought to encapsulate the essence of the data in a meaningful and coherent manner. Each theme was given a concise yet descriptive name that conveyed its core concept. Moreover, we enriched our thematic descriptions by including supporting quotes from participants, which added depth and authenticity to our findings. These quotes were selected with care, emphasizing their relevance and resonance within each theme. This process of defining and naming themes was pivotal in transforming the raw data into a structured narrative that offered a comprehensive insight into the influence of advanced health and care management on professional learners. It ensured that our findings were firmly grounded in the participants' voices and experiences, enhancing the trustworthiness and richness of our study's results.

3.6 Ethical Considerations

3.6.1 Informed Consent

Prior to their participation in the study, participants were presented with comprehensive information regarding the research's purpose, procedures, and their rights. It was imperative that participants were well-informed about the study's objectives and what their involvement entailed. This process was designed to ensure transparency and ethical consideration. Participants were given the opportunity to ask questions and seek clarification on any aspect of the research before providing their informed consent. This step aimed to uphold the principles of autonomy and respect for individuals, affirming their right to make an informed decision about their participation. Only after obtaining explicit informed consent from each participant did we proceed with data collection, adhering to ethical standards and legal requirements to safeguard the rights and well- being of those involved in the study.

3.6.2 Anonymity and Confidentiality

Throughout the research process, utmost care was taken to protect the identities of our participants. All data collected, including transcripts and any other relevant materials, were rigorously anonymized. This entailed the removal of any personally identifiable information, such as names, locations, or any other potentially identifying details. The purpose of this practice was to ensure that participants' privacy and confidentiality

were always maintained. During analysis and reporting, pseudonyms or participant codes were used to refer to individuals, further safeguarding their anonymity. Additionally, all data were stored securely and accessible only to the research team. Any potentially sensitive information shared by participants was handled with the utmost discretion and was not disclosed beyond the research team. This commitment to anonymity and confidentiality was fundamental to our research ethics and compliance with ethical standards. It allowed participants to speak candidly and openly about their experiences, knowing that their identities were protected. Furthermore, it reinforced our dedication to upholding the trust placed in us by our participants and ensured that the research findings were based solely on the content and themes of the data rather than the identities of those who contributed to the study.

3.6.3 Voluntary Participation

It is essential to emphasize that participation in this study was entirely voluntary. Participants were under no obligation to take part, and they were made aware of this fact at the outset of the research process. They were informed that they could choose to withdraw from the study at any stage without facing any penalties, consequences, or negative repercussions of any kind.

This commitment to voluntary participation upheld the principles of autonomy and respect for individuals. It ensured that participants had the freedom to make informed decisions regarding their involvement and could do so without feeling pressured or coerced. Participants were also informed that their decision to participate or withdraw would not affect any existing relationships or commitments.

This approach not only adhered to ethical standards but also emphasized our commitment to conducting research in an ethical and responsible manner. It underscored our dedication to respecting the rights and choices of our participants, allowing them to have agency over their participation throughout the study.

3.6.4 Researcher Bias

Efforts were made to acknowledge and manage potential researcher biases by maintaining reflexivity and conducting member checking with participants to validate findings.

In all, the qualitative methodology employed in this study allowed for a comprehensive exploration of the influence of advanced health and care management on professional learners. By engaging participants through interviews, observations, and document analysis, the research aimed to provide rich insights into the experiences and perceptions of individuals undergoing such training programs. Thematic analysis facilitated the identification of meaningful themes that contribute to a deeper understanding of the research topic.

4 Results

Table 1: Table of respondents.

S/N	Sector	Respondents
1.	Government	1
2.	Health and social care	4
3.	Industry/ private sector	1

Table 1 presents the demographic characteristics of the study participants. The sample consists of six (6) individuals from diverse backgrounds, with varying levels of experience and occupation. As depicted in the table, most participants fall within the health and social care sector, with an equal distribution of gender. Please note that all participants are in mid-senior level roles in their respective organizations.

Altogether, six (6) themes were identified having gone through the entire coding process.

Figure 2: SmartArt showing the themes identified.

Through the analysis, quotes from transcripts have been included. These themes resonated the most with all the participants and they are as follows:

4.1 Theme 1: Practical Application and Relevance to work.

The course's practicality and direct relevance to participants' professional roles were standout features. The models and tools introduced were not just theoretical but had immediate applicability in real-world settings. One key aspect of this theme is the strong emphasis on the tangible benefits of the course content in their day-to-day work. KW, GR, SR, GD, RJ and JL all share a common perspective, acknowledging that the knowledge and skills acquired from the course are directly transferable to their respective roles. This recognition highlights the course's capacity to bridge the gap between theoretical knowledge and practical implementation, a fundamental attribute that resonates with these individuals.

The concept of applicability takes center stage within this theme. Respondents express a shared sentiment that the models and concepts acquired during the course are not merely abstract theories but rather valuable tools that can be immediately employed in the dynamic and ever-evolving landscape of healthcare and social care. This perspective reinforces the idea that the course equips them with actionable knowledge, making it an indispensable asset in their professional toolkit.

Evidence:

JL's emphasis on the course's relevance, especially in understanding organizational purpose, indicates the course's alignment with contemporary health and care challenges.

KW's application of the PESTEL model, business case planning, and swim lane mapping showcases the course's direct utility in her professional setting. this is evidenced by this response when asked about how the modules align with work:

> *"… the PESTEL model,… So looking at the political, environmental, and that's useful in a lot of projects that I work in. Business case planning, that's something that I do now in my role and in my previous roles as well. And more importantly, recently, we have done swim lane mapping and looking at process mapping and how we can bring in efficiencies…."*

GR's ability to bridge the gap between the course modules and his workplace dynamics, especially with models like innovation triangles and swim lane mapping, underscores the course's real-world relevance. GR admits the usefulness of the modules at work and that is illustrated thus:

> *"…..so things like innovation triangle have been really useful for looking at how we develop the services that we offer and what the services we offer are……looking at things like swim lane mapping, which we've done more recently. Really useful for looking at the journey that a client or a patient has through our service to work out: where the bottlenecks, where are the things that could*

be improved upon, how can we make the experience better for that person, and where are the touch points with our organization and others as well."

Swim lane mapping, for instance, can streamline processes and enhance workflow efficiency, while business case planning can aid in making well-informed decisions and securing resources for critical projects. The inclusion of these examples further substantiates the theme of practicality, illustrating how the course has equipped these individuals with tools that directly contribute to their effectiveness in their respective roles.

4.2 Theme 2: Career Advancement and Confidence Boost

Beyond academic enrichment, the course played a pivotal role in participants' career trajectories. It not only equipped them with advanced skills but also instilled a newfound confidence. KW, GR, SR, GD, RJ, and JL unanimously express how the course has significantly boosted their self- confidence. They describe a newfound sense of assurance in their roles, stemming from a deeper understanding of the course material and the practical tools they have acquired. This heightened self-assurance is not merely a personal transformation; it has translated into tangible career advancements.

KW's testimony, for instance, reveals that their increased confidence led to their being entrusted with more responsibility and elevated roles within their organization. This shift in their professional status is a direct result of the course's impact on their self-assuredness, which has opened doors to new and challenging opportunities.

GR's experience aligns with this, as they mention how the course has positively influenced their career trajectory. They now feel better equipped to take on leadership roles and tackle complex projects, reflecting the newfound confidence they have gained through the course.

Evidence:

KW's transition to new roles and her confidence in job applications can be attributed to the course's comprehensive curriculum and the qualification's prestige.

GR's experience aligns with this, as they mention how the course has positively influenced their career trajectory. They now feel better equipped to take on leadership roles and tackle complex projects, reflecting the newfound confidence they have gained through the course. One of the central pillars of this theme is the development of specific skills that are essential in their professional domains the course's focus on change program implementation has equipped them with the tools to navigate organizational transitions successfully.

GR's mention of new opportunities post-course indicates the course's positive impact on his professional visibility and credibility.

SR's promotion post-course is a testament to the course's role in enhancing her professional capabilities and recognition as SR has assumed a new role owing to the increased capacity. This has also been the case with RJ.

JL's self-assured approach post-course, especially in leading by example, showcases the course's transformative impact on participants' self-perception.

4.3 Theme 3: Course Structure and Delivery Feedback

Participants acknowledged the course's structured approach but also highlighted areas for refinement, ensuring a more tailored fit for health and care professionals. This aspect of the theme underscores the importance of accommodating the diverse needs of learners, especially those who are actively engaged in their careers. The course's flexibility in delivery aligns with the evolving landscape of education, which increasingly emphasizes remote learning options. KW and GR's positive feedback reaffirms the effectiveness of this approach in catering to the needs of working professionals.

Both KW and GR express appreciation for the course's hybrid format, which combines in-person and online teaching. This blended approach is particularly advantageous for individuals like KW and GR, who have demanding professional schedules. They highlight that the flexibility of online components allows them to balance their coursework with their work responsibilities. They also acknowledged the intensity of the course, although accepting it is expected owing to the nature of the ILA.

Evidence:

KW's endorsement of the course's delivery method as excellent and practical indicates its effective pedagogical approach while GR's feedback on the course's structure, especially the need for a break, reflects the course's intensity and the need for periodic respites. SR's feedback on assignment volume and the desire for more technical training underscores the need for a balanced curriculum and JL's observation about the course's orientation towards industry manufacturing suggests the need for content recalibration to cater more to health and social care professionals.

JL proposed a provision of a summer break for students/professional learners is also noteworthy. This suggestion addresses the need for balance and rejuvenation within the program. Offering a break between academic terms can alleviate burnout, allowing students to recharge and return to their studies with renewed energy and focus. GR's recommendation to incorporate a break between year one and year two of the course adds depth to the thematic analysis. This proposal reflects an understanding of the demands of a rigorous academic program, especially one tailored to working professionals. Such a break can facilitate reflection, career planning, and personal development for students. It also aligns with the notion that structured intervals for reflection and planning can enhance the overall learning experience.

This theme highlights both the strengths and potential areas for enhancement in how the course is structured and delivered. KW and GR's positive remarks underscore the importance of flexibility and accommodation for working professionals, acknowledging the value of blended learning methods. JL's suggestions for incorporating more taught elements and providing a summer break, along with GR's recommendation for a break between years, emphasize the importance of continuous improvement and adaptability in course design. This analysis underscores the significance of aligning course delivery with the evolving needs and expectations of students, especially in programs tailored to professionals in healthcare and social care.

4.4 Theme 4: Faculty Support and Recommendations

The faculty's approachability and unwavering support emerged as significant positives. Participants were unanimous in their endorsement of the course to peers and colleagues. As illuminated by KW and JL's testimonials, faculty members play a pivotal role in crafting a positive learning atmosphere. KW and JL's experiences affirm the critical impact of approachable and supportive faculty in shaping the overall educational experience. This theme underscores the need for fostering a positive, nurturing learning atmosphere where students can excel both academically and personally, especially in programs tailored for healthcare and social care professionals. Their experiences underscore the significance of approachability, support, and a positive learning environment.

4.4.1 Approachable and Supportive Faculty:

KW and JL both emphasize the approachability and supportiveness of faculty members in their course. This observation is crucial as it suggests accessible and responsive instructors who foster open communication and encourage students to seek guidance, fostering a sense of community and collaboration within the learning environment. KW can be quoted here saying "……. And being able to access the faculty and say, I'm struggling with this, can you support me? Has been excellent."

4.4.2 Creating a Positive Learning Environment

These remarks reflect faculty members' nurturing and encouraging demeanor, extending to aiding with coursework, addressing challenges, and providing mentorship. Such support significantly contributes to students' academic and personal growth, creating a conducive environment for academic excellence and personal development.

4.4.3 Strong Recommendations for the Course

KW, GR, SR, GD, RJ, and JL all share a common enthusiasm for the course, with each of them wholeheartedly recommending it to others. Their unanimous endorsement underscores the perceived value and benefits of the program. Their recommendations are rooted in their positive experiences and the tangible advantages they have gained from the course. KW says: "I quite often recommend the course to colleagues. Quite often, yeah. I think I must have sent five to ten people the course information so that they can get on it, because I think it's been a wonderful opportunity." JL on asking if they would be comfortable recommending the course responded so "yes, without hesitation. But I would flag up that it lives up to its name."

These strong recommendations serve as a testament to the course's effectiveness and relevance, suggesting that it has successfully met the needs and expectations of KW, GR, SR, and JL, who likely represent a diverse range of prospective students.

KW and JL's experiences affirm the critical impact of approachable and supportive faculty in shaping the overall educational experience. This theme underscores the need for fostering a positive, nurturing learning atmosphere where students can excel both academically and personally, especially in programs tailored for healthcare and social care professionals.

GR and JL offer a note of caution regarding the course's intensity and the significant time commitment it entails. This cautionary perspective provides potential students with a realistic expectation of the demands associated with the program. The acknowledgement of the course's intensity is valuable as it prepares individuals for the rigorous academic and professional journey they are embarking upon. It underscores the importance of time management, dedication, and readiness to invest substantial effort in the coursework. While the caution may initially sound discouraging, it ultimately serves as a helpful reminder that success in such programs often requires sacrifice and diligent effort.

4.4.4 Suggestion for Curriculum Enhancement

JL's suggestion to integrate more health and social care content into the curriculum is a constructive recommendation that addresses potential areas for program improvement. This feedback reflects a desire for greater alignment between the course content and the specific needs and interests of healthcare and social care professionals. By incorporating more relevant content, the program can enhance its appeal and directly address the knowledge gaps that professionals in these fields may encounter. It also highlights the importance of continuous program development and adaptation to evolving industry trends and demands.

Their enthusiastic recommendations underscore the course's value and benefits, suggesting its effectiveness in meeting their professional needs. However, the cautionary notes about intensity and time commitment offer prospective students a realistic view of what to expect. JL's suggestion for curriculum enhancement demonstrates the importance of aligning course content with the specific needs of healthcare and social care professionals, highlighting the potential for continuous program improvement. This analysis captures the multifaceted nature of feedback and recommendations, contributing to a well-rounded understanding of the course's impact and potential for growth. KW suggests a possible inclusion of “health innovation” as part of the earlier modules to help clarity and pips that it would be useful.

4.5 Theme 5: Motivations and goals

Participants' motivations for enrolling were diverse, ranging from professional advancement to personal fulfillment. These motivations provide insights into the course's appeal to a broad spectrum of health and care professionals.

Evidence:

KW's desire to consolidate knowledge and ascend in career trajectory underscores the course's appeal to professionals seeking advancement. GR's aspiration to gain a comprehensive understanding of the health and care landscape in Wales and beyond reflects the course's depth and breadth. SR's passion for value-based healthcare and her drive to enhance population outcomes resonate with the course's mission. This is similar to GD who wanted to gain more knowledge on value-based healthcare and how it fits into the workspace they find themselves in.

The insights provided by the cohort offer a glimpse into the profound personal and professional reasons that drove them to pursue the course. Their motivations not only highlight their dedication but also reflect broader themes related to personal and organizational aspirations.

4.5.1 Passion for Value-Based Healthcare

SR and GD’s motivation to take the course is deeply rooted in a passion for value-based healthcare. This motivation reflects a commitment to a specific healthcare paradigm that prioritizes outcomes and efficiency while minimizing costs. Such passion signifies a dedication to improving the quality of care and optimizing healthcare systems.

SR's choice to pursue this course aligns with a broader trend in healthcare, where professionals increasingly recognize the importance of value-based approaches in delivering high-quality, cost- effective healthcare

services. This thematic element underscores the significance of aligning personal values with one's educational and career pursuits.

4.5.2 Leading by Example within Organizations

JL's unique position as one of the course architects and his decision to enroll showcases his commitment and belief in the program's vision. JL's motivation to enroll in the course is driven by a desire to lead by example within their organization. This aspiration represents a broader theme of leadership and innovation within the healthcare and social care sectors. JL's intention to lead by example suggests a commitment to becoming a catalyst for positive change. This motivation goes beyond personal advancement and extends to the aspiration of being an influential figure who inspires others to embrace innovation and improvement within their organizations.

This thematic element underscores the importance of individuals who serve as role models and change agents within their fields, driving transformative initiatives and inspiring their peers and colleagues.

SR's passion for Value-Based healthcare signifies a commitment to improving healthcare systems, while JL's goal of leading by example reflects a broader aspiration to be an agent of positive change within their organization and profession. These motivations align with overarching themes related to values-driven healthcare and leadership within healthcare and social care sectors, underscoring the profound impact that personal goals and values can have on educational and career choices.

4.6 Theme 6: Impact on Understanding and Organizational Change:

SR and JL highlight how the course has improved their understanding of healthcare systems and organizational purpose.

JL notes that the course has allowed him to challenge uninformed opinions within his work.

The experiences shared by SR and JL provide valuable insights into how the course has not only enhanced their understanding but also empowered them to drive organizational change and challenge the status quo within their respective healthcare and social care contexts.

4.6.1 Improved Understanding of Healthcare Systems:

Both SR and JL emphasize how the course has significantly improved their understanding of healthcare systems. This transformation reflects a deeper comprehension of the intricacies, challenges, and opportunities within the healthcare domain. The enhanced understanding of healthcare systems is a critical asset, as it equips them to make more informed decisions, identify areas for improvement, and navigate the complex landscape of healthcare delivery effectively. This thematic element underscores the power of education in broadening perspectives and equipping professionals with the knowledge needed to excel in their roles. It also reflects the course's success in providing a comprehensive view of healthcare systems, which is an asset in the field.

4.6.2 Impact on Organizational Purpose

SR's mention of the course improving their understanding of organizational purpose is significant. This suggests that the course has instilled a deeper sense of alignment between organizational goals and the broader mission of delivering quality healthcare and social care services. The impact on organizational purpose reflects a broader theme of values-driven leadership, where professionals recognize the importance of aligning organizational objectives with the core values of their respective fields.

This underscores the course's role in fostering a sense of purpose and social responsibility among its participants, inspiring them to contribute meaningfully to their organizations' missions.

4.6.3 Challenging Uninformed Opinions

JL's comment about the course enabling them to challenge uninformed opinions within their work environment highlights the course's transformative impact in promoting critical thinking and evidence-based decision-making. This empowerment to challenge uninformed opinions reflects a broader theme of advocacy for evidence-based practices within healthcare and social care. It demonstrates how individuals who have undergone specialized education can be agents of change by promoting data-driven and informed decision-making. This shows the importance of individuals who are equipped with the knowledge and

confidence to challenge the status quo, advocate for best practices, and ultimately contribute to positive organizational change.

This theme reveals the profound influence of the course on SR and JL's perspectives and abilities within their healthcare and social care roles. The course has not only deepened their understanding of healthcare systems and organizational purpose but has also empowered them to challenge uninformed opinions and advocate for evidence-based practices. These impacts underscore the transformative power of education in equipping professionals to drive change, align organizational goals with broader missions, and promote critical thinking within their fields.

5 Conclusion

Our research provides substantive insights into the impact of an MSc in Advanced Health and Care Management on professionals within the UK's healthcare and social care sectors. These insights were gleaned from the experiences of individuals who participated in this educational programme, elucidating several salient themes. Firstly, the immediate practical applicability of the coursework to the participants' professional roles was striking. According to a study by Eraut (2004), the ability to directly apply acquired knowledge in professional settings is a critical feature of effective professional education. Our findings echo this, demonstrating that the programme bridges the gap between theory and practice, thereby enhancing the effectiveness of professionals in healthcare and social care environments. Additionally, participants highlighted significant career advancement and increased self- confidence as outcomes of completing this course. This aligns with research by Plack (2008), which indicates that advanced degrees can positively influence career trajectories and self- assurance in healthcare professionals. Our study underscores the transformative influence of this course on participants' professional journeys. The courses' structured yet flexible hybrid delivery format was particularly lauded, aligning with the needs of working professionals. According to a study by Wladis et al. (2014), such flexibility in course delivery is crucial for professionals balancing work and educational commitments. Faculty members were unanimously praised for their supportive and approachable demeanour, a key factor in fostering a conducive learning environment, as indicated in research by Chickering and Gamson (1987). Feedback on areas for improvement, such as curriculum balance and inclusion of breaks, was also constructive. The diverse motivations for enrolling in these courses ranged from professional advancement to personal fulfillment, highlighting the programme's broad relevance. This echoes findings by Deci et al. (1991), who elucidate the multi-faceted motivations in adult learning. Moreover, the course enabled a deeper understanding of healthcare systems and emboldened individuals to challenge unsubstantiated views, advocating for evidence-based practices. This speaks to the transformative power of education, supported by the work of Mezirow (1997), in empowering professionals to drive organizational change.

6 Recommendations

Following the transformational effect indicated in the literature study on Lifelong Learning within the Welsh Health and Social Care sector, several major suggestions and future directions emerge to move education programs ahead. Our research illuminates the transformative power of Advanced Health and Care Management Msc within the healthcare and social care sector in the UK. This course equips professionals with practical skills, boosts their confidence, and empowers them to become catalysts for positive change within their organizations and the industry. By heeding these recommendations and maintaining a commitment to continuous improvement and innovation, these educational programs can continue to shape the future of healthcare and social care in the UK, producing informed, confident, and impactful professionals.

6.1 Cultivating a Culture of Lifelong Learning

In advocating for a culture of Lifelong Learning within healthcare organizations and among policymakers, it's essential to cite evidence-based arguments. Emphasizing the need for continuing education for healthcare professionals has been shown to significantly enhance patient care quality (Institute of Medicine, 2010). Furthermore, creating supportive settings for ongoing learning can enhance employee satisfaction and retention, as outlined by West et al. (2015), who discusses the positive impact of learning environments on healthcare professionals. The suggestion that professionals become "agents of positive change" within their organisations and the broader healthcare and social care sectors is corroborated by the idea of transformational leadership. Such leadership styles encourage team members to go beyond their self-interest for the good of the team and are particularly effective in healthcare settings (Bass & Riggio, 2006).

They allow professionals to integrate practical skills and ideological goals, thereby effectively acting as change agents (Cummings et al., 2018). Therefore, investing in a culture of Lifelong Learning not only optimizes practical skills but also fosters a transformative work environment that benefits both the healthcare system and broader societal sectors.

6.2 Leveraging Technology and E-Learning

To improve access to education, especially for those in distant or rural locations, it's essential to integrate technology and e-learning platforms into educational programs. This not only broadens the reach of training opportunities but also accommodates the varying schedules of healthcare practitioners, enabling them to engage in continuous learning conveniently. To substantiate the claim that integrating technology and e-learning platforms enhances access to education, a study by Crompton and Traxler (2018) outlines the role of mobile technology in making education accessible, especially in rural areas. Additionally, accommodating the schedules of healthcare practitioners via e-learning platforms has been highlighted as a key factor in enabling continuous professional development, as observed by Cook et al. (2010). These platforms have been shown to offer flexibility that is essential for professionals who are often time pressed.

6.3 Multidisciplinary Collaboration

Promoting multidisciplinary collaboration beyond the therapeutic context is another crucial aspect. A study by Reeves et al. (2017) emphasizes that multidisciplinary collaboration significantly contributes to resolving complex healthcare issues. Further, by fostering collaboration among educators, researchers, and practitioners, it is possible to bridge the gap between theory and practice. D'Amour and Oandasan (2005) discuss the importance of this integrated approach in healthcare education, asserting that it enhances educational outcomes.

6.4 Curriculum Enhancement and Flexibility

The importance of continuous curriculum enhancement in education programs tailored for healthcare professionals is emphasized in a study by Billings et al. (2019). They argue that keeping the curriculum aligned with industry trends significantly benefits the preparedness of healthcare practitioners. Flexibility in course delivery has also been touted as a key element in effective education for working professionals, as highlighted by a study from Mennenga and Smyer (2010). This balanced approach not only equips professionals with knowledge but also ensures the relevance and resonance of education with evolving industry trends.

6.5 Emphasizing Value-Based Healthcare, Innovation and Leadership

Professionals should not only advance their careers but also become advocates for evidence-based practices and agents of positive change within their organizations and the broader healthcare and social care sectors which will ensure a culture of innovation and excellence throughout the health sector. Courses focused on value-based healthcare have been shown to be essential in shaping healthcare practices, per Porter and Teisberg's report (2006). The role of such courses in fostering leadership skills among healthcare professionals is validated by a study from West et al. (2015).

The emphasis on professionals becoming advocates for evidence-based practices aligns with the recommendations of the Institute of Medicine (2010), which outlines the benefits of an evidence- based approach in healthcare.

Implementing these recommendations in educational programs provides a multifaceted approach that equips professionals with essential skills and mindset. These initiatives contribute to high- quality treatment and instigate innovation and sustainability in healthcare, resonating with the legacy aim of the ILA, as discussed in a report by Frenk et al. (2010).

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8 Appendices

8.1 Appendix A

QUESTIONS FOR INTERVIEWS.

1. COULD YOU TELL US A BIT ABOUT YOURSELF AND YOU'RE ROLE IN HEALTHCARE? [Possible prompt] HOW LONG HAVE YOU BEEN IN HEALTHCARE?
2. WHAT INSPIRED YOUR DECISION TO STUDY ADVANCED HEALTH AND CARE MANAGEMENT?
3. HOW WOULD YOU RATE THE MODULES AND THE DELIVERY METHODS SO FAR?

(Could become "Can you tell us about your experience with the modules so far? Follow-up: what have you enjoyed, how has it benefitted you? Could you tell us what you think about the delivery methods for the course? Can you tell us about the specific modules, which has been your favourite?")

4. HAVE YOU FOUND ANY RELEVANCE BETWEEN THE MODULES YOU ARE STUDYING AND WHAT IS YOUR DAY-TO-DAY WORK? (How applicable are the modules to health and social care sector?" or "how well can they be applied?

   [prompt if not specified] COULD YOU RATE THE APPLICATION OF THE MODULES YOU HAVE LEARNED ON THE COURSE TO YOUR WORK?

   [Prompt if you they don't give much detail in Q4] HAVE YOU BEEN ABLE TO APPLY ANY OF THE FRAMEWORKS AND PRINCIPLES TO YOUR PROFESSIONAL LIFE? (Can you give examples of where you have applied frameworks and principles from the course to your work?)
5. IN WHAT WAYS HAS THE COURSE HELPED IMPROVE YOUR SKILL SET?
6. WHAT WERE YOU AIMINGTO ACHIEVE BY STUDYING HEALTH AND CARE MANAGEMENT?
7. HAS STUDYING ON THIS COURSE HAD AN IMPACT ON YOU AND YOUR ROLE/CAREER?
8. WOULD YOU RECOMMEND THE COURSE TO OTHERS?

   Prompt if not specified- to whom would you recommend this course.
9. ARE THERE ANY SUGGESTIONS YOU MAY HAVE FOR THE IMPROVEMENT OF THE COURSE

Allied Health Professionals' Perception of Value-Based Healthcare in Wales

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Abstract:

Background: Healthcare costs globally are escalating while patient outcomes stagnate, underscoring the imperative for transformative approaches to healthcare delivery. Value-Based Healthcare (VBHC) has emerged as a strategic paradigm aimed at reconciling this imbalance by optimizing health outcomes while containing costs. However, the extent of its adoption and impact among Allied Health Professionals (AHPs) remains understudied, particularly within specific organizational contexts such as Wales' National Health Service (NHS).

Methodology: This study delves into AHPs' perceptions of VBHC within the Welsh healthcare landscape, characterized by a publicly funded NHS serving a population of 3.1 million. By employing an inductive approach, complemented by a cross-sectional mixed methods concurrent embedded methodology, the research offers a comprehensive exploration of AHPs' perspectives on VBHC.

Findings: Findings reveal a nuanced understanding of VBHC among AHPs, influenced by factors such as professional experience, seniority, and organizational context. Despite increased funding for NHS Wales and a strategic commitment to VBHC, there exists a notable variability in AHPs' awareness and engagement with VBHC principles.

Conclusions: This study underscores the need for targeted interventions to enhance AHPs' understanding and adoption of VBHC. Recommendations are proposed to bridge existing knowledge gaps, including targeted educational programs, interprofessional collaborations, and policy initiatives. Additionally, the study identifies opportunities for future research, including comparative studies in other healthcare contexts and longitudinal examinations of VBHC implementation strategies.

By illuminating AHPs' perceptions of VBHC in Wales, this research contributes to the broader discourse on value-based approaches to healthcare delivery. Insights gleaned from this study have implications for policymakers, healthcare leaders, and educational institutions striving to enhance healthcare quality and efficiency.

Keywords: Value-Based Healthcare, Allied Health Professionals, Perception, Wales, Mixed Methods, Healthcare Delivery, Policy Implications.

Table of Contents

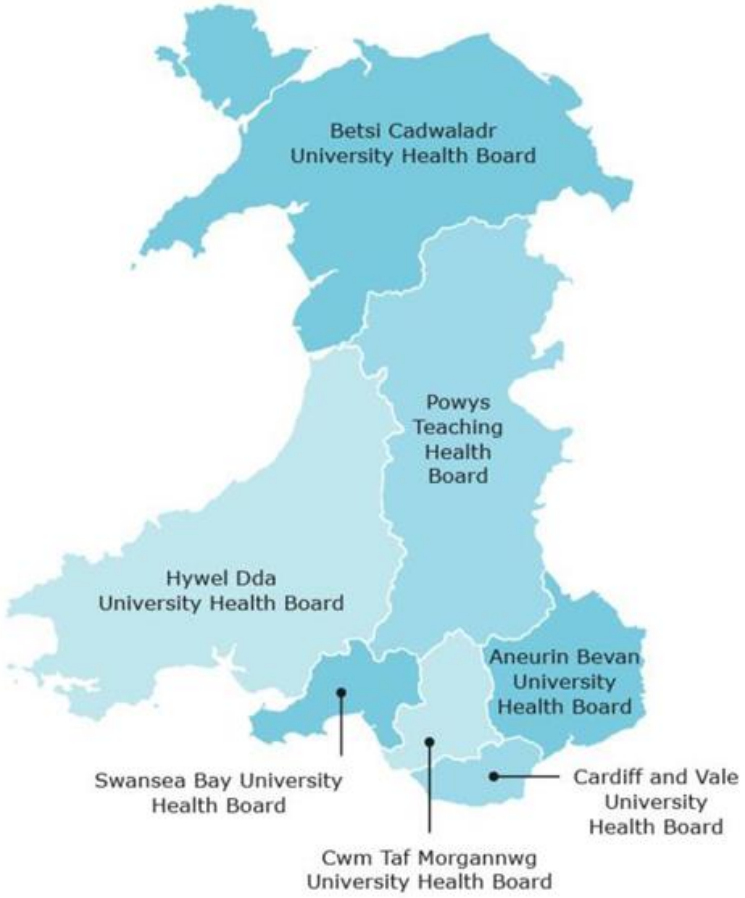
1 Introduction

1.1 Background

Globally, healthcare costs are rising at a significant and unsustainable rate, however, the outcomes that matter to people receiving healthcare are not improving at the same rate and inequities are prevalent (Lewis, 2022). Value-Based Healthcare (VBHC) aims to address this imbalance by delivering the best possible health outcomes in the most cost-efficient way (Porter and Teisberg, 2006). Since its inception in 2006 VBHC has gathered momentum worldwide as a strategy to transform services.

1.2 Organisational Context

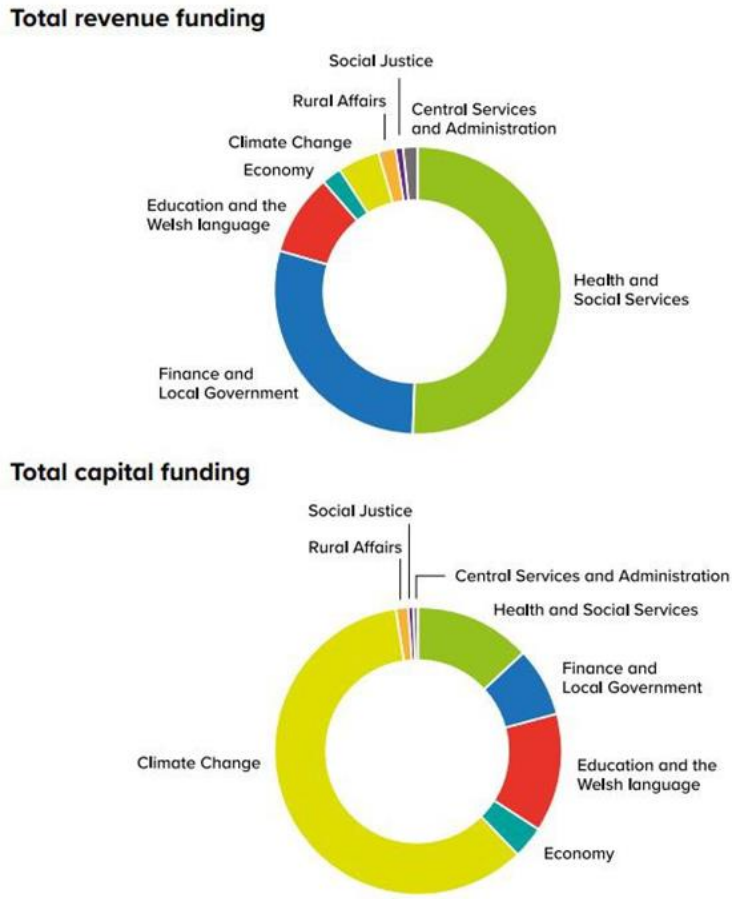
In Wales the publicly funded National Health Service (NHS) is responsible for providing healthcare to a population of 3.1 million people. The Welsh Government sets the strategy for delivering healthcare services and NHS Wales delivers the strategy via seven Local Health Boards (Figure 1), three NHS Trusts and two Special Health Authorities.



Source: NHS Wales Shared Services Partnership (n.d.)

Figure 1. Local Health Boards in Wales.

In 2023 NHS Wales received additional funding, taking its annual revenue budget to £9.6 billion. Over half of the Welsh Government's total budget (£20 billion) is now spent on health and social services (Figure 2).



Source: Welsh Government (2023d)

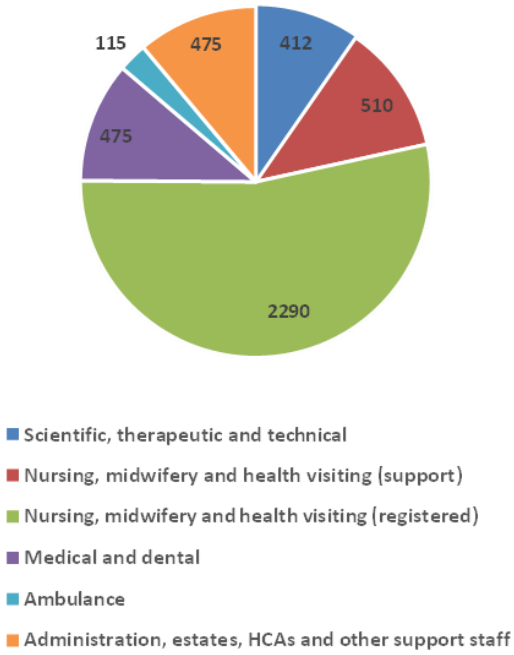
Figure 2. Welsh Government Budget 2023-2024.

Despite receiving additional funding NHS Wales is currently predicting a £800m overspend (Clarke, 2023) and the Minister for Health and Social Services in Wales recently warned the public that cuts in the NHS are inevitable (James & Edwards, 2023).

Unfortunately, NHS Wales is already under extreme pressure and is consistently missing its current performance targets across unscheduled and scheduled care (WG, 2023b).

At the same time, both demand and public expectations continue to increase. Wales also has an increasingly ageing population - people are living longer and are developing multiple and/or chronic conditions that place an increased demand on the NHS. The number of people aged 65 and over is projected to rise by 50% by 2037 and the percentage of people living with multiple chronic conditions is set to grow by 56% over this period if population increases are considered (The Welsh NHS Confederation, 2017).

NHS Wales is also facing significant workforce challenges. Latest figures estimate there are 4,277 vacancies (Figure 3) across the different professions (WG, 2023c).

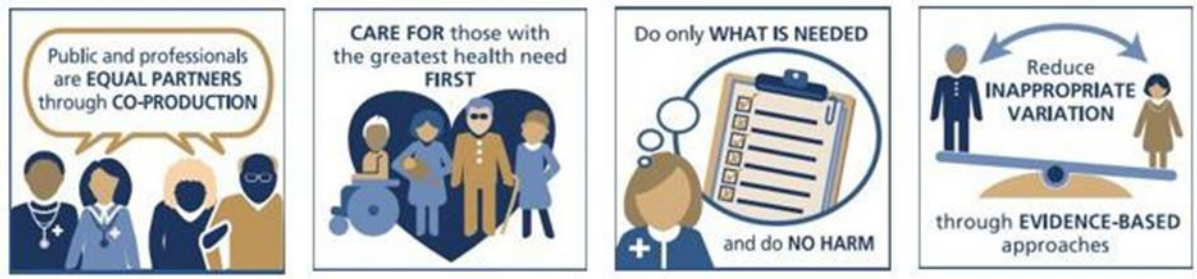


Source: Welsh Government (2023c)

Figure 3. NHS Staff vacancies by staff group March 2023.

1.3 Policy Context

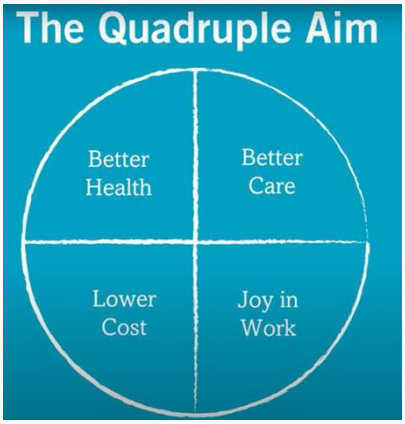
The Welsh Government's policy, A Healthier Wales (WG, 2018a), sets out the long-term vision and strategy for health and social care services in Wales. The strategy was written in response to a Parliamentary Review (WG, 2018b) that examined the long-term future of the health and social care system and concluded that a "revolution from within" was needed to ensure it was able to meet the needs of future generations. The strategy is built upon the previously published 'Prudent Healthcare' philosophy (Bevan Commission, 2015) that aimed to improve patient outcomes and value for money through the widespread adoption of value-based Prudent Healthcare Principles (Figure 4).



Source: Bevan Commission (2015)

Figure 4. Prudent Healthcare Principles.

A key recommendation of the Parliamentary Review (WG, 2018b) was the adoption of the internationally renowned Quadruple Aim (Figure 5).



Source: Institute for Healthcare Improvement (2017)

Figure 5. Quadruple Aim.

When Welsh Government produced A Healthier Wales (WG, 2018a) it included the Quadruple Aim as the central idea to drive transformation across the health and social care system, however, it adapted the model to suit the Welsh context and replaced the theme that has previously been labelled 'lower cost' with 'Higher Value Health and Social Care' demonstrating its commitment to a value-based approach (Figure 6). It also produced 'Ten Design Principles' to help describe how the themes of the Quadruple Aim and the 'Prudent Healthcare' philosophy could be translated into reality. The narrative provided to describe the 'Higher Value' design principle again underlines the Welsh Government's commitment to VBHC (Figure 7).

Source: Welsh Government (2018a)

Figure 6. Welsh Government's Quadruple Aim.

Higher value – achieving better outcomes and a better experience for people at reduced cost; care and treatment which is designed to achieve 'what matters' and which is delivered by the right person at the right time; less variation and no harm.

Source: Welsh Government (2018a)

Figure 7. Welsh Government's Higher Value Design Principle.

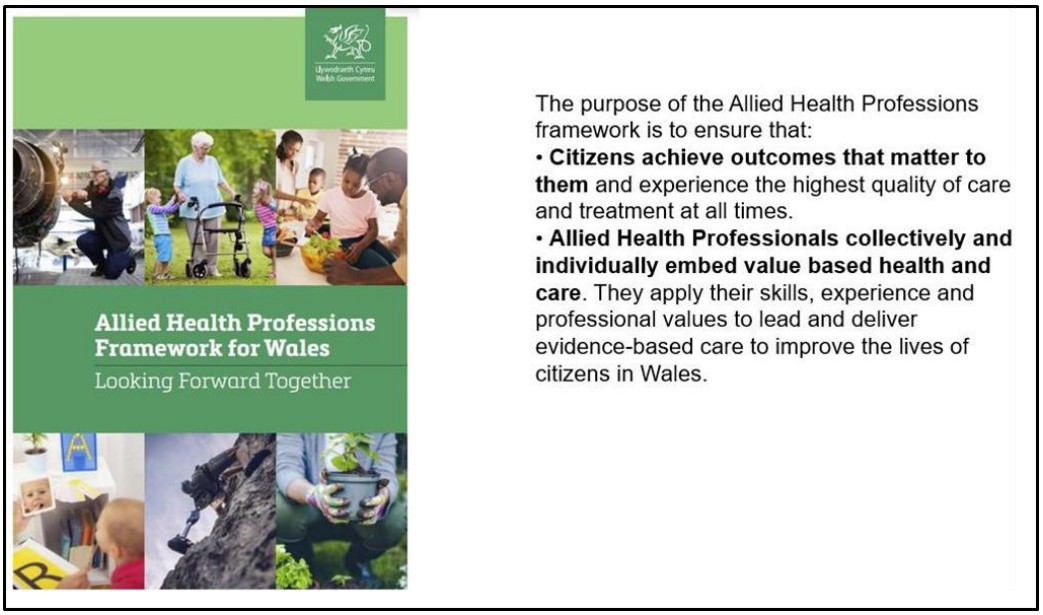
Shortly after the publication of A Healthier Wales (WG, 2018a) a National Action Plan for Value-Based Healthcare in Wales (WG, 2019b) was launched, setting out a three-year plan to embed VBHC in Wales. Later in 2021 the Welsh Value in Health Centre (WViHC) was established and released an updated strategy outlining how it would support a whole system approach to value-based healthcare for Wales (WViHC, 2021).

1.4 Professional Context

In Wales the terms 'Allied Health Professions' and 'Allied Health Professionals' (AHPs) are used interchangeably to collectively describe thirteen different professions (Table 1). AHPs provide a unique range of bio/psycho/social interventions across the entire care pathway and are an integral part of the health and social care system. Increasingly AHPs are acting as first-contact or sole-contact practitioners, and some professions have independent prescribing rights allowing them to independently diagnose and treat a greater number of patients. However, despite having a plethora of diverse skills and abilities, AHPs have not always been visible and equal partners in the health and social care workforce, and this has restricted their ability to improve outcomes (WG, 2019a). In 2019 the Allied Health Professions Framework for Wales (WG, 2019a) was launched in response to A Healthier Wales (WG, 2018a) and describes the challenges that need to address, the value that AHPs offer, and the actions needed to maximise AHPs value and impact. The framework calls for AHPs to collectively and individually embed VBHC (Figure 8).

Table 1. AHPs in Wales.

Art Therapist
Dietitian
Drama Therapist
Music Therapist
Occupational Therapist
Orthoptist
Orthotist
Paramedic
Physiotherapist
Podiatrist
Practitioner Psychologist
Prosthetist
Speech and Language Therapist



Source: Welsh Government (2019a)

Figure 8. Overview of Allied Health Professions Framework for Wales.

1.5 Research Question, Aims and Objectives

The requirement for AHPs to embed VBHC in Wales is clearly articulated in government policy (WG, 2018a and WG, 2019a), however, AHPs' perceptions of VBHC will affect its adoption. Numerous change management theories have documented the importance of understanding people's perceptions when implementing change (Kotter, 1996; Lewin, 1947; Rogers, 2003). However, there is lack of research exploring healthcare professionals' perspectives towards change and the limited research that is available focuses on technology-led changes (Milella et al., 2021). There is no published literature examining AHPs perceptions of VBHC, so this research aims to generate new knowledge.

The question guiding this study is:

What are Allied Health Professionals' perceptions of Value-Based Healthcare in Wales?

1.5.1 Research Aim

To investigate and understand Allied Health Professionals' perceptions of Value-Based Healthcare in Wales.

1.5.2 Research Objectives

- Research Objective 1 (RO1): To establish Allied Health Professionals' understanding of Value-Based Healthcare in Wales.
- Research Objective 2 (RO2): To analyse differences in AHPs perceptions of VBHC in Wales.
- Research Objective 3 (RO3): To develop a set of recommendations based on the findings.

1.6 Personal Motivation of the Researcher

The researcher is an experienced senior leader and registered AHP (Paramedic) in the NHS in Wales. He has recently been appointed as the National AHP Advisor for VBHC and is responsible for leading the development of education, strategy, and policy to support the adoption of VBHC by AHPs in Wales. This stimulated his interest in AHPs' perceptions of VBHC and how they will influence adoption.

1.7 Conclusions and The Structure of the Thesis

This chapter has presented a brief overview of the organisational, policy and professional context surrounding VBHC and AHPs in Wales and set out the purpose of the research. Chapter 2 will provide a review of the existing literature relating to the field of study before defending the chosen research design in Chapter 3. Chapter 4 will present the findings of the research conducted. Chapter 5 will discuss the findings and implications of the study before presenting the conclusions and recommendations as a result of this research in Chapter 6.

2 Literature Review

2.1 Literature Relating to The Theory of VBHC.

Porter and Teisberg (2006) originally defined VBHC in their book titled Redefining Health Care as "the outcomes that matter to patients relative to the cost of achieving those outcomes across a whole cycle of care". The fundamental concept of Porter and Teisberg's (2006) approach is that standardised outcomes should be measured, compared with other institutions, and rewarded through outcomes-based payments. However, Porter and Teisberg's (2006) definition has limitations in the context of a universal healthcare system as focusing only on funds spent on each patient's cycle of care does not take account of the available resources and how they are allocated across the entire population.

In England, Professor Sir Muir Gray (2013) recognised the need to link VBHC with 'Population Medicine' which he described as "maximising value by getting the right outcomes for the right patients in the right place with the least use of resources, but also ensuring the prevention of inequity related to age or gender or race or social class". In response Professor Sir Muir Gray (2015) developed the 'Triple Value Healthcare' paradigm that focuses on three different types of value. The first type is 'Personal Value' which involves ensuring that each individual patient's values are used as a basis for decision making when discussing the outcomes that matter to them. The second type is 'Technical Value' which involves ensuring resources are

used optimally. When Personal Value and Technical Value are combined, they link closely to Porter and Teisberg's (2006) original definition of VBHC. Personal value, by definition, relates to the individual and technical value relates to the interventions available for a given condition. The last type of value is 'Allocative Value' which ensures that resources are allocated optimally and equitably across populations.

The European Commission's Expert Panel on effective ways of investing in Health (EXPH, 2019) recognised that the concept of solidarity (where individuals contribute according to their ability and obtain benefits according to their need) lies at the heart of all European nations universal healthcare systems. It suggests that 'access and equity' (Allocative Value), 'quality and performance' (Personal Value) and 'efficiency' (Technical Value) – can be seen as indicators for achieving the goal of a fair distribution of healthcare resources to those in need, however, it also recognises that tensions between 'Personal Value' and 'Allocative Value' might emerge. The EXPH also highlights how 'health' is fundamental to social cohesion and adds a fourth value labelled 'Societal Value' to the previously described triple value model. The EXPH describes 'Societal Value' as "relating to whether the impact of the intervention in healthcare contributes to social cohesion, based on participation, solidarity, mutual respect, equity and recognition of diversity". The EXPH suggests that considering 'Societal Value' can help manage potential tensions between 'Personal Value' and 'Allocative Value' and helpfully suggests that models such as Accountability for Reasonableness (Daniels and Sabin, 2002) can enhance the fairness and legitimacy of difficult resource allocation decisions.

The EXPH defines VBHC as:

A **comprehensive concept** built on four value-pillars: appropriate care to achieve patients' personal goals (**personal value**), achievement of best possible outcomes with available resources (**technical value**), equitable resource distribution across all patient groups (**allocative value**) and contribution of healthcare to social participation and connectedness (**societal value**).

Hurst et al. (2019) noted that despite its prominence in healthcare systems facing increased demand and resource constraints, VBHC had not gained full traction within the NHS. They attributed this, in part, to the absence of a universally agreed-upon definition of VBHC in the NHS. Consequently, they organised a workshop involving a diverse group of stakeholders experienced and interested in VBHC to address this challenge.

They recognised that value in the NHS varies depending on the context of the services provided and the population served so they aimed to describe VBHC's most essential characteristics in a way that was meaningful to everyone, from individual patients to national organisations, and from prevention to end of life care. They suggested "Value-based healthcare is the equitable, sustainable and transparent use of the available resources to achieve better outcomes and experiences for every person".

Whilst the VBHC approaches proposed by Porter and Teisberg (2006) and Professor Sir Muir Gray (2013) should inherently improve sustainability, Hurst et al. (2019) notably identify it as an essential characteristic of VBHC. The emphasis on sustainability is particularly important in today's healthcare landscape where additional resources are not readily available. Additionally, Hurst et al. (2019) also list transparency as another essential characteristic of VBHC and again this is particularly important in today's healthcare landscape where the rationale behind difficult decisions about resource allocation and the inevitable disinvestment decisions discussed in Chapter 1 will need to be shared.

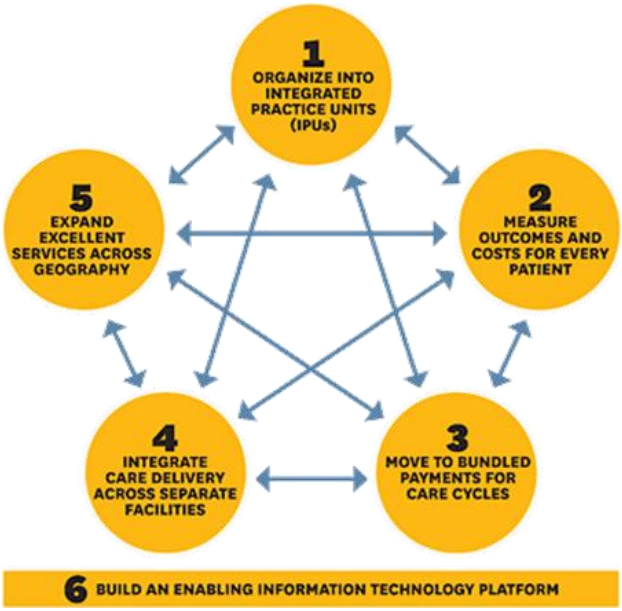
Previous studies have shown that health professionals are reluctant to disinvest, as this can be perceived as a rationing instrument, which will restrict clinical autonomy and reduce patient choice (Gerdvilaite and Nachtnebel, 2011). However, Professor Sir Muir Gray (2013) argues clinicians should decide how to allocate resources within a programme—deciding how much to allocate to systems for asthma, chronic obstructive pulmonary disease, and sleep apnoea within a respiratory programme, for example, and then, within each system, deciding how much to allocate to different interventions. When this approach was adopted by Aneurin Bevan University Health Board (Lewis and Reynolds, n.d.) it reduced its respiratory prescribing spend by £1.3M (low value care) enabling reinvestment in high value interventions such as pulmonary rehabilitation. Lewis and Reynolds (n.d.) highlight how the prospect of influencing how resources could be re-allocated was extremely rewarding for everyone involved (respiratory physicians, general practitioners, pharmacists, patients, third sector and finance colleagues) and a major factor in the success of the project.

While various definitions, theories, and approaches to VBHC compete for attention, a unifying theme persists: the pursuit of optimal patient outcomes at minimal cost. However, the paramount consideration lies in contemplating how we attain this value.

2.2 Literature Relating to VBHC Implementation

Porter and Lee (2013) propose that the history of healthcare reform has been marked by a series of narrow "solutions" that failed to address the fundamental strategic and structural issues undermining value for patients. They argue these so-called "magic bullets" whether considered individually or collectively, have fostered unrealistic expectations and diverted focus from the genuine challenges.

Building on this perspective, Porter and Lee (2013) emphasise the need for a new strategy to implement VBHC, which they refer to as the 'Value Agenda', encompassing six essential components (Figure 9).



Source: Porter and Lee (2013)

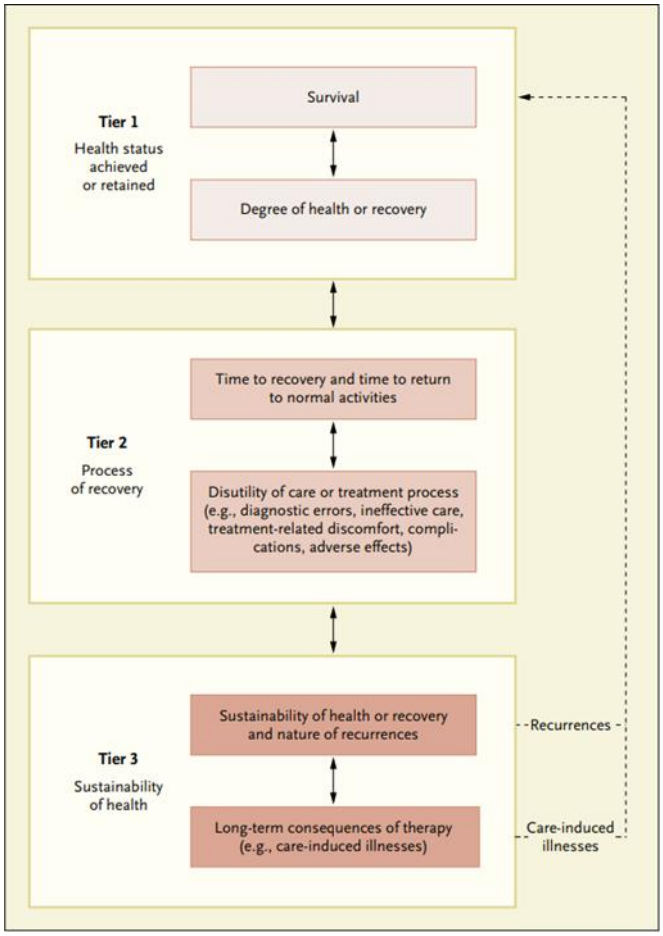
Figure 9. The Value Agenda.

Porter and Lee (2013) advocate the establishment of Integrated Practice Units (IPUs) designed around a specific medical condition or a closely related set of conditions. These units feature a co-located multidisciplinary team that convene regularly to deliberate on patient care plans throughout the entire care cycle. This team is responsible for implementing improvements based on robust outcome and cost data.

Lewis (2022) suggests this approach is not feasible or practicable in many healthcare systems and warns that IPUs could create fragmentation of care in other ways, especially for those with multiple morbidities. Lewis (2022) recommends that the integrated health boards in Scotland and Wales, and the integrated care systems in England may be more useful structures to adopt VBHC principles.

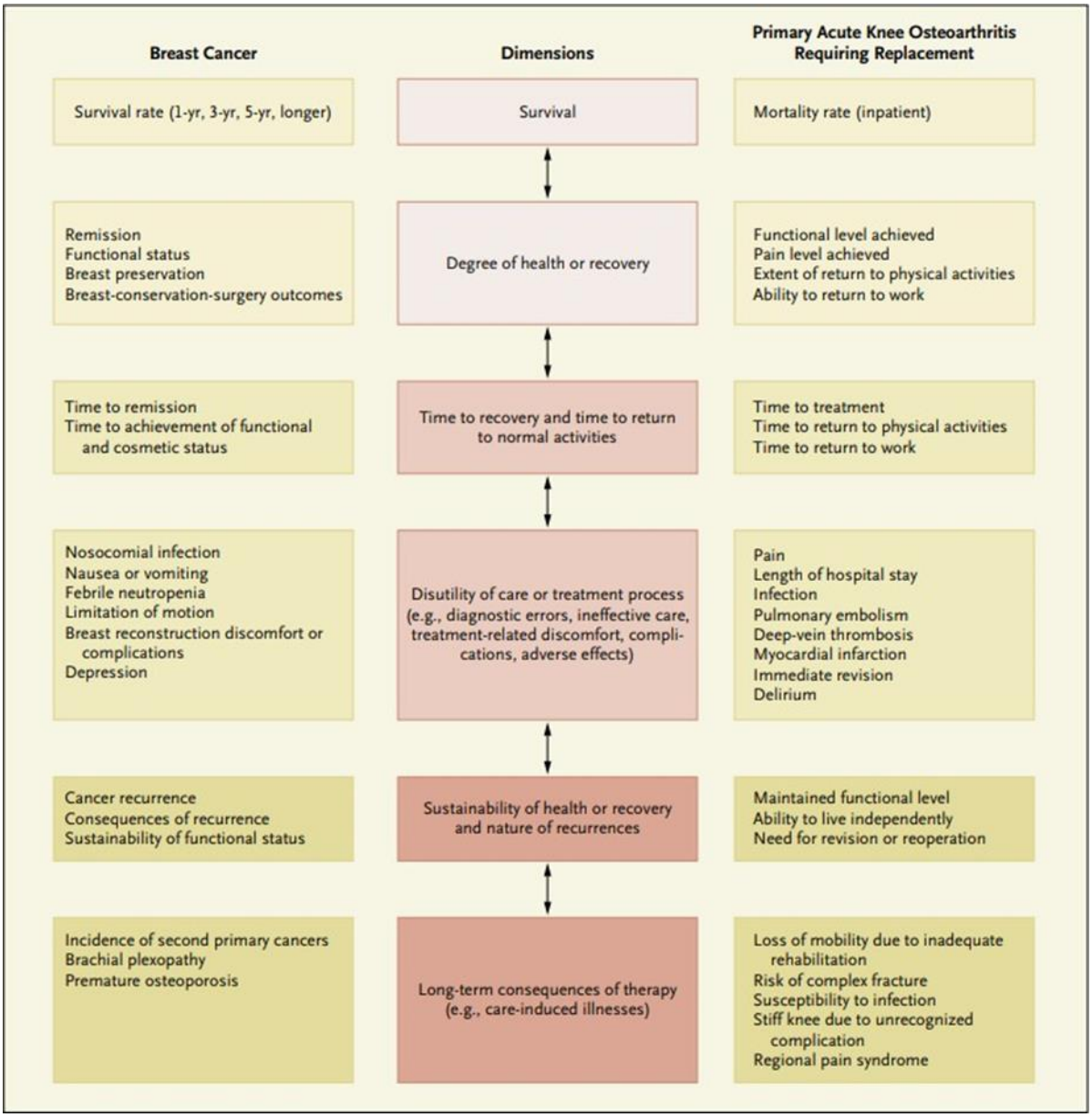
Earlier research by Mjåset et al. (2020) that assessed the implementation status of the six elements of the 'value agenda' in four different healthcare systems found that IPUs were the least adopted element, however, government officials and providers in England (one of the four healthcare systems assessed) did reveal an ambition to work toward more integrated care and gave examples of how multidisciplinary teams, including AHPs, had been established in primary care to organise care around patient's needs. Mjåset et al. (2020) found that in secondary care there was a drive to integrate care along defined standardised clinical pathways, such as cancer or mental health, however, the implementation of IPUs with financial and outcome accountability was conceived as not to fit the organisational structure of hospitals where care is organised along the lines of traditional academic disciplines.

The second component of the 'value agenda' involves measuring outcomes and cost for every patient which Porter and Lee (2013) suggest is the most important step in improving healthcare. They suggest outcomes should be measured by medical condition, cover the full cycle of care for the condition, and track the patient's health status after care has concluded. Porter (2010) suggests that the outcomes that matter to patients can be categorised into three tiers (Figure 10) and provides an example of possible outcome measures for breast cancer and acute knee osteoarthritis requiring knee replacement (Figure 11).



Source: Porter (2010)

Figure 10. The Outcome Measures Hierarchy.



Source: Porter (2010)

Figure 11. Outcome Hierarchies for Breast Cancer and Knee Osteoarthritis.

Porter (2010) argues that the value of healthcare should always focus on the patient and be measured using outcomes not the volume of services delivered. While objective measures can be readily assessed by clinical teams, Porter (2010) suggests they should be combined with subjective measures to create standardised outcome sets that can be used to compare providers and stimulate competition.

According to Lewis (2022), Patient-Reported Outcome Measures (PROMs) are more effectively utilised as a means of communication between patients and their healthcare providers, facilitating discussions on symptom burden and quality of life, rather than as a tool for comparing different healthcare teams or organisations. Lewis (2022) argues that within this context, it is more appropriate to view outcomes as significant milestones in an individual's healthcare journey rather than definitive endpoints. Additionally, Lewis (2022) highlights the considerable influence of external factors on these outcomes, notably the patient's own healthcare goals and care preferences. Relying solely on standardised outcome measures, as Lewis (2022) points out, would miss the core purpose and fail to generate value in healthcare provision.

Porter and Lee (2010) argue that optimising value for patients involves not only enhancing outcomes but also reducing the costs of care. They advocate for Time-Driven Activity-Based Costing (TDABC), a method that meticulously calculates the cost of treating patients with specific medical conditions by examining the entire treatment process and identifying associated costs for each step.

Whilst IPUs can use data-driven insights based on outcomes and cost to improve value, Porter and Lee (2010) suggest a new reimbursement model is needed to align providers' incentives with value rather than the volume of services provided. They suggest 'bundled payments for care cycles' where payment is tied to the comprehensive care of patients with specific medical conditions, aligning payment with what the IPU can influence and control.

Lewis (2022) highlights how paying for healthcare is highly contextual to the country in which VBHC is being applied and suggests that appropriate financial levers must be designed in the context of the local healthcare system.

The fourth component of the 'value agenda' focuses on integrating care delivery across separate facilities. According to Porter and Lee (2010), true system integration requires organisations to wrestle with four interrelated sets of choices: defining the scope of services, concentrating volume in fewer locations, choosing the right location for each service line, and integrating care for patients across locations.

In Wales, Local Health Boards are legally obligated to provide services in their designated areas. This legal obligation limits their ability to reduce the scope of services they offer compared to private providers.

Concentrating service volume in fewer locations is also a politically sensitive matter, although it is becoming more commonplace in the NHS due to growing evidence demonstrating improved outcomes for certain conditions, such as major trauma (Lockey, 2018).

Choosing the right location for each service line aligns with the Welsh Government's ambition to deliver care as close to patients' homes as possible. This vision was reinforced through their recent statement of intent, Building Capacity through Community Care – Further Faster (WG, 2023a) which recognises the role of AHPs in preventing costly avoidable hospital admissions.

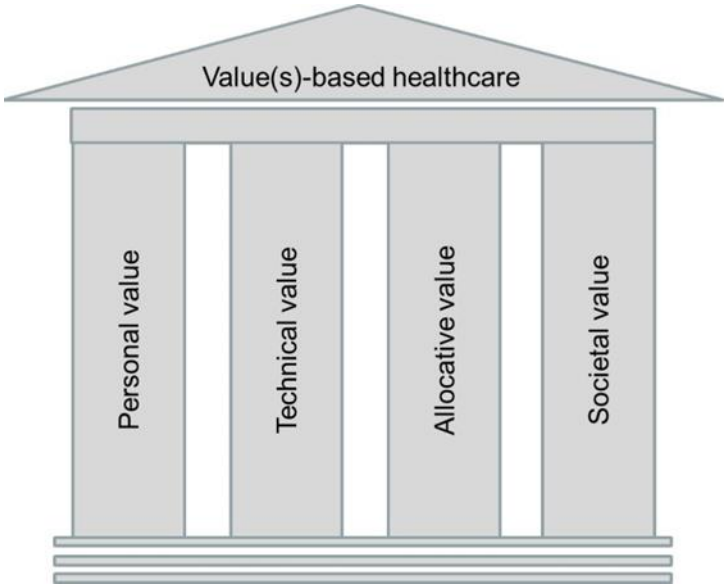
The final aspect of health system integration involves providing care for individual patients across various locations. For example, this might include repatriating a major trauma patient closer to home to receive ongoing rehabilitation.

The fifth component of the 'value agenda' focuses on expanding the availability of centres of excellence with expertise in managing complex patients. Research by Mjåset et al. (2020) suggests that government-run healthcare systems, like the UK's NHS, tend to be more successful in establishing such centres compared to privately run systems. In Wales, the Welsh Health Specialised Services Committee (WHSSC) is commissioned by the seven local health boards to ensure equitable access to specialised services, such as cancer care (WHSSC, n.d.).

The final component of the value agenda involves 'building an enabling Technology Platform' which Porter and Lee (2010) suggest is a key enabler for the preceding five components of the value agenda. According to Porter and Lee (2010) an IT system has six essential elements: the data is patient-centric, covering various services, locations, and timeframes throughout the entire care cycle. It includes all categories of patient data, employs consistent data definitions, ensures accessibility of medical records for both providers and patients, enables straightforward retrieval of outcomes and cost-related metrics per patient and condition, supports interoperability with diverse provider and payer organisations, and provides templates and expert systems for each medical condition.

While Porter and Lee (2013) have suggested that healthcare reform has historically been marked by a series of 'narrow solutions', EXPH (2019) argue that Porter and Lee's (2013) proposed solution is also 'narrow', particularly within the European context as it focuses on improving value from an individual perspective and omits aspects such as equity.

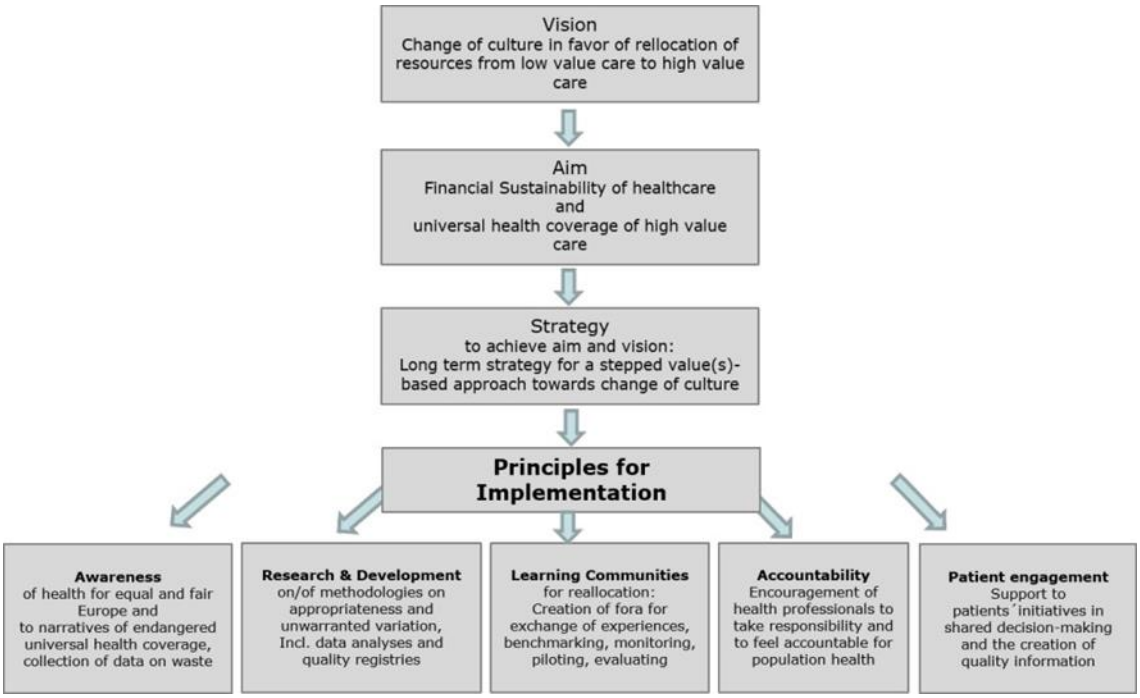
Consequently, the EXPH (2019) propose that 'value(s)-based healthcare' should preferably be used in European debate to describe the previously discussed comprehensive concept it put forward to define VBHC (Figure 12).



Source: EXPH (2019)

Figure 12. The four value pillars for a value(s)-based healthcare in Europe.

The EXPH recommends an alternative strategy that, according to its suggestion, will foster a culture capable of reallocating resources from low-value care to reinvest in high-value care and thus contribute to the sustainability of universal health coverage (Figure 13).



Source: EXPH (2019)

Figure 13. From vision to implementation: a multistep strategy.

As suggested by EXPH (2019), the European University Hospital Alliance (EUHA), a consortium of nine university hospitals in Europe, established a learning community to determine the steps required to implement VBHC in their hospitals (Cossio-Gil et al., 2022). Through an international, multicentre consensus process the EUHA initially identified eight core components and three additional components to implement VBHC in a hospital (Figure 14).

	The hospital/s are or have:
Core components of the agenda of VBHC	Organized into integrated practice units or Re-designing and improving the **pathways** in order to add value to patients
	Routinely measuring outcomes that matter to patient: **Clinical outcomes**
	Routinely measuring outcomes that matter to patient: **PROMs**
	Routinely measuring experience that matter to patient: **PREMs**
	Routinely measuring **costs at patient level**
	A built and enabled information **technology platform**
	Integrated care delivery across separate facilities
	Moving for **bundled payments** for Value for clinical condition
Others	Using those outcomes for making **clinical decisions** and for **improving the care** of the patients
	Evaluating changes in the **culture** of your organization
	Including patients in the clinical but also organizational decisions

Source: Adapted from Cossio-Gil et al. (2022)

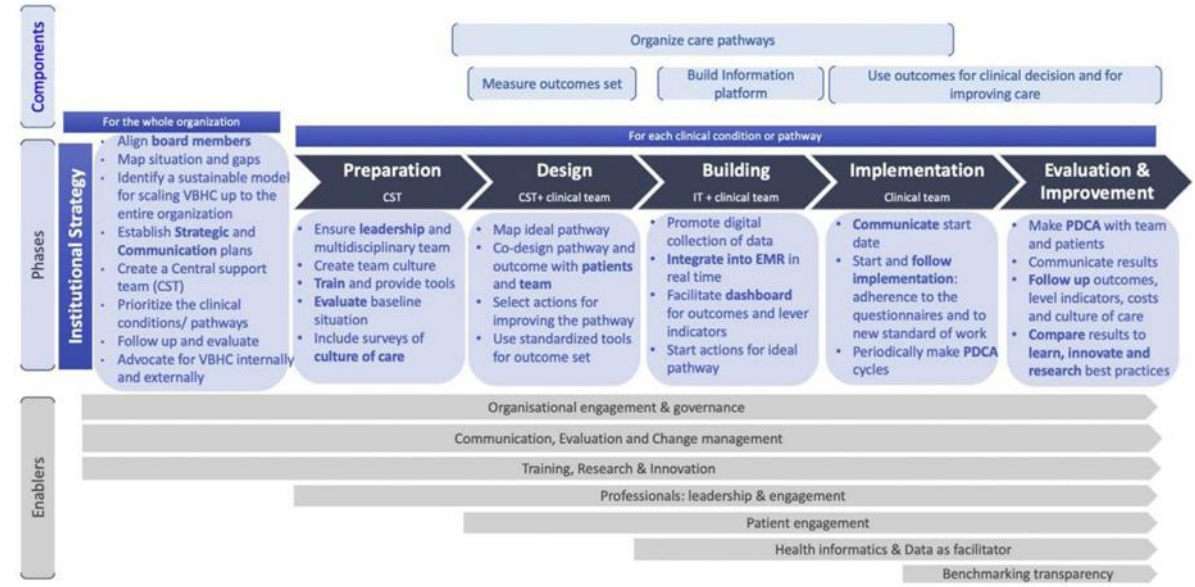
Figure 14. Core components to implement VBHC in a hospital.

Subsequently, the EUHA grouped the eight core components (Figure 14) into four “main components” (Figure 15). The first of the four main components involves organising care pathways, which is related to the concept of IPUs recommended by Porter and Lee (2010). Nevertheless, as previously indicated by Mjåset et al. (2020) and Lewis (2022), the EUHA suggests that implementing IPUs in university hospitals would necessitate significant organisational and cultural changes, in addition to being cost and time intensive. Therefore, they propose a focus on clinical pathways instead of IPUs.

The second component involves measuring clinical outcomes, PROMs, Patient Reported Experience Measures (PREMs), process indicators and costs at a patient level to create an “outcomes set”.

Building an information platform is the third component and the EUHA recommend integrating PROM collection in the patient pathway and enabling data visualisation via dashboards. The last component involves actively using short-term and long-term outcomes for clinical decisions and for improving care in a patient centred approach.

Based on the four main components the EUHA produced a “blueprint” consisting of six phases to guide pathway implementation (Figure 15). Although phase one corresponds to the preparation of the whole organisation, the subsequent five stages focus on the implementation of the clinical pathway. Seven enablers are also proposed to overcome barriers that the EUHA identified through their research.



CST indicates Central Support Team; EMR, electronic medical record; PDCA, Plan Do Check Act; VBHC, Value-based healthcare.

Source: Cossio-Gil et al. (2022)

Figure 15. Components, phases, and enablers of the roadmap for the implementation of value-based healthcare.

Hurst et al. (2019) assessed the barriers to VBHC's development in the NHS and suggested what skills and training would support its implementation (Figure 16). However, they do not outline a specific strategy for implementing VBHC within the NHS. Nevertheless, they acknowledge the importance of developing a strategy and include it as one of their key recommendations.

Common challenge	Skills and Training Gap
Better data:	- The analytical capability to define and measure health outcomes and experiences with patients in the national and local context. - The analytical capability to define and measure resource use in the national and local context. - Communication skills to disseminate information to NHS managers, healthcare workers, patients and the public.
Better evidence:	- Skills and knowledge to translate existing evidence into programmes to increase value, and to evaluate programmes designed to increase value. - Communication skills to disseminate new evidence from programme evaluations.
Describing the Journey to Value:	- The capacity to identify and prioritise 'value problems' (i.e. aspects of care in which value can be improved). - Knowledge synthesis to provide a guide to the process of increasing value that could apply at an organizational level or for smaller systems of care.
Multi-disciplinary Engagement:	- Training and skills development in value is needed for a range of different professional groups, from directors to managers to clinicians to finance people. - Effective communication skills to achieve "buy-in" from patients, the public and disparate groups of professionals.
A Value-based culture:	- Training in value-based healthcare, leadership skills, understanding culture, behaviour and the process of culture change to increase value.
A Value-based System	- Skills and knowledge in healthcare systems and their role in increasing value.

Source: Hurst et al (2019)

Figure 16. Skills and training needed to deliver value-based healthcare.

A recent scoping review by Staalduinen et al. (2022) that explored VBHC implementation, identified 62 publications meeting their study's eligibility criteria. However, only seven of these publications were from the United Kingdom (UK). None of the UK publications specifically focused on implementation strategies, and only two of them briefly touched upon the implementation techniques they used for their VBHC projects. For example, Ahluwalia et al. (2019) developed an education programme that followed a “value- based agenda” to implement a protocolised tool to rationalise the surgical process for diabetic foot debridement. Meanwhile, Withers et al. (2021) ensured multidisciplinary involvement and clinical leadership to implement PROMs and PREMs in Wales.

Squitieri, Bozic and Pusic (2017) show how PROMs can be used by various stakeholders to increase value (Figure 17). Boyce, Browne and Greenhalgh (2014) conducted a systematic review to synthesise qualitative studies that investigated the experiences of healthcare professionals using information from PROMs to improve the quality of care. Sixteen studies met their inclusion criteria and over half of the included studies (n=9) were carried out in the UK, three of which included AHPs. Boyce, Browne and Greenhalgh (2014) found that professionals value PROMs when they are useful for the clinical decision-making process but practical barriers to the routine use of PROMs are prominent when the correct infrastructure is not in place before commencing data collection.

The Value of Patient Reported Outcome Data for Stakeholders

PRO Impact	Patient	Clinical Provider	Academic Researcher	Institution/Employer Organization	Payer	Research Funding Agency	Regulatory Agency
Evaluation of Novel Treatments	X	X	X		X	X	X
Shared Decision Making	X	X					
Evaluating Provider Performance	X	X		X	X		
Determining Treatment Effectiveness	X	X	X		X	X	
System Level Quality Improvement		X		X	X		

Source: Squitieri, Bozic and Pusic (2017)

Figure 17. The Value of Patient Reported Outcome Data for Stakeholders.

The WViHC recognised the importance of building an infrastructure to support PROMs collection and listed ‘digital health’ as one of its six key enablers (WViHC, 2021) to facilitate the delivery of VBHC across Wales. Considerable work has already taken place to ensure common data standards, process standards and connectivity standards for collecting PROMs in Wales through the publication of the PROMs Standard Operating Model (PSOM) and the publication of an All-Wales PROMs Outcome Collection Framework that will ensure that any future suppliers of PROM capture solutions meet the PSOM standards (WViHC, n.d.).

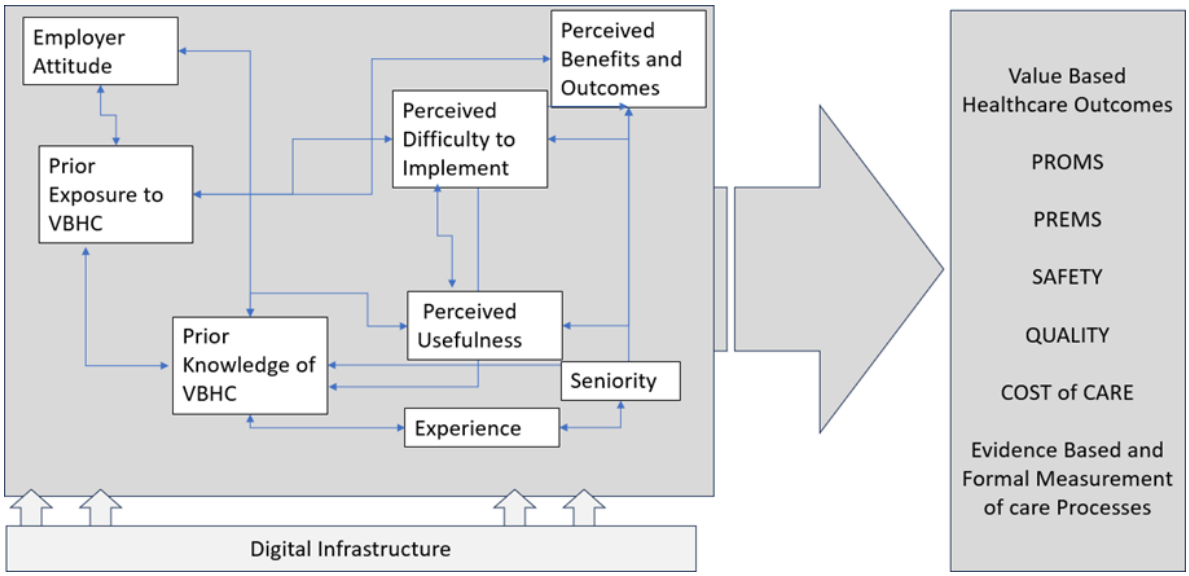
Source: Lewis (2022)

Figure 18. WViHC's six key enablers for value-based healthcare.

2.3 Literature linking VBHC and AHP's

There is a paucity of literature linking VBHC with AHPs and the limited literature that is available predominantly examines VBHC approaches to service developments that involve AHPs. There is no literature exploring AHPs perceptions of VBHC. Therefore, this research aims to answer the question; What are Allied Health Professionals' perceptions of Value-Based Healthcare in Wales?

Drawing on concepts identified from the wider literature, the researcher has developed the following conceptual framework to explore the gap in the literature in the context of AHPs.



Porter and Lee (2010), Hurst et al. (2019), EXPH (2019), EUHA (Cossio-Gil et al 2022) and the WViHC (2021) all identified an information technology/digital platform as a key enabler for the implementation of VBHC, so it has been placed as an underpinning component of the conceptual model.

In the square box are the other factors that could affect AHPs perceptions of VBHC and its subsequent adoption and implementation that will be explored further.

2.4 In Summary

There is limited existing research exploring the relationship between VBHC and AHPs. This study aims to fill this gap by investigating AHPs' perceptions of VBHC. The subsequent chapter will present and defend the research methods employed in this study.

3 Research Methodology and Design

3.1 Literature Review

A literature review is an essential component of any research study for several reasons. Firstly, it provides a comprehensive understanding of the existing body of knowledge related to the research topic and allows researchers to identify gaps where further investigation is needed. Secondly, it establishes the context and theoretical framework for the study. Additionally, it aids the formulation of research questions, ensuring the study's objectives contribute meaningfully to the field.

3.2 Review Criteria

A literature review was conducted using the search strategy in Appendix A. To broaden the search keywords, phrases and synonyms were used to describe each concept, and the Boolean operator 'OR' was utilised to ensure their presence in the results. Truncation was also utilised to ensure all the relevant literature was captured. Concept 1 and Concept 2 were combined using the Boolean operator 'AND' to ensure relevant results were retrieved.

3.3 Review Process

The electronic databases in Table 2 were searched from January 2006 (the year Porter and Teisberg coined the term VBHC) to July 2023.

At first, a search was conducted in the 'title' field, but due to minimal results, both the 'title' and 'abstract' fields were later included.

3.4 Results

Using both the 'title' and 'abstract' fields, the database searches identified 237 publications. 42 duplicates were removed leaving 195 publications for title/abstract screening.

Table 2. Electronic databases utlised for literature search.

Database	Description
Cumulative Index to Nursing & Allied Health Literature (CINAHL)	CINAHL is a database indexing literature related to all aspects of nursing, midwifery and allied health. CINAHL is international in scope with more than 5.2 million records from 5000 journal titles, including full text for more than 770 journals.
Embase	Embase is a biomedical and pharmacological database with access to more than 37 million records including articles from more than 8,100 journals published world-wide.
Health Management Information Consortium (HMIC)	HMIC is produced by the library services of the UK's Department of Health and the King's Fund. The HMIC database covers official publications, journal articles and grey literature relating to health and social care management, including management of the NHS; the quality of health services; estates management; regulation of medicines; medical equipment.
iFind	Provides access to resources provided by Swansea University including online journals and databases, journal articles, conference papers, newspaper articles, reference entries and much more.
Medline	Medline provides authoritative medical information on medicine, nursing, dentistry, veterinary medicine, the health care system, pre-clinical sciences, and much more. Medline uses MeSH (Medical Subject Headings) indexing with tree hierarchy, subheadings and explosion capabilities to search citations from over 5,400 current biomedical journals.
TRIP Pro	Trip PRO is a clinical search engine designed to allow users to quickly and easily find and use high-quality research evidence to support their practice and/or care. It has extra content and functionality to Trip+ including 100,000+ extra systematic reviews, information on over 175,000 ongoing clinical trials, medical images and videos and an advanced search.

3.5 Assessment of Sources / Eligibility Criteria

Titles and abstracts were screened to ensure they met the following criteria: language of publication was English; participants included AHPs; and article describes perceptions of VBHC.

None of the articles met the eligibility criteria so a gap was identified in the existing body of knowledge that warranted further investigation.

A conceptual framework was developed which was presented in Chapter 2.

3.6 Research Methodology

3.6.1 Approach

Given the absence of existing literature on AHPs' perceptions of VBHC, an inductive approach was chosen to facilitate an unbiased, open-minded, and participant-centred exploration, allowing for theory development grounded in AHPs' real-life experiences.

3.6.2 Methodological Choice

A cross-sectional mixed methods concurrent embedded methodology was used to collect both quantitative and qualitative data. This methodology was chosen to maximise the benefits of both data types and gain a more comprehensive understanding of AHPs perceptions.

3.6.3 Research Strategy

The chosen research strategy for this study was a self-completed conceptual questionnaire, allowing the collection of both quantitative and qualitative data from a diverse group of AHPs across a wide geographical area within the specified time and resource constraints.

The research strategies in Table 3 were reviewed but discounted for the reasons stated.

Table 3. Discounted Research Strategies.

Alternative	Reason for Not Using
Case Studies	Case studies are time-consuming, and the study aimed to understand the perceptions of multiple different AHPs.
Action Research	Action research requires active involvement in the field, which was beyond the scope of this study focused on perceptions.
Ethnographic Research	Ethnographic research is immersive and time-consuming, making it impractical for this study, which aimed for a broader overview.
Grounded Theory	Time and resource constraints.

3.6.4 Data Collection

Consideration was given to the three types of data variables that Dillman et al (2014) suggest can be collected through questionnaires: factual or demographic; attitudes and opinions; and behaviours and events. Demographic data was needed to explore how perceptions differ and to ensure the data collected was representative. For ease of completion and comparison, closed questions in the form of lists were predominantly used to collect the demographic data, for example, participants were asked to select who their main employer was, however, they were given the option to select ‘other’ and specify their employer if it was not listed.

A five-point Likert scale was used to measure respondent’s attitudes and opinions towards various VBHC concepts that had been identified in the literature. Several statements were provided in different lists to make economical use of space and for ease of completion. Positive and negative statements were included to ensure respondents read each of the statements carefully.

It was also important to collect behaviour and event variables to ascertain their impact on respondent’s perceptions. For example, does prior exposure to VBHC concepts affect respondent’s perceptions.

Open-ended qualitative questions were also used to gain a more comprehensive understanding and validate the results from closed questions. For example, respondents were asked to rate their knowledge of VBHC, and they were also asked to describe what VBHC meant in an open-ended question.

Prior to widespread data collection the questionnaire was sent to 10 colleagues to pilot test allowing the researcher to check its face validity and how long the questionnaire took to complete.

Using a technique known as snowball sampling the questionnaire was then sent to the Welsh AHP Committee that is made up of senior leaders from every AHP in Wales and members were asked to complete the questionnaire and share it amongst their professional networks. A link was also shared on LinkedIn and X (formally known as Twitter) asking AHP volunteers to complete the questionnaire and repost the link.

3.6.5 Data Analysis

The researcher analysed and compared the quantitative and qualitative data looking for patterns and themes with reference to the conceptual framework.

3.6.6 Appropriateness of the Actual Research Design

The strategy chosen for this study is well-established and Darby et al (2023) have previously successfully used a similar design involving a questionnaire to collect quantitative and qualitative data regarding perceptions.

3.6.7 Limitations of the Study

- It is limited to Wales.
- No responses were received from Drama Therapists, Orthotists or Prosthetists.
- Time and word count constraints have prevented all possible analyses.
- Not generalisable.

3.6.8 Ethical Considerations

- All participants were afforded anonymity and reassured via a statement at the top of the questionnaire that their data would be anonymised.
- Swansea University's School of Management Ethical Review Checklist (Appendix B) was reviewed with the researcher's supervisor to consider other ethical considerations including the collection, usage, and storage of participants data.
- Ethical approval was granted by Swansea School of Management.

3.6.9 In Summary

This chapter has presented and defended the research strategy and methods. The next chapter will present the study findings.

4 Findings

117 responses were received, however, one of the respondents was from England so their response has been removed and the subsequent analysis of the data presented in this chapter is based on 116 responses.

Table 4. Respondents Demographics.

Profession	Count	Percent
Art Therapist	1	0.86%
Dietitian	10	8.62%
Music Therapist	2	1.72%
Occupational Therapist	42	36.21%
Orthoptist	2	1.72%

Paramedic	9	7.76%
Physiotherapist	33	28.45%
Podiatrist	5	4.31%
Practitioner Psychologist	3	2.59%
Speech and Language Therapist	9	7.76%
Grand Total	**116**	**100.00%**

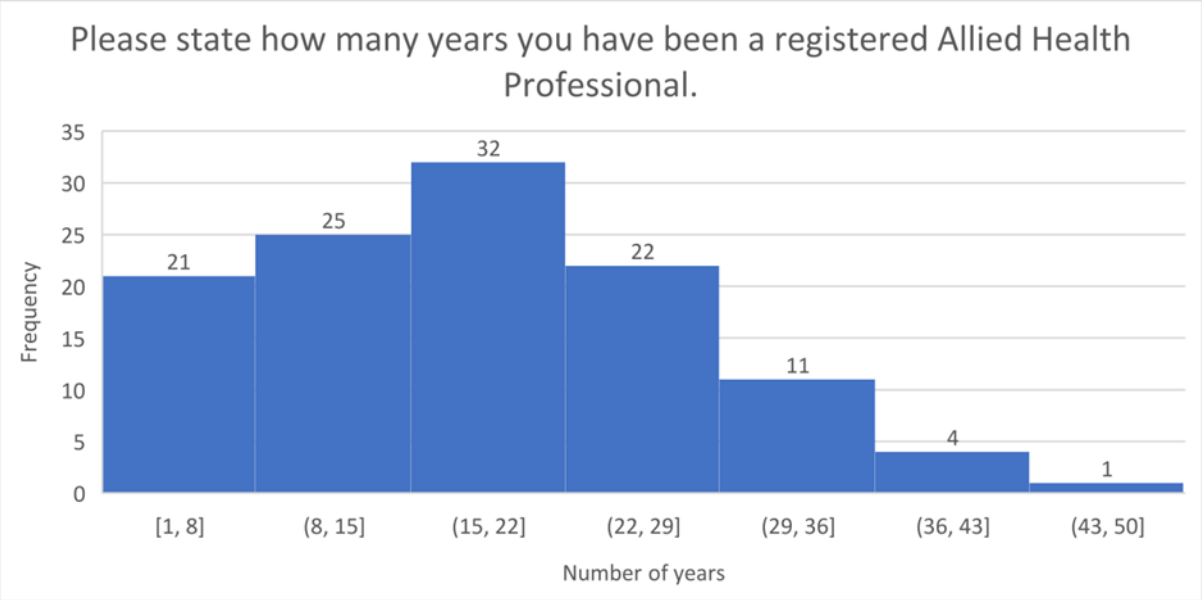
Type of organisation MAINLY work for	**Count**	**Percent**
NHS	113	97.41%
Other Public Sector	2	1.72%
Private Sector	1	0.86%
Grand Total	**116**	**100.00%**

MAIN employer	**Count**	**Percent**
Aneurin Bevan University Health Board	5	4.31%
Betsi Cadwaladr University Health Board	14	12.07%
Cardiff and Vale University Health Board	45	38.79%
Cwm Taf Morgannwg University Health Board	15	12.93%
Health Education and Improvement Wales (HEIW)	1	0.86%
Hywel Dda University Health Board	8	6.90%
NHS Wales Shared Services Partnership	1	0.86%
Powys Teaching Health Board	3	2.59%
Public Health Wales	2	1.72%
Swansea Bay University Health Board	9	7.76%
Velindre University NHS Trust	2	1.72%
Welsh Ambulances Services NHS Trust	8	6.90%
Vale of Glamorgan Council	1	0.86%
Audit Wales	1	0.86%
Self Employed	1	0.86%
Grand Total	**116**	**100.00%**

MAIN area of practice	**Count**	**Percent**
Clinical	72	62.07%
Leadership and Management	39	33.62%
Research and Audit	4	3.45%
Strategy	1	0.86%
Grand Total	116	100.00%

No responses were received from Drama Therapists, Orthotists or Prosthetists.

Responses were received from respondents in every health board in Wales.



The mean was 14.6 years.

Figure 19. Number of years respondents have been registered AHPs.

4.1 Findings relating to RO1 – To establish Allied Health Professionals' understanding of Value-Based Healthcare in Wales

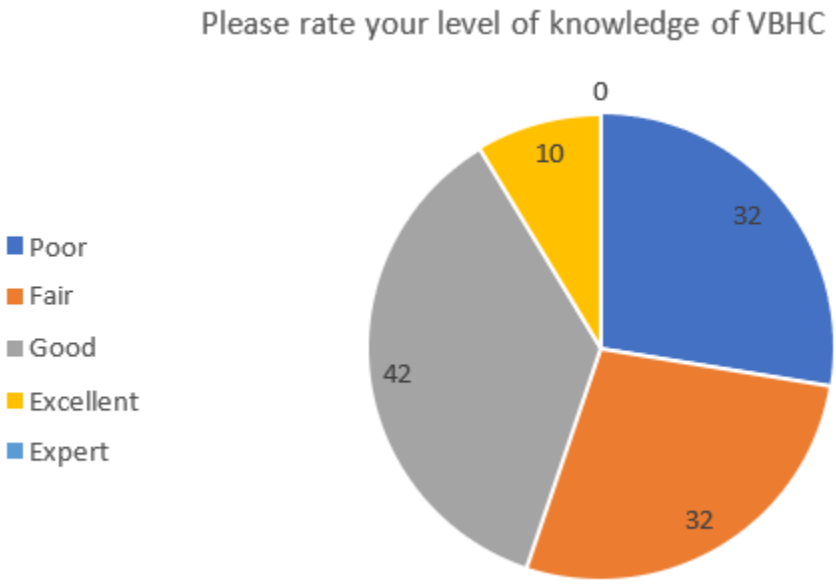


Figure 20. How respondents self-rated their knowledge of VBHC.

The majority of respondents (36.21%) rated their knowledge of VBHC as good. 27.59% of respondents rated their knowledge as fair, 27.59% of respondents rated their knowledge as poor and 8.62% of respondents rated their knowledge as excellent.

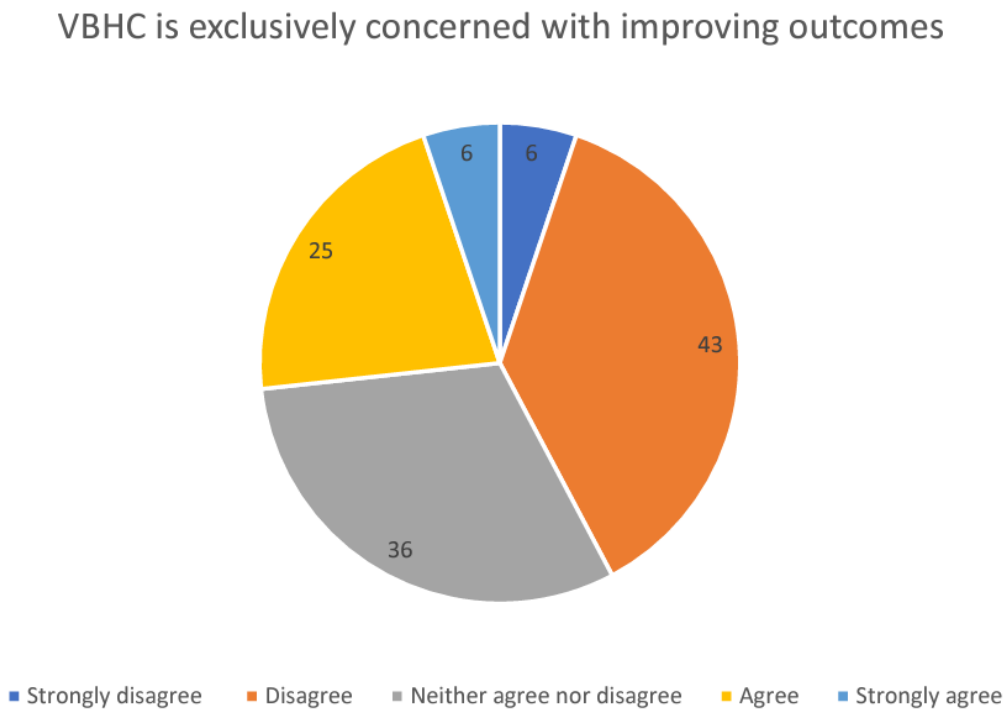


Figure 21. Responses to the statement 'VBHC is exclusively concerned with improving outcomes.'

The majority of respondents (37.07%) disagreed with the statement. 31.03% of respondents neither agreed nor disagreed, 21.55% of respondents agreed, 5.17% of respondents strongly agreed and 5.17% of respondents strongly disagreed.

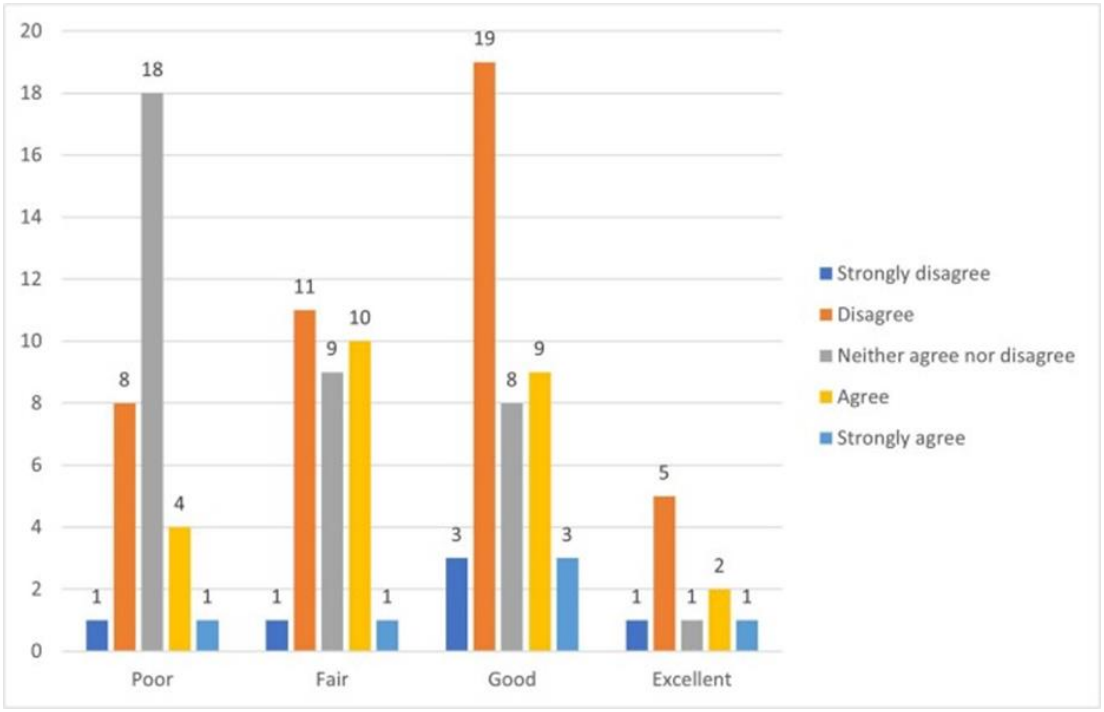


Figure 22. Responses to the statement 'VBHC is exclusively concerned with improving outcomes' compared against the respondent's self-reported level of knowledge of VBHC.

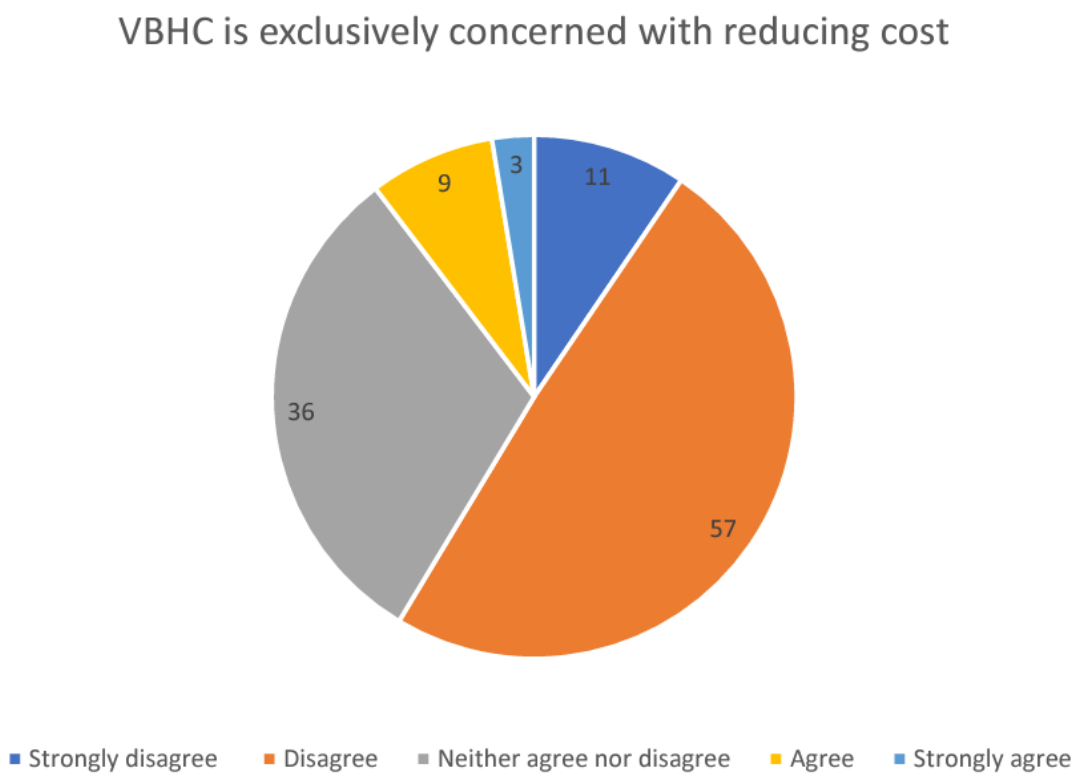


Figure 23. Responses to the statement 'VBHC is exclusively concerned with reducing cost.'

The majority of respondents (49.14%) disagreed with the statement. 31.03% of respondents neither agreed nor disagreed, 9.48% of respondents strongly disagreed, 7.76% of respondents agreed and 2.59% of respondents strongly agreed.

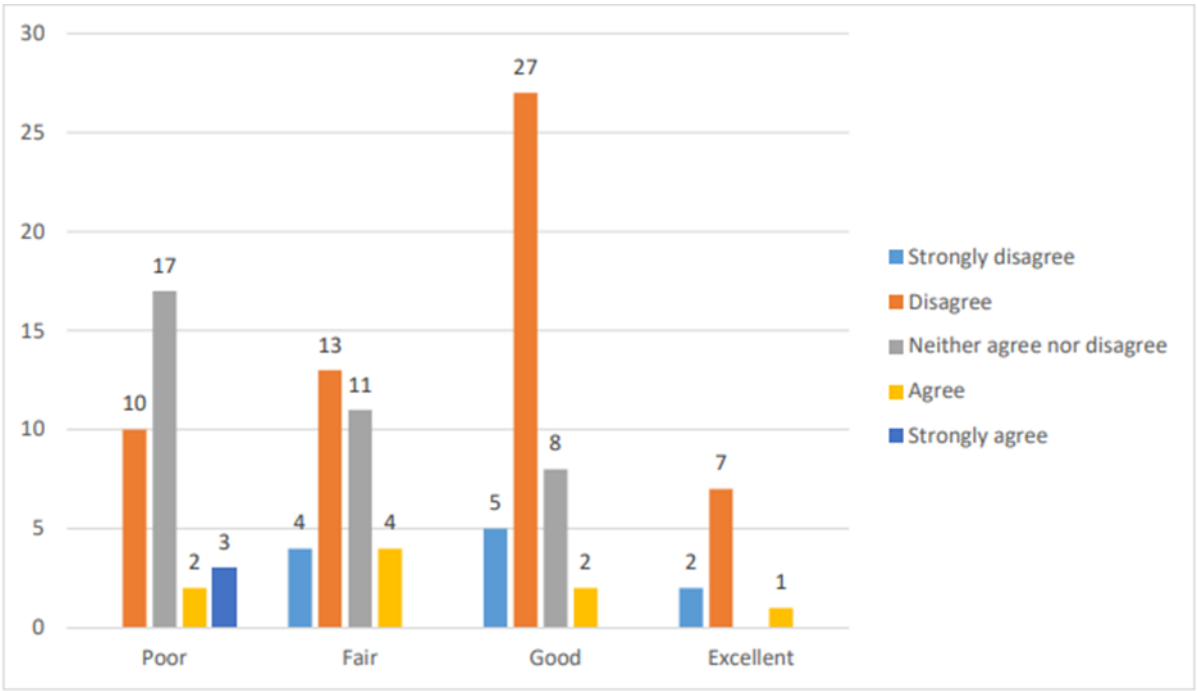


Figure 24. Responses to the statement 'VBHC is exclusively concerned with reducing cost' compared against the respondent's self-reported level of knowledge of VBHC.

Figure 25. Word cloud depicting the relative proportions of key words and phrases used by respondents in response to the question, 'In your own words, please describe what VBHC means to you.'

50 respondents (43%) used the word 'patient' in their response.

Table 5. Themes that have been extracted from the respondents' answers to 'In your own words, please describe what VBHC means to you.'

Theme	Example quote	Frequency
Improving Outcomes	"Improving outcome for patients who need care"	36
Values and Behaviours	"Its living (and working) the organisations values and behaviours of dignity and respect, kindness and compassion, caring and supporting individuals (family, patients, colleagues) well being, whilst offering individualised responsive care based on their feedback, need, goals. Care should be provided by enough competent, caring and committed staff in a prudent fashion where it is needed first time."	17
Resource Allocation	"Allocation of resources to areas of greatest value according to population need based on data and what matters to people and evidenced through robust evaluation and outcome measurement."	15
Patient-centred care	"delivering care that matters to people across the whole pathway. Using PROMS to deliver changes in care pathways, demonstrate effectiveness and patient centred decision making"	9
Evidence-Based Practice	"ensuring effective evidence based practice - undertaking objective measures of effectiveness of interventions / services to ensure cost effectiveness and further development."	9
Impact and Value	"get the best out of what we have, aligned to the evidence base to do the most good/ have the most impact"	9
Prudent Healthcare	"Ensuring that the care provided to patients is patient centred and prudent based on evidence. Looking at the person holistically and utilising coproduction with the person to set goals that are realistic and a priority for the patient. Using prudent healthcare ensures that the right patient gets the right treatment"	8
Equity and Access	"Delivery of healthcare based on equitable access, sustainable delivery with an emphasis of use of resources where any change delivers better outcomes and experience for patients and future service users."	7
Efficiency	"spending money wisely to achieve value for money – the best outcomes for service users whilst being efficient"	4

4.2 Findings relating to RO2 – To analyse differences in AHPs perceptions of VBHC in Wales

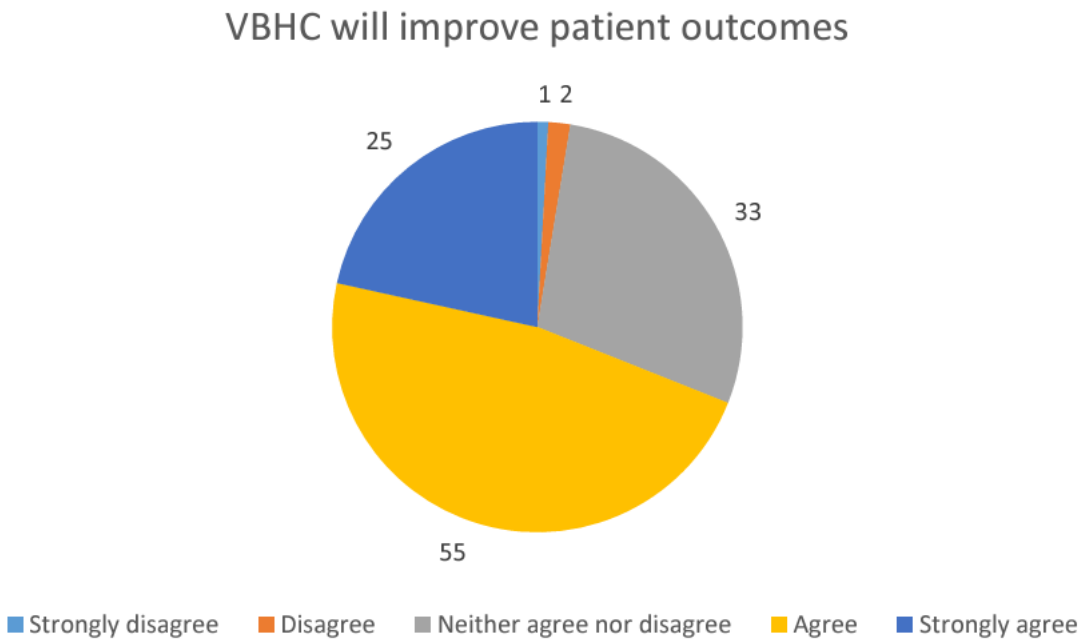


Figure 26. Responses to the statement 'VBHC will improve patient outcomes.'

The majority of respondents (47.41%) agreed with the statement. 28.45% of respondents neither agreed nor disagreed, 21.55% of respondents strongly agreed, 1.72% of respondents disagreed and 0.86% of respondents strongly disagreed.

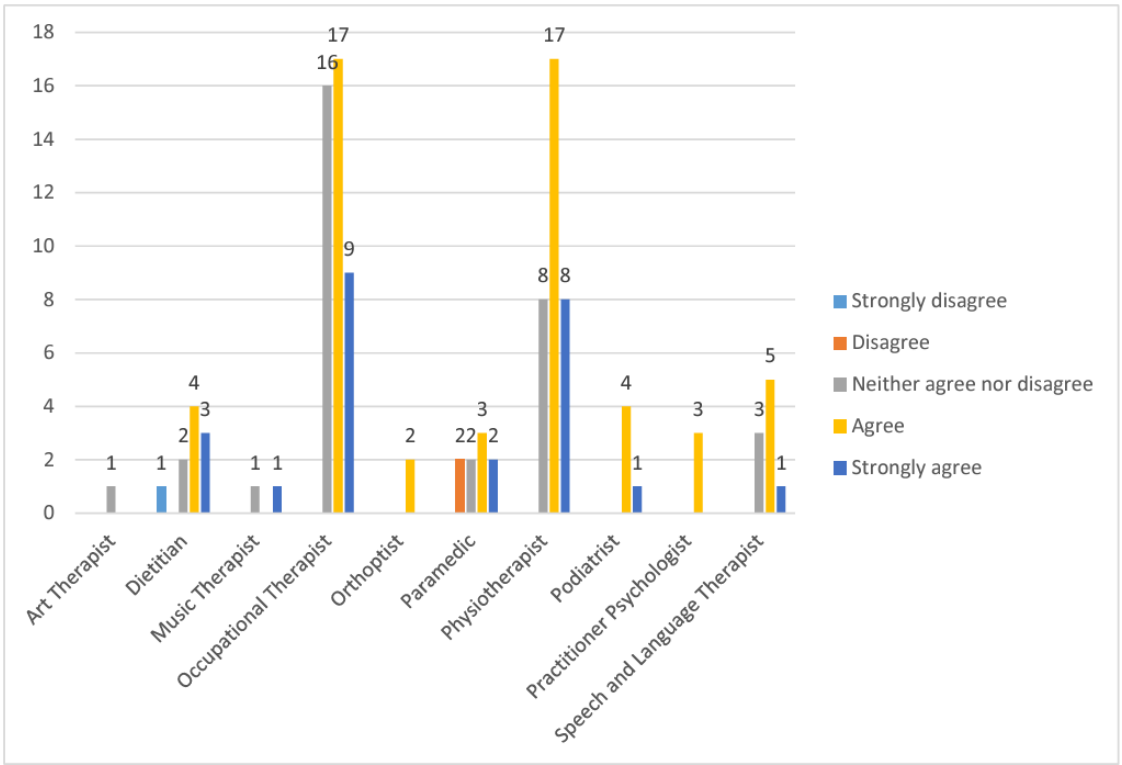


Figure 27. Responses to the statement 'VBHC will improve patient outcomes' compared against the respondent's profession.

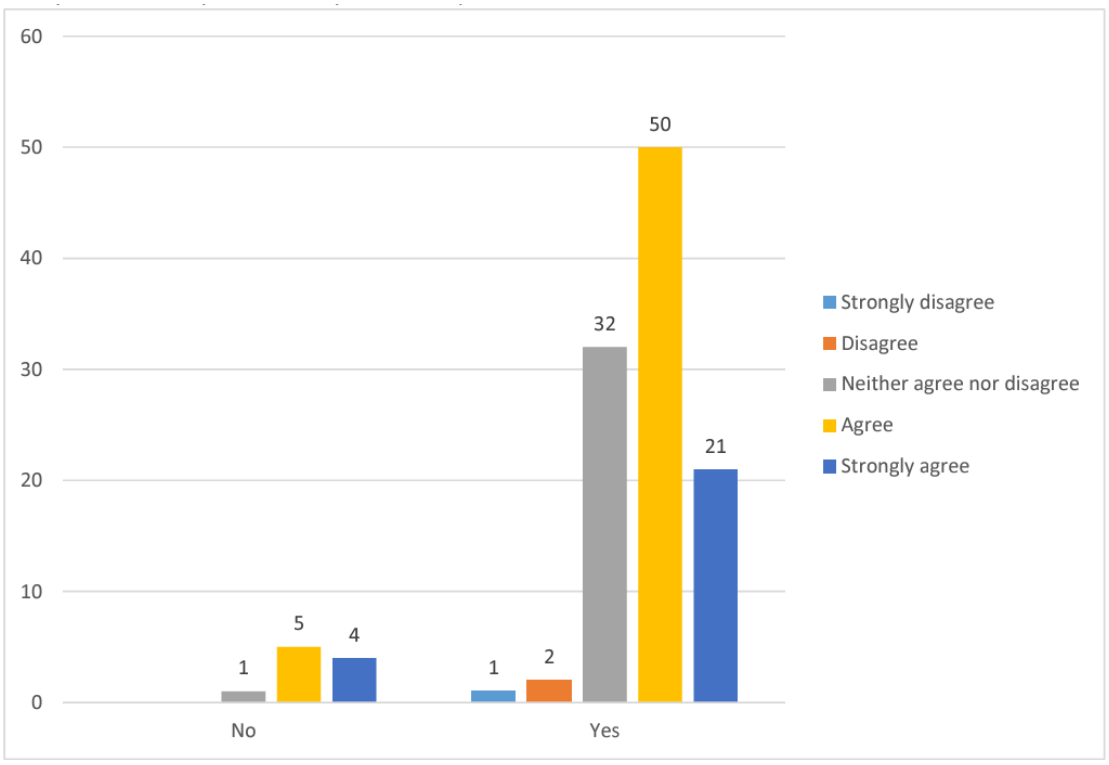


Figure 28. Responses to the statement 'VBHC will improve patient outcomes' compared against responses to the question 'Are you currently in clinical practice?'

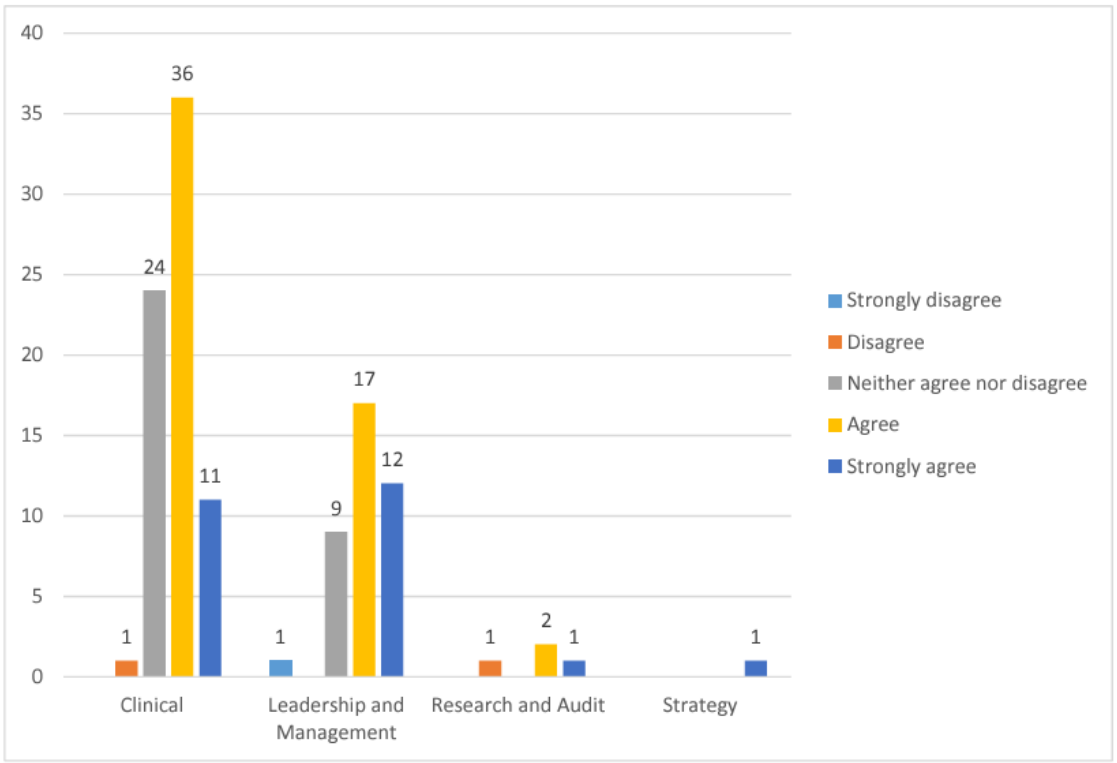


Figure 29. Responses to the statement 'VBHC will improve patient outcomes' compared against the respondent's main area of practice.

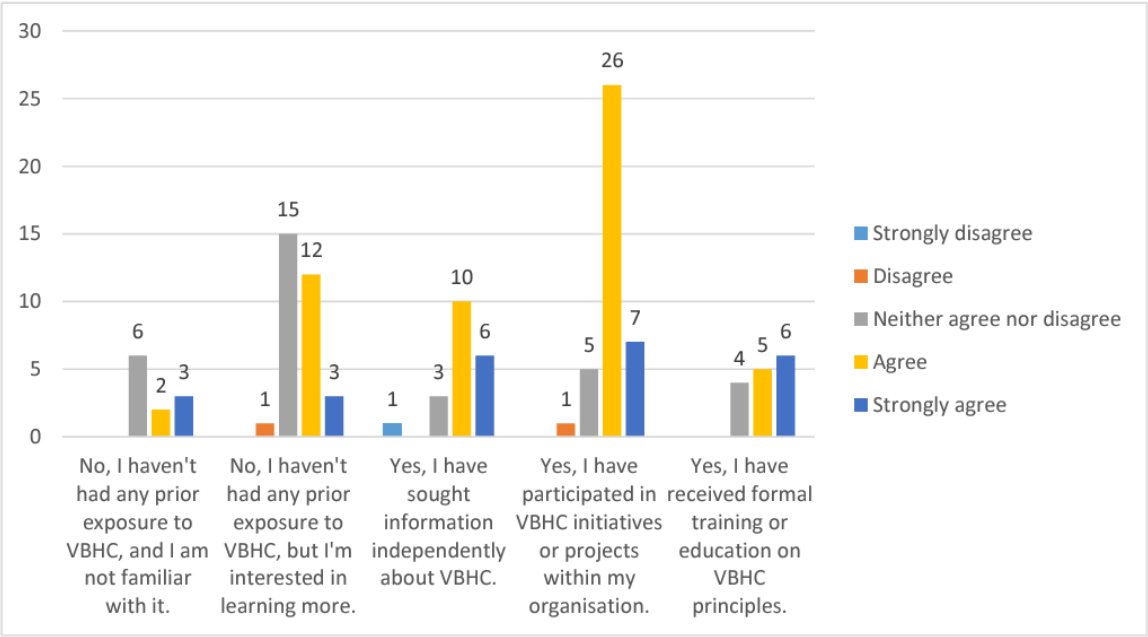


Figure 30. Responses to the statement 'VBHC will improve patient outcomes' compared against responses to the question 'Have you had any prior exposure to Value-Based Healthcare (VBHC) concepts or participated in VBHC initiatives during your professional career?'

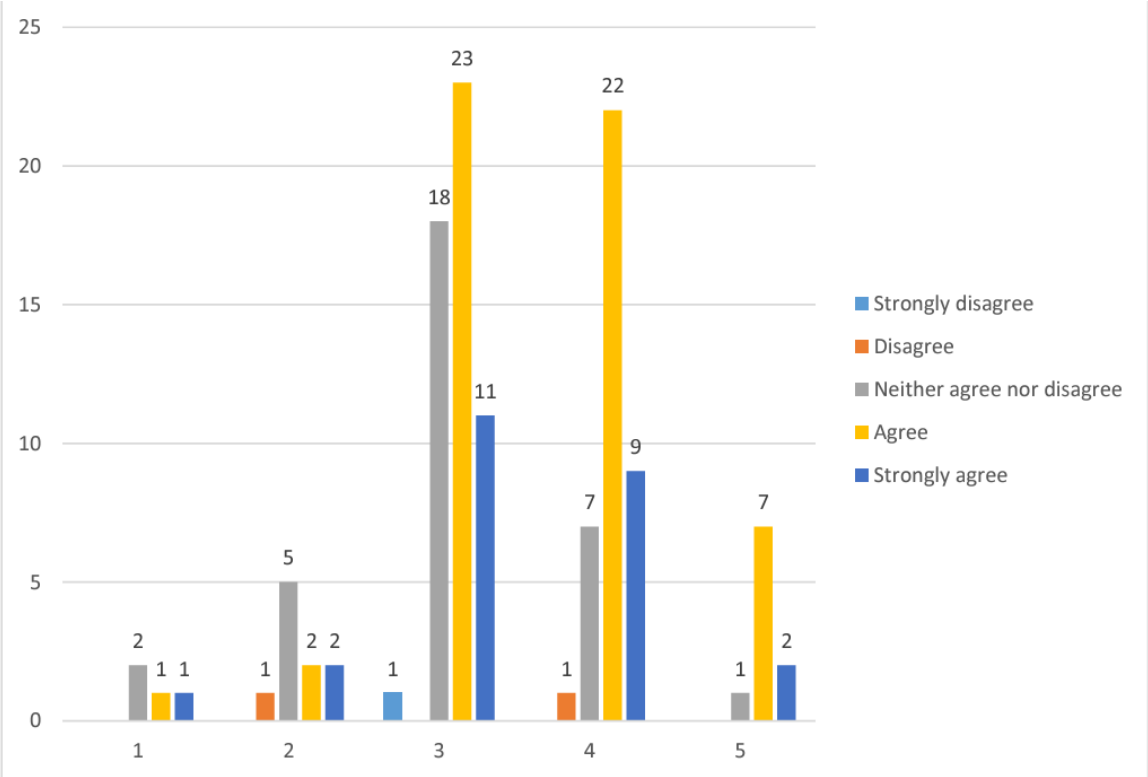


Figure 31. Responses to the statement 'VBHC will improve patient outcomes' compared against the respondents self-rated level of seniority, where 1 represents the lowest level of seniority and 5 indicates the highest level of seniority.

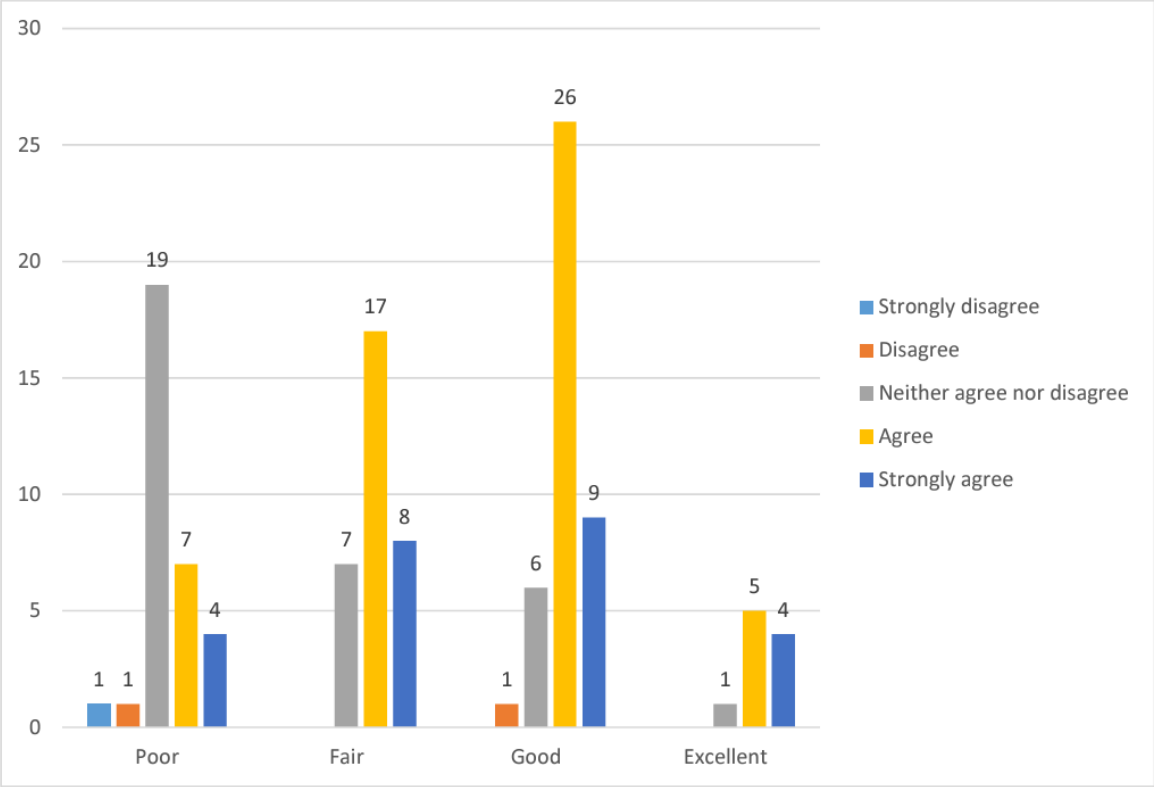


Figure 32. Responses to the statement 'VBHC will improve patient outcomes' compared against the respondents self-rated level of knowledge of VBHC.

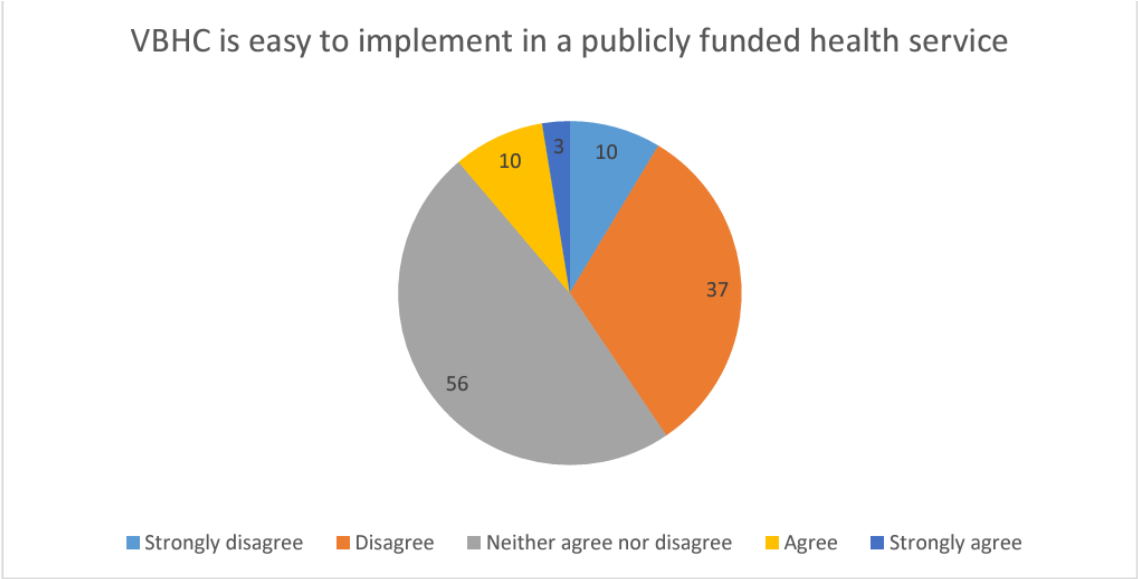


Figure 33. Responses to the statement 'VBHC is easy to implement in a publicly funded health service.'

The majority of respondents (48.28%) neither agreed nor disagreed with the statement. 31.90% of respondents disagreed, 8.62% of respondents strongly disagreed, 8.62% of respondents agreed and 2.59% of respondents strongly agreed.

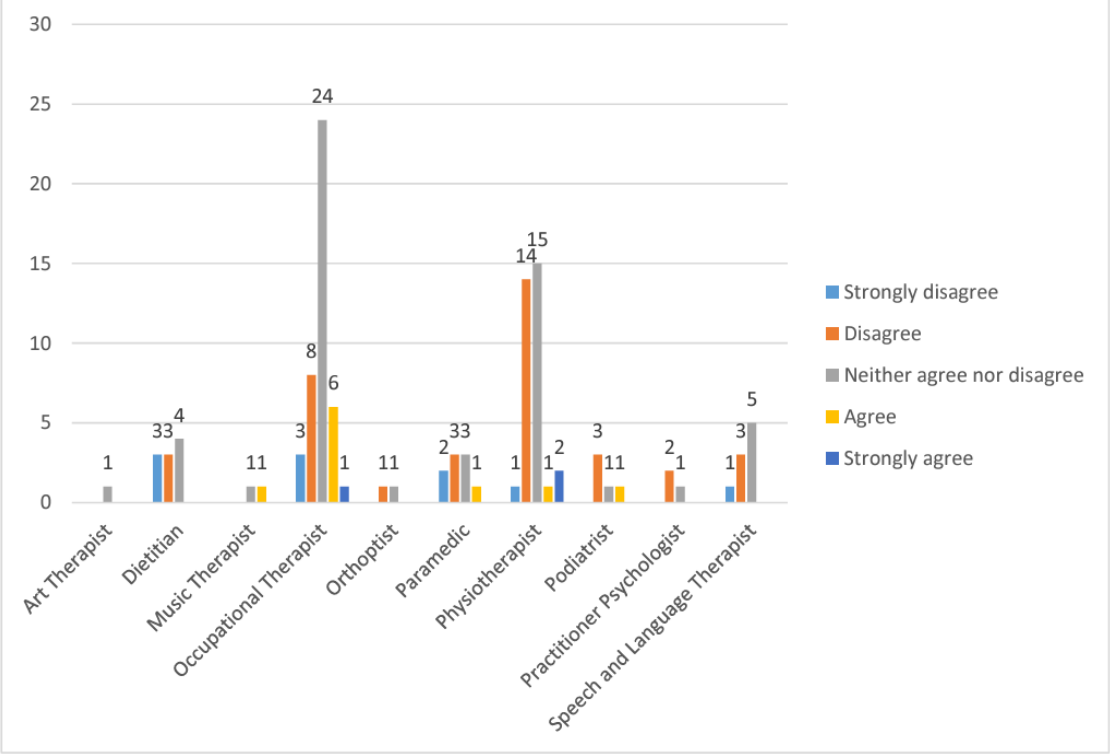


Figure 34. Responses to the statement 'VBHC is easy to implement in a publicly funded health service' compared against the respondent's profession.

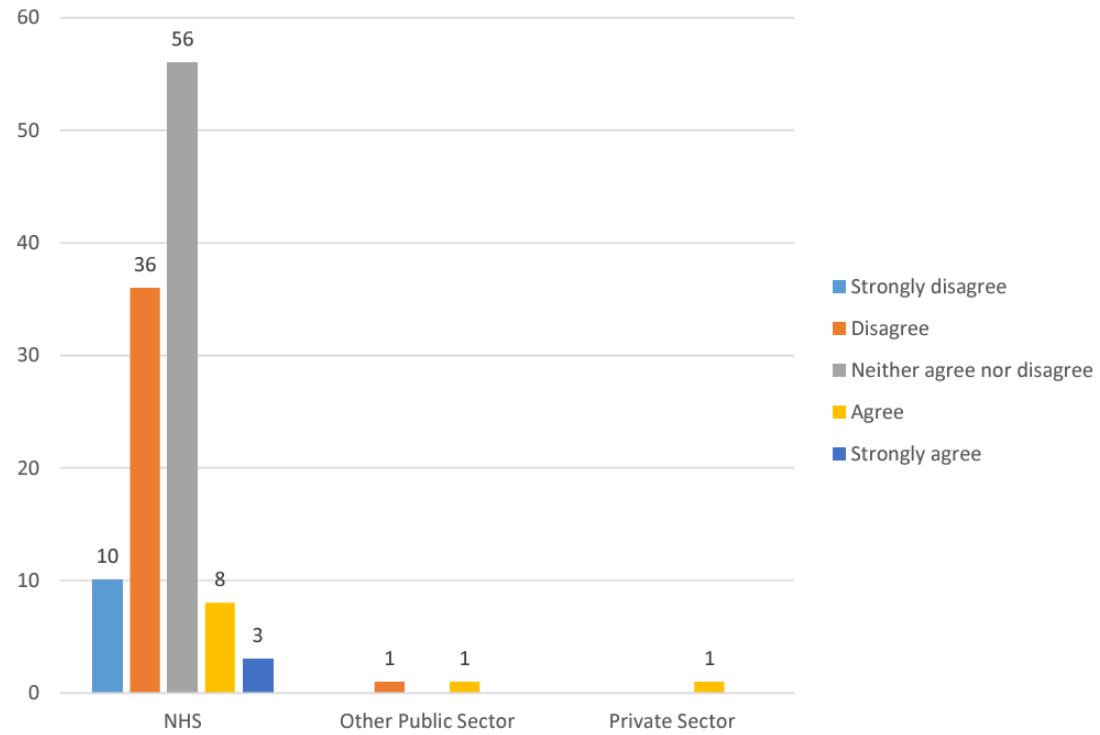


Figure 25. Responses to the statement 'VBHC is easy to implement in a publicly funded health service' compared against the type of organisations that respondents mainly work for.

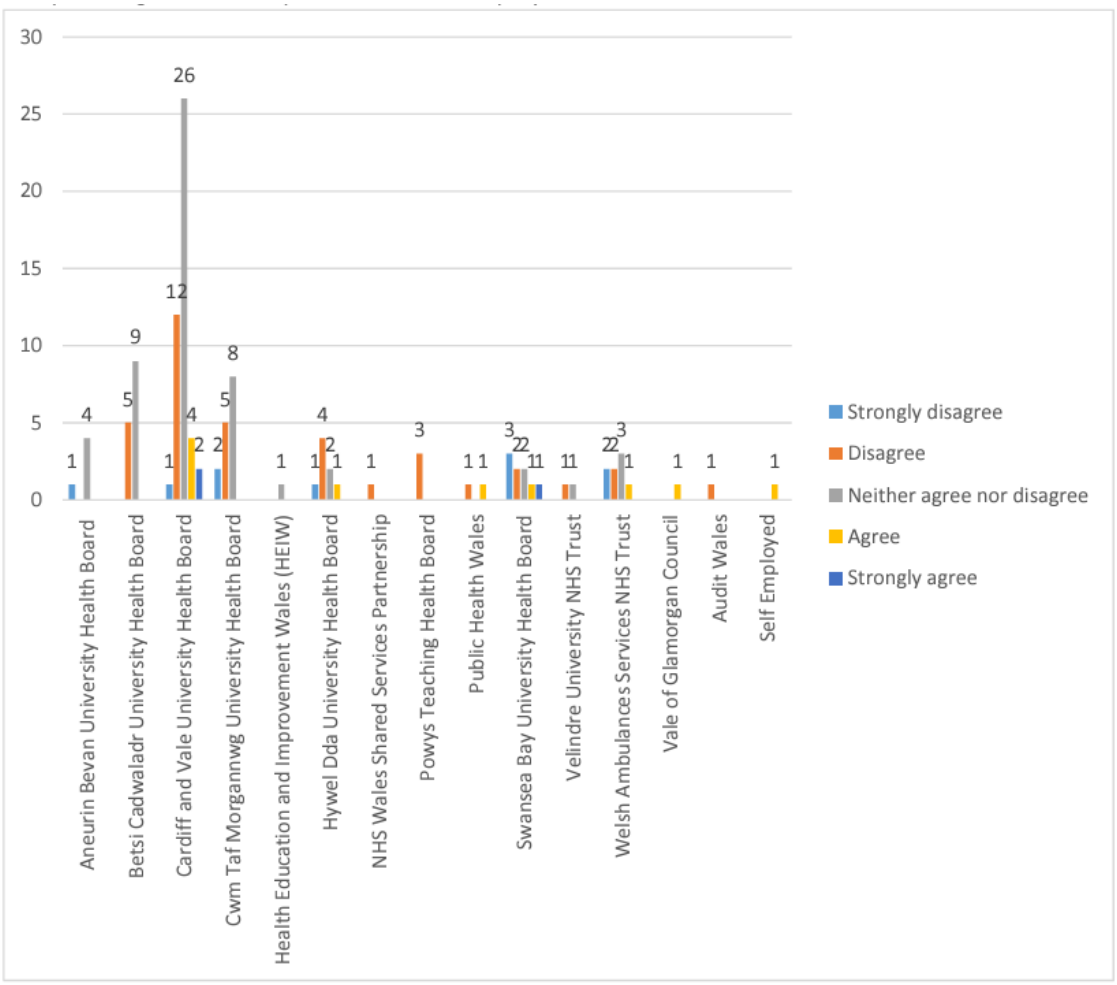


Figure 36. Responses to the statement 'VBHC is easy to implement in a publicly funded health service' compared against the respondent's main employer.

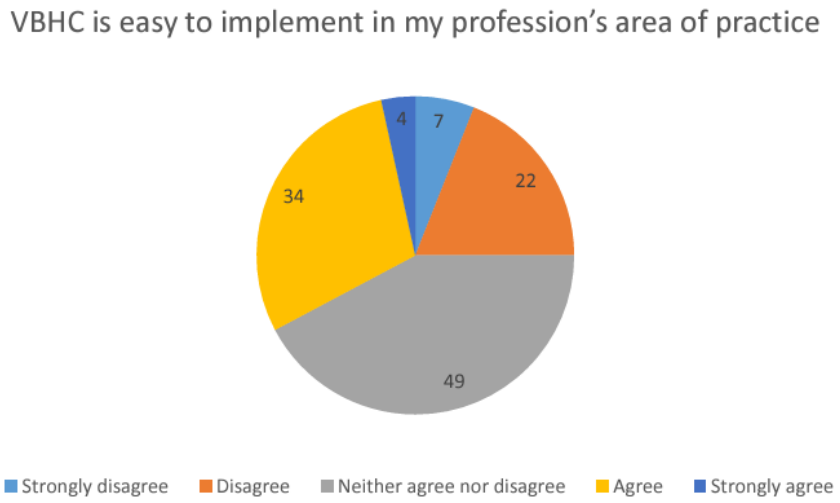


Figure 37. Responses to the statement 'VBHC is easy to implement in my profession's area of practice.'

Most respondents (42.24%) neither agreed nor disagreed with the statement. 29.31% of respondents agreed, 18.97% of respondents disagreed, 6.03% of respondents strongly disagreed and 3.45% of respondents strongly agreed.

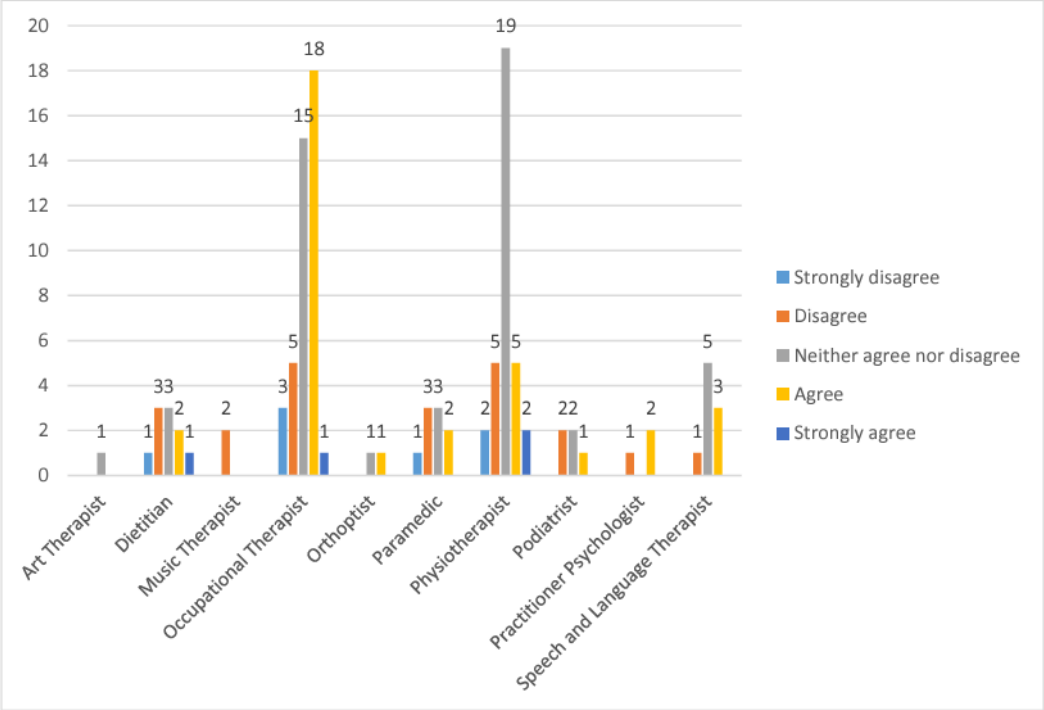


Figure 38. Responses to the statement 'VBHC is easy to implement in my profession's area of practice' compared against the respondent's profession.

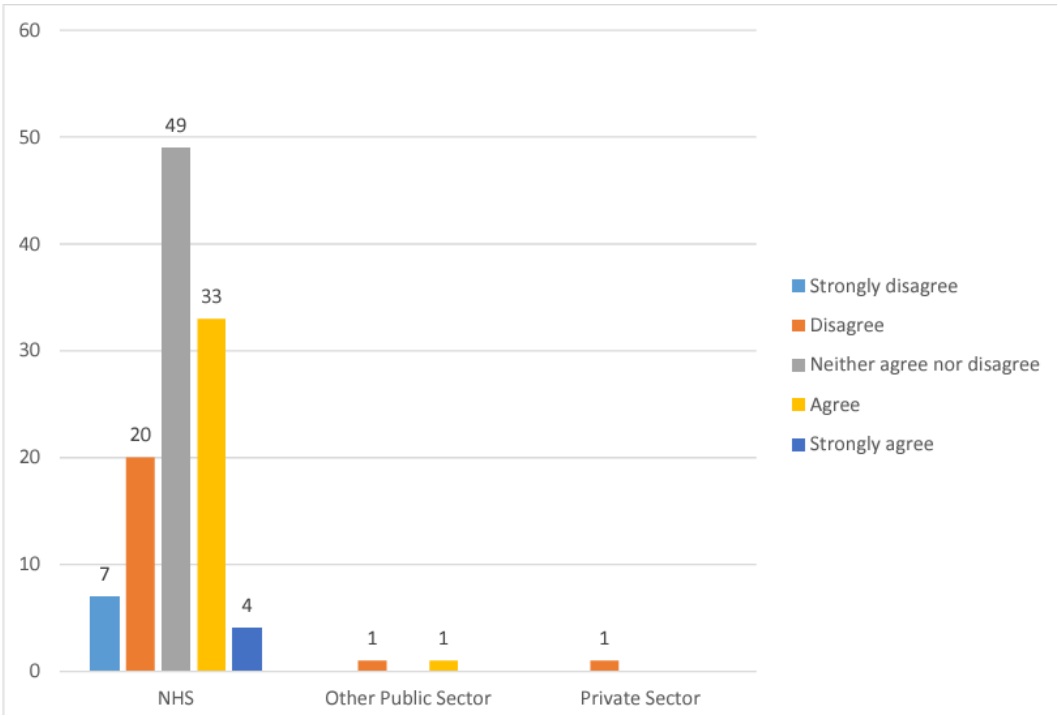


Figure 39. Responses to the statement 'VBHC is easy to implement in my profession's area of practice' compared against the type of organisations that respondents mainly work for.

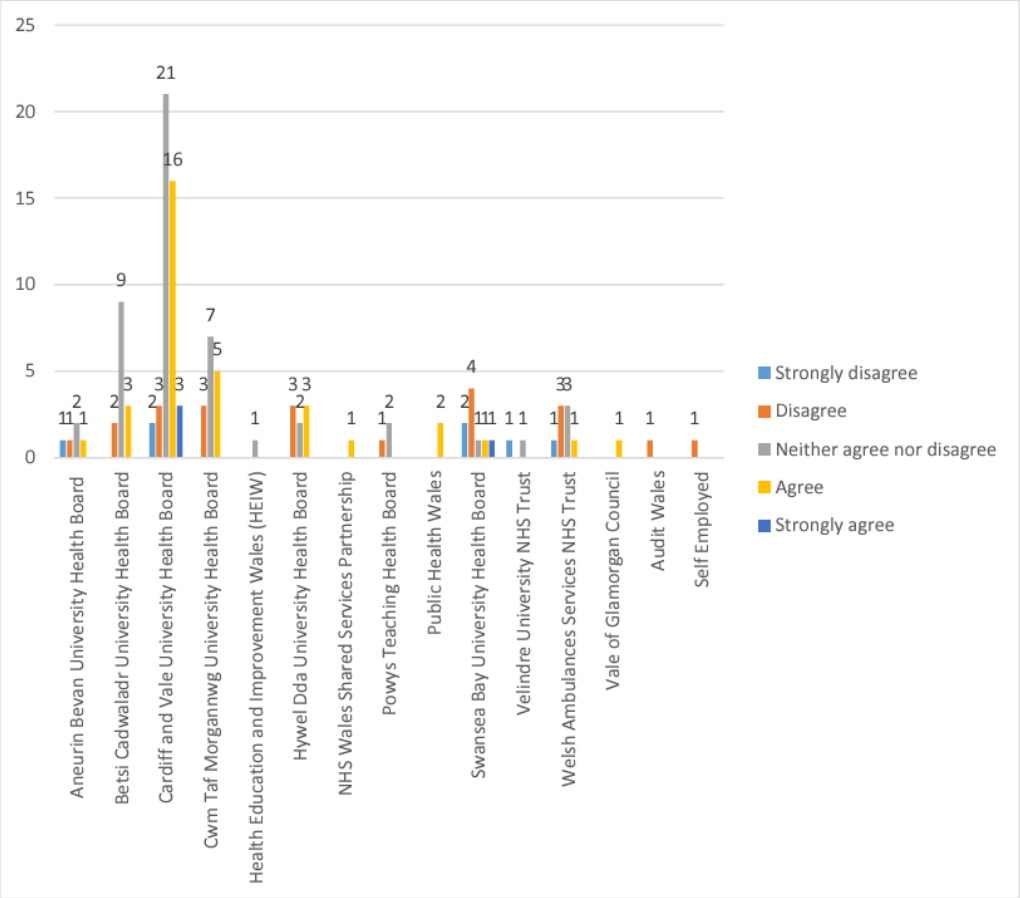


Figure 40. Responses to the statement 'VBHC is easy to implement in my professions are of practice' compared against the respondent's main employer.

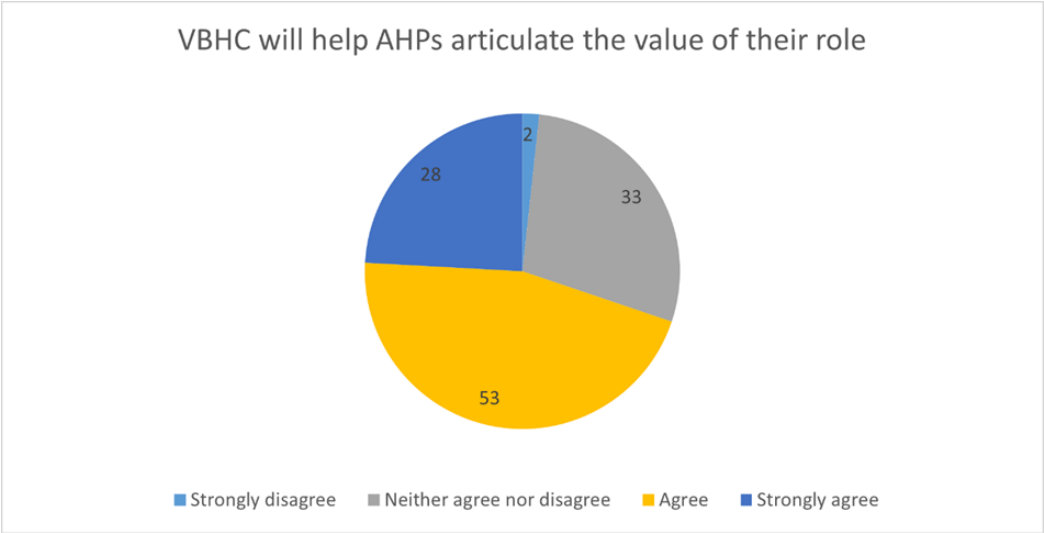


Figure 41. Responses to the statement 'VBHC will help AHPs articulate the value of their role.'

The majority of respondents (45.69%) agreed with the statement. 28.45% of respondents neither agreed nor disagreed, 24.14% of respondents strongly agreed, and 1.72% of respondents strongly disagreed.

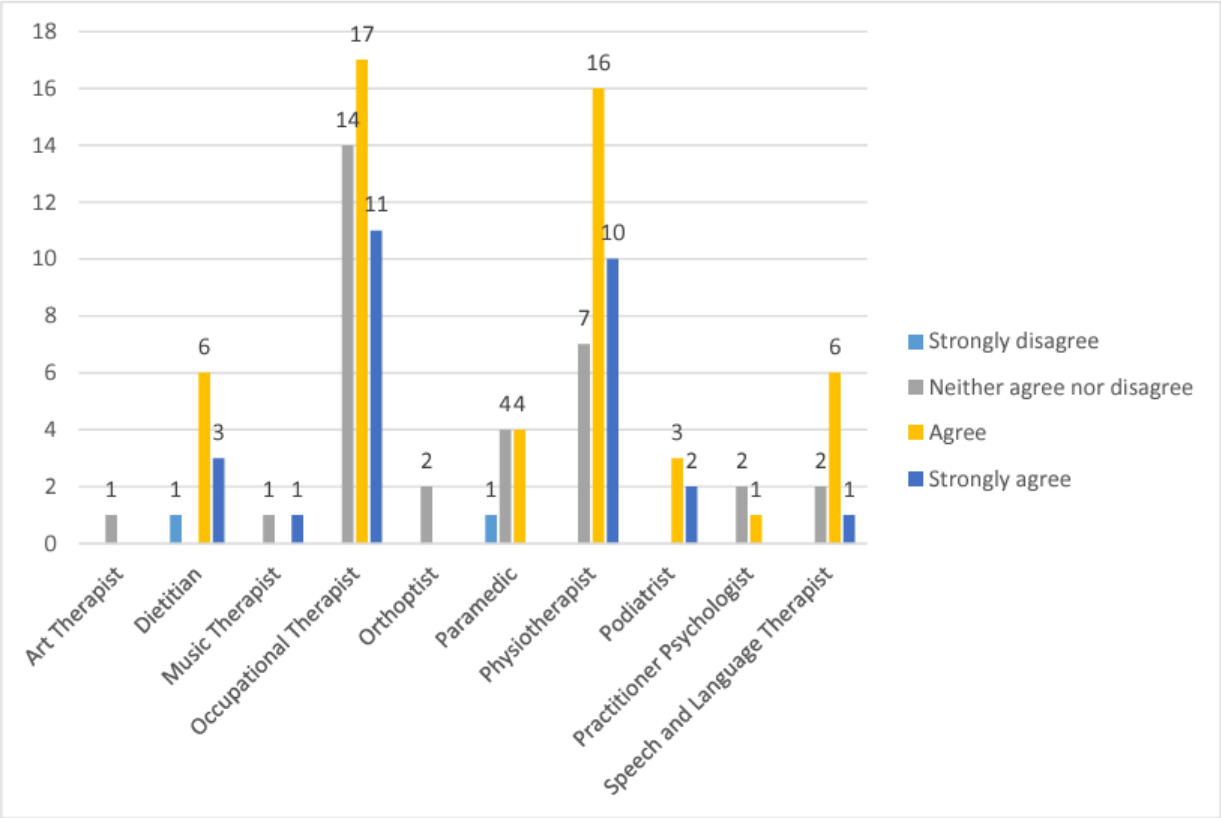


Figure 42. Responses to the statement 'VBHC will help AHPs articulate the value of their role' compared against the respondent's profession.

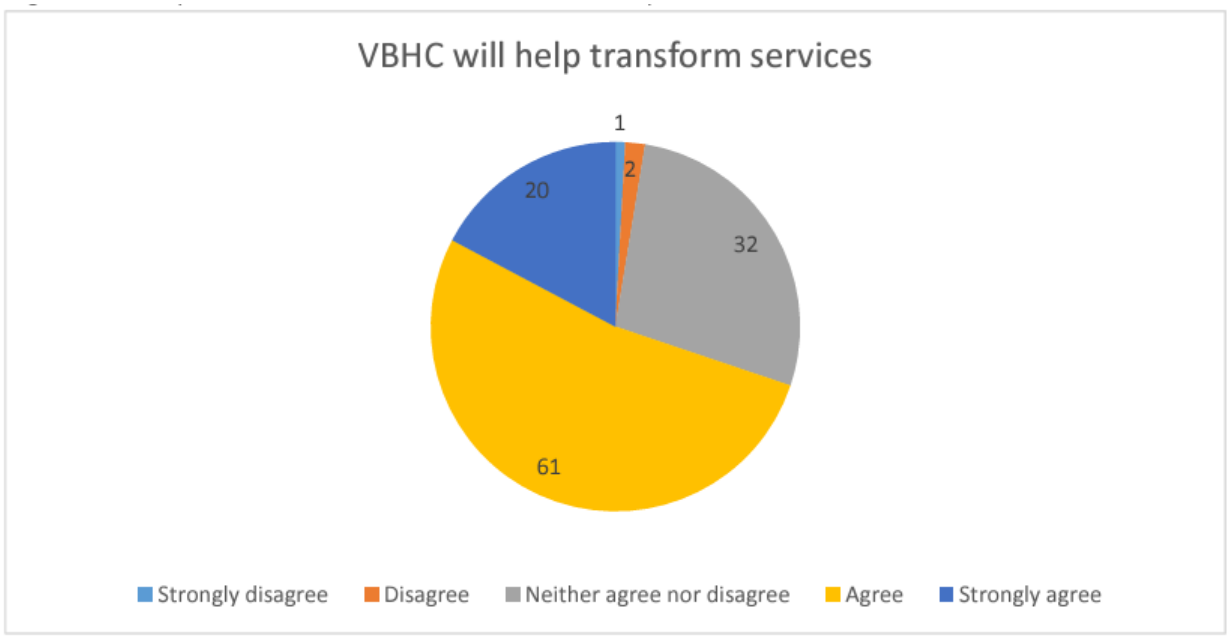


Figure 43. Responses to the statement 'VBHC will help transform service.'

Most respondents (52.59%) agreed with the statement. 27.59% of respondents neither agreed nor disagreed, 17.24% of respondents strongly agreed, 1.72% of respondents disagreed and 0.86% of respondents strongly disagreed.

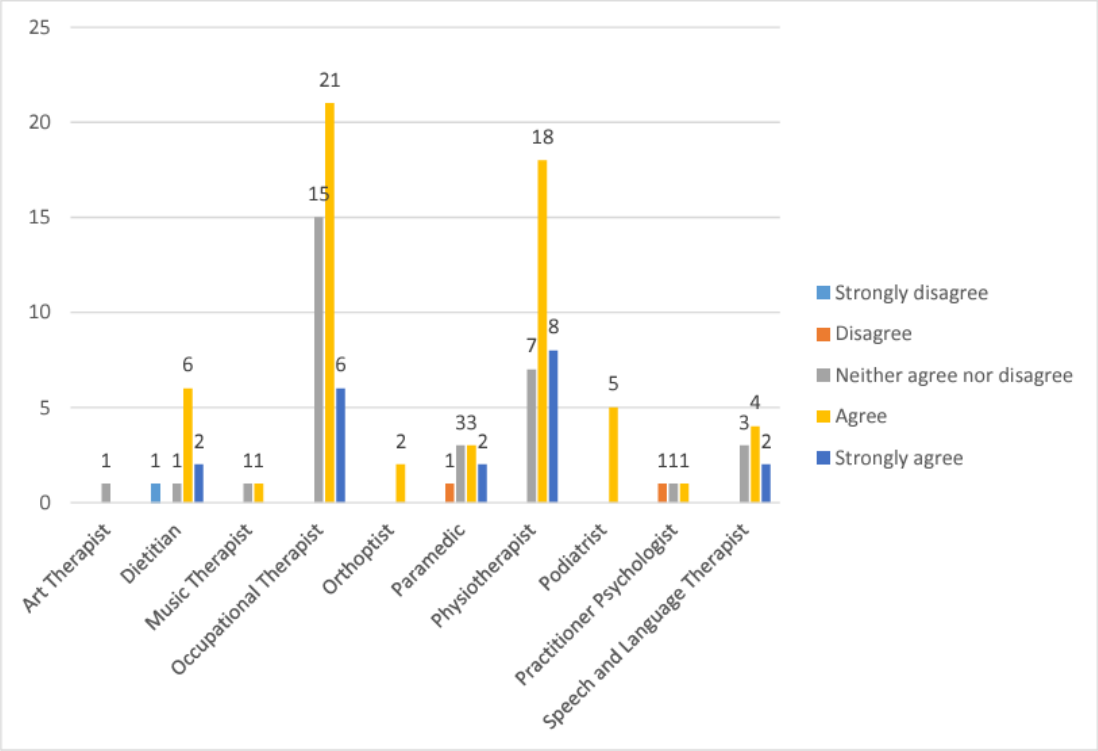


Figure 44. Responses to the statement 'VBHC will help transform services' compared against the respondent's profession.

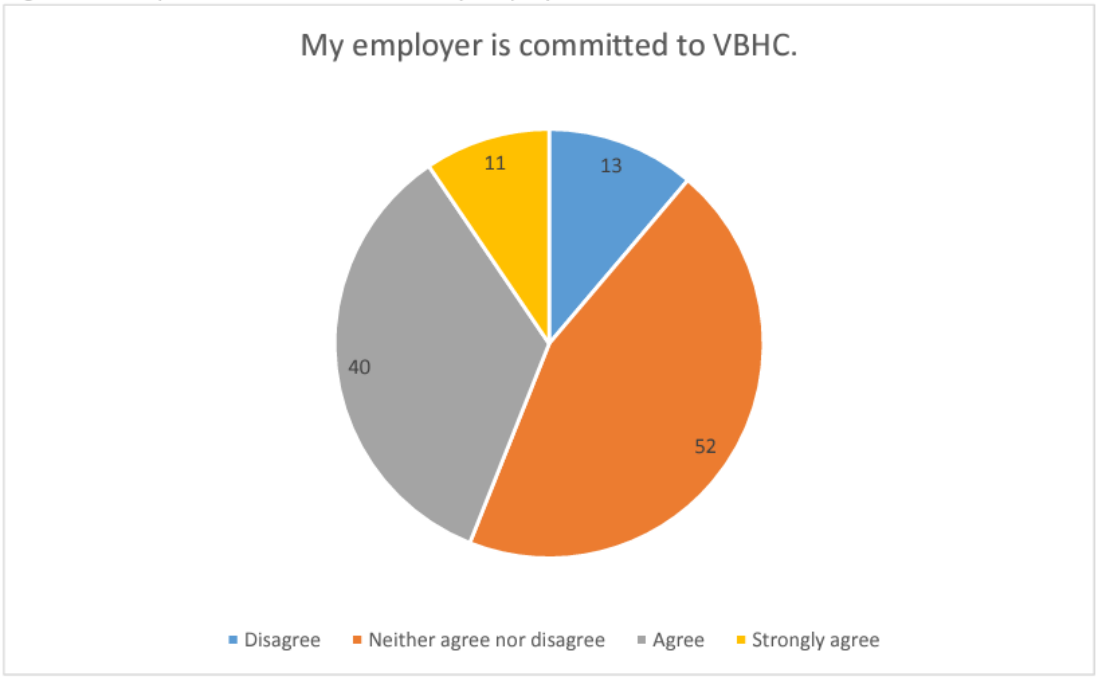


Figure 45. Responses to the statement 'My employer is committed to VBHC.'

Most respondents (44.83%) neither agreed nor disagreed with the statement. 34.48% of respondents agreed, 11.21% of respondents disagreed, and 9.48% of respondents strongly agreed.

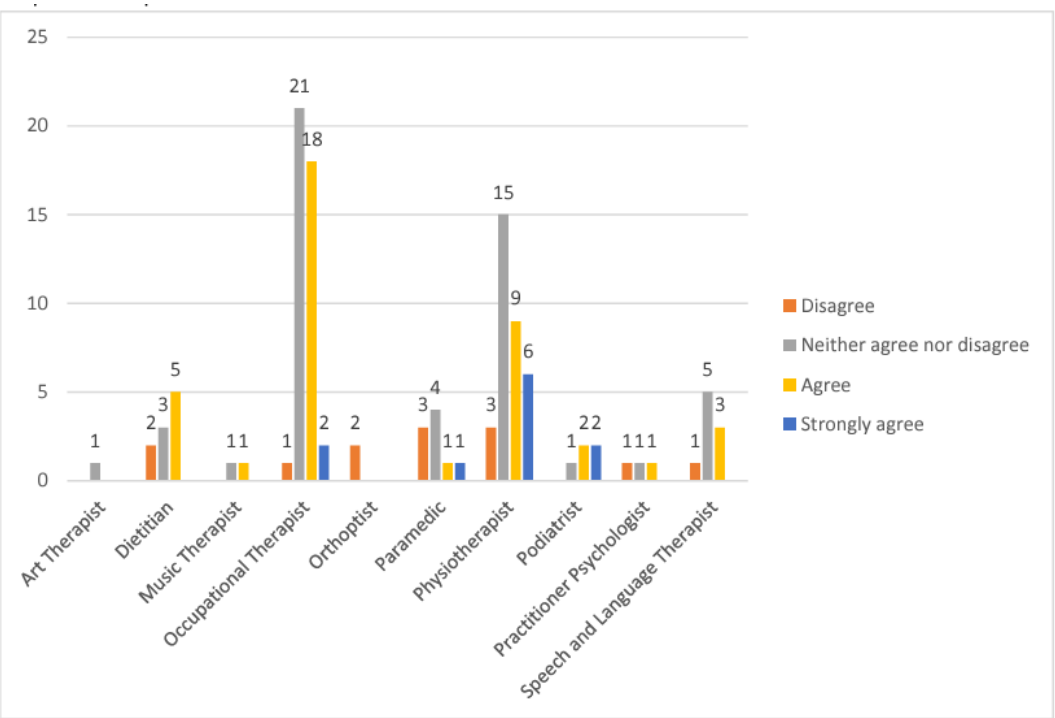


Figure 46. Responses to the statement 'My employer is committed to VBHC' compared against the respondent's profession.

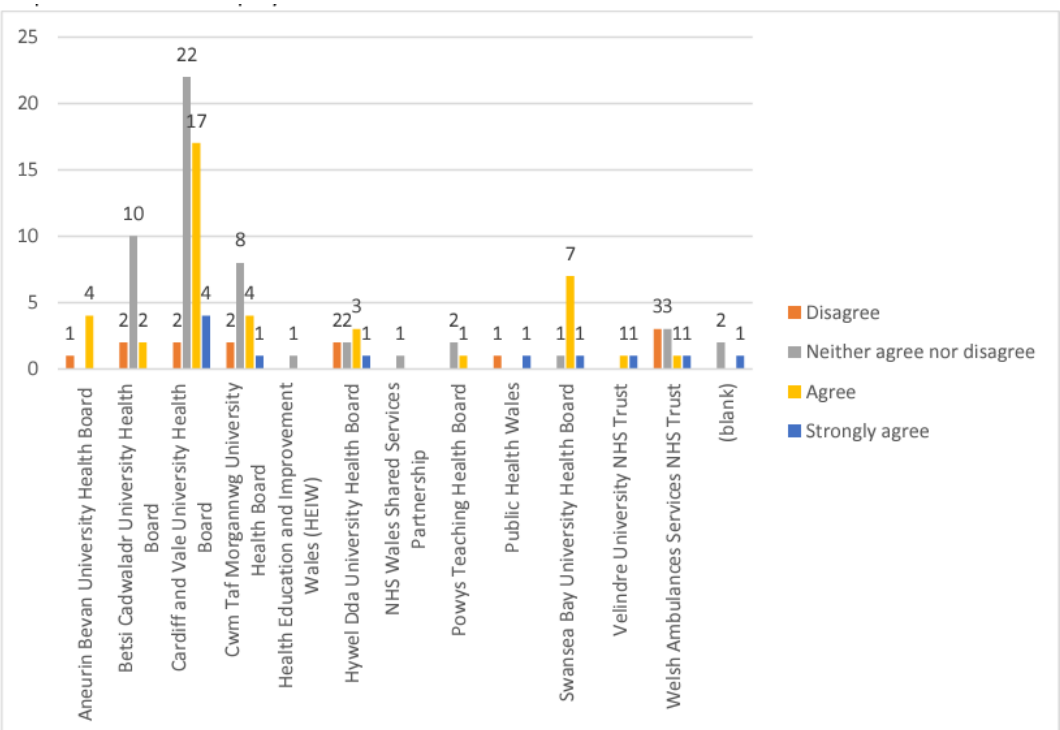


Figure 47. Responses to the statement 'My employer is committed to VBHC' compared against the respondent's main employer.

5 Discussion

While there is no single universally accepted definition of VBHC, all the definitions found in the literature converge on a common principle: the improvement of outcomes relative to the cost of achieving those outcomes (Porter and Teisberg, 2006; EXPH, 2019; Hurst et al., 2019).

Porter and Teisberg's (2006) definition explicitly emphasise the connection between outcomes and cost. In contrast, EXPH (2019) and Hurst et al. (2019) associate outcomes with 'resources' in their VBHC definitions. However, both the EXPH (2019) and Hurst et al. (2019) clarify that 'cost' falls under the broader category of 'resources' in their interpretations of VBHC.

Given that the relationship between outcomes and cost is a fundamental concept shared by all these definitions, it was chosen as a pivotal criterion to answer RO1 and evaluate AHPs understanding of VBHC.

To avoid response bias and encourage critical thinking, respondents were asked to rate their agreement with the statement 'VBHC is exclusively concerned with improving outcomes' using a five-point Likert scale (Figure 21). 37.07% of respondents (n=43) 'disagreed' with the statement and 5.17% (n=6) of respondents 'strongly disagreed', however, 21.55% of respondents (n=25) 'agreed' and 5.17% of respondents (n=6) 'strongly agreed' demonstrating VBHC is not universally understood.

The respondents that 'agreed' with the statement, self-reported their level of knowledge as follows; 10 as 'fair', 9 as 'good', 4 as 'poor' and 2 as 'excellent'. More worryingly the respondents that 'strongly agreed' with the statement self-reported their level of knowledge as follows; 3 as 'good', 1 as 'excellent', 1 as 'fair', and 1 as 'poor' demonstrating that most respondents who either 'agreed' or 'strongly agreed' with the statement are overestimating their level of knowledge of VBHC (Figure 22).

Respondents were also asked to rate their agreement with the statement 'VBHC is exclusively concerned with reducing cost' (Figure 23). 49.14% of respondents (n=57) 'disagreed' with the statement and 9.48% (n=11) of respondents 'strongly disagreed'. Only 7.76% of respondents (n=9) 'agreed' and 2.59% of respondents (n=3) 'strongly agreed'.

Whilst Hurst et al. (2019) suggest that there is a common misconception that VBHC programmes are simply looking for cost-efficiencies, this doesn't appear to be the case with AHPs in Wales. In fact, the majority of respondents either 'disagreed' or 'strongly disagreed' with the statement that 'VBHC is exclusively concerned with reducing cost'.

All 3 of the respondents that 'strongly agreed' with the statement, self-reported their level of knowledge as 'poor' and the respondents that 'agreed' with the statement self-reported their level of knowledge as follows; 4 as 'fair', 2 as 'poor', 2 as 'good' and 1 as 'excellent' (Figure 24). Again, these results demonstrate that some respondents are overestimating their level of knowledge of VBHC.

When respondents were asked to describe in their own words what VBHC meant to them, many linked outcomes to cost suggesting an understanding that VBHC involves improving outcomes while being mindful of the costs associated with achieving those outcomes. However, 17 respondents (14.65%) confused VBHC with organisational values. For example, one respondent gave the following response "Following Health boards values. In practice: facilitate values-based appraisal, values-based recruitment and interviewing".

Staalduinen et al. (2022) suggest VBHC has a high level of interpretative variability, and this study's results confirm this is also the case with AHPs in Wales. This could in part be because there are multiple definitions of VBHC and despite Hurst et al. (2019) defining VBHC in the NHS, the adoption of their definition has been poor. For example, the Allied Health Professions Framework for Wales (2019a) cites a definition offered by Lewis (2018) in a blog post, not the Hurst et al. (2019) definition that Lewis co-authored. Hurst et al. (2019) suggested common terminology needed to be adopted so that every person involved in healthcare, including patients, have a shared understanding of what VBHC means. The results of this study support that recommendation, for example, one respondent wrote, "It might have been helpful to have had a definition at the start of the survey and then I could have answered the questions better. I answered neither agree nor disagree because I don't know", this clearly demonstrates the need for an agreed definition to increase AHPs understanding of VBHC.

5.1 RO2. To analyse differences in AHPs perceptions of VBHC in Wales.

47.41% (n=55) of respondents agreed with the statement 'VBHC will improve patient outcomes' and 21.55% (n=25) of respondents strongly agreed (Figure 26). Only 1.72% (n=2) disagreed and 0.87% (n=1) strongly

disagreed. The 2 respondents who disagreed were both paramedics and the respondent who strongly disagreed was an Occupational Therapist. Both the paramedics and the occupational therapist reported that they were in clinical practice. One of the paramedics said their main area of practice was 'clinical' and the other said 'research and audit'. The paramedic whose main area of practice was clinical said they were not aware of VBHC. The paramedic who worked in research and audit had strong views and said:

> *"Whilst potentially better than the status quo, VBH should not be substituting what we learned through the work of Archie Cochrane and others conducted in Wales over half a century ago. Namely, that health care should be based on high quality and rigorous evidence, and it should be clinically and cost effective and universally available."*

This may include activities such as prems & proms, but while patient centred care is vital, it cannot tell us if it works. We need to conduct rigorous research such as randomised controlled trials to do that. My concern is that VBH is trying to substitute Evidence Based Medicine/Healthcare, and in doing so, misdirecting resources, our organisations and most talented AHP's away from conducting rigorous research, which may not lead to efficient and effective services but hold us back.

The Occupational Therapist appears to be an 'outlier', which Saunders, Lewis and Thornhill (2018) describe as a "case or unit of analysis that has extreme values for a variable which may distort the interpretation of data or make a statistic misleading". The Occupational Therapist gave extreme answers (strongly disagree / strongly agree) for 79% of their responses and when asked to describe VBHC in their own words they said "Staff are paid only if patient outcomes are met. This means that no matter how well you provide care/advice etc, if the patient doesn't follow guidance the clinician won't be paid". Worryingly they said they held a mid-level leadership and management role in the NHS. Thankfully these views were not shared by others in leadership and management roles, the majority of which (43.59%) agreed that VBHC would improve patient outcomes (Figure 29).

When asked to rate their agreement with the statement 'VBHC is easy to implement in a publicly funded health service', 48.28% of respondents neither agreed nor disagreed (Figure 33). Interestingly, this question had the highest 'neither agree nor disagree' response among all the questions asked in the questionnaire, indicating a significant level of ambivalence or uncertainty regarding the implementation of VBHC in a publicly funded health service. Notably, 97.41% of the respondent's main employer was the NHS (Figure 35). The 'neither agree nor disagree' response was most prevalent (46.43%) in respondents employed by Cardiff and Vale University Health Board (Figure 36). Occupational Therapists contributed the highest percentage (42.86%) of the 'neither agree nor disagree' responses (Figure 34).

However, when asked to rate their agreement with the statement 'VBHC is easy to implement in my profession's area of practice', the majority of Occupational Therapists (15.52%) agreed with the statement (Figure 38). This demonstrates that they perceive it as easier to implement in their specific area of practice compared to its implementation in a publicly funded health service more generally. In contrast, the number of 'neither agree nor disagree' responses from Physiotherapists increased from 26.79% in response to 'VBHC is easy to implement in a publicly funded health service' (Figure 34) to 38.78% in response to 'VBHC is easy to implement in my profession's area of practice' (Figure 38), suggesting an increasing amount of ambivalence or uncertainty amongst physiotherapists regarding the implementation of VBHC in their profession's area of practice. The 'neither agree nor disagree' response was still most prevalent (42.86 %) among respondents employed by Cardiff and Vale University Health Board in response to the statement 'VBHC is easy to implement in my profession's area of practice' (Fig 40). However, more NHS employees (28.45%) agreed with the statement 'VBHC is easy to implement in my profession's area of practice' (Figure 39) compared to the percentage (6.90%) that agreed with statement 'VBHC is easy to implement in a publicly funded health service' (Figure 35).

While there appear to be different perceptions among AHPs regarding the implementation of VBHC, the majority of AHPs (45.69%) agreed with the statement 'VBHC will help AHPs articulate the value of their role' (Figure 41). None of the respondents 'disagreed' and only 1.72% (n=2) 'strongly disagreed'. Notably, one of the respondents who strongly disagreed was a paramedic and one was a dietician.

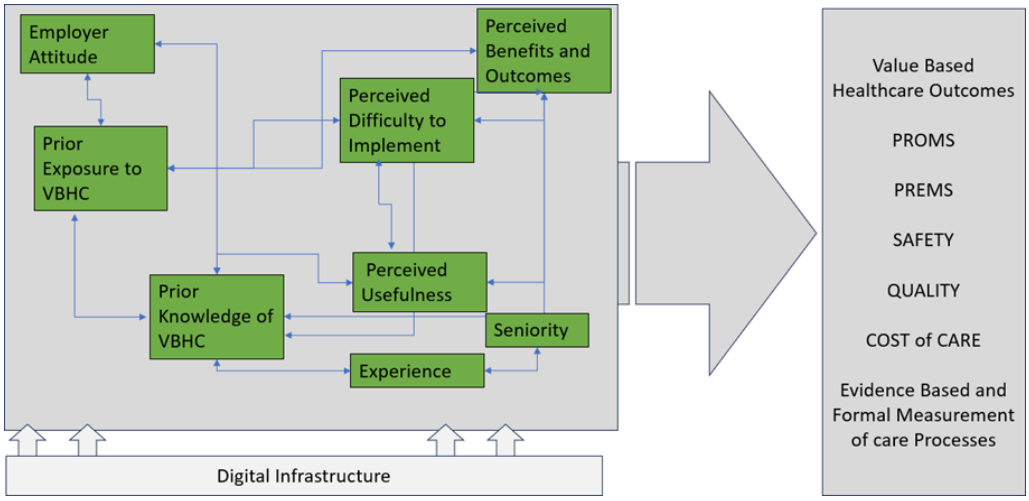
Similarly, the majority of AHPs (52.59%) agreed with the statement 'VBHC will help transform services' (Figure 43). Only 1.72% (n=2) of respondents 'disagreed' and 0.86% (n=2) of respondents 'strongly disagreed'. One of the respondents who 'disagreed' was a Paramedic, and the other was a Practitioner Psychologist. The respondent who strongly disagreed was a dietician.

AHPs agreement with statements such as 'VBHC will help AHPs articulate the value of their role' and 'VBHC will help transform services' suggests that AHPs perceive VBHC as useful.

However, when asked to rate their agreement with the statement 'My employer is committed to VBHC', most respondents (44.83%) neither agreed nor disagreed (Figure 45), indicating a high level of ambivalence or uncertainty regarding their employer's commitment. This is particularly interesting given that this study is based in Wales, who are often referred to as "leading the way" with VBHC (Life Sciences Hub Wales, n.d.). Again, the 'neither agree nor disagree' response was most prevalent (44.00%) in respondents employed by Cardiff and Vale University Health Board (Figure 47) and this may have influenced the perceptions of Cardiff and Vale University Health Board employees regarding VBHC implementation discussed earlier.

This study has analysed the differences in AHPs perceptions of VBHC in Wales (RO2). The results have found that generally AHPs appear to perceive VBHC as a strategy that will help transform services and help AHPs to articulate the value their role can offer. However, AHPs perceptions do appear to be impacted by the factors identified and tested through the conceptual model developed by the researcher.

The factors highlighted in green in the model below have been analysed through this study and shown to affect AHPs perceptions of VBHC.



The results of this study will inform RO3 and be presented as recommendations in the next chapter.

5.2 In Summary

The study has identified many new insights and a vacuum in AHPs general understanding of VBHC and its useful application to improve practice. The study will now be concluded.

6 Conclusion

The purpose of this study was to investigate: What are Allied Health Professionals' perceptions of Value-Based Healthcare in Wales?

The research objectives were:

- RO1. To establish Allied Health Professionals' understanding of Value-Based Healthcare in Wales.
- RO2. To analyse differences in AHPs perceptions of VBHC in Wales.
- RO3. To develop a set of recommendations based on the findings.

6.1 Summary of Key Findings

- RO1. VBHC is not universally understood by AHPs in Wales.
- R02. The following factors affect AHPs perceptions of VBHC:
  - AHPs experience

- AHPs seniority
- Prior knowledge of VBHC
- Prior exposure to VBHC
- Employer attitude towards VBHC
- Perceived benefits and outcomes of VBHC
- Perceived difficulty to implement
- Perceived usefulness

- RO3. The recommendations based on the findings of this study are presented in section 6.2 below.

6.2 Implications

The following recommendations are made based on the results of this study:

6.2.1 AHPs

- AHPs should improve their understanding of VBHC.
- Best practise VBHC case studies should be developed.

6.2.2 Employers

- Employers should involve AHPs in allocative resource discussions to enhance their understanding of what AHPs can offer and increase AHPs understanding of VBHC.
- Given the current operational pressures and the extreme financial challenges employers should consider the value AHPs can add and to the system.

6.2.3 Professional Bodies

- Professional bodies should champion VBHC amongst their respective professions.
- Professional bodies should champion the work of their respective professions through the lens of value.
- Professional bodies should encourage, support and lead interprofessional collaborations.

6.2.4 Policy Implications

- To help inform policy decisions the researcher will share his findings with policymakers and healthcare leaders including the Chief Allied Health Professions Advisor in Welsh Government and the National Director of the Welsh Value in Health Centre.
- Common terminology should be adopted to ensure everyone has a shared understanding of what VBHC is.
- A strategy should be written to integrate VBHC into AHP practice.

6.2.5 Educational Implications

- This study has highlighted the need for targeted educational programmes and training for AHPs regarding VBHC.
- VBHC should be taught on undergraduate AHP courses and given the same level of attention as subjects such as Evidence Based Practice and Quality Improvement.

6.3 Future Research

This research study is anticipated to pave the way for further academic exploration. The researchers propose the following as crucial next steps in this endeavour:

- A research study is conducted in another country similar to Wales to see if the model and study findings are generalisable. This will overcome the acknowledged methodological limitation of only completing the study in Wales.

- A longitudinal research study is conducted in Cardiff and Vale University Health Board examining how they overcome the challenges identified by this study and embed VBHC amongst their AHPs.
- Examine the perceptions of AHPs in Queensland Australia who have developed a specific strategy to support the implementation and adoption of VBHC in AHPs.

6.4 Concluding Remarks

This study contributes to the expanding field of VBHC research, revealing a notable disparity between the theoretical understanding of VBHC and its actual implementation, especially among key AHP categories. The findings suggest that the subject is still in its early stages, requiring substantial promotional efforts to enhance awareness and drive substantial improvements in practice. It is my aspiration that this work will serve as an inspiration for future researchers, guiding them to make meaningful contributions to the enhancement of professional practice using VBHC principles.

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8 Appendices

Appendix A

Concept 1 AHPs		Concept 2 VBHC
"Allied Health" OR AHP* OR "Art Therapist*" OR "Art therapy" OR "Music Therapist*" OR "Music therapy" OR "Drama Therapist*" OR "Drama therapy" OR "Dietitian*" OR "dietetic service*" OR "Occupational Therapist*" OR "Occupational therapy" OR Orthoptist* OR Orthotist* OR Orthotic* OR Paramedic* OR Physiotherapist* OR Physiotherapy OR Podiatrist* OR Podiatry OR "Practitioner Psychologist*" OR Prosthetist* OR Prosthetic* OR "Speech and Language Therapist*" OR "speech therapist" OR "speech therapy"	AND	"Value Based Healthcare" OR "Value-Based Healthcare" OR "Value Based Health Care" OR "Value-Based Health Care" OR "Value Based Care" OR "Value-Based Care" OR VBHC

Appendix B

School of Management Ethical Review Checklist

This checklist should be completed with the assistance of project or dissertation supervisors.

Does the proposed research involve any of the following?

☐ Vulnerable people or participants unable to give informed consent.

☐ Deception, misrepresentation, or covert research.

☐ Any risk of harm, damage, or distress to anyone.

☐ Collection of personal or sensitive personal data as defined by GDPR.

☐ Data collection from participants without prior, recorded, informed consent.

☐ The sharing of data or confidential information beyond the initial consent given.

☐ A lack of anonymity for research participants. (i.e. it will identify participants).

☐ Interventions and therapies, including clinical and non-clinical trials.

☐ Study or exposure of illegal activity, or research that is likely to discover illegal activity.

☐ Financial inducements offered to participants.

☐ Collection or purchase of human samples including bodily fluids e.g., blood, saliva

☐ Other aspects that pose significant concerns such as:

- Coercion.
- Conflicts of interest.
- Research in countries where research integrity cannot be ensured.
- Data security.
- Use of administrative or secure data.
- Inappropriate inducements.
- Poor practice.
- Artificial Intelligence.
- Security-sensitive data or materials.
- Sensitive objects, artifacts, or topics.
- Potentially dangerous and/or illegal internet sites.

Postgraduate research undertaking any of the above will require ethical review using the online research ethics system. https://swansea.forms.ethicalreviewmanager.com

Students should also confirm that they will comply with Health and Safety guidelines and undertake risk assessment of the research as required. Students should also confirm that they understand that all projects and activities will be undertaken in accordance with relevant external and internal policies, regulations, codes of practice and other requirements, and that further information on these is available from University and Faculty research and teaching support services. For further assistance on ethical review contact FHSS-Ethics@swansea.ac.uk

Where is the value in Digital Pathology?

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Abstract:

Background: Digital Pathology (DP) is revolutionizing cellular pathology by utilizing technology to produce images at both macroscopic and microscopic levels, enabling pathologists to diagnose using on-screen whole slide images. With NHS Wales poised to transition its DP infrastructure, this project conducts a systematic review of literature, focusing on computational pathology and DP deployments in clinical settings. The aim is to identify the value propositions of DP in healthcare, particularly within a Value Based Health and Care (VBHC) context. By applying the European Union Commission's definition of VBHC, this critical review assesses not only technical value propositions but also broader societal impacts of DP implementation.

Methodology: This qualitative systematic review aims to explore how DP adds value within a VBHC framework. Utilizing an iterative categorization (IC) method adapted from Neale (2021), the study expands beyond immediate technical benefits to evaluate wider VBHC criteria. The focus extends to patient-centered outcomes, the flow of information, sustainability, and collaboration. Through stringent eligibility criteria, including DP topics, computational pathology/AI tools, and evidence of service benefit, the study excludes statistical studies and non-relevant research. Leveraging PubMed and Research Rabbit, the search strategy yields 77 pertinent papers for review. The methodology employed a single reviewer using the iterative categorization (IC) method by Neale (2021), utilizing NVIVO to extract and categorize statements from green-marked papers based on the EU Commission's definition of Value Based Healthcare, along with two additional categories: Emergent and Intangible. NVIVO's coding functions facilitated the allocation of categories to statements, which were then summarized and analyzed for recurring themes and higher-order concepts to aid further analysis.

Findings: Key recommendations include a focus on patient-centered outcomes, utilizing the VBHC toolkit to define workflows and develop AI tools for cancer care pathways. Open architecture strategies are proposed to enable the flow of patient data and facilitate clinician-patient engagement. Furthermore, a national training strategy for pathologists is suggested to ensure sustainability and equity in DP adoption. Finally, fostering collaborations with academic institutions and third-party suppliers is advocated to drive innovation and tool development, leveraging the diverse expertise within the healthcare ecosystem.

Conclusions: This research provides insights into the value propositions of DP within a VBHC context, emphasizing the need for a comprehensive approach that encompasses technical, societal, and patient-centered considerations. By adopting these recommendations, NHS Wales can optimize the implementation of DP and realize its full potential in transforming healthcare delivery.

Keywords: Digital Pathology, Computational Pathology, Artificial Intelligence, Value Based Health and Care, Qualitative Systematic Review

Table of Contents

1 Introduction

Digital Cellular Pathology or commonly Digital Pathology (DP) is the term which describes the use of technology used in Cellular Pathology laboratory processes to produce images at both macroscopic and microscopic level. This allows specimen photography and diagnosis by a pathologist using on-screen whole slide images as opposed to slides being viewed under a microscope. As NHS Wales is looking ahead to upgrade from the existing DP infrastructure to a system capable of fully digitising the cellular pathology caseload across the country, this project will look to the latest literature to review the developments with a focus on the use of computational pathology or AI (Artificial Intelligence) learning models but also look to literature relating to the use of DP in regional deployments for clinical use. NHS Wales is already using DP with computational tools to assist in diagnosing prostate biopsies in some of the health boards.

The aim is to identify value propositions which this technology will bring to the services across Wales and explore the wider impact that it will have on healthcare delivery. Initial reading on the subject demonstrated a focus on the technical considerations and the immediate benefits to the service utilising the technology, it is the hypothesis that a wider review of the literature will be able to demonstrate value propositions which should be considered under the scope of a Value Based Health and Care (VBHC) context. Through application of the European Union Commission definition of VBHC, this critical review aims to identify not only the technical value propositions but the wider societal impact that could be made by the implementation of DP.

2 Project Requirement

This is a qualitative systematic review which will explore how DP will add value in a VBHC context. Experience from preliminary reading of the topic has provided this author with the impression that the focus of those who implement DP in a surgical cellular pathology context are usually focused on reporting direct technical benefits and are less focused on measuring wider VBHC criteria. By performing a wider ranged review of this subject and performing an adaptation of iterative categorisation (IC) method Neale, J. (2021), to provide a qualitative analysis of the selected reading. By expanding the types of value beyond the immediate technical benefits, it is hoped that this can guide NHS (National Health Service) Wales (and others) as they scale up the DP infrastructure and understand the broader potential value it offers so that those value propositions may be realised.

3 Methods

3.1 Eligibility Criteria

- Inclusion Digital Pathology topic, use in healthcare setting, use of computational pathology or AI tools, evidence of benefit to the service. Using DP in a multi-site/regional setting.
- Exclusion, disregard statistical studies relating to acceptance of suitability of DP compared to glass microscopy for primary method of diagnosis, studies related to pharmacological research or veterinary studies.
- Discard any pre-2017.

3.2 Information Sources

- PubMed, Search date: 16/05/23
- Research Rabbit: https://www.researchrabbit.ai/

3.3 Search Strategy

- Search term of ‘Digital Pathology’ in pub med database.
- Limited to 5 yrs. Produced 6500 results.
- Refined terms: "digital pathology" [All Fields] NOT trial [Title] NOT display[title] AND ("2020/01/01" [Pub Date]: "2023/05/14" [PubDate]) Produced 5436 results.

- Used the search results to identify papers by authors who presented at the 9th Digital Pathology and AI (Artificial Intelligence) congress December 2022, these papers were then transposed into the Research Rabbit tool which interfaces to PubMed. This tool automatically searches and adds similar papers as references are added. This resulted in producing 77 papers to review.

3.4 Selection process

The selection process was conducted by a single reviewer. The results were exported into endnote from Research Rabbit. Copies of the papers were added into the endnote records and then exported into NVIVO to conduct the initial eligibility check. The content was assessed and using functionality in NVIVO to indicate green for suitable to review or red to reject.

This process resulted in 49 papers being accepted in the final group to review. Due to the time constraints available to produce this report, the scope of the search was limited to these papers, whilst further reading was identified within the literature, it only would've served to support the existing findings.

3.5 Data collection process

3.5.1 Single reviewer

The methodology is based on iterative categorisation (IC) method Neale, J. (2021). Conducted by a Single reviewer. NVIVO file containing the green marked papers from the selection process were then reviewed, opening a copy of the paper in NVIVO, highlighting any text which appears to provide or claims to have a value/benefit, these statements were categorised primarily on associating the statements to the EU commission definition of Value based Healthcare, European Commision (2019):

- ALLOCATIVE VALUE: Equitable distribution of resources across all patient groups.
- TECHNICAL VALUE: Achievement of best possible outcomes with available resources.
- PERSONAL VALUE: Appropriate care to achieve patients' personal goals.
- SOCIETAL VALUE: Contribution of healthcare to social participation and connectedness.

Two other categories were added:

- Emergent: where value wasn't directly identified because of digital pathology but a case for indirect value could be made.
- Intangible: where a value was not easily classified within the other definitions.

Coding functions in NVIVO were used to allocate 1 or more categories to statements from the literature. NVIVO collated the excerpts with references to the documents.

In NVIVO the category generates a file with the extracted texts which were copied to Word. These were saved as a reference copy and then duplicated to create an analysis file. The analysis file was then used to list the concepts reported in the selected texts and the source referenced against the concept. This was repeated for all categories, the concepts were reviewed and consolidated as required if they were similar.

The analysis file for each category was again duplicated to be written as a summary document to facilitate further analysis. Consideration is paid to themes recurring and whether the themes are a higher order concept.

4 Main Analysis

4.1 Where is the value?

By analysis, the literature and attributing the value to the categories of Technical, Societal, Personal, Allocative, Emergent, and Intangible, most of the content was found to align with the technical category.

4.2 What is the Value: Technical – Providing the best outcomes with the available resources

Digital pathology as part of a managed implementation across multiple sites has demonstrated that it can improve productivity, there are various aspects of the cellular pathology workflow which can be optimised

as part of an implementation and directly translate to benefits. A key point is the time taken to diagnose a case for a pathologist, 'Overall, the turnaround time decreased from 6.16 days to 5.73 days (6.94%), with the largest effect being seen in the complex cases categories. For the most complex category (6), the mean turnaround time decreased by 20.16%, which is almost 2 days less per case' Stathonikos Et Al (2019). The difference of 2 days could mean the difference of a patient being discussed at multi-disciplinary team meetings or not which decides treatment options. Where patients are unable to be discussed this can postpone treatment until the next available meeting, otherwise the clinicians must communicate with the team outside of the scheduled meeting to decide options. Making sure the results are available as soon as possible increases the likelihood the patient will be discussed for treatment at the soonest opportunity.

With the use of digital pathology comes the application of computational pathology models to the whole slide image data which can be developed to augment the pathologist workflow. These tools can deliver further efficiencies to the workflow in automating labour-intensive tasks such as cell counting, 'The model performance has also been compared with the pathologists' manual annotations. Prospectively, this model will be highly beneficial to the pathologists for fast and efficient Ki-67 scoring from breast IHC (cancer) images.' Saha Et Al (2017). It is also not just efficiency but are proven to increase pathologist accuracy, tumour percentage is used when referring materials for Next Generation Sequencing methods that determine the genetic makeup of a patients tumour, which then informs treatment choices, consistently accurate estimation of the presence of the tumour could reduce the number of false negatives and improve the quality of targeted therapies for the patients, 'at a meeting where 59 pathologists were asked to estimate tumor cellularity in a given specimen of lung adenocarcinoma. The accurate confirmed tumor content was 28%, and only 3 out of 59 pathologists could guess the correct range (26–30%)' Sakomoto et al (2020).

Automation can analyse a slide and make a request for immunohistochemistry (IHC) which is a staining technique typically performed at the request of a pathologist after review of Haematoxylin and Eosin-stained slides. This can streamline the workflow for the pathologist where they don't need to take the time to make the request for the lab to act upon. Chatrian Et al (2021) demonstrated a proof of concept where there was concordance with the pathologists in making the IHC request and estimated 11 mins per case of time saved. They also raise the point that optimising the requesting tool could be a challenge, as it could under call the case and not request IHC when needed or could be over tuned and call for IHC when unnecessary. A consideration they haven't accounted for is if there is a change in practice and a new method is required, would a new model entirely be needed, or would integration just be adjusted? There need to be considerations like these when designing these systems so that they can keep pace with current evidence and not become a burden to the lab system. These systems could be developed into workstreams to fully automate review processes, which the pathologist would become the final reviewer to issue the report. Currently breast cancer models that can identify tumour, they make the IHC and Fluorescent in situ hybridisation (FISH) requests and another model can be used to analyse those results performing quantification & proven to outperform pathologists, Lujan Et al (2020). These systems can add value with automation associated time savings building on the reported reductions that digital workflows already provide, providing quantifiable results not affected by individual pathologist bias. 'Surgical resection cases with prior WSIs (whole slide images) showed a 1-day decrease in TAT. A DP experience survey showed 80% of respondents agreed WSIs improved their clinical sign-out experience.' Hanna Et Al (2019). Digital tools will not have the limitations of humans, they are not distracted, suffer fatigue etc with availability 24hrs system permitting.

Standardisation by use of automation to supplement pathologist reporting by reducing inter observer variability, Lujan Et al (2020). The AI is changing the analysis of slides from an evidence-based opinion into quantifiable data, there are no professional relationships involved where difference of opinion may affect the outputs. The benefit to the patient is any pathologist will come to the same conclusion as another pathologist from using the tool. Reducing the variability, regardless of who gets assigned the case.

It is not only consistency of reporting that has shown to be improved but also there is improved sensitivity. With the tools capable of identifying small tumours that can be missed by a pathologist. More patients will be placed in a care pathway where they may not have been before when these types of cases were missing. Whether that may be a repeat biopsy or surveillance or treatment, without these tools there was a percentage of patients that may be missing out. 'Consistent with our results, the Steiner et al. study reinforces that AI systems can improve sensitivity and efficiency, particularly in cases where tumor burden is low. 'Raciti Et Al (2020).

The technology lends itself to slides being always accessible, the archived slides in digital format are more readily accessible than the physical counterparts, there is no longer any need to inform someone to retrieve the materials. Which can be scattered across multiple locations depending on the facility. MDT's benefit directly from any queries raised about previous cases can be answered in real time reducing retrieval and separate follow ups. 'If there is an unexpected query about a case during the MDT (multidisciplinary team) meeting discussion, then the pathologist will be able to open and view the relevant slides straightaway during the meeting and resolve the query. This avoids it needing to be done 1 or 2 days later when the glass slides have been retrieved from filing and delivered to the pathologist which sometimes then results in another MDT meeting discussion needing to be scheduled with subsequent delay in patient management.' Millican-Slater (2021).

Pathologists can save time when reporting surgical margins as they could review previous biopsies at a click, this could also prevent a repeat of ancillary testing as it can be quicker to repeat a staining method than it is to find the slides particularly if errors occur in the archiving. 'The existence of a digital archive enables the immediate availability of previous slides, which is helpful, for instance, when comparing the findings in resection specimens with those of the initial incisional biopsy.' Retamero Et al (2020).

This accessibility removes the need to ship materials between sites, providing two sites have access to the system distance is now irrelevant. Once filed the slides will no longer need to be retrieved for review, meaning less time is spent by lab staff to move them around. Time still must be taken to archive the slides after scanning but for cases which would have been retrieved regularly week after week when recurring on an MDT list for example the time savings are cumulative and the increased risk of damage/misplacing through repeated handling and transport is eliminated. 'Glass slide requests from the department slide archive and an off-site surgery center showed a 93% and 97% decrease, respectively.' Hanna Et Al 2019.

New tools can identify characteristics which are unnoticed by humans, this is creating novel approaches that can be implemented in differential diagnostic tools. 'Digital biomarkers' is a term that emerges in the literature where patterns are recognised by the tools and indicated to the user. This can be used as a decision aid or one day a substitute to performing ancillary testing, this could be replacing the use of expensive antibodies for IHC or effectively lead to earlier commencement of bespoke treatment by using tools to indicate with a high reliability the presence of genetic mutations which allow targeted therapies. Reasearch may improve the reliability of models already developed and novel digital biomarkers where there are unique patterns which relate to clinical outcomes may emerge. 'The ability to quickly and inexpensively predict both the type of cancer and the gene mutations from histopathology images could be beneficial to the treatment of patients with cancer given the importance and impact of these mutations' Coudray Et al (2018).

Digital pathology has enabled users to be able to rapidly communicate the cases to others, whether it is within the pathology department or with other teams involved with patient care. 'Digitisation of glass slides has enabled laboratories to avoid shipping glass slides around, which permits laboratories to hold onto the physical glass slides, and instead send out digital copies. Large review research projects can be performed more quickly by having all cases digitised and hosted in a central location, allowing access for pathologists to review cases independently of their location' Stathonikos Et Al 2019. It simplifies the preparation for an MDT meeting where the pathologist needs to review the cases prior, as they no longer rely on the cases being physically compiled. This will release time from laboratory or administrative staff as they would not perform this compilation which involves locating unreported cases & retrieving slides from pathologists in various locations. It facilitates sharing of cases where a pathologist requires a second opinion or peer review. This is of particular importance where the RCPATH recommends double reporting of specific case types, Lujan Et Al (2020). Savings may be achieved through the reduced need to physically transport materials between sites. Also, a potential reduction of travel expenses for pathologists who may need to move between sites in a network. Recuts to replace damaged slides or teaching sets where duplicated cases are produced for educational purposes will no longer be required as the slides are recalled through the system this could benefit the trainee pathologists as they would be reviewing the exact slides the case was reported on and not a recut slide from deeper into the tissue block which may have differences from the original, duplication risks loss of material through the production of additional slides.

A digital platform is an act of stained slide preservation that exceeds the capability of traditional methods. Slides are prone to breakage and the stains can fade over time and coverslips become detached which exposes the tissue sections to further damage. The slide can be retrieved digitally with a case number, a

misplaced slide can take anywhere from minutes/hours/days to find so there is value in reducing time wasted searching for misplaced slides.

Combining the data produced by this platform with genomics and clinical data could provide more accurate diagnosis for patients by bringing the data together. In the Catalan Health institute network the approach was to create a bespoke system integrating the lab system and digital pathology into their evolving wider clinical information network system (ARGOS) ensuring that this data was easily available to reporting pathologists, Temprana-Salvador (2022).

Optimisation of the workflow is key; the scanning must come after the staining to prevent contamination of the slides through handling. Running a dual system of digital and non-digital will also strain resources to manage and deliver. There would need to be clear delineation of what makes the digital cases and non-digital.

It's reported that use of barcoding on slides helps to reduce the misidentification, which improved patient safety, Temprana-Salvador (2022). This is only a risk reduction and not risk elimination as the method of producing barcodes on slides varies from direct etching to applying a label to the slide. There is still potential for error e.g., if a user applies the label to the wrong slide. It does eliminate transposition errors that occur when handwriting.

There are physical health benefits to using screens over microscopes, with some pathologists reporting fewer musculoskeletal issues after the change, Jahn Et Al 2020. There is a possibility that while preserving the posture the increased use of screens may impact the pathologist, but it is also possible that this may be comparable to microscope use.

If the digital pathology system is opened to researchers, it has potential value to reduce some of the volume of materials being transported to research sites as they could have access to the slides.

4.3 What is the Value: Emergent, indirect value because of Digital Pathology

Innovation is a recurring theme, there is capability to innovate within the digital pathology environment, with AI tools, developing a system based on open architecture so that data can freely flow into other clinical systems creating an interoperable ecosystem. Given that bespoke care is reliant on clinical and diagnostic results from multiple sources this approach ought to become the standard as it would benefit the patient directly to reduce any barriers to the data being brought together for clinical teams to action. As mentioned above this is a reality for the Catalan Network. Temprana-Salvador (2022). To reach the full potential of what can be achieved by digital pathology there needs to be an innovative approach to unifying the information required to effectively produce accurate reports to the clinical teams to direct the patient treatment.

MDT meeting supported by the DP, meeting rooms are commonly equipped with audiovisual equipment but less likely to have a multiheaded microscope at every facility, this can enable all members of an MDT to be able to see the slides simultaneously, with contextual annotations made rather than searching through slides to show the area of interest, Zarella Et Al (2018). Millican-Slater (2021). Turnquist et al. (2019). Smith Et al (2022). Browning Et Al (2021). With screensharing being ubiquitous through Teams or Zoom, the pathologists do not need to be present physically and these methods of remote sharing were used during the covid 19 pandemic to enable continuation of service.

Improving patient safety by using the digital tools to aid diagnostics could reduce likelihood of litigation against the service. With the diagnoses becoming more concordant and variability being reduced between pathologists with the digital workflow to label the blocks and slides helping to reduce lab process-based errors, 'high patient safety and increased quality of diagnosis, saving significant costs outside the pathology laboratory, as pointed out by Ho et al.' Baidoshvili et al. (2018)

QC automation has been shown to be concordant with human assessment and can be integrated into the digital workflow. This can reduce the manpower required to assess the quality of the scans, which means the burden of the extra steps in the workflow that the addition of DP brings can be mitigated. 'Comparison of HistoQC against manual QC by two pathologists on 450 images yielded an average agreement greater than 95%, comparable in range of agreement to that between the two individual human readers.' Janowczyk, Et al 2019.

4.4 What is the Value: Societal - Contribution of healthcare to social participation and connectedness

The DP enables pathologists to be able to share cases and request assistance from one another. Kim et al (2022), Levy et al. (2022), Millican-Slater (2021). This can be within a network that has been implemented and potentially allow external pathologists to work within said network. 'Sharing cases with colleagues and requesting 'curbside consultations' is straightforward, even between distant sites. On-call pathologists covering another site can report their routine cases from within the hospital network' Retamero, et al (2020). There is a possibility that it makes the pathologist too accessible to colleagues and they will have to develop their own workflow to mitigate this. 'We encouraged an optimal exchange of information between hospitals, establishing second-opinion strategies according to clinical practice guidelines that immediately benefitted patients.' Temprana-Salvador et al (2022). This accessibility can help support research to allow collaboration across the world. Eloy et al (2021), Jahn et al (2020), Lujan et al (2020), Turnquist et al (2019).

For the pathologist DP offers the flexibility to be able to work remotely without being limited with the number of cases they can carry home. This shifts the number of cases you can review to however many you can safely report in each session, instead of how many you took home. Cases may not turn out as time consuming as expected and the opportunity to review further cases may be lost if reliant on the physical slides. In digital pathology, if a case were quicker to report than expected then the pathologist could call up another case on the list to review if required.

This opens access to specialty pathologists for smaller institutions which may not have enough pathologists to enable specialisation thereby providing patients with equitable use of the best resource available. 'Remote diagnosis is particularly beneficial to small sized academic institutes, wherein the development of training programs covering all pathology subspecialties is challenging' (Sakamoto et al, 2020).

This makes it easier to participate in External QA (Quality Assurance) schemes as it removes the difficulty in searching for the materials and removes the need to post them and could also reduce the need for members that are assessors to travel to review the materials. This could also support the efficiency of the schemes and provide a faster turnaround and potentially enable EQA participants to review the full slides of the best and worst rated scores rather than selected portions of the images (Millican-Slater, 2021).

4.5 What is the Value: Intangible

DP is an enabling platform; it will only lead to more research and development of tools as needs are identified and the means of achieving them are deliverable with modern computing power.

In Italy there has been an innovative approach using photography at every step of the case, Fraggetta et al (2021), which offers visual evidence that can easily be queried in a case to track where an issue has occurred. This means you no longer rely on people to recall what occurred, which is a fallible approach as a busy lab will result in someone performing the same task dozens if not hundreds of times a day. Implementing a photographic record will demonstrate more evidence in an investigation than the audit trail of the user that performed the step.

There is an environmental benefit to an all-digital process which reduces the reliance on paper. Eloy et al (2021). Although there is no data presented to demonstrate the extra environmental burden that the additional equipment generates. A possible reduction in carbon footprint may come from reduced material transportation. This is an area which requires further exploration as it is not just the digital pathology equipment itself, but the other data services entwined e.g., AI tools, PACS (Picture Archive and Communication System), hospital system integrations etc.

The inclusion of WSI (Whole Slide Imaging) into 'big data' repositories which are being explored by healthcare as a means of opening avenues for research. Lujan et al (2021) said that return on investment should consider potential value of the scanned slides for research, and while examples where that is put into action, e.g., the digital biomarker, it is an open-ended question which may be less helpful to those considering a business case proposal to obtain digital pathology systems.

4.6 What is the Value: Allocative - Equitable distribution of resources across all patient groups.

DP enables pathologists peer support, particularly when understaffed in a particular location. Or lack they lack the expertise of a particular specialty. Sakomoto Et al (2020). Millican-Slater (2021). Jahn et al (2020).

This can reduce inequity of services between locational boundaries, prior to DP a location without the required resource would have to outsource those cases to another region, incurring delays due to transport of materials to referral labs. As an enabling network is put in place there need to be arrangements to agree the volume of the workflows, this may be an adjustment to existing arrangements and all DP does is adjust the means of the case being reviewed and the time taken, but there is a potential risk that specialists could become overwhelmed with cases as the ease of referral increases which could lead to detrimental outcomes to those patients.

When a network for DP is set up its possible that training materials can be developed and meet the needs across the network. The trainees would not be limited to cases which are only available on the site where they are located, which broadens the specialties they are exposed to within the network.

The digital tools, when applied, can be used in an optimised workflow. This can produce leaner processes and automate the decisions required to produce them, i.e., automatic IHC for breast cancer cases. The tools can also be deployed network wide increasing the equity to the patients as decision support tools can assist a pathologist if they are not specialised in a particular subset of pathology. 'This approach can democratize expert knowledge so that it can be used in locations where subspecialists are not present' Raciti et al (2020). Approaches like this one may mitigate the risk previously identified where subspecialists may become overwhelmed if there are tools developed to support their specialty, but the reproducibility of results and aligning interpretations between pathologists provides equity to the patients.

Pathologists are no longer limited to receiving a case based on where they are and the capacity of their lab, Lujan et al (2021) this could reduce overloading a small lab with a limited pathologists allowing others to assist reporting cases. It could prevent over allocation of pathologists to small lab locations to provide redundancies and reduce the amount of time they might be waiting for work, meaning if they have a gap in the workload on site, they could pull cases from another location to report.

4.7 What is the Value: Personal

The analytical tools support the need to provide personalised medical information, with bespoke models showing high accuracy predictions for genetic mutations based on automated morphology assessment, it has the potential to reduce the wait for patients as the tumour gene sequencing is a lengthy process, or at least to streamline the process. Models are being developed to provide a prognostic treatment response. Coudray et al (2018). Lujan (2021). Kather et al (2020).

DP platforms will have methods for sharing cases between pathologists, this ease of sharing will help to bring down the waiting times, or the use of decision assistive tools could reduce the frequency of 2nd opinion altogether.

A byproduct of increasing the efficiency of delivering results means that potential is there to reduce the time a patient must wait for the news and could reduce the anxiety they are feeling. Millican-Slater (2021), Baidoshvili et al (2018). This does not account for the systems around clinicians and their delivery of results to patients, a result could have a 2-day reduced turnaround time, but if the patient is not due back to clinic for a week, then it is an unrealised benefit that is not passed to the patient.

By using DP platform and strategically sharing patient information and allow the patient to be directed to the most appropriate hospital for the specialty rather than the specimen being taken and received at one hospital and then being transported elsewhere as the samples may require specialised procedures.

Clinicians being able to demonstrate WSI to the patient when discussing treatment options may engage the patient more and help them to feel more informed about the decisions they are being asked to make. A suggestion by Rackovic (2022), was that for the proportion of patients that are diagnosed with low grade prostate cancer which requires 'active surveillance' if they are demonstrated to only have a few cells detected they may not opt for treatments until it becomes necessary. It can help reduce the number of patients that are treated prematurely.

5 Discussion.

There is a lot of technical value which can be offered by DP implementation in a cellular pathology service. Authors like Singhal et al (2022) make generalisations of better outcomes for patients and do not provide

any outcome data to support those claims, they did propose further studies to be conducted in future. This is present in the literature that there are speculative benefits to patients where the technical benefits are being realised. If the turnaround times are being buffered by other elements of the healthcare system, then is any influence on outcomes being exerted at all?

There is evidence to support the argument that reducing the time taken to provide treatment to patients can reduce mortality rate, Hanna, T. P. (2020) showed through a meta-analysis that delays over 4 weeks to treatment has shown reduced mortality for specific cancers. Diagnosis of cancer is a step in that process which cellular pathology services aim to keep as short as possible, then there is potential for direct patient benefit.

Potential value is not enough to justify the use of the technology, in a value-based health and care context there is not enough detail in the literature to assure the benefits are being realised outside of the labs which are using the technology. Fraggetta et al (2021) provide a best practice recommendation for the adoption but lack any value-based healthcare approach considering patient outcomes.

The best practice recommendations need to be considered with an approach that will incorporate a value-based healthcare evaluation also, it is possible that the scope of implementing DP is too broad a reach for a value-based assessment, as there are too many pathways of care and patient specialties for it to be applied at a systemic level. But if this is an enabling platform then by focussing on a subset of patient samples processes which are enabled by DP (e.g. use of a specific AI tool) then the projects that will arise around DP can apply a framework such as the Aneurin Bevan University Health board Value based toolkit, Cahill, A. (2020) to better assess the impact that these innovations are providing to patients. This change management framework outlines the considerations needed when making value-based assessments to healthcare settings. The VBHC (Value Based Health and Care) toolkit provides a detailed change management guide which incorporates patient outcome focused measurements to justify the changes being implemented. NHS Wales has published data from the use of AI to assist in reporting prostate biopsy samples, Aslam & Heath (2023), but as with the literature reviewed this does not factor patient outcomes in the data but serves as a technical validation.

Implementation of DP will require careful planning to ensure the benefits will be optimal. Any project can be mismanaged and if decisions to partially implement a digital solution are chosen it can have the risk of splitting the resources between to competing workflows which could become a challenge to manage but also could lead to hostilities in the workplace. An implementation will offer the chance for review of the workflows and provide a chance for optimisation prior to adoption if possible.

Examples in the literature describe the implementation of digital pathology to enable them to move towards barcoded materials through the Cellular Pathology process. In the NHS in Wales through the implementation of a National Laboratory Information System (LIMS) all Cellular Pathology departments moved towards this without the implementation of Digital Pathology systems. Having already realised this capability the benefits described in the technical value section will not be a factor as they have already realised. This does however mean that NHS Wales is in a better position to implement a full digital pathology procurement as barcoded slides which are uniquely identifiable can allow automated interfaces to be developed between the digital pathology systems and the LIMS to pull patient data into the slide management user interface. This increases patient safety as the pathologist can be sure the details they are looking at pertain to the right patient.

The AI tools being used are helping to increase consistency of reporting and are demonstrating potential to democratise specialist knowledge to pathologists. This tool should not be seen to replace pathologists but to supplement their abilities. The final decision for a report should be made by a qualified pathologist/scientist. There may be changes of opinion over this as the technology matures and AI reporting for normal tissues may be validated one day placing cellular pathology on a par with the development of automation in its fellow pathology disciplines. It is recognised that these tools are not 100% accurate, there is always a chance that something could be presented which is not what it appears, histologic mimics could present problems.

6 Conclusion.

Digital Pathology is a transformative innovation that can have significant technical benefits for Cellular Pathology. Establishing professional cooperative networks that could not have existed without significant costly logistical challenges due to distances between services. It can deliver a range of benefits across the range of technical, societal, personal, allocative value-based healthcare propositions.

Digital Pathology is a foundational platform for innovation. By digitising whole slides, the application of computational models is achievable. Computational power and availability increase as the tech industry focuses on AI systems. The developments will be driven by the needs of the service to better meet the needs of patients.

These benefits are not achievable without careful consideration, the needs of the department must be accounted when investing in new equipment, reviewing factors such as capacity vs speed, failure rates, location within the department and whether it is optimal for the workflow.

Technical benefits are well documented and validated, but the patient centred outcome data is lacking on this subject. Further research is required in this area to explore the impact that this has directly on patients.

Through establishing a wider network to connect laboratories it can help drive standardisation between services, this is supplemented by the AI tools which are developed in conjunction with pathologist input and produce consistent and specific outputs for the pathologist to review and report on.

7 Key Recommendations

Here are the recommendations relating to innovation, transformation, and value.

7.1 Focus on patient centred outcomes:

Demonstrate the benefits to patients, use the VBHC toolkit and define a workflow that can be explored within the scope of digital pathology.

As more computational tools become available, this will increase the care pathways which are available to assess, this could lead to an AI tool framework to be developed based on the VBHC toolkit which assesses the steps in a cancer care pathway from diagnosis to treatment and follow up care.

A framework could allow for the collection of nationally comparable data and through analysis determine what effect the implementation is having directly on patient care. Not only this but also to examine the impact that it is having elsewhere in the care pathway. Efficiency gains are reported in the MDT sessions when discussing patient care, but if the service is delivering more efficient Turnaround times on diagnostics, does that increased rate of results have a positive or negative effect.

Questions could be addressed about whether the teams waiting on results can manage the increased rates, are there processes which align with these improvements or are they antagonistic and buffering the benefits from being passed to the patient.

NHS Wales could explore the use of the prostate AI provided by IBEX, the technical data has been reviewed and validated. The exploration of the downstream effects on the care pathway needs to be established. The published 13% increase in cancer detection rate using AI, Aslam & Heath (2023) has the potential to increase the percentage of patients requiring treatment and could support a business case to increase clinical capacity.

7.2 Enabling the flow of information:

Open architecture, In Wales there is an open architecture strategy implemented by DHCW (Digital Health Care Wales). Institutions across the world which have implemented digital pathology at scale recognise the need for clinical information to be readily accessible when there are distinct separate systems which produce that information. This approach needs to be taken to allow for the efficient flow of patient data to facilitate the appropriate care across the teams responsible for their patient.

This approach with open architecture could also be a means for patients and clinicians to engage over the results, enablement of clinical staff to display the relevant whole slide image during a consultation may

assist the patient to see why a particular approach is taken. As previously discussed, a patient with a small focus of tumour may just need to be closely monitored, it may dissuade them from asking for more radical options if they can see it for themselves. Providing a controlled way for this to be accessed and ensuring that clinical staff are supported with this approach would be essential.

7.3 Ensuring sustainability:

Develop a national training strategy for trainee pathologists, which aligns with RCPATH examination process but also exposes the trainees to case types that may be exclusive to certain health boards. Digital pathology enabling case sharing around the country with a fully developed solution, combined with video conference services would allow to trainees to work with pathologists regardless of locations, minimising the travel burdens or even relocations required when rotating through health boards.

When implementing a digital pathology system, there are not only the training requirements to be able to use whichever system is deployed but also the need to provide the trainees with experience to diagnose in this manner. Providing equity in the training and having a national digital pathology system would be more attractive proposition and help to retain trainee pathologists within NHS Wales as they would be well suited to a pathologist position anywhere in the NHS Wales pathology network once qualified.

7.4 Collaboration and development of partnerships:

Foster relationships with academic institutions or 3rd party suppliers to further enable innovation and development of new tools. The pathology service is unlikely to have the skill sets within it to create its own innovative tools without external sources. By assessing the needs of the service and the patients, areas where an innovation could be identified allowing for development, validation, and application. Establishing a network of partners could allow for these developments to occur in parallel, utilising the various health boards in Wales to act as project sponsors or pilot sites before national deployment.

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Assessing The Awareness, Acceptability And Feasibility Of Implementing Value-Based Healthcare In Lagos, Nigeria: A Pilot Study

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Abstract:

Background: The transition from volume-based healthcare to Value-Based Healthcare (VBHC) has gained momentum globally, emphasizing the delivery of high-quality care at optimized costs. This study focuses on the implementation of VBHC principles in Lagos, Nigeria, examining the awareness, knowledge, acceptability, feasibility, and challenges associated with this transformative approach to healthcare delivery. Drawing from Porter and Teisberg's framework, VBHC is defined as the attainment of improved patient health outcomes per unit cost, emphasizing the creation of value through enhanced health status. Unlike traditional quality improvement efforts, VBHC prioritizes patient outcomes over process adherence and distinguishes value from patient satisfaction, aligning stakeholders towards common objectives. The study objectives encompass measuring awareness and knowledge of VBHC among healthcare workers, exploring perceived acceptability and benefits, assessing feasibility within existing infrastructure, identifying implementation challenges, and recommending strategies for effective adoption.

Methodology: the study employed a cross-sectional design, conducting qualitative interviews with healthcare professionals and structured questionnaires with hospital management and department heads. Descriptive statistics were derived from quantitative data analysis using EXCEL software, while thematic analysis of qualitative data was conducted to extract key insights.

Conclusions and Recommendations: Key recommendations include stakeholder engagement and collaboration, education and training initiatives, advocacy for policy reforms, support for research and evaluation, prioritization of healthcare workforce welfare and professional development, investment in healthcare infrastructure, public awareness and education campaigns, emphasis on preventive medicine and poverty reduction, and acknowledgment of study limitations including sample bias and small sample size. The study acknowledges inherent biases associated with self-reporting in participant responses and emphasizes the need for cautious interpretation of findings. Despite limitations, the study provides valuable insights into the feasibility and challenges of implementing VBHC in Lagos, Nigeria, contributing to the advancement of healthcare delivery practices in the region.

Keywords: Value-Based Healthcare, VBHC implementation, Healthcare transformation, Lagos, Nigeria, Stakeholder engagement, Policy advocacy, Healthcare workforce development, Infrastructure investment, Public awareness.

Table of Contents

1 Introduction

The transition from volume-based healthcare to Value-Based healthcare (VBHC) began in the 1990s, emphasizing quality over quantity. Porter and Teisberg introduced VBHC in 2006, defining value as health outcomes per cost unit. Key VBHC components include Integrated Practice Units (IPUs), outcome tracking, bundled payments, care integration, expansion, and IT support (Porter and Teisberg, 2006).

Value and patient satisfaction are distinct concepts. While satisfaction emphasizes patient experience, value centres on improving health. Value-Based care providers prioritize the patient's current well-being and health status (Cossio-Gil, et al., 2022; Makdisse et al., 2022; Ramos et al., 2021; Theunissen et al., 2023; Venema et al., 2022). VBHC is embraced by various stakeholders, including patients, healthcare providers, health plans, employers, and government organizations, aligning their objectives. Health economist Uwe Reinhardt initially referred to VBHC as a utopian vision, praising its goals despite recognizing implementation challenges.

In the context of Nigeria, implementing VBHC in Lagos would require careful consideration of feasibility, potential benefits, and necessary adaptations. This pilot project aims to explore the challenges and opportunities associated with implementing VBHC in Lagos, Nigeria, acknowledging its potential to improve healthcare outcomes while addressing the unique healthcare landscape of the region. Therefore, the need for this study arises where it contributes to knowledge and improves health sector in Nigeria were the following objectives below was discussed in detail:

1. Measure the level of awareness of VBHC among healthcare workers in Lagos, Nigeria.
2. Access the knowledge of VBHC among healthcare workers in Lagos, Nigeria.
3. To explore the perceived acceptability and benefit of VBHC in Lagos, Nigeria.
4. Assess the feasibility of implementing value-based healthcare within Nigeria's existing healthcare infrastructure and regulatory framework.
5. Identify the potential challenges of implementing VBHC in the healthcare system of Lagos, Nigeria.

2 Identification Of Project Requirements

2.1 Conceptual Framework

2.1.1 Value-Based Healthcare

Value in health care is the measured improvement in a patient’s health outcome for the cost of achieving that improvement (Porter and Teisberg, 2006). The goal of value-based care transformation is to enable the healthcare system to create more value for patients. Because value is created only when a person’s health outcomes improve. Reducing costs is important but not sufficient: If the real goal of value-based health care were cost reduction, painkillers, and compassion would be sufficient (Teisberg E, Wallace S, O'Hara S 2020).

Value-based healthcare is often mistaken for the vague concept of quality, which focuses on processes and inputs. Quality improvement efforts may not necessarily improve patient health outcomes as different teams can yield varying results despite similar processes. Moreover, tracking process compliance requirements can divert attention from the core goal of enhancing health outcomes. An example in Italy demonstrated that better process compliance in the north didn't always lead to improved patient outcomes. While consistency and evidence-based guidelines are crucial, value-based healthcare prioritizes better health outcomes over process adherence. Additionally, value differs from patient satisfaction, as the primary purpose of healthcare is to improve health, not just meet patient expectations.

2.1.2 Importance Of Value-Based Healthcare

Value-Based healthcare (VBH) aligns clinicians with their healing mission, combating burnout by emphasizing better health outcomes and empathetic clinician-patient relationships. Improved outcomes lead to cost reduction and reduced care needs. VBH supports the Institute for Healthcare Improvement's goals, focusing on patient experience, population health, cost reduction, and clinician satisfaction. However, VBH implementation faces challenges:

1. Scope: Determining the scope of VBH implementation is challenging, ranging from care type to the level of implementation (provider, state, national).
2. Quality vs. Outcomes: Quality measures are established but differ from outcome measures, which are less standardized. Standardized, patient-centric outcome measures are crucial.
3. Cost vs. Spend: Understanding patient-level costs is a global challenge, and clinical costing capabilities need development.
4. Data Infrastructure: A robust data infrastructure is essential, but waiting for perfection may hinder progress. Simple data collection tools can be effective.
5. Leadership and Resources: VBH requires leadership commitment and resource investment. Shortages of staff and inadequate IT infrastructure can be challenges.
6. Clinician Behaviour: In fee-for-service systems, clinicians may fear VBH's impact. Engaging clinicians and addressing resistance is vital.

In Lagos, Nigeria, similar challenges exist for VBH implementation, emphasizing the importance of defining scope, standardizing outcomes, understanding costs, building data infrastructure, securing leadership support, and addressing clinician concerns. Local context plays a crucial role in successful VBH implementation.

2.1.3 Value-Based Health Care in Resource Limited Setting

Despite being the biggest economy and most populous nation in Africa, Nigeria's age-specific mortality rate is significantly worse when compared to its neighbouring West African countries like Benin, Burkina Faso, Cabo Verde, Cote d'Ivoire, Gambia, Ghana, Guinea-Bissau, Guinea, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo (The Lancet, 2023). The age-specific mortality rate in Nigeria is below the Sub-Saharan region's average, and the dependence on out-of-pocket expenses makes healthcare unaffordable for the poorest Nigerians (The Lancet, 2023).

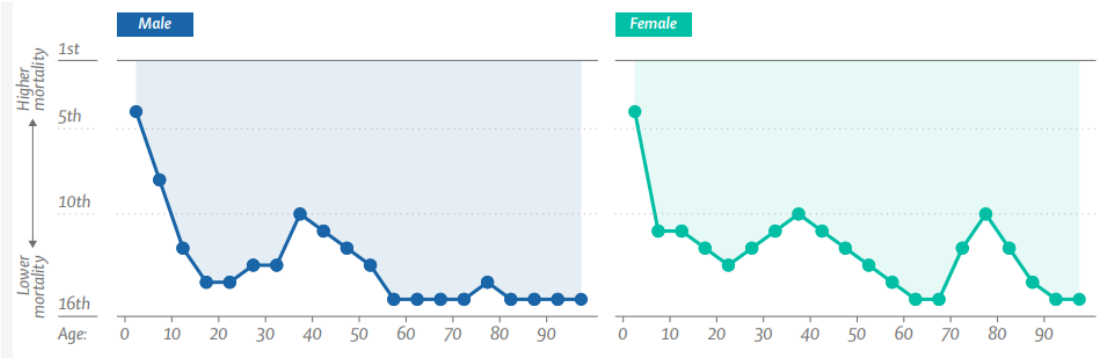

Figure 1. The age-specific mortality rate of Nigeria compared to other West African countries, categorized by gender.

Currently, in numerous low- and middle-income countries (LMICs) like Nigeria, inadequate care quality plays a more significant role in causing mortality compared to limited access to care. This situation is partly attributable to health systems that prioritize the quantity of services delivered rather than their quality or resulting outcomes. A more appealing approach is Value-Based care, which concentrates on patient-centric outcomes and enhances delivery and payment methods to achieve these desired results (USAIDS, 2023).

2.2 Awareness, Acceptability, And Feasibility of Implementing Value-Based Healthcare In Lagos

2.2.1 Awareness of Implementing Value-Based Healthcare

"Value-Based Healthcare" is a widely used term globally and in Nigeria's healthcare discussions, but there's a lack of consensus on its precise meaning and how to achieve it. While healthcare professionals are aware of the concept's link to improved and quality healthcare, most patients struggle to understand its components or how it can enhance their health outcomes. Achieving a clear understanding and implementation of "Value-Based Healthcare" remains a challenge for healthcare systems worldwide, whether patients are sick or healthy (Teisberg E, Wallace S, and O'Hara S in 2020).

2.2.2 Acceptability of Implementing Value-Based Healthcare in Lagos

Acceptability is a critical factor in designing, evaluating, and implementing healthcare interventions, especially complex ones. Such interventions often involve multiple components and levels within a healthcare organization (MRC U. 2008). Ensuring the best clinical outcomes with available resources is a challenge for intervention developers. Studies by Diepeveen S, Stok FM, and Fisher P emphasize that successful implementation relies on the acceptability of the intervention to both those delivering and receiving it, including patients and healthcare professionals. Patients' perspectives, considering content, context, and care quality, impact acceptability (Fisher P et al, 2016). If an intervention is deemed acceptable, patients are more likely to adhere to treatment recommendations and achieve improved clinical outcomes. For healthcare professionals, low acceptability may lead to intervention delivery deviations, affecting overall effectiveness. Hicks JP's work on eHealth tools in Nigeria also highlights varying levels of acceptability in implementing a Value-Based healthcare system (Hicks et al, 2021).

2.2.3 Feasibility Of Implementing Value-Based Healthcare

This study focuses on assessing the feasibility of a proposed Value-Based healthcare plan in Lagos, analysing the practicality of an existing project. There is limited research on the feasibility of implementing such a plan in Lagos, with challenges including political influence, limited resources, and poor infrastructure. Abubakar et al., 2022 study in The Lancet Nigeria Commission highlighted the need for efficient health financing mechanisms and optional health insurance to achieve a viable healthcare system. Countries like Ethiopia and Indonesia, with similar systems to Nigeria, have embarked on ambitious Value-Based healthcare programs.

3 Findings and Discussion

3.1 Overview of the Methodology

The study in Lagos, Nigeria, assessed healthcare workers' awareness and knowledge of Value-Based healthcare (VBHC). It aimed to gauge VBHC's acceptability, identify potential implementation challenges, and evaluate feasibility. The findings include respondents' demographic data and thematic analysis of focused group discussions. A cross-sectional study design was adopted for this study and a purposeful sample comprising 68 healthcare workers was selected for the quantitative interview, while 16 health workers were chosen for the qualitative interview which represent the sample size. Qualitative interviews, specifically key informant interviews, were conducted with hospital management, department heads, and the Association of resident doctors using structured questionnaire. Quantitative data from the surveys was analysed using EXCEL software to derive descriptive statistics, including frequencies, percentages, and means using 5% level of significance.

3.2 Respondents' Personal Data

3.2.1 Age Distribution

The rationale for capturing different age groups is in line with the objectives of this study. The objectives of this study require a thorough investigation of how healthcare professionals perceive and are aware of Value-Based healthcare (VBHC). It is crucial to consider the respondents' demographic traits, especially the distribution of their ages, to accomplish these goals. Age is a demographic factor that has a considerable impact on how healthcare professionals view and experience a lot of things. Figure 2 shows the age distribution where the age range 24-30 has the highest percentage of 60% while 31-40 has 27%, 41-50 has 6% and 51-60 has 7%.

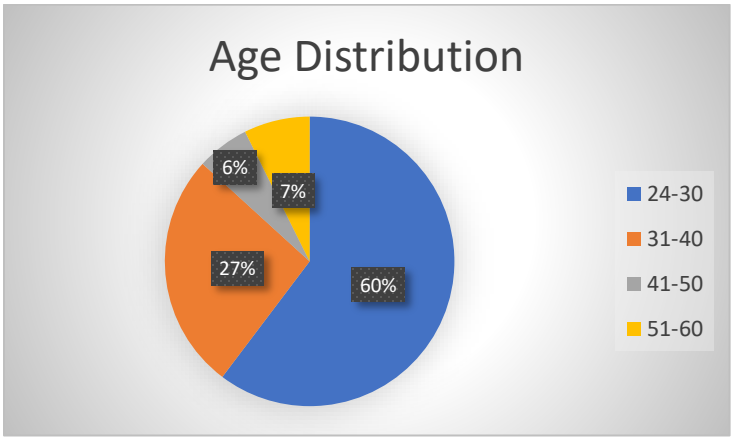

Figure 2. Age Distribution.

Healthcare workers' awareness of Value-Based Healthcare (VBHC) may vary with age. Younger professionals, fresh from education and training, might have better knowledge of modern healthcare concepts like VBHC. In contrast, older practitioners may rely on their accumulated experience, which may or may not include exposure to VBHC earlier in their careers. This age-related difference could lead to varying levels of openness to innovative healthcare strategies like VBHC, impacting their perspectives and attitudes toward its acceptability and benefits. Older professionals may better grasp the complexities of the current healthcare system, influencing their views on the viability of VBHC. These age-related variances can result in differing attitudes and experiences.

3.2.2 Role or Position in Healthcare Field

The study sample consists of various healthcare professionals, predominantly medical doctors (74%), followed by pharmacists (4%), and a diverse group including directors, nurses, physiotherapists, senior registrars, and other specialized healthcare professionals (22%). The prominence of medical doctors underscores their significance in healthcare and their potential impact on the adoption of Value-Based Healthcare (VBHC) practices. Pharmacists, though fewer in number, play a crucial role in medication management and patient care, offering insights into the pharmacological aspect of healthcare provision. Other healthcare professionals in the sample, such as directors and nurses, contribute diverse skills and perspectives. While they represent smaller percentages individually, their unique viewpoints enrich the understanding of VBHC implementation challenges and benefits. This diverse sample helps assess VBHC awareness, knowledge, and perspectives across different roles, enhancing the study's comprehensiveness.

Table 1. What is your specific role or position in the Healthcare field?

Position	Frequency	Percentage
Clinician	1	1%
Consultant	1	1%
Director	2	3%
Nurse	2	3%
Physiotherapist	2	3%
Gynaecologist	2	3%
Orthodontist	1	1%
Pharmacist	3	4%
House officer	1	1%
Senior registrar	2	3%
Medical Doctor	50	74%
specialist	1	1%
Total	68	100%

3.2.3 Length of service in healthcare

Years of service are a very important indicator of experience and knowledge gained over the years. Figure 3 shows the distribution of the length of service. Those who have worked in healthcare between the ages of 0-5(red) have the highest frequency. The rationale behind capturing this level of experience is to give insight into how health workers perceive the VBHC concept. Due to their prolonged exposure to changing healthcare practices, for example, healthcare personnel with considerable experience, such as those with 30+ years, may have a stronger understanding of healthcare ideas. On the other hand, people with shorter tenures, such as 0-5 years, might be more aware of modern advancements but may have had less exposure to previous healthcare approaches.

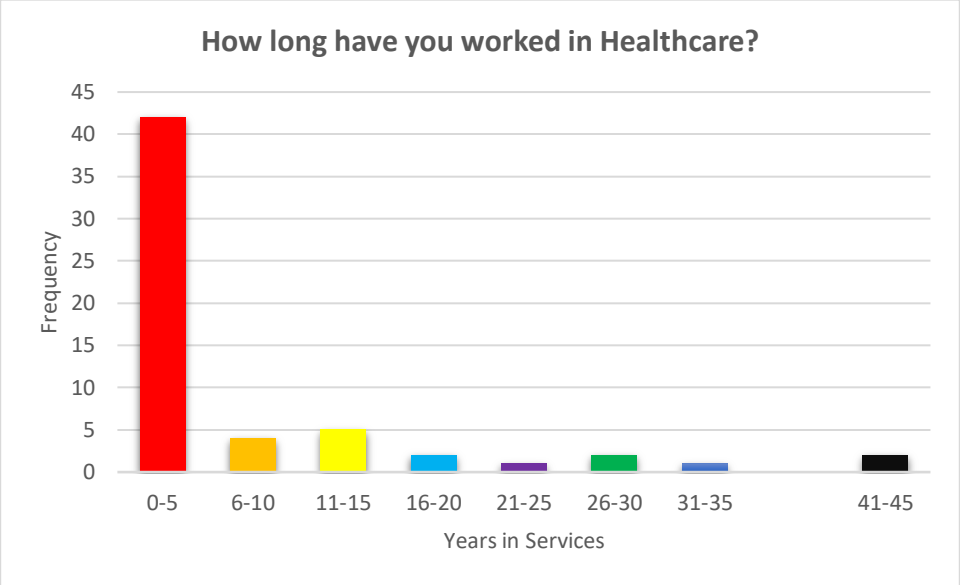

Figure 3. Length of service in healthcare.

3.2.4 Country of Education/Training

Fig. 4 shows the country where each of the respondents schooled or had their training. About 89.71%(green) of respondents said they acquired their education in Nigeria, a huge majority. This substantial representation of healthcare professionals with educational backgrounds in Nigeria shows that the survey mostly involves practitioners with such backgrounds.

It is interesting to observe that a small but diverse group of respondents attended school in a variety of foreign nations. These countries, which contributed 1.47% of the responses each, include England, Ghana, South Africa, Sudan, Ukraine, and St. Kitts and Nevis (see Fig.4). The inclusion of people who received their education in these nations gives the sample a more global perspective.

The respondents' varied educational experiences may have an impact on the study's goals, especially when evaluating respondents' perceptions, awareness, and understanding of value-based healthcare (VBHC). Professionals with knowledge of international education may add new perspectives and ideas to the conversation.

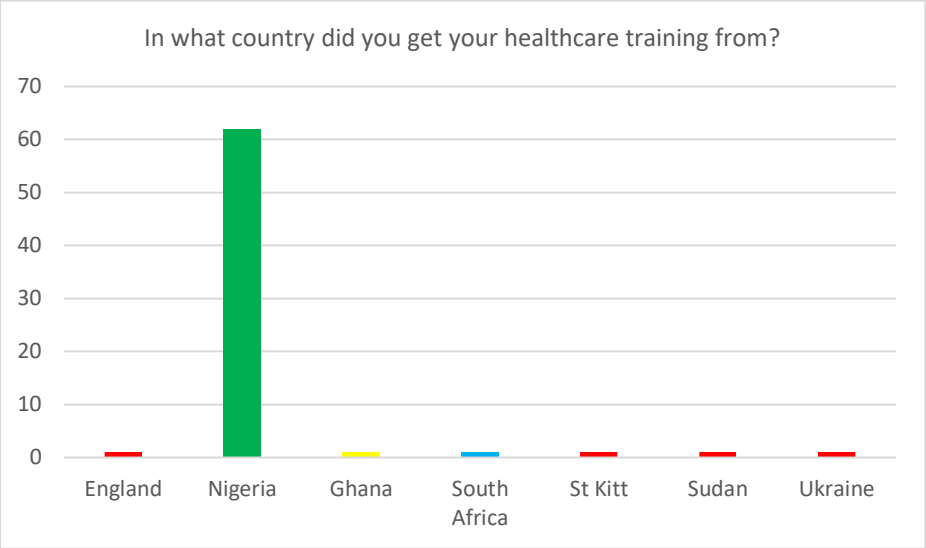

Figure 4. Country of Education/Training.

3.2.5 Duration in current role

This question seeks to assess the length of the role played by the respondents. With 93% of responses falling into this category, it suggests that many respondents are within the "0-5 years" age range for the duration of their present work. In addition, only 1% of respondents have held their current position for "31-35 years," compared to 6% of respondents who have been in it for "6-10 years."

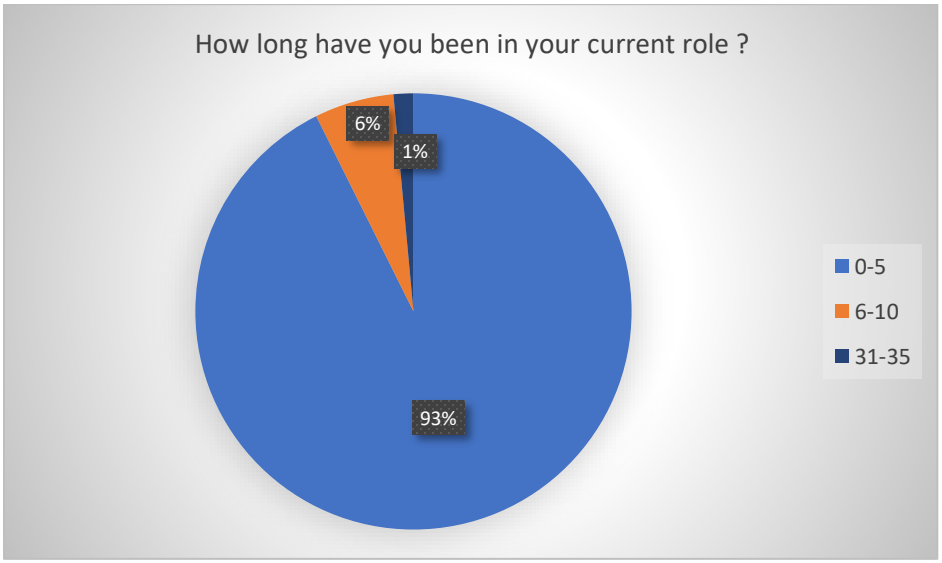

Figure 5. Duration in current role.

The distribution of respondents' years of experience in their current employment can be deduced from these percentages shown in Fig 5. With a tiny minority having more years of experience in their professions, the bulk of respondents are still very early in their careers within their current positions.

3.2.6 Worked Abroad or Not?

Approximately 4.41% of respondents, a modest minority, said they have worked abroad. These people have worked abroad in places including Ghana, South Africa, the United Kingdom, France, Texas, and USA (See Fig.6). They may have encountered various healthcare practices and systems as a result of their experiences, which could have impacted how they view various healthcare models, including Value-Based Healthcare (VBHC).

Figure 6: Worked Abroad or Not.

95.59% (red) of those polled said they have never worked abroad. This is a large majority. Healthcare professionals who have predominantly worked in Nigeria make up this category. Their understanding of healthcare models and perspectives is likely affected by the Nigerian healthcare setting, which is where their experiences are most likely founded.

3.3 Measuring the Knowledge and level of awareness of VBHC among healthcare workers.

Sections 3.3.1, 3.3.2, and 3.3.4 present the level of awareness and knowledge of VBHC amongst healthcare workers who participated in the study. This section achieves objectives 1 and 2 in Chapter 1.

3.3.1 Heard the term "Value-Based Health and Care?

About 24 % of survey participants said they had encountered VBHC at some point in their professional lives. These people might have come across VBHC theories, methods, or conversations during their careers. Their awareness, understanding, and opinions about this healthcare paradigm may change as a result of their exposure to VBHC. Approximately 76% of those surveyed said they had never heard of VBHC (See Figure 7). Healthcare professionals who may have had little to no exposure to VBHC concepts in their training or professional contexts make up this category.

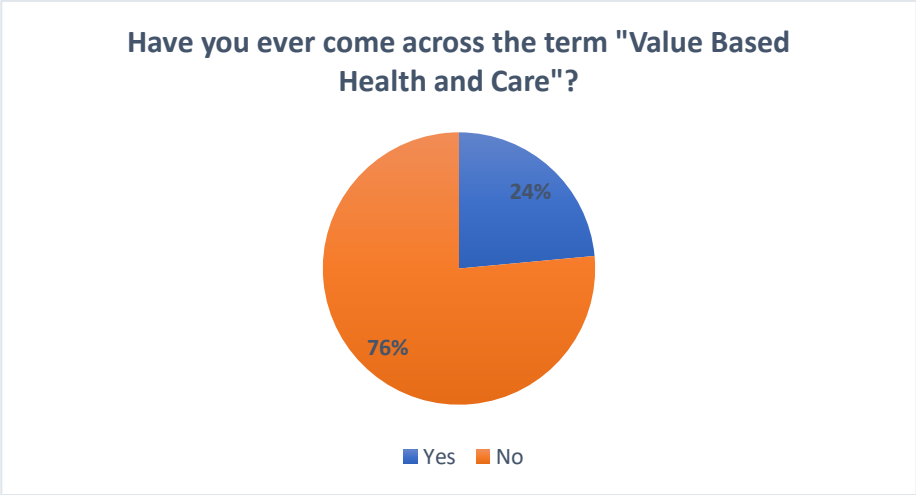

Figure 7: Have you ever come across the term "Value-Based Health and Care"?

Their comments can indicate that they are unfamiliar with VBHC. Due to their exposure, respondents who have encountered VBHC (24%) may have a higher level of awareness. Their comments can reveal

information about their level of awareness and how VBHC operates. The understanding and awareness of this healthcare model may be restricted among healthcare professionals who have not encountered VBHC yet. Due to their familiarity with the paradigm, those who have encountered VBHC may be more likely to view it favourably.

3.3.2 Where did you hear the term "Value-Based Health and Care?

Fig.8 shows where health workers heard of VBHC, and this of course captured only 24% of study respondents who said they had heard of VBHC before. Respondents who have not heard of this concept at all. About 56.25% (red rectangle in Fig 7) of respondents said they heard about VBHC through professional training, which is a sizeable percentage. The importance of formal education and well-designed training programs in exposing healthcare personnel to VBHC ideas is underlined by this study. Given the importance of VBHC in modern healthcare, it shows a proactive approach on the part of healthcare organizations and educational institutions to include it in their curricula or training programs.

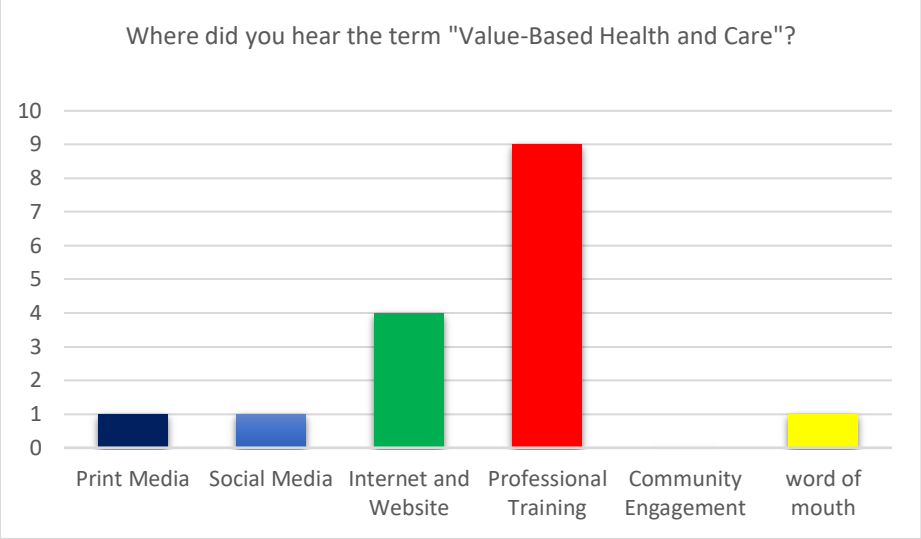

Figure 8. Where did you hear the term "Value-Based Health and Care"?

In addition, 25% of respondents said they obtained information about VBHC through websites and the Internet. This indicates the growing significance of digital platforms and online resources in the dissemination of knowledge regarding healthcare delivery systems. The fact that healthcare professionals are actively looking for information about VBHC through digital channels highlights the need for easily available online resources and the potential impact of web-based content on how they interpret VBHC. 6.25% of respondents cited social media as a source of information, indicating that VBHC-related discussions and content may be available on these platforms. This shows that healthcare professionals are participating in debates regarding healthcare on these platforms, highlighting the importance of social media in keeping healthcare professionals up to date on market trends.

None of the respondents, on the other hand, claimed to have learned about VBHC through community involvement, indicating that formal healthcare settings may be where VBHC-related discussions and activities take place more frequently than community outreach programs. The fact that 6.25% of respondents cited print materials as a source of information, however, emphasizes the ongoing importance of printed materials in healthcare education. Finally, 6.25 percent of respondents said that they learned about VBHC through word of mouth. This demonstrates how crucial interpersonal contact and peer-to-peer interactions are to educating healthcare workers about various healthcare models.

3.3.3 Who do you think Value-Based healthcare is relevant to?

The responses to the inquiry about the relevance of Value-Based healthcare in Lagos, Nigeria, reflect a variety of viewpoints among healthcare professionals. None of the respondents said they thought payers were the main audience for VBHC (0%). Healthcare managers were only mentioned as a relevant group for VBHC by a very tiny percentage of respondents (2.94%). Healthcare providers were indicated as a relevant audience for VBHC by a small percentage of respondents (1.47%). This answer demonstrates that some

participants are aware of the role that healthcare professionals, such as doctors and nurses, play in the provision of Value-Based treatment.

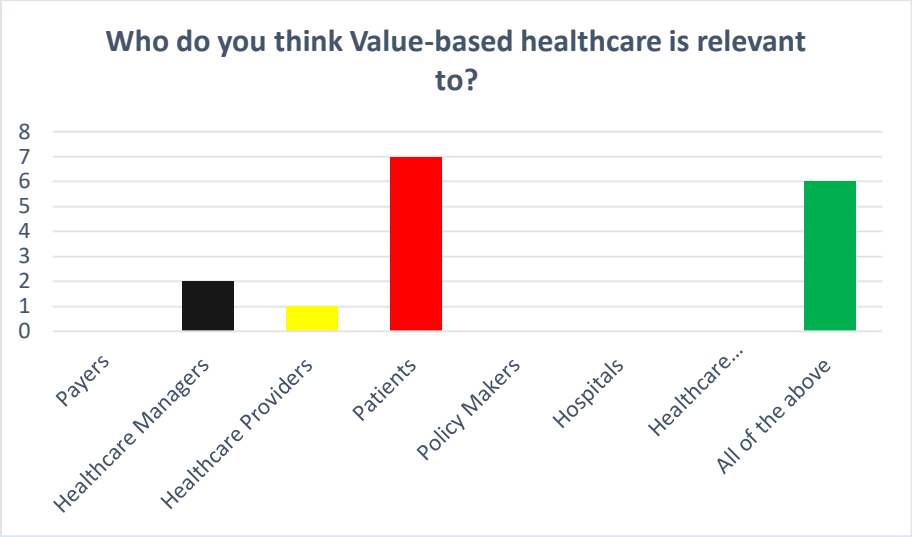

Figure 9: Who do you think Value-Based healthcare is relevant to?

About 10.29% of respondents said they thought VBHC was important to patients, making it the most frequent response. This fits with VBHC's patient-centred philosophy, which places a strong emphasis on providing care that is in line with patient choices and outcomes.

In the same way that payers were not included, neither were policymakers as an important group for VBHC. This may indicate that the participants do not think that VBHC in their area has a strong policy focus. No respondents named hospitals or healthcare IT as the main beneficiaries of VBHC relevance. 8.82% of those polled thought that VBHC was pertinent to each of the groups. This point of view is consistent with VBHC's holistic approach, which attempts to incorporate numerous stakeholders in providing high-value treatment.

3.4 Perceived Acceptability and Benefit of VBHC

3.4.1 Do you believe Value-Based healthcare has the potential to improve patient outcomes in Nigeria?

94% of respondents believe Value-Based healthcare has the potential to improve patient outcomes in Nigeria. Only 6% are not sure. This means the importance of VBHC is recognized.

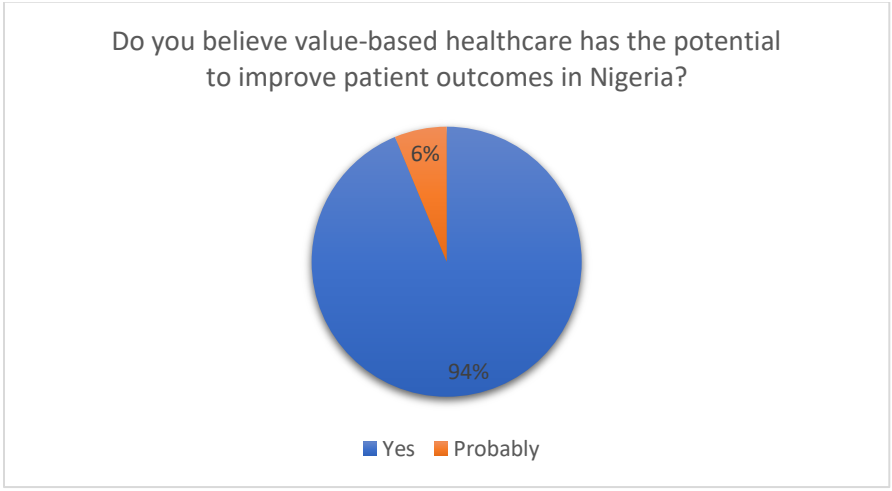

Figure 10. Do you believe value-based healthcare has the potential to improve patient outcomes in Nigeria?

3.5 Thematic Analysis

In order to gain a deeper knowledge of the underlying phenomena, thematic analysis is paramount. Thematic analysis is a qualitative research technique that involves finding, examining, and reporting patterns (themes) within a dataset. The analysis is carried out in accordance with the aims and objectives of this study.

3.5.1 Thematic Analysis: VBHC awareness and knowledge.

The first part of the thematic analysis presents an analysis based on responses given to each question. This captured the awareness level and knowledge of VBHC measured through FGD. 9 different themes were extracted (See Table 2,3 and 6).

Theme 1: Outcome Measurement and Patient-Centred Care

The necessity of measuring outcomes, especially clinical-reported outcomes (CRO) and patient-reported outcomes (PRO), is emphasized in responses 1, 12, 15, and 16(see Table 2). These replies emphasize the necessity of setting up systems to track expenditures at the patient level, enhancing value, and actively involving patients in their care. In Table 3, the focus on the patient is emphasized in responses 2, 8, and 16 in value-based healthcare. This places a strong emphasis on values like respect, privacy, empathy, and customizing interventions to the requirements of the patient. In fact, the key tenet of value-based healthcare is highlighted in responses 1, 3, 5, 7, 10, 11, and 16, (Table.3) which emphasizes the importance of attaining the best possible patient outcomes and providing high-quality care.

Table 2. What Value-Based Healthcare approach could be applied in Nigeria?

S/N	Responses
1	Start measuring and using outcomes (CRO and PRO) and implement a platform. Start to capture patient-level costs. Making improving value a priority for the health department.
2	All of it
3	Getting the population better health care at an affordable/low cost
4	Ensuring adequate pricing excellent infrastructure, and excellent care delivery.
5	Worker's incentive
6	Universal health coverage through insurance policies
7	Wide insurance coverage
8	Patient load and pay grade
9	Revamping the primary healthcare centres
10	All of it
11	Patient-to-health worker ratio
12	Increasing treatment plan transparency and involving patients actively in their care
13	ACOs
14	1 don't know
15	Payment based on patient satisfaction
16	Patient-centred medical home

Theme 2: All-inclusive Strategy

Responses 2, 10, and 14 (Table 2) present a thorough viewpoint, arguing that Nigeria should consider and implement all facets of VBHC. This topic suggests an understanding of the reality that VBHC is a comprehensive strategy requiring consideration of a few different elements, including outcome measurement, accessibility, infrastructure, care delivery, and patient satisfaction.

Theme 3: Affordability and Accessibility

The importance of accessibility and affordability is emphasized in responses 3, 6, 7, and 8 (Table. 2). These responses suggest methods for obtaining universal health coverage, including expanding insurance coverage and primary healthcare facilities renovation.

In Table 3, the necessity of low and affordable expenses is emphasized as a core principle in responses 1, 3, 5, 7, and 13. To ensure that patients do not encounter financial hurdles to receiving care, this theme underscores the necessity to make healthcare services affordable and accessible. These results agree with Asakitikpi (2019) who found that providing universal health coverage has presented significant obstacles in Nigeria. Even though Nigeria's health system achieved tremendous strides in the first two decades following its independence in 1960, the economic crisis brought on by the collapse of the oil price, on which Nigeria's

economy depended, created a series of unexpected turns. The approval of the structural adjustment program signified a transition from a large welfare scheme to the introduction of user fees and the consequent spread of commercial healthcare provision, and health policies were subsequently impacted by external pressures.

Theme 4: Quality Care and Rewards.

In Table 2, responses 4, 5, and 11 highlight the necessity of ensuring quality care through reasonable pricing, first-rate facilities, and motivating medical staff. In Table 3, the theme of sustaining high standards in healthcare service is reflected in responses 4, 6, and 15.

These comments emphasize that providing high-value care necessitates not only accessibility to care but also the skill and desire of healthcare professionals to offer such care.

Table 3: What are the key principles of the term "Value-Based Healthcare" system?

S/N	Responses
1	Value outcomes that matter over cost.
2	Dignity, Respect, privacy, confidentiality, empathy, inclusion.
3	Better/Quality care, Low and affordable cost, and better health.
4	Service, standards.
5	Quality Health.
6	Customer care, quality service with adequate controls.
7	Quality health care at the lowest cost.
8	Equity and fairness.
9	Tailoring interventions to meet the needs of the patient.
10	Value-Based healthcare is an approach to healthcare delivery and resource allocation that places a primary focus on achieving optimal patient outcomes and experiences while utilizing healthcare resources efficiently. It shifts the traditional fee-for-service model towards a system that rewards quality, efficiency, and patient-centered care.
11	Optimal care.
12	Don't know.
13	Patients spend less money to achieve better health.
14	1 don't know.
15	The reward of healthcare providers is evidence-based.
16	Patient-centred, improves health outcomes, healthcare providers are rewarded for helping patients improve their health.

Theme 5: Accountable Care Organizations (ACOs)

In response 13(Table 2), the idea of Accountable Care Organizations (ACOs) is introduced, demonstrating an understanding of the function of structured care systems in raising value. ACOs are organizations that support the VBHC tenets by aiming to enhance care coordination and quality while cutting costs.

Theme 6: Uncertainty and Lack of Knowledge

In Table 2, response 9 says "Revamping the primary healthcare centres," but response 14 says only "I don't know." In Table 3, responses 12 and 14, which both contain the word "I Don't know," show some scepticism or lack of knowledge of the fundamental concepts of Value-Based healthcare. This is again reflected in Table 4 where responses 1, 8, 23, 26, 59, and 62 show a lack of knowledge and comprehension of what VBHC comprises. These comments imply some ambiguity or a lack of detailed understanding regarding the precise VBHC methods that can be used in Nigeria. It draws attention to the potential need for VBHC education and awareness campaigns.

Table 6: In brief, what does the term "Value-Based Healthcare" mean?

S/N	Responses
1	Better outcomes that matter to patients at the lowest possible cost
2	Simply put, a health care system that maximizes available health resources and personnel while, giving their best to the service user.
3	Getting a quality service at an affordable price.
4	Adequate care befitting the resources deployed. The patient gets the services in a timely and professional manner, meeting his needs as per current standards.

5	I think it means delivering quality healthcare services.
6	An attempt at providing health care based on efficacy, affordability, customer-care centred, and the engagement of all segments of the health industry.
7	Emphasis on quality care.
8	The amount earned is equivalent to work level.
9	Patient-centred Healthcare.
10	Value-based healthcare is an approach to healthcare delivery and resource allocation that places a primary focus on achieving optimal patient outcomes and experiences while utilizing healthcare resources efficiently. It shifts the traditional fee-for-service model towards a system that rewards quality efficiency and patient centred care.
11	Getting the best care for the amount paid.
12	Concentrating on patient satisfaction.
13	Health providers are paid based on the patients' health outcome.
14	Quality healthcare.
15	Value-based healthcare is a healthcare delivery model in which providers, including hospitals and physicians, are paid based on patient health outcomes. Under value-based care agreements, providers are rewarded for helping patients improve their health, reduce the effects and incidence of chronic disease, and live healthier lives in an evidence-based way.
16	This means providing medical care to patients at the lowest cost possible with high-quality care and healthcare providers and paid based on patient health outcomes.

The responses to the question "In brief, what does the term 'Value-based Healthcare' mean?'" were analyzed thematically. demonstrates various recurrent elements that give a thorough insight into how healthcare workers and experts view the idea of Value-Based Healthcare (VBHC).

The thematic analysis of healthcare professionals' responses reveals key themes related to Value-Based Healthcare (VBHC):

Theme 7: Patient-Centered Care

Several responses (1, 4, 9, 15, 16) highlight the importance of putting patients' well-being, satisfaction, and outcomes at the forefront of healthcare services. This theme underscores the central role of patients in VBHC.

Theme 8: Effectiveness and Quality

Responses (1, 4, 6, 10, 14) emphasize the delivery of high-quality healthcare services as a primary goal of VBHC. VBHC is recognized for focusing on efficient and effective care that aligns with industry standards.

Theme 8: Cost-Effectiveness

References to affordability and cost-effectiveness in VBHC are found in responses (1, 3, 5, 12, 16). VBHC is viewed as a model that strives to provide high-quality care at a reasonable cost, ensuring efficient use of medical resources. The shift from fee-for-service to outcome-based compensation is highlighted (10, 13, 15).

Theme 9: Healthcare Resource Optimization

Responses (2, 3, 6, 10) stress the importance of optimizing healthcare resources, including staff and facilities, in VBHC. It is seen as a system that maximizes limited resources to offer the best possible treatment to service users.

In summary, healthcare professionals perceive VBHC as a patient-centered approach that prioritizes quality, effectiveness, and cost-effectiveness in healthcare delivery. The themes reflect their views on the core principles and objectives of VBHC.

3.5.2 Thematic Analysis: The Potential Challenges of Implementing VBHC

This thematic analysis presents themes from Table 4 which identify the potential challenges of implementing VBHC in Lagos. This aligns with the objective of the study. The thematic analysis of the comments discussing the difficulties in implementing Value-Based Healthcare (VBHC) in Nigeria indicates several recurrent themes. These topics shed light on the difficulties and barriers that healthcare professionals encounter when implementing the VBHC.

Table 4. What are the Barriers to Implementing Value-Based Healthcare in Nigeria?

S/N	Responses

1	Lack of awareness, political will
2	Government Policy
3	Finance
4	Corruption, lack of planning
5	Getting well-qualified health professionals to offer service at a low cost and unhealthy policies and a conductive environment
6	Lack of enabling environment
7	Resources and societal cultural/orientation
8	-
9	Political instability governance, attitude to work
10	Governance structure and corruption
11	High Patient load and low doctor-to -patient ration
12	Training
13	Inadequate personnel and infrastructures
14	Poverty, Ignorance, the proliferation of substandard health facilities
15	Huan resources
16	Political will, facility-base problems
17	Policy
18	Poor economic situation
19	Poor remuneration
20	Good governance policies
21	Finance
22	Insecurity, low remuneration for medical professionals
23	Government policies
24	Lack of awareness and ignorance
25	Lack of leaders
26	Not clear on what Value-Based means
27	Funds, policy makers
28	Intersectoral collaboration
29	Nil
30	Lack of appropriate technologies
31	Healthcare professionals' collaboration
32	Lack of manpower
33	Lack of appropriate technologies
34	Ignorance of level of service providers
35	Lack of medical insurance
36	Inadequate knowledge of health workers and poor government policies
37	Bad governance
38	Lack of information
39	The cost of implementation doctor to patient ration
40	No systems are in place to monitor patient outcomes after visits to healthcare providers
41	Poor health facilities
42	Poverty poor political will
43	Poor government policies and lack of interest by healthcare professionals
44	Nil
45	Finance
46	Financial constraints form patients and relatives, greed and selfishness from healthcare providers, and lack of proper infrastructure and facilities
47	I don't know
48	Lack of qualified personnel
49	Lack of political will
50	Lack of structure
51	Poor financing of the health system in general (From facilities to the health care workers as well
52	Poor implementation of bills, poor funding, ignorance, and illiteracy
53	Poor funding, interprofessional rivalry
54	Inadequate funding of the health sector inadequate manpower in the health system
55	Lack of po9litical will, poverty
56	The paucity of emphasis on the Value-Based health care or on factors that affect Value-Based health outcomes
57	Nil
58	Low Funds allocated to health care. Corrupt distribution of resources
59	Don't know

60	Low socio-economic status of the masses
61	Doctor-patient ration, lack of motivation
62	Nil
63	Health Insurance
64	I don't know
65	Finance
66	I don't know
67	Poor budgeting
68	Healthcare providers are understaffed, therefore a ration of patients to a doctor is very high The health information technology system is sometimes not updated, crashes, and not running adequately. Prices of medication constantly fluctuates due to unstable economy

Theme 1: Political and Government Factors

In Table 4, responses 2, 9, 10, 23, 29, 43, 63, and 67 draw attention to obstacles caused by politics and the government. These include things like political instability, governance attitudes, governance structures, and policies of the government.

Theme 2: poor funding and financial constraints

Responses 3, 5, 21, 44, 49, 52, 54, 65, 66, and 68 in Table 4 mention money problems and insufficient funds as major obstacles. Financial problems include difficulties with paying for healthcare services, paying for healthcare workers, and the state of the economy in general. While Health insurance is mentioned as a barrier in responses 28, 35, 63, 64, and 67. These responses agreed with Odunyemi (2021) who found that despite having immense potential, the Nigerian health system has performed appallingly on all important health indices, lagging behind several African nations due to poor financial allocation to the health ministry.

Theme 3: Infrastructure and the Healthcare Workforce

In Table 4, responses 5, 12, 13, 16, 32, 56, 66, 33, 55, and 68 place an emphasis on problems with the infrastructure and workforce in the healthcare industry. These include a lack of qualified employees, inadequate training, and outdated technology. The high patient load and poor doctor-to-patient ratio are highlighted as important challenges in responses 11, 50, and 61. Many African governments have experienced difficulties with health workforce deployment, funding, employment, capacity building, and training. In search of greater prospects, the continent has thus continued to see a rapidly rising migration of the health workforce to high-income environments (Adeloye et al.,2017). Perhaps the biggest obstacle to the development and maintenance of the global health system, particularly in Nigeria, is the crisis in the health workforce.

Theme 4: Cultural and Social Aspects

The hurdles mentioned in responses 5, 7, 13, 48, 60, and 65 of Table 4 include societal culture, orientation, and elements like poverty and ignorance. Healthcare procedures and patient behaviour may be affected by societal variables. A studied by Ojua et al. (2013) revealed similar findings that some of these traditions have a negative impact on women's and children's lives, and that enculturation will go a long way toward ensuring that some of these harmful habits are eliminated and new, beneficial ones are strengthened.

Theme:5 Corruption and ethical issues

Corruption, greed, and selfishness are mentioned as obstacles to adopting VBHC in responses 4, 27, 58, and 66 of Table 4. These moral questions have to do with how the healthcare system is run and its integrity. These findings agreed with the results of (Onwujekwe et al.,2018) who found that absenteeism, procurement-related corruption, under-the-counter payments, health financing-related corruption, and employment-related corruption are common in the Nigerian health sector.

Theme 6: Data and Information Challenges

In Table 4, responses 20, 28, 31, 36, 37, 38, 40, and 61 reveal difficulties with data, information, and patient outcome monitoring. Measurement and improvement of healthcare value are significantly hampered by inadequate data, a lack of knowledge, and a lack of procedures for monitoring outcomes.

3.5.3 Thematic Analysis: Comments and suggestions.

Here, responses to comments and suggestions are thematically analysed. According to the stated objectives, a thematic analysis of the ideas and comments about the implementation of Value-Based Healthcare (VBHC) in Nigeria indicates several recurrent themes. These themes offer insightful information about the viewpoints and suggestions of stakeholders and healthcare professionals.

Table 5: Suggestions and Comments.

S/N	Responses
1	QIO and 15 need to be "tick all that apply" with the ability to select more than one. The introduction is quite long but probably okay. Asa no HCP now Some Of the questions don't quite work for me but I'm not your audience. Generally, it's pretty good. You need to explain why you are asking for a name and email if it is anonymous.
2	Better Stakeholder Engagement
3	Improved governmental support to patients and improved work support for health workers.
4	Value-Based healthcare should be prioritized in hospitals to get the best out of healthcare professional and improve patient satisfaction.
5	Collaboration between the health providers, policymakers; and health managers with public sensitization and Education will all be needed to achieve/ implement good Value-Based healthcare in N – eria.
6	Creation of an enabling environment like reduced bureaucracy, demand for accountability.
7	Value-Based healthcare is a topic to be promoted.
8	None.
9	I think government policies can be amended to ensure bureaucracy, demand for accountability.
10	We must continue to fine/tune the yet-to-be-completely implemented National Health Insurance Policy till we get it right.
11	Inculcation into the training school for health care professionals to be more value-orientated, first person-related, health outcomes related, and of course profit financially.
12	Attitude to work and remuneration.
13	More funding will be required for the training and retraining of health workers.
14	1. More NHIS coverage 2. Close all facilities not
15	More recruitment.
16	Conscious efforts to increase.
17	Private -Public partnership in healthcare.
18	Pro.
19	Bureaucracies surrounding policies in govern.
20	The government should make good health policies to improve the health of the citizens.
21	Don 't know.
22	Start from the primary healthcare centre up to tertiary institutions.
23	Good governance help.
24	Nil.
25	We should get it right from our leaders.
26	What is Value-Based healthcare?
27	Providing options for answers can be used in studies like this.
28	Government.
29	Nil.
30	Improving healthcare financing at the government level.
31	Collaboration. Training. Models.
32	Adequate manpower, technology, and intersectoral collaboration.

Theme 1: Infrastructure and Strengthening of the Healthcare System

Responses 3, 5, 7, 16, 20, 32, 33, 38, 39, 41, 43, 49, 50, 53, 54, 55, 56, 58, 60, 65, and 68 in Table 5 place a strong emphasis on the necessity of enhancing healthcare financing, policies, and infrastructure. These recommendations emphasize how crucial it is to improve the healthcare system in order to facilitate the adoption of VBHC.

Theme 2: Collaboration and Stakeholder Involvement

The importance of stakeholder participation, collaboration, and partnerships is emphasized in responses 2, 5, 10, 13, 30, 31, 35, 37, 42, 48, 51, 53, 55, 58, 63, and 66 (Table 5). Collaboration between healthcare professionals, lawmakers, health managers, and the general public is advised. In order to promote the adoption of VBHC, this theme emphasizes the necessity of a coordinated effort among many stakeholders.

Theme 3: Education, Public Awareness and training

Initiatives for education and training are mentioned in responses 1, 26, 38, 42, and 56(Table 5). These recommendations stress the significance of VBHC concepts and methodology education for healthcare workers. Education is thought to improve comprehension and readiness for the application of VBHC. While responses 20, 26, 28, 35, 37, 58, 59, 61, 62, 63, 66, and 67 in Table 5 highlight the significance of improved public awareness and widespread education. These suggestions emphasize the necessity of VBHC education for the general population. Demand for Value-Based care may increase as a result of public awareness.

Theme 4: Political Will and Government Policy

In Table 5, responses 2, 4, 9, 23, 31, 42, 44, 47, 63, and 64 demonstrate how political will and government policies support VBHC. To effectively execute health programs, recommendations include better political backing, policy changes, and strong governance. For VBHC to advance, political commitment and backing are essential.

Theme 5: Healthcare Labour and Welfare

In Table 5 responses 12, 18, 32, 38, 53, 65, and 68 concentrate on elements relevant to the healthcare workforce. These ideas cover solutions for problems with pay, manpower, education, rewards, and work position categorization. Delivering value-based care requires a highly motivated and well-supported healthcare team. In a nutshell, the thematic analysis emphasizes the value of VBHC implementation in Nigeria through the improvement of the healthcare system, stakeholder involvement, education, government support, workforce welfare, public awareness, and preventative healthcare. Policymakers and healthcare executives seeking to further the implementation of VBHC in the Nigerian healthcare context can benefit greatly from these insights.

4 Conclusion

The study in Lagos, Nigeria, presents a multifaceted view of Value-Based Healthcare (VBHC) within the local medical community:

4.1 Awareness and Knowledge of VBHC

The research indicates a varied level of awareness among healthcare professionals, with some having limited acquaintance with VBHC concepts. This highlights the urgent need for targeted educational programs tailored to healthcare practitioners to bridge knowledge gaps and enhance their understanding of VBHC principles. Clear and unambiguous information dissemination is crucial to prevent misunderstandings that could hinder effective adoption.

4.2 Perceived Acceptability and Benefits of VBHC

Healthcare professionals familiar with VBHC generally hold positive opinions about it. They recognize potential benefits such as improved patient outcomes, enhanced care quality, and efficient resource allocation. However, concerns about its applicability within the current healthcare system were raised, emphasizing the need for a thorough and collaborative implementation approach to address these concerns and ensure successful integration.

4.3 Feasibility of Implementing VBHC

The study uncovers intricate challenges in implementing VBHC in Lagos, Nigeria. These include knowledge gaps, policy limitations, budget constraints, inadequate infrastructure, and a shortage of skilled healthcare workers. Overcoming these obstacles requires a concerted effort involving stakeholders at all healthcare system levels. Advocating for policy reforms, increasing public awareness, funding research and evaluation projects, and promoting transparency and accountability are essential steps.

4.4 Challenges to Implementing VBHC

The study highlights opportunities and difficulties in aligning the healthcare system with VBHC principles and regulatory frameworks in Nigeria. It underscores the necessity of policy reforms and policymakers' active involvement to bring the healthcare system in line with VBHC principles.

In summary, the study underscores the importance of education, awareness, policy reform, infrastructure development, and collaboration to successfully implement VBHC in Lagos, Nigeria, and address the challenges and opportunities it presents within the local healthcare context.

5 Key Recommendations

Several suggestions can be made to support the effective adoption of value-based healthcare in Nigeria considering the research findings:

5.1 Stakeholder Engagement and Collaboration

Encourage the public, lawmakers, healthcare professionals, and the general public to work together to promote the adoption of VBHC. Partnerships and awareness-raising initiatives can enhance the development of a positive environment.

5.2 Education and Training

To close the knowledge gap regarding VBHC, comprehensive educational programs and training modules must be established. Healthcare professionals in Lagos ought to have access to thorough and specialized instructional materials that go through the fundamental ideas and real-world applications of VBHC. To make sure that they specifically fulfil the needs of healthcare professionals, these programs can be developed in collaboration with academic institutions, professional associations, and healthcare facilities. Such training programs serve as the first step in supplying healthcare professionals with the information they need to comprehend and apply VBHC successfully.

5.3 Advocate for Policy Reforms

In order to bring the healthcare system into compliance with the VBHC principles, policy change advocacy is essential. To underscore the significance of policies that prioritize quality-driven, patient-centered care, policymakers should be involved at both the state and national levels. These changes should include policies and rules that encourage medical professionals to use VBHC techniques. The development of a supportive environment that encourages VBHC adoption on a larger scale and makes it a crucial component of the healthcare system is made possible through policy lobbying.

5.4 Support Research and Evaluation

In order to assess the effects of VBHC implementation in Lagos, Nigeria, research and evaluation activities must be encouraged. Within VBHC models, research studies should concentrate on important topics such as patient outcomes, cost-effectiveness, and patient satisfaction. Results from these studies can offer evidence-based insights that support efforts at continuous improvement and decision-making. Stakeholders add to the body of information on VBHC's effectiveness and its application in the local context by sponsoring research initiatives.

5.5 Healthcare Workforce Welfare and Professional Development

To ensure a motivated and well-supported healthcare workforce, address workforce-related issues such as compensation, training, incentives, and job role classification. To evaluate the development and success of VBHC activities over time, a strong monitoring and evaluation mechanism must be put in place. Stakeholders can monitor the effects of VBHC procedures by routine data collection on key performance indicators, patient outcomes, and cost-effectiveness. Furthermore, in order to maintain the strategy's relevance and responsiveness to local dynamics, stakeholders should be ready to modify VBHC plans considering the changing demands and difficulties facing Lagos' healthcare system. Promoting CPD activities among healthcare professionals is essential for keeping abreast of VBHC changes and best practices. Workshops, seminars, and conferences might offer beneficial chances to improve expertise. Healthcare providers should be commended and rewarded for their outstanding use of the VBHC principles.

5.6 Invest in Healthcare Infrastructure

A fundamental prerequisite for the efficient implementation of VBHC is the provision of resources for enhancing the hospital infrastructure. This includes modernizing hospital buildings, ensuring accessibility to cutting-edge tools and IT systems, and fostering an atmosphere that supports value-based treatment. For

healthcare professionals to satisfy the objectives of value-based care and make the most of the infrastructure investments, adequate staffing levels and continual training are essential.

5.7 Public Awareness and Education

Public awareness initiatives are essential for informing the public and patients about VBHC and its potential advantages. Patients who are well-informed are better able to actively participate in their healthcare decisions and promote value-based strategies. Utilizing multiple communication channels, such as the media, community involvement initiatives, and social media, ensures that the message reaches a large audience and helps to create a healthcare community that is more informed and more powerful.

5.8 Preventive Medicine and Poverty Reduction

Prioritize preventative healthcare and initiatives to combat poverty to reduce the overall strain on the healthcare system and increase the viability of VBHC. Implementing these suggestions will help stakeholders overcome obstacles and speed up the adoption of value-based healthcare in Nigeria, ultimately enhancing patient and provider experiences and results.

5.9 Limitations of the Study

This study acknowledges several flaws in both its conception and execution. These limitations should be considered when interpreting the results and extrapolating them to larger populations or circumstances.

The potential for sample bias that might have impacted the study's findings is one major issue. The study only examined healthcare professionals in the Lagos region, which may not have adequately reflected the wide range of experiences and viewpoints of healthcare workers in other parts of Nigeria or in other nations. As a result, the findings may not be immediately applicable to healthcare professionals in environments other than Lagos, given its unique geographic and cultural context.

Another drawback to consider is the small sample size used in the study. Even though the goal of the study project was to collect a representative sample of Lagos' healthcare professionals, it is crucial to understand that the sample size might not be enough to adequately reflect the complexity and diversity of this professional group. A larger, more representative sample might have improved the study's generalizability and external validity.

In studies that rely on participant responses, like the questionnaires and focused group discussions utilized in this research, self-reporting bias is an inherent constraint. In terms of their awareness and knowledge of VBHC, participants may have been influenced by social desirability bias, leading them to give answers that conform to societal norms or the "correct" replies. The accuracy of the reported data may be affected by this inherent bias.

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The Effects of Value-Based Healthcare Principles in Adopting Microwave Tumor Ablation for Cancer Management in Sri Lanka

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Abstract:

Background: In the realm of modern healthcare, tumour ablation stands as a widely utilized treatment modality for solid tumours, employing thermal therapies, reactive oxygen species-producing agents, and photodynamic therapy. As cancer incidence rates surge, particularly in the Asian region, where it accounts for half of global new cancer cases and nearly half of cancer-related deaths, tumour ablation emerges as a pivotal management strategy, representing 44.65% of clinical studies worldwide. This study focuses on applying the principles of Value-Based Healthcare (VBHC) to microwave ablation (MWA) for cancer management within the Sri Lankan healthcare system, aiming to elucidate its potential impact compared to conventional methods.

Methodology: Through a comprehensive literature review and analysis of primary data collected via a structured questionnaire distributed among 50 patients, this study evaluates the practical feasibility and efficacy of implementing MWA within the Sri Lankan healthcare context. Demographic factor analysis and inferential statistics are employed to assess the collected data, with a final sample size of 36 patients revealing a 100% response rate.

Findings: Results indicate that MWA holds promise as a viable treatment option within a VBHC framework, offering advantages such as speed, simultaneous tumour ablation, and the ability to treat larger tumour sizes. Moreover, the study's findings underscore MWA's potential to address healthcare system challenges exacerbated by the COVID-19 pandemic, offering a swift and efficient tumour management solution.

Conclusions: The study concludes that adopting MWA for cancer management aligns with the principles of VBHC, emphasizing efficiency, cost-effectiveness, minimal invasiveness, and precision. Recommendations highlight the importance of promoting awareness and understanding of MWA among healthcare professionals and the public to facilitate its widespread adoption and integration into oncology management practices globally. This research underscores the transformative potential of MWA within the context of VBHC, paving the way for enhanced tumour management outcomes and contributing to the evolution of value-based healthcare practices worldwide.

Keywords: Tumour ablation, Microwave ablation, Value-Based Healthcare, Cancer management, Clinical outcomes, Patient-reported outcomes, Sri Lanka.

Table of Contents

1 Introduction

1.1 Research Background

In the modern healthcare sector, tumour ablation is a commonly used treatment method for solid tumours. The tumour Ablation method is conducted using thermal therapies, reactive oxygen species-producing agents, and photodynamic therapy. At the thermal therapies stage, the tumour will be destroyed via thermal energy and includes microwave, cryoablation, highly intensive focused ultrasound, and radiofrequency. Bray, Ferly, and Soerjomataram (2018) have highlighted that in the Asian region of the world, the cancer statistic represents half of global new cancer patients and nearly half of cancer-caused deaths. Tumour Ablation is applied in Asia as an express management process, and this accounts for 44.65 per cent of clinical studies globally. The benefits of the tumour ablation process highlight that this treatment helps to reduce the cost of cancer management compared to traditional cancer treatment methods and outcomes of these treatment methods highlight high reliability compared with conventional treatment methods. Therefore, by conducting this study, the author is focused on applying the Value-Based Healthcare Concept for the tumour Ablation process and highlighting the possible outcomes compared with other methods.

1.1.1 Aims and Objectives

- To identify the effects of value-based healthcare principles by adopting to Microwave ablation (MWA) for cancer management in the Sri Lankan healthcare system.
- To understand the basics of Value-Based Health Care and its importance.
- To understand the MWA technology and its importance in Clinical Reported outcomes Measures (CROMs).
- To explore and understand the way MWA technology adds value to the Value-Based Health Care system in terms of Patient Reported Outcomes Measures (CROMs).

1.2 Research Overview

The main purpose of conducting this study is to identify the practical possibility of adding Value- Based Healthcare Principles by implementing MWA for Cancer Management in the Sri Lankan Healthcare System. To meet this objective, the author needs to evaluate the practical approach and consider ways of implementing the standard way of achieving the objective. The secondary chapter discusses the literature related to key subject areas. Under the data analysis, the author will discuss the survey details that were collected by distributing the customized research questionnaire and the secondary data to evaluate patient reported outcomes measures and clinical reported outcomes measures. The consecutive conclusion chapter has discussed the gaps between expected and real outcomes while the recommendations chapter indicates the potential usefulness of adopting Microwave Ablation for Cancer Management.

2 Project Requirement

2.1 Problem Statement

The implementation of VBHC considers delivering healthcare services at a low cost while providing better outcomes. On the other hand, in many countries including Sri Lanka, it costs considerably and takes much time for cancer treatments. Apart from Chemotherapy, transplantation, in Sri Lanka, some people try Ayurvedic and homeopathy treatments to cure the cancers. However, by referring to the previous experience of the author, the author believes that MWA is an emerging option for cancer management since it is low cost and has an instant effect on the patients. By conducting this study, the author will highlight how effective is the microwave ablation treatment for cancer patients and the way it adds value to the VBHC concept.

2.2 Overview of VBHC Concept

In the modern world, health has become a major concern since the community consciousness of being healthy is increasing. However, modern technologies have created many changes and effects on leveraging the healthcare sector to the next level. These inputs to the healthcare sector have increased the healthcare sector by introducing many theories and concepts to uplift the services. Among these theories and concepts,

value-based healthcare (VBHC) has become a highly demanding concept. Value in the healthcare industry can be determined as receiving prominence in the healthcare system and facing increased demand for services by utilizing minimum resources.

Catalyst (2017) has described VBHC as a modern healthcare delivery system that targets hospitals and physicians who are getting paid depending on the patient's health outcomes. The typical VBHC systems providers get rewards for the health status of patients and the professional management helps to reduce the effects and possibilities of getting chronic diseases while living a healthy life in a proven manner. Hurst, et al. (2019) have defined VBHC concepts as providing transparent, sustainable, and equitable uses of the available resources to achieve better outcomes and experiences for everyone. VBHC has emerged as an alternative and potential replacement for fee-for-service reimbursement based on quality rather than quantity. VBHC concept is developed as a combination of Clinical Reported Outcomes (CROMs) and Patient Reported Outcomes (PROMs).

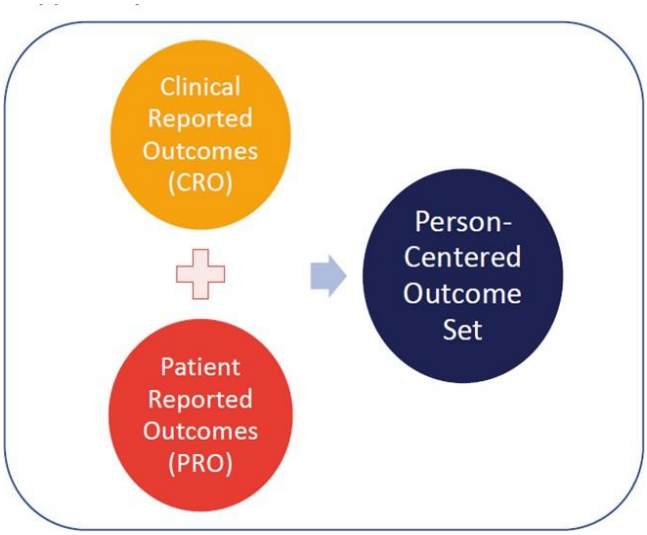

Figure 1. VBHC Concept.

2.3 Overview of Tumor Management

Hyperthermia is one of the tumor treatment methods in which devices deliver energy to increase the temperature of the cells in body tissue. The early clinical usages were primarily for the treatment of patients who were not surgical resection candidates owing to prohibitive tumor location, multi-nodular tumours, medical comorbidities, or anatomic constraints limiting resection. Most of the patients are not surgical resection candidates because of limitations including multifocal disease, tumor position to key vessels, and size of the tumor also increasing the temperature causes the killing of cancer cells and damages the proteins and structures within the cells. MWA has great and promising potential for the treatment of primary and secondary liver disease and tumours in the lungs, kidneys, and bones. The use of MWA has been expanded due to many benefits when compared to other existing methods, including higher temperature, larger ablation zone when using high power, faster ablation time, decreased susceptibility to vessels in proximity to the tumour, and insensitivity to tissue features.

2.4 Process and Importance of Microwave Ablation

Radiofrequency ablation for cancer is a minimally invasive procedure that uses electrical energy and heat to destroy cancer cells. Like Radio frequency Ablation (RFA), MWA uses a thin needle to transmit microwaves into your liver tumor to destroy cancer cells with heat. This is the ablation method most frequently used at Penn Medicine. This treatment also offers the chance to remove inoperable tumors. The minimally invasive procedure also allows the preservation of more healthy tissue than a surgical intervention, which generally leads to improved quality of life. The MWA process is an emerging treatment concept used in tumor ablation. This method is used to create a flexible approach to laparoscopic, open surgical access, and percutaneous. A microwave generator emits an electromagnetic wave via the exposed, non-insulated portion of the antenna (Simon, et al., 2005). During this treatment process, the affected area tissues produce

immediate coagulative necrosis (Brace, 2010). The main advantage of this process is this can be applied for larger and predictable tumor volumes, less painfully, can be used in several areas, and results in faster ablation. This higher intertumoral temperature will not affect the patient and optimal heating of cystic masses and many others (Patel, et. al 2012; Simon, et al., 2005; Stauffer, et al., 2003).

2.5 Clinical-Related Outcomes of Local and International Microwave Ablation Treatment Practices

The report of Kumuduni Hettiarachchi (2023) has described the Microwave Ablation method as a minimally invasive treatment that uses visual guidance for tumor localization identification and a thin microwave antenna of gauge 14.5 will be inserted into the affected area. With the help of a microwave antenna, the kinetic energies and heat will be increased up to 105^0C and cause cellular death and surrounding tissue. Recently, in Sri Lanka Radiologists from China, India, and Bangladesh have gathered for a two-day workshop about treating liver cancer patients by using MWA treatment and this was held in Colombo North Centre for Liver Disease under Ragama Teaching Hospital in Sri Lanka. The workshop reflected the knowledge on revolutionizing cancer treatment in their regions by using the MWA treatment. Udayanga (2018) has stated a Sri Lankan consultant for interventional radiology, Dr. Prasad De Silva has stated that tumour areas up to 5cm in diameter can be burned by the Microwave Ablation method and the treatment time only takes 5-10 minutes for completion. The MWA treatment is successful when treating the lungs, breast, kidney, liver, prostate glands, and many other tumor types. Using this method makes life easier and more convenient for the patient since the surgical procedure has no downtime or blood loss while the risk of infection or post-op complications is extremely mild.

A study carried out by Dr. Chinthaka Appuhamy and the clinical team regarding the Sri Lankan MWA treatment application implied that this method is ideal for immediate procedure results for significant liver tumors especially the right lower segment of liver tumors. Further, the same study contrasts that this method is the lowest cost treatment, and the results of the procedure are significantly effective. The study conducted by Jayawickreme, Muthukuda, Kariyawasam, Piyasiri, and Abeywickrama (2022) has identified that the MWA treatment can be applicable for treating selected trans-arterial embolization and radiofrequency ablation in treating insulinoma condition due to its better results, with minimal complications. Also, the findings reflected that in Sri Lanka, this method is applicable as a combined treatment with alcohol ablation that is used in treating insulinoma conditions. These findings reflect that the Microwave Ablation method is successful in treating tumor management and cancer management in Sri Lanka.

The National Health Services in East Suffolk and North Essex National Health Services Foundation Trust collaborated and conducted clinical trials for the MWA treatment. This centre became one of the six centres in the UK that have begun the MWA treatment. This made a significant move in East Suffolk and North Essex since this is a successful tumor management method that is used for complex conditions and early malignancy insights conditions that treat patients under general anesthesia. The National Health Services in East Suffolk and North Essex National Health Services Foundation Trust concluded that this treatment seems more successful compared to other treatments and it was reported that 20 percent of patients are returning for a second ablation process. Furthermore, these team leads captured that only 9 percent of patients are required to go for additional treatment. The North Essex National Health Services Foundation Trust report conveys that this method helps to be more definitive when predicting the extent of the ablated tumour and upon that the professionals suggest additional treatment. The main factor of the study highlights that most of the patients can return to their homes on the same day of treatment. These findings reflected that in the UK, beginners of the MWA treatment commented positively due to its significant outcomes with minimal or no complications.

2.6 Development Hypothesis for the Study

Debela, et al., (2021) have implied that cancer is a global health problem and presently in every global death one person is caused by cancer. In general terms, treating cancer is a complex process that costs a lot of money and a considerably wide period of conventional treatment approaches, while significant advances are being made in recent times, including stem cell therapy, targeted therapy, ablation therapy, nanoparticles, natural antioxidants, radionics, chemo-dynamic therapy, sonodynamic therapy, and ferroptosis-based therapy. Current methods in oncology focus on the development of safe and efficient cancer nanomedicines. The author believes that the combination of the VBHC concept and Microwave Ablation for cancer management will help cancer patients to cure or manage their burden of cancer and extend their life assurance. Therefore, the author has developed these main sub-hypotheses to test by

referring to real information. The European Commission (2019) has elaborated the VBHC in four dimensions and they are named value pillars: personal value conveys the patient's personal goals, technical value conveys maximum outcomes using entire possible resources, allocative values are resources distributed across all patients, and societal value conveys social participation, relationship, and contribution.

2.6.1 Main Hypothesis

Hypothesis 1: The implementation of Microwave Ablation for Cancer Management can directly add value to VBHC practices.

Null Hypothesis: The implementation of MWA for Cancer Management cannot directly add value to VBHC practices.

2.6.2 Sub Hypothesis

Hypothesis 1a: The implementation of MWA for Cancer Management can directly add value to VBHC practices in terms of personal value.

Hypothesis 1b: The implementation of MWA for Cancer Management can directly add value to VBHC practices in terms of technical value.

Hypothesis 1c: The implementation of MWA for Cancer Management can directly add value to VBHC practices in terms of allocative value.

Hypothesis 1d: The implementation of MWA for Cancer Management can directly add value to VBHC practices in terms of societal value.

3 Project Analysis

The gathered primary data will be analysed and presented in this chapter. As a result, the initial step is to conduct a demographic factor analysis, followed by inferential statistics. The gender distribution, age distribution, and other details of the sample are evaluated using dummy variables and tables, bar charts, and pie charts are also utilized to present this demographic data. Then the behaviour of the respondents is explored through several questions. After that, the hypotheses built in the research are tested using SPSS, and the internal consistency of reliability of the variables is measured as the first step and then a correlation analysis is implemented to identify the existing associations of the variables.

3.1 Sample Size

As a sample population of this study, 50 patients were selected, and a structured questionnaire was distributed practically for the collection of data. Accordingly, all of them responded and were re- surveyed by the researcher, and 09 were removed due to missing values. Then the rest of the questionnaires were surveyed again, and it was found that there were no missing values, and the correct 36 questionnaires were used for further analysis and statistically the response rate of this study was 100%.

3.2 Demographic Profile

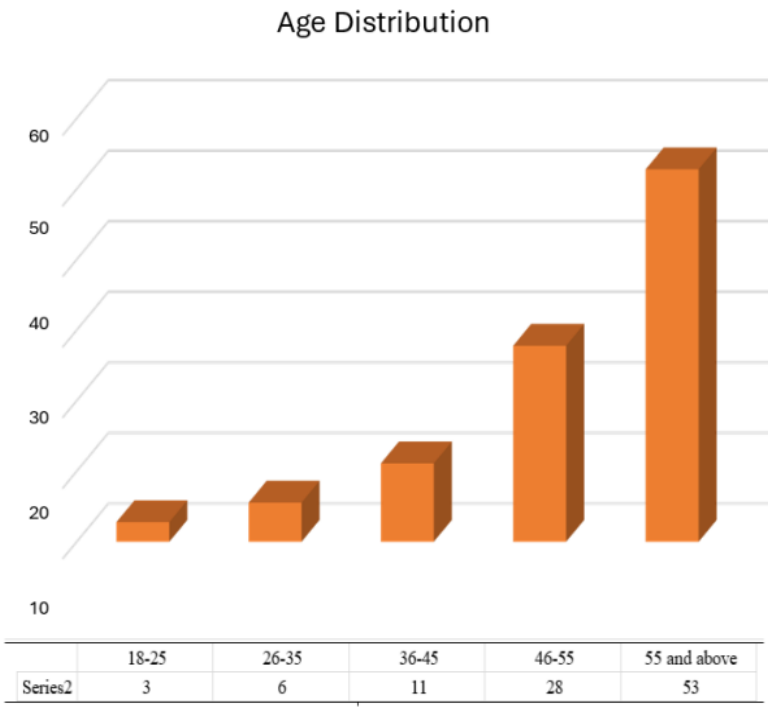

Figure 2. Age of Respondents.

Focusing on the age level of the respondents, the highest representation of the entire sample is reported from the 55 and above age group, which is 53% in percentage terms. The second largest majority is reported from the 46-55 age group, which accounts for 28%, while the 36-45 age group represents 11%. Further, representation of 18-25 group is around 3% and 6% from the total sample belongs to 26-35 age category. The results contrast that most of the aged population is being diagnosed and referred to MWA treatment in this short treatment method.

3.3 Gender of Respondents

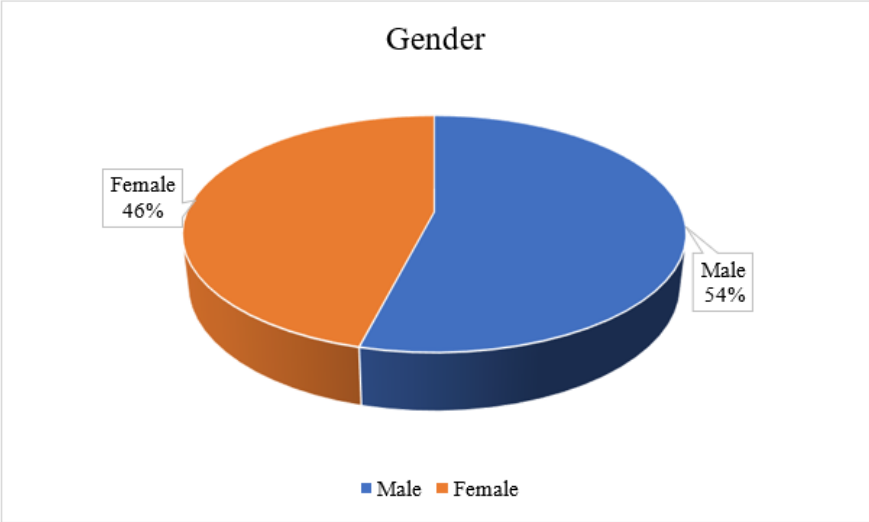

Figure 3. Gender of Respondents.

Here, 54% of the participants in this research were male, covering more than 50% of the total sample. Furthermore, the remaining 46% are female persons and this implies that most of the participants in this survey are male.

3.4 Diagnosis / Treatment History-related Questions

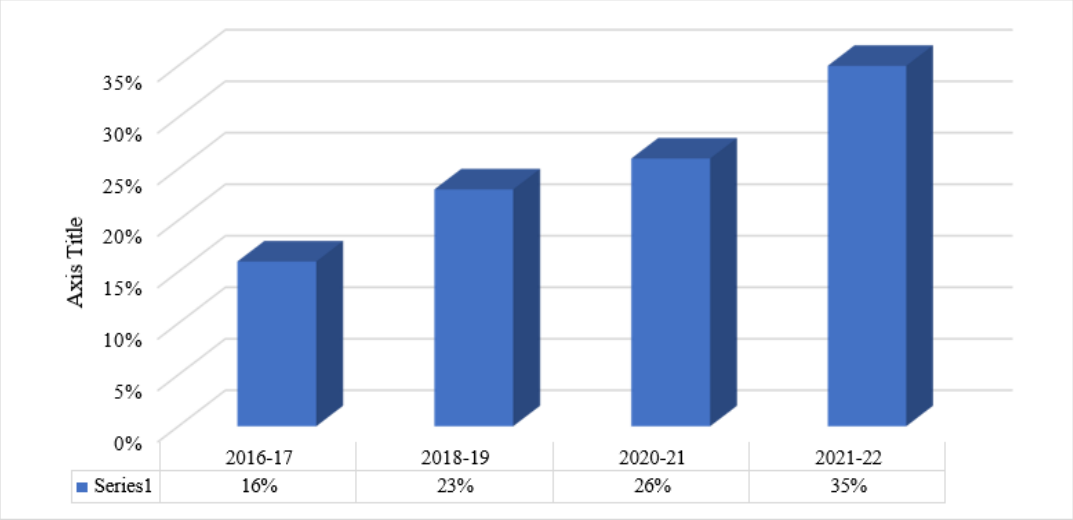

Figure 4. Cancer Diagnosis Year.

Later, Data was gathered and compiled from the respondents to this survey on the cancer diagnosis year, and it was discovered that the period 2022-2023 is the longest diagnostic year. Additionally, within that period, the reports of 35% of patients were received. On the other hand, during the diagnosis era of 2016-2017, there was documented 16%. Most of the people were diagnosed with cancer from 2022 -2023 and during the era most of the healthcare professionals were aware of this method after experiencing the outcomes. Further after COVID-19 outbreak consciousness of the people towards their own health has increased rapidly and this can be a direct cause of a significant number of patients being diagnosed in that period.

3.5 Affected Area

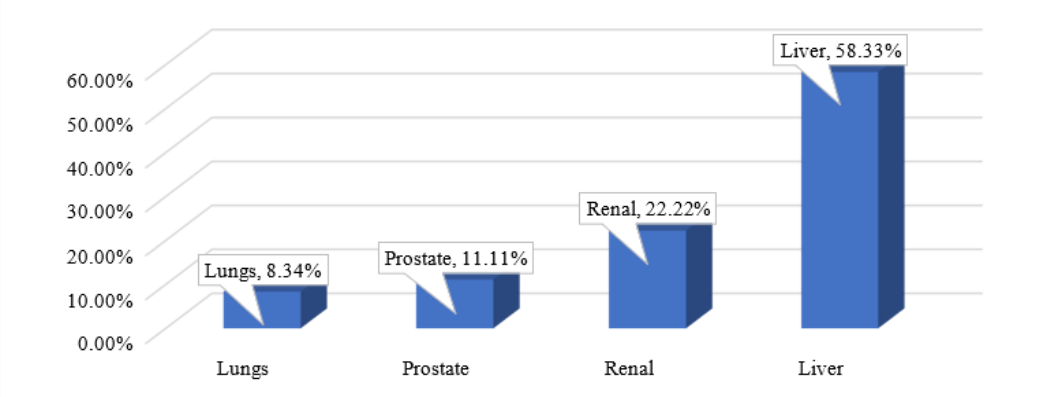

Figure 5. Affected Area.

After that, data was gathered regarding the afflicted region from the participants, and by summarizing the data, it was able to determine that 58.33% of the overall sample was connected to the liver. In addition, individuals who have tumors with their renal are the second most likely to get affected at 22.22%, and 11.11% of those had tumors in their prostate. On the other hand, just 8.34% of lungs were the organ that was harmed the least. Most patients with hepatoma were directed to this treatment method and that's mostly due to alcoholic and non-alcoholic cirrhosis conditions.

3.6 Initial Treatment Method

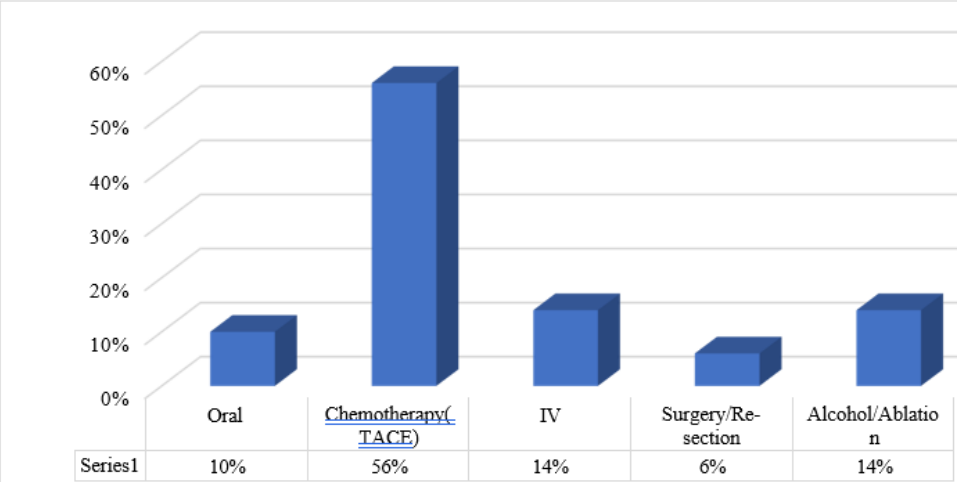

Figure 6. Initial Treatment Method.

Later, data collection was done about the initial treating method from the participants, and according to the summarized data, it was possible to identify that 56% of the total sample used chemotherapy or chemoembolization (TACE) as the initial treatment. 14% of alcohol ablation being used as the second most, also 10% have followed the oral method and 6% being referred for surgery resection (removal). Most of the patients were directly sent for chemotherapy method by the consultants as the first therapy is just to kill the fast-growing cells and prevent the growth of cells furthermore.

3.7 Period of Time you Underwent Microwave Ablation Treatment

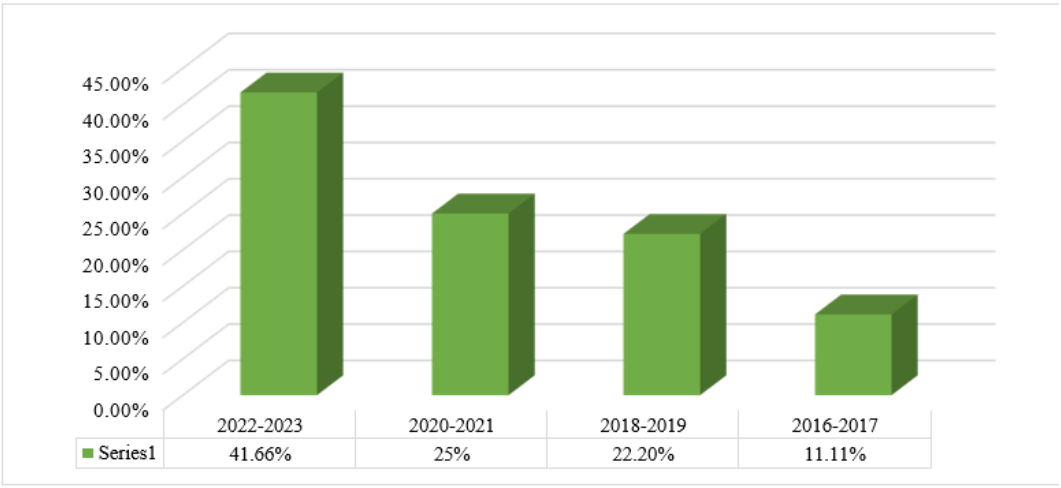

Figure 7. Period of Time you Underwent Microwave Ablation Treatment.

Then, data were collected and summarized on what period that underwent microwave ablation treatment, and it was discovered that the time period between 2022 - 2023 is the longest treated period which represents 41.66% of the total sample. The 2020-2021 period represents 25% of the sample and 22% of the total treated represents 2018-2019. On the other hand, during the treated era of 2016-2017, there was a documented of 11.11%. As per the above graph, a high number of patients being referred to MWA treatment were reported in the period between 2022 – 2023. Word- of-mouth among healthcare professionals, doctor recommendations and experiences, and continuous awareness programs about MWA treatment and its benefits can be the main reason for these figures.

3.8 Stage that you are in the Microwave Ablation Management Process

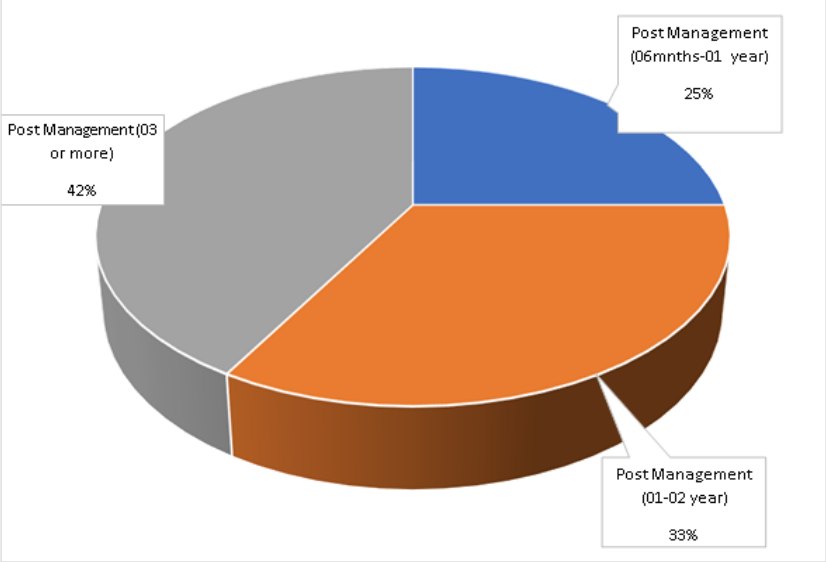

Figure 8. Stage that you are in the Microwave Ablation Management Process.

Further, as the next data collection, data collection was done on the stage in the microwave post management process, where 42% of the total sample reported that they were in the Post management Stage (03 years or more). On the other hand, 33% of the people in the Post Management Stage (01-02 years) and 25% of the people in the Post Management Stage (06 months-01 year). Even though this treatment process is a short-term one, healthcare professionals and authorities are monitoring the patients at regular intervals to identify post-secondary effects and also to identify if there is any new cells or tumors that would develop with time.

3.9 Have You Been Diagnosed with Cancer Again

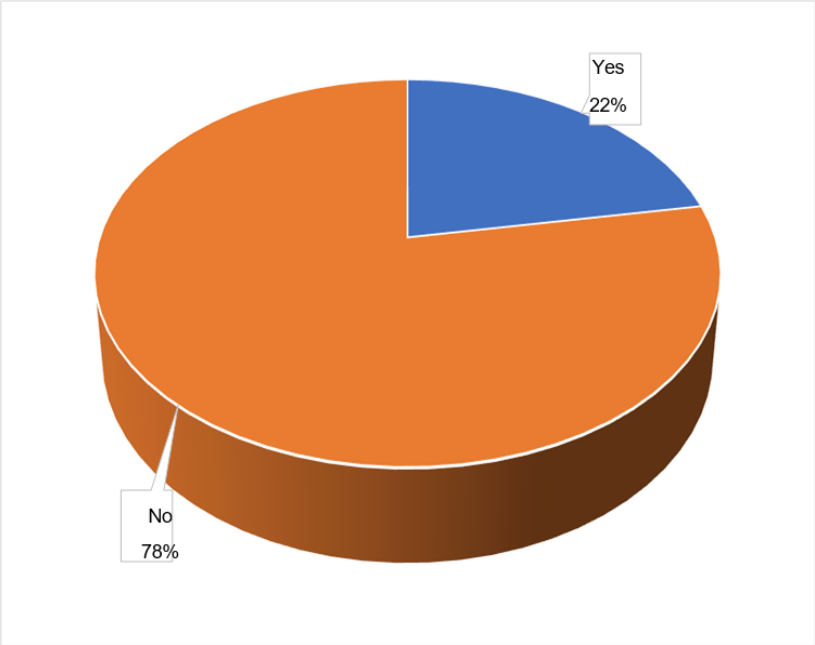

Figure 9. Have You Been Diagnosed with Cancer Again?

After microwave ablation treatment, data were collected on whether post-secondary treatment was recommended, and data summarization revealed that 77.7% of the total sample reported not seeking

post-secondary treatments, while 22% require further follow-ups and treatments. These findings reflect that most of the patients reported minimum come-back and this reflects a high effectiveness of the treatment method.

3.10 If yes, was that diagnosed under the previous area affected?

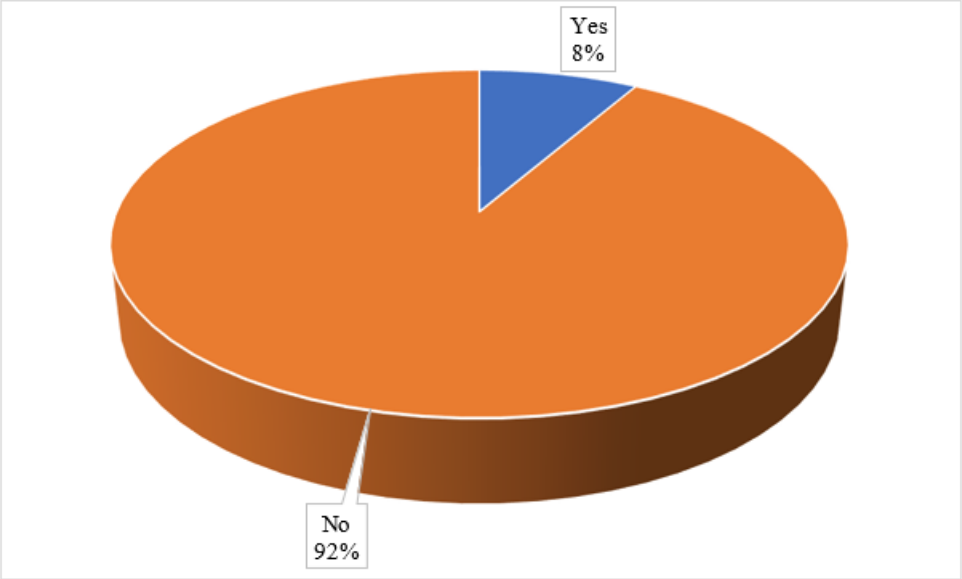

Figure 10. If Yes, Was That Diagnosed under the Previous Area Affected?

If yes, then a data collection was done on whether it was diagnosed under previously affected area, where 92% indicated that the diagnosis was not made under previously affected area, while 8% reported that the diagnosis was made under previously affected area which is a very minor figure according to all data. Only 03 patients of the sample size were reported with recurrence, and this can be treated with a secondary ablation. The post-secondary patient management has been helpful for the patients as well as for consultants to have close follow up even after years of the procedure.

4 Discussion for Independent Variables of the Study

The European Commission has appointed the Expert Panel on Effective ways of investing in Health (EXPH) research team to comprehensively understand the Value-based healthcare system. This team has proposed four pillars under value-based healthcare, and they are personal, allocative, technical, and social. EXPH has further elaborated that the term 'Value' refers to healthy outcomes that are related to capturing the input while adhering the cost-effectiveness. Immegrut, et al. (2021) have contrasted the urgency of creating a value related to healthcare is the high population or ageing community, increasing numbers of patients with complex morbidities, increasing cost for healthcare expenses, emerging technologies under healthcare, and new trends and expectations of the citizens are being the most boosting factors for value-based healthcare innovations.

The personal values are described in terms of suitable and required care that the patient needs. Often patients are more stressed when they have been diagnosed with a cancer and they know they have to undergo a certain treatment process so they are very keen to the know the treatment process and they can be back to their normal life, so explaining the MWA treatment to the patient and giving a detailed description of the process will enhance the transparency of the process. As often described, this is a minimal invasive and one of the safest procedures when it comes to treating tumors. The study of the Scottland government (2022) notifies that shared discussion regarding the pros and cons of the treatment process should be enclosed to their families and patients. Therefore, the author has added "To decide to have a MWA treatment for tumor management, the company and healthcare professionals has given all the details requested regarding the entire process" and "The expected outcomes of MWA treatment were thoroughly explained by every person who was entitled to each stage of the treatment" statement to gather the ratings of the participants. Similar to pre-arrangement and the treatment stages, the post-management also should be

considered by the professionals. Therefore, the author has added the “The transitional period from post-management to the normal stage was easier than expected” statement to rate by the participants. The author has added “When entering into normal life, the medical treatment team has supported you with the necessary guidelines” statement since value-based healthcare focuses on the betterment of the outcomes.

The EXPH research team has described the technical value as the highest degree that the method can achieve with the availability of resources. Therefore, the understanding of how the MWA treatment underlines the value-based principles, the author has created some statements to understand how the technicians and designated surgeons have explained the technical side of the treatment method during the process, how the technicians have supported it. To contrast the significant outcomes compared with the previous oncology treatment methods, the author has taken a rating about pain and the process that has been used in the cancer treatment process. Finally, the author has taken the participant’s rating for the “technical process of the microwave Ablation treatment method is less complicated compared with traditional tumor management methods, and it can be understandable”. These statements helped the author capture how the MWA treatment adds value to the value-based healthcare concept.

Allocative value under value-based healthcare is defined as the equitable distribution of resources within the patient groups. In other words, the Scottland government (2022) implied that the distribution of resources needs to be equitable and transparent. This allows for different health conditions appropriately and according to the needs of the population. In terms of the patient’s capacity, the required amount of funds needs to be there to proceed with the microwave ablation treatment. Whatever, the amount should be within the patient’s comfort zone. Calabro, et al. (2022) have described allocative values means affordability, innovations, unwanted variations, access to vaccination, and equity in the provision are the main areas. Therefore, the author has asked about the patients’ experience about their MWA experience, in terms of the given amount of expenses, support from the assigned professionals, resources about the MWA treatment process, and the monitoring process regarding the effects of each case. This directly touches the low cost and better outcomes tagline under value-based healthcare.

Calabro, et al. (2022) have described societal values as the representation of healthcare contributions to social betterment and connectedness. The report of the Scottland government (2022) described societal values as the main impact the health and care services deliver to society. Due to the COVID-19 outbreak, the queues for cancer and all other treatments and consultations have increased incredibly. Also, the close monitoring and health screening resulted in identifying more cancer and tumour patients. To manage these conditions, the authorities need a proper solution. Therefore, the author has created statements to identify how the MWA treatment creates value for the community. Under this, the effectiveness of the microwave Ablation treatment compared with the traditional oncology treatment methods, the cost-effectiveness of the treatment method, the ability to address the high demand for cancer patients and fewer complications reported compared with traditional oncology treatment were rated by the participants. Community betterment is a main ideology that is based on value-based healthcare. By introducing this method to the healthcare services and the healthcare professionals this will be able to reduce the ques for cancer treatments, can provide an effective cancer treatment method for a low cost, will be able to provide a most effective cancer treatment method compared with traditional treatment methods, are the main outcomes.

If we consider the final graphs shown, we can see how effective the MWA treatment is by considering the re-admission percentage. The re-admission rate will purely affect the healthcare providers and professionals’ effectiveness and by adopting to this treatment the waiting lists can be much more minimized and the professionals may be able to put their efforts to treat new patients more rapidly. Further if you consider the time frame it is a minimal invasive treatment which takes much less time than any other treatment and it’s a very safe procedure too. Often patients will be returned to their usual activities within a few days and this MWA treatment is emerging as a fast treatment with a short recovery time and that’s a core output according to the value base healthcare principles.

5 Discussion

The use of VBHC considers the provision of healthcare services at a cheaper cost while concurrently producing better outcomes. On the other hand, cancer treatments such as chemotherapy and radiation may be highly costly and time-consuming in many countries, including Sri Lanka. This is particularly the case in developing nations. In Sri Lanka Patients who have no other alternatives left might seek treatment in a variety of modalities, including chemotherapy, organ transplantation, and even homoeopathy and Ayurvedic

medicine. On the other hand, the author believes that MWA is a promising new option for the treatment of tumors since it is economical and has an immediate effect on the patients. The author's prior experiences lend credence to this theory and provide supporting evidence. The author will underline how successful MWA therapy is for cancer patients and how it adds value to the VBHC notion by performing this study to show how effective the treatment is. This research was done to demonstrate how successful the treatment is.

A total of 65 people were chosen at random to be a part of the sample population for the research project, and a questionnaire that was comprised of predetermined questions was utilized to gather the data that was necessary for the study. Directly because of this, a total of 50 people took the time to reply to the questionnaire that was sent to the general public. The researcher sent a second survey to each of these individuals, and after analysing the results, the researcher determined that 09 of them should not be included in the study since they provided inadequate data. Following that, the remaining questionnaires were reevaluated, and it was discovered that there were no missing data; hence, the right 36 questionnaires were chosen for further research, and the response rate to this study was 100% according to the statistical calculations that were done.

According to Debela et al. (2021), cancer is a problem that affects the health of people all over the globe. Now, cancer is the cause of death for one person out of every death that takes place everywhere in the world. Some of the more recent developments that have been developed in the treatment of cancer include stem cell therapy, targeted therapy, ablation therapy, nanoparticles, natural antioxidants, radionics, chemo-dynamic therapy, sonodynamic therapy, and ferroptosis-based therapy. In general, therapy for cancer is a challenging procedure that requires a significant amount of time and a significant amount of money to accomplish when utilizing standard treatment approaches. Oncology techniques that are now in use focus an emphasis on the research and development of nanomedicines that are successful in treating cancer while also being safe to use. The author is of the view that employing the VBHC notion in combination with MWA for the treatment of tumors will be of aid to cancer patients in extending their life expectancy as well as curing or controlling the symptoms of their sickness. This is something that the author believes will be of use to cancer patients. Because of this, the author has developed five key sub-hypotheses that may be verified by referring to existing data from the real world. The Value-Based Health Care Cooperative has been developed by the European Commission (2019) in four aspects; these dimensions have been given the label value pillars. Allocative values are resources that are dispersed among all patients, whereas societal values convey social engagement, connection, and contribution. own values communicate the patient's own aspirations; technical values communicate maximum results by using all possible resources; personal values communicate maximum outcomes by employing all available resources.

6 Key Recommendations

The author has conducted this primary and quantitative research to identify the effects of value- based healthcare principles by adopting MWA for cancer management by referring to the Sri Lankan healthcare system. Under this cancer management, the author has mainly focused on the tumor management area since many patients have found that the MWA treatment method is preferred by many gastro physicians, gastro surgeons and interventional radiologists. To understand the basics of Value-Based Health Care and its importance, the author has conducted a comprehensive literature review of the Value-Based Health system and the MWA technology, and its importance was discussed consecutively in the introduction and methods chapter.

6.1 Recommendations to Identified Research Gap

Debela et al. (2021) and many other studies revealed that cancer is a problem that affects the health of people all over the globe. On the other hand, Pfannenstiel, et al (2023) have described the MWA method as holding significant importance today due to the minimally invasive treatment method that is associated with tumour management in many parts of the body. The recent technological heights in microwave technology agree that microwave techs directly contribute to tumour ablation modalities. When a patient is diagnosed with a tumour the MWA method can be applied, after the treatment the patient will return to their direct routine from the very next day as a normal person. Therefore, the author has conducted this study to identify how the MWA method can be applied under a value-based healthcare approach. To identify the theses, aim of achievement, the author has conducted a survey method, by using a structured questionnaire. The

questionnaire was developed based on societal, technical, allocative, and personal values. The demographical questions of the study contrast that most of liver malignancies are seen among the male participants. The primary survey showed that the MWA technology meets the four basic values under the Value-Based Health Care system and all the hypotheses were resulted as positive. Therefore, the author recommends that Value-Based healthcare professionals adopt MWA technology for cancer and tumour management to meet Value-Based healthcare concept implementation.

By conducting the analysis, the author was able to understand the way that MWA technology adds value to the Value-Based Health Care system. As per the above analysis, the independent variables; personal values, social values, allocative values, and technical values act positively towards the cancer management approach. Due to the all-positive effects of sub hypothesis, the study contrasts the positive relationship between MWA technology usage in cancer management towards value-based healthcare principles. The results contrast the technical values of the MWA technology is considerably high with the participant's primary and secondary treatment methods. The effectiveness of the treatment process contrasts at a high level since the number of patients who got the same condition in the same affected area, or a new area remains considerably low. In this modern era, painful surgeries, tablets with side effects, IVs with different side effects, long times for emergency and waiting lists can be minimize rapidly an on a large scale and will lead to better outcomes for the patient as well as for the healthcare services.

6.2 Recommendations for Future Studies

Previous studies have shown that the MWA process is still in the early stages and the community knowledge regarding this concept remains low. Therefore, the author has planned to write some blogs on the internet in order to contrast the benefits and reliability of this method. The ultimate objective of this study is to highlight the professionals and academics about the total benefits of choosing this method and encourage all professionals to initiate and recommend this treatment method for patients and also to research this medical method to find solutions for consequences. To motivate and create awareness about this treatment method, the author suggests that future academics conduct a study highlighting the significance of MWA treatment methods compared with traditional cancer treatment methods. The author further suggests that professionals publish more studies and publish more sources related to technical reactions of MWA treatment. This helps the potential and future healthcare professionals to refer valid resources regarding the process.

6.3 Limitations Management of the Study

When conducting the research, the author was unable to address the medical/ clinical side description that happens inside the patient's body, since the medical knowledge is lacking with the author. Further, when conducting the study, the questionnaire which the author delivered was distributed in Sinhala and Tamil languages since these languages are the most commonly used in Sri Lanka. From the author's personal experience, tumors or cancers with uneven shapes will not be treated using the microwave ablation method. The awareness about the MWA treatment remains significantly low compared to other treatment methods in Sri Lanka and, the company is conducting training platforms with demonstrations including marketing activities to increase the awareness of the treatment method.

7 Conclusion

7.1 Summary

The new technological heights are used to manage many health-related concerns and MWA is especially identified as the latest technology that destroys liver and other tumours by using microwave energy waves. With the small insert of a laparoscopic port or open incision, the surgeons access the tumour and microwaves are emitted from a thin antenna. This method provides many advantages compared with traditional tumour management methods. The significance of this method is the speed, simultaneous tumour ablation, and larger tumour size. The main aim of this study is to capture the impact of implementing microwave ablation for cancer management and develop a strong connection between value-based healthcare. This study was conducted as a primary and the author used a survey strategy and evaluated the collected quantitative data by using the SPSS data tool. The hypothetical testing contrasted that the microwave ablation method meets the values of a value-based healthcare system, and the findings prove that this treatment method can be used for value-based healthcare system implementation. Due to the Covid-19 pandemic effects, many

countries are dealing with congested and busy patterns in the healthcare system. Approaching this method will help to manage the tumours and cancers in the fastest, simultaneous tumour ablation, process, and considerably, larger tumour sizes also can be treated. Therefore, healthcare professionals and authorities in the UK and other countries can consider implementing this concept for tumour management. By referring to these pure results, the author believes that this method's availability needs to be promoted since a limited number of global healthcare professionals are aware of this method. To motivate and create awareness about this treatment method, people need to be aware of the benefits and ease of choosing the MWA treatment method compared with the traditional cancer treatment methods. From the author's viewpoint, efficiency, low cost, minimal invasiveness, and precision are the main advantages of the tumour ablation process and this can be considered as a more acceptable treatment method for oncology management. However, further technical clarifications are needed for the professionals as well as for the patients to identify ablative treatments more constructively. The core of this study proves that adopting Microwave Ablation treatment will add more value to the value-based healthcare process globally.

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9 Appendix A: Research Questionnaire

The Effects of Value-Based Healthcare Principles in Adopting Microwave Tumor Ablation for Cancer Management in Sri Lanka

RESEARCH QUESTIONNAIRE

Personal Introduction

I am Everton de Silva (Student ID – 2248169), and I am a full-time student at Swansea University, UK. This study is conducted to complete the partial requirement of the research methods module under the Advanced Health and Care Management Program at Swansea University, UK. The main purpose of conducting this study is to contrast the usefulness of the Microwave Ablation Treatment Method for cancer management and streamline it with Value-Based healthcare principles. This will be conducted by identifying the effects of value-based healthcare principles by implementing microwave ablation for cancer management in the Sri Lankan healthcare system. Therefore, please rate your answers by referring to your prior experience regarding the Microwave Ablation Treatment Method. To answer these questions, the participants can contribute voluntarily and the author hereby declares that these data will not be enclosed for any external party.

Section A – Demographic Questions

1. **Age Category:**

18 – 25	
26 – 35	
36 – 45	
46 – 55	
60 and above	

2. **Gender:**

Male	
Female	
Prefer not to say	

Section B – Diagnosis History-related Questions

3. **Cancer Diagnosis Year:**

2006 – 2010	
2011 – 2015	
2016 – 2020	
2021 – Present	

4. **Affected Area:**

Liver	
Renal	
Prostate	
Lungs	
Other	

5. **Initial Treatment Method**:

Oral	
IV	
Surgery (Removal)	
Alcohol Ablation	

Section C – Background Information

6. In which period you were treated with the Microwave Ablation treatment??

2016 – 2017	
2018 – 2019	
2020 – 2021	
2022 – 2023	

7. Currently, what is the stage that you are in the Microwave Ablation Process?

Post-Management (06 months-01 year)	
Post-Management (01-02 years)	
Post-Management (03 or more years)	

8. Have you again been diagnosed with a cancer?

Yes ☐

No ☐

9. If yes, was that diagnosed under the previous area of affected?

Yes ☐

No ☐

Section D – Understanding the Independent variables of the Study

Please rate your answers by referring to your prior experience regarding the MWA Treatment Method.

Scale	**1**	**2**	**3**	**4**	**5**
Description	Highly Dissatisfied	Dissatisfied	Either Satisfied or Not Satisfied	Satisfied	Highly Satisfied

Statements	**Statement Rating**				
	1	**2**	**3**	**4**	**5**
Personal Value					
1. To decide having a MWA treatment method for tumor management, the company has given all the details requested regarding the entire process.					
2. The expected outcomes of MWA treatment were thoroughly explained by every person who was entitled to each stage of the treatment.					
3. The transitional period from post-management to the normal stage was easier than expected.					
4. When entering into normal life, the medical treatment team has supported you with the necessary guidelines.					

Technical Value					
5. At the initial stage of MWA treatment, the technicians and designated surgeons have explained the technical side of the process.					
6. During the entire process, you were continuously consulted by the technical team.					
7. As per your previous treatment methods, the techniques used in this process made a less painful and smooth transition.					
8. The technical process of the MWA treatment method is less complicated compared with traditional tumour management methods, and it can be understandable.					
Allocative Value					
9. During the MWA treatment process, the allocated funds according to the given numbers were affordable for you.					
10. The company has allocated all supportive professionals for the ongoing and post-management process.					
11. During the MWA treatment process, the professionals provided all the supportive details in printed or digital methods.					
12. During the MWA treatment process, the professionals have monitored the effects of complicated cases.					
Societal Value					
13. You believe that the MWA treatment method is highly effective compared with your previous treatment methods.					

14. You believe that the MWA treatment, method helps the community to manage cancer situations methodically and cost-effectively.					
15. You believe that the MWA treatment method will help to manage the present delays in the health system.					
16. You believe that the MWA treatment method has fewer complications compared with traditional and present cancer treatment methods.					

Section E - Understanding the Dependent variable of the Study

The main focus of a Value-Based healthcare system is to deliver **better outcomes** at a **low cost**. To ensure this concept addition, many international and national platforms are implementing new strategies and methodologies to create a comprehensive Value-Based healthcare system for the betterment of the community. As per your viewpoint, please rate the below answers which are developed to measure the potential need to implement the MWA Treatment Method for cancer management and streamline with Value-Based healthcare principles.

Scale	**1**	**2**	**3**	**4**	**5**
Description	**Highly Dissatisfied**	**Dissatisfied**	**Either Satisfied or Not Satisfied**	**Satisfied**	**Highly Satisfied**

Research Paper DOI: tbc ISSN: tbc

Statements	Rating Scale				
	1	2	3	4	5
17. The implementation of the MWA treatment method under value-based healthcare helps to increase the patient's benefits and comfort (personal values).					
18. The implementation of the MWA treatment method helps to address the technical patient-related outcomes under value-based healthcare.					
19. The implementation of the MWA treatment method under value-based healthcare helps to increase patient-related outcomes by utilizing minimal resources compared with traditional treatment methods.					
20. The implementation of the MWA treatment method under value-based healthcare helps to increase the cancer/ tumour management issues among the community.					

Exploring the Culture Surrounding Innovation Strategy and Implementation in Hywel Dda University Health Board

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Abstract:

Culture is a key factor in the successful implementation of innovation in a health and care context (Cinar et al., 2018). The culture towards innovation in Hywel Dda University Health Board (HDdUHB) has not been analysed. This study aims to explore both the current and desired culture in the HDdUHB research, innovation, and value department and to further investigate the culture towards innovation in the HDdUHB as a whole. By doing this, the study hopes to inform the future development of a culture that supports innovation in the HDdUHB and to influence the development of future strategies that aim to develop and nurture a pro-innovation culture. Data was collected through two different questionnaires. The first questionnaire was the validated organisational culture assessment instrument (OCAI) (Cameron and Quinn, 2006). This was disseminated within the department of research, innovation, and value in HDdUHB to determine the culture within the department and the quantify desirable changes. The second questionnaire utilised was derived from the organisational culture for innovation self-assessment, developed by the NHS Institute for Innovation and Improvement in 2005, and was disseminated throughout the health board, with the aim of determining the culture towards innovation in the health board. The Organisational Culture Assessment Instrument (OCAI) indicated the dominant culture in the research, innovation, and value department of HDdUHB to be a mixture of a hierarchy culture and a clan culture at present. The preferred culture revealed a desire to move closer towards a clan culture and an adhocracy culture and away from a market and hierarchy culture. When assessing the culture towards innovation throughout the HDdUHB, responses overall indicated neutral views on the culture of innovation. Staff rated a lack of resources, lack of rewards systems and a lack of knowledge sharing as the areas which could be improved most to nurture a culture of innovation in the HDdUHB. The preferred direction of cultural shift for the research, innovation and value department was towards a clan and adhocracy culture and away from a hierarchical and market culture. However, although the OCAI is a useful tool for examining culture, for an effective and correct cultural change to take place, it is important that consensus is reached on the current and preferred culture. Although it is recommended that discussions are facilitated to reach consensus around the current and preferred culture in the department, recommendations are also provided for the research, innovation and value department that focus on developing the existing culture towards a more clan and adhocracy-based culture and away from a hierarchy and market-based culture. The organisational culture for innovation self-assessment tool indicated that for innovation to flourish in HDdUHB, investment is needed across all seven dimensions, particularly resources, rewards systems, and knowledge sharing, which were all rated less than 5 out of 10. Development of an action plan to improve innovation in the HDdUHB and to strengthen the culture towards innovation is recommended. Recommendations are provided as stated at the end of the report.

Keywords: Culture Innovation Strategy, Hywel Dda University Health Board.

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Acronyms, Tables, and Figures

List of Acronyms used

Acronym	Definition
GP	General Practitioner
HDdUHB	Hywel Dda University Health Board
IQR	Interquartile Range
ILS	Institute for Life Sciences
NHS	National Health Service
OCAI	Organisational Culture Assessment Instrument
R & D	Research and Development
SD	Standard Deviation
VBHC	Value-based Health Care

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1 Introduction

1.1 What is Innovation?

Innovation is defined by the UK Government as "the creation and application of new knowledge to improve the world" (UK Government, 2021). Companies use innovation to achieve a competitive advantage. Innovation is utilised in its broadest sense, through the utilisation of new technologies and new ways of doing things (Porter, 1990). Innovation turns great ideas into value, prosperity, productivity, and wellbeing (UK Government, 2021).

1.2 The Importance of Innovation in a Health and Care Context

Currently the NHS is facing an unprecedented crisis the likes of which has not been seen before (Mathew, 2023, O'Dowd, 2023). Waiting times for diagnostics and therapies continues to increase in Wales, with over 50,000 patients currently waiting for 8 weeks or more for a diagnostic test (Welsh Government, 2023). These challenges can be partly explained by the COVID-19 pandemic (Welsh Government, 2023), but the NHS is also facing other challenges such as longstanding workforce issues (Barber, 2023), lack of investment and increasing demands for health care (Holmes, 2023). In West Wales, the situation is similar to the rest of the UK, with an ageing population leading to an increase in patients with complex health care needs and a shortage of carers to look after them (West Wales Care Partnership, 2022). As the incidence of dementia is strongly linked to an ageing population, it is also likely that we will see increases in people living with dementia, with the prevalence of dementia in West Wales predicted to almost double by 2040 (West Wales Care Partnership, 2022). To overcome these challenges, innovation is more important than ever. Innovation is a key driver of growth and prosperity (Tohidi and Jabbari, 2012). The importance of innovation is highlighted at both the regional and national level in Wales. The national strategy for healthcare in Wales, which is outlined in 'A Healthier Wales' (Welsh Government, 2018), states:

"Our focus has to be on transformation, innovation and delivery knowing we have foundations to build on in our current system."

The national strategy also places a focus on local innovation which is expected to feed through to new models of health and social care, which can then be scaled up to the national level (Welsh Government, 2018). The regional strategy towards innovation in HDdUHB is outlined in 'A Healthier mid and West Wales' (Hywel Dda University Health Board, 2018, page 46), which states:

"In addition to facilities at the Llanelli Wellbeing and Life Sciences Village, we aim to develop our research and innovation capability further and intend to develop research and innovation facilities on the urgent and planned care site, including an Institute for Life Sciences (ILS), supporting the creation of a research culture and giving all the staff the opportunity to add to the body health and social care research."

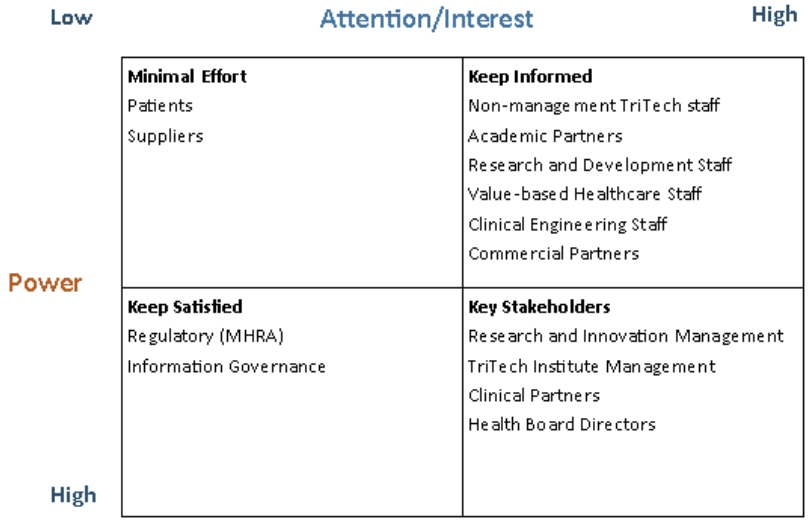

Figure 1. Stakeholder Mapping: The Stakeholders in HDdUHB Innovation Strategy.

Stating a clear intent to further develop and support innovation at a regional level, the report clearly highlights the importance of innovation to the future for health care in West Wales. HDdUHB was chosen as the site for the study as it is where the researcher was based and has the benefit of being a mixture of rural and urban areas, which is reflective of the overall Welsh region. A stakeholder map for implementing innovation in HDdUHB is shown in **Figure 1** above.

Key stakeholders in HDdUHB were identified as the management of the research, innovation and value departments, the management of TriTech Institute, clinical partners key to providing the innovative new services or utilising new technologies, and the board of directors. Despite a key focus and need for innovation on a local and national level, the implementation of innovation projects is not always successful with a lack of clear innovation adoption pathways. Multiple barriers have been identified to the implementation of innovation in a health and care setting, which are discussed in more detail below.

1.3 Innovation Barriers

Identifying and understanding the barriers to innovation is an important factor in increasing the success of innovation adoption in a health care setting. There are many potential barriers to the successful implementation of innovation in public sector organisations. Table 1 below presents some of the most common barriers identified in literature.

Some of these barriers could be specific to regions, whereas others could be widely prevalent across the NHS. Previous studies have highlighted the high level of bureaucracy and hierarchical culture within public organisations such as the NHS as a key barrier to innovation (Bakici et al., 2014, Sucha and Gronlund, 2014). This could be reflected in HDdUHB, which like all health boards in Wales is subjected to high levels of bureaucracy. A risk averse culture has also been identified as a culture-related barrier to innovation (Brown and Osborne, 2013), which could be linked to the rigidity of organisational structure and culture. By its nature, the implementation of innovation has significant risks, such as the potential failure of the innovation, non-adoption, or poor long-term sustainability. In a review carried out in 2003, it was suggested that only 20 percent of innovations are viable long-term (Van der Panne et al., 2003). As such a certain level of risk-taking is required to support a pro-innovation culture.

A rent-seeking culture (Azad and Faraj, 2011), slow bureaucracy (Bakici et al., 2013), hierarchy (Susha and Gronlund, 2014), and a lack of organisational learning culture (Marsden et al., 2011) were also identified as barriers to innovation. It is clear from the literature that organisational culture is a key factor in the successful implementation and adoption of innovation. This study aims to investigate the culture towards innovation in Hywel Dda university health board.

Table 1. List of Barriers to the Successful Implementation of Innovation

Type of Barrier	Example	Reference
Organisational	Logistical barriers such as lack of training	Abuya et al., 2012
	Additional workload of activities	Landry et al., 2011
	High staff turnover	Gardner et al., 2010
	Rigid organisational structure / culture	Bakici et al., 2014 Susha and Gronlund, 2014
	Risk-averse culture	Brown and Osborne, 2013 Termeer, 2009
	Lack of organisational learning culture	Marsden et al., 2011
Interaction Specific Barriers	Lack of a shared understanding between organisations	Ansell and Gash, 2008
	Lack of effective network governance	Aagaard, 2012
	Inadequate knowledge sharing between organisations	Dorado and Vaz, 2003
	Public doubt and opposition to the innovation	Biesbroek et al., 2014
Political	Lack of political support for an innovation	Bakici et al., 2013
Innovation Characteristics	Incompatibility of the innovation – lack of compatibility with the existing values, past experiences and needs of potential adopters.	Rogers, 2003
	Complexity of the innovation.	De Civita and Dasgupta, 2007
Contextual barriers	Requirement of an innovation to adhere with current laws, regulations, and policies.	Pelkonen and Valovirta, 2015

1.4 Organisational Culture and Its Importance to Innovation

Culture is a term that is widely used but does not have a consensus agreement for definition (Mannion and Davies, 2013). Hudelson describes culture as a 'shared set of (implicit and explicit) values, ideas, concepts, and rules of behaviour that allow a social group to function and perpetuate itself' (Hudelson, 2004). In a study by Bull et al., carried out in 2018, NHS managers and frontline staff perceived culture as 'a determinant, measure and/or consequence of change and linked to workplace behaviours, emotions, and cognitions' (Bull et al., 2019). It was agreed by participants that culture is damaged by imposed top-down change which had knock-on effects on care quality (Bull et al., 2019). Cultural resistance can hinder innovation, and is thought to arise from multiple factors, including a lack of vision, poor organisation, teamwork or attitudes and deficient learning (Stevenson and Baker, 2009).

The importance of a culture that nurtures innovation is also highlighted on a national and regional level in Wales. Wales Innovates, the innovation strategy for Wales states that the vision for Wales is: "To create and nurture a vibrant innovation culture for a stronger, fairer, greener Wales" (Welsh Government, 2023). The document also recognises the culture barriers that are currently present in Wales, highlighting the "traditional culture of silo working within sectors and organisations" as a barrier to innovation (Welsh Government, 2023). A thriving innovation culture is a key part of the vision for development of the economy in Wales. Similarly, in 'A Healthier Mid and West Wales', the health and care strategy for Hywel Dda University Health Board, the importance of developing a culture of research, innovation and development is highlighted to transform local health and care services, with the aim of providing better outcomes for patients and positively impact staff and the facilities they use (Hywel Dda University Health Board, 2018). In a study carried out in an NHS England County to assess innovation culture in a primary care setting, it was found that most GP practices reported a positive culture of innovation, with the leadership behaviour significantly correlating with the culture for innovation (Apekey et al., 2011). This highlights the importance of leadership in nurturing a positive culture of innovation in organisations.

1.5 Measuring Culture / Quantifying Culture

1.5.1 Organisational Culture Assessment Instrument (OCAI)

One such tool that can be used for assessing the culture of an organisation is Organisational Culture Assessment Instrument (OCAI), which was developed by Cameron and Quinn in 2006. The OCAI is based on a theory called the competing values framework, which aims to integrate and organise many of the dimensions of culture that have previously been described in the literature. The competing values framework was developed from thirty-nine indicators of organisational effectiveness, developed by Campbell et al. in 1974 which claimed to represent all the possible measures of organisational effectiveness (Campbell et al., 1974). The list of thirty-nine indicators was analysed by Quinn and Rohrbaugh in 1983, and two major dimensions emerged (Quinn and Rohrbaugh, 1983). Of the two dimensions, the first dimension differentiated effectiveness criteria of flexibility, discretion, and dynamism from stability, order, and control, i.e., some organisations are more effective if they have a flexible, dynamic culture, whereas other organisations benefit from stability and predictability. The second dimension differentiated an effectiveness criterion of integration and unity from differentiation and rivalry, i.e., some organisations are suited to a culture with harmonious internal characteristics, and other organisations thrive if they are externally focused, with a culture of competition. The two dimensions can be organised into four quadrants that each represent a distinct set of organisational effectiveness indicators. The four quadrants each represent opposite or competing assumptions, e.g., flexibility vs stability, or internally focused vs externally focused, and each quadrant was given a label by Cameron and Quinn that represents the most notable characteristics, i.e., Clan, Adhocracy, Market and Hierarchy (**Figure 2**).

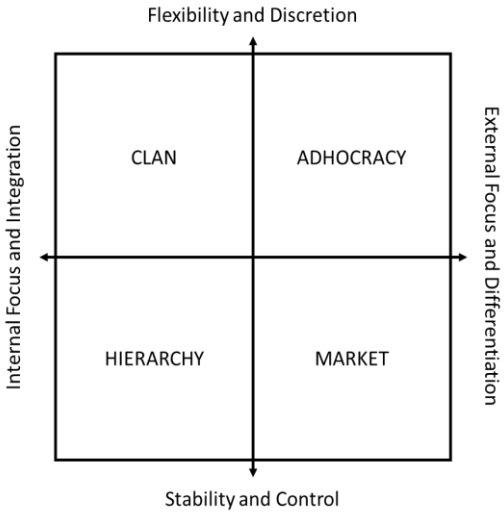

Figure 2. The Competing Values Framework (Cameron and Quinn, 2006).

Each of the quadrants in the competing values framework represents a culture type:

- **Clan** culture type is focused on togetherness and a sense of participation in the organisation. There is an emphasis on teamwork and employee development, where employees are empowered. An emphasis is also placed on commitment and loyalty.
- **Adhocracy** culture type is focused on driving success through innovation and pioneering initiatives. An adhocracy culture emphasises entrepreneurship, creativity, and adaptation.
- **Hierarchy** culture type is focused on the classical attributes of bureaucracy. There is an emphasis on rules, specialisation and hierarchy with the aim of reliable, smooth operation with predictable output.
- **Market** culture type is focused on transactions with the external environment, such as suppliers, customers, and contractors. The major focus is to conduct transactions, with an emphasis on competition and productivity.

The competing values framework can be applied to organisations to better understand the culture, and to determine what the preferred culture of an organisation is and how to get there. In a study carried out by the Belfast Health and Social Care Trust, the OCAI was used to diagnose culture within an NHS emergency department. The study found that the present dominant culture in the emergency department was a market culture; a culture primarily focused on results and competition, and the preferred future culture for staff was a clan culture; a culture primarily focused on fostering a collaborative, family-like environment (Armstrong et al., 2019). Using the OCAI, Armstrong et al. were able to provide several recommendations to the emergency department, designed to assist the ED in moving its organisational culture towards the desired future state.

1.5.2 The Organisational Culture for Innovation Self-Assessment Tool

A tool specifically designed to measure the organisational culture for innovation is the organisational culture for innovation self-assessment tool. This tool was developed by the NHS Institute for Innovation and Improvement in 2005 (NHS Institute for Innovation and Improvement, 2005) with the aim of enabling an organisation to assess their culture towards innovation and help to understand steps that can be taken towards improving the culture towards innovation within the organisation. The tool was developed through the identification of seven dimensions for supporting a strong culture for innovation as follows:

- Risk-taking culture: The degree to which there is support for teams to try something new, given reasonable precautions to avoid patient harm, or disruption to the organisation.
- Resources for innovation: The availability of money, time, information, and authority to act for teams that wish to innovate.
- Widely shared knowledge: The degree to which knowledge is widely gathered and available within the organisation.

- Specific targets: The degree to which leaders make it clear that innovation is a target in specific areas of the organisation.
- Tools and techniques: The degree to which the organisation supports a conscious process of innovation.
- Reward system: The degree to which the organisation rewards individuals and teams for their efforts.
- Ease for rapidly formed relationships in an organisation: The ease with which high-performing teams of motivated individuals are formed in the organisation.

The tool is an evidence-based tool and was specifically developed to analyse the culture towards innovation i.e. to determine if an organisation has an overall culture that is supporting or hampering innovation, and then identify the specific areas that can be improved upon.

In a study carried out in 2011, Apekey et al. utilised the self-assessment tool to assess the culture of innovation in primary care in the East Midlands (Apekey et al., 2011). They found that most of the respondents rated a positive culture for innovation in primary care and that leadership behaviour was significantly correlated to a culture for innovation. However, the tool also identified areas where innovation was potentially being hampered in some practices, such as a tendency towards risk avoidance.

1.6 Research Question, Aims and Objectives

The study aims to answer the following research question:

Is culture supporting innovation strategy implementation in Hywel Dda University Health Board?

The research question of this project will be explored through the following objectives:

- To explore the culture surrounding innovation implementation in HDdUHB.
- Explore what changes in culture would support the development and growth of innovation in HDdUHB.

This report aims to explore the culture of innovation in HDdUHB and determine if the culture is supporting or hindering innovation. Recommendations on future implementation strategies to improve the adoption and spread of beneficial innovative practices or interventions will be provided.

2 Research Design

2.1 Research Location

The research will be carried out at Hywel Dda University Health Board (HDdUHB) in West Wales. As the researcher is based in the TriTech Institute in HDdUHB, the research presents the ideal opportunity for the researcher to explore the culture towards innovation in their occupational health board.

2.2 Questionnaires

Two different questionnaires were used in the study:

1. To examine the current and preferred organisational culture in the research, innovation and value department, the Organisational Culture Assessment Instrument (OCAI) was utilised (Cameron and Quinn, 2006). A copy of the OCAI is shown in appendix 1.
2. To examine the overall culture towards innovation in the HDdUHB as an organisation, a questionnaire derived from the organisational culture for innovation self-assessment tool by NHS Institute for Innovation and Improvement was used (NHS Institute for Innovation and Improvement, 2005). A copy of the questionnaire is shown in appendix 2.

2.3 Participant Groups and Distribution

Assessing the overall culture in HDdUHB as an organisation is challenging, as the organisation consists of multiple departments that are diverse in their roles, purposes and programmes/projects. Due to the heterogenous nature of culture in the health board, and the difficulty in completing the OCAI, it was decided

that the organisational culture would be assessed in the Research, Innovation and Value Department only. This consisted of employees in the divisions of research and development, TriTech Institute and innovation, and value-based health care.

The OCAI was distributed in person through hard copies (paper). The questionnaires were self-administered and were used to assess the current cultural landscape in the department and the preferred changes in culture. Instructions for how to complete the questionnaire were contained as part of the documentation distributed with the questionnaire. If required, a verbal explanation to assist with completion of the questionnaire was provided.

Due to the simple nature of the organisational culture for innovation self-assessment tool, the culture towards innovation was assessed throughout the entire health board. The questionnaire was distributed electronically with the aim of investigating the organisation's current culture towards innovation. This involved utilising the existing infrastructure of the HDdUHB 'Global e-mails' system, from which requests can be used to send information to all staff in HDdUHB. The questionnaire was prepared electronically via Microsoft Forms, with a link to the form sent via global e-mails for completion.

2.4 Data Collection

Participants were asked if they have a clinical or non-clinical role, as well as their years of experience working on the health board and their years working in their current department. Questionnaire answers were anonymised and recorded electronically. All paper copies of the OCAI questionnaire were stored in a locked filing cabinet on HDdUHB premises.

2.5 Ethical Considerations and Data Protection

The study has gained ethical approval from the Swansea University ethics committee – see appendix 3. Approval was given by HDdUHB IG department to distribute the culture towards innovation questionnaire via the global e-mails system, and the electronic copy of the questionnaire was prepared with a statement linking to the HDdUHB privacy policy as requested by the IG department. All data was stored on an encrypted HDdUHB laptop, with only non-identifiable information stored.

2.6 Statistical Analysis

Quantitative data are presented as mean +/- SD for normally distributed data and median (IQR) for non-normally distributed data. Normality of data was assessed using the Shapiro-Wilk test. Statistical differences between normally distributed groups were assessed using a 2-sample t-test.

3 Chapter 3: Findings

3.1 Organisational Culture Assessment Instrument (OCAI)

A total of 18 staff in the Research, Innovation and Value Department completed the Organisational Culture Assessment Instrument (OCAI). Baseline characteristics of respondents are shown in table 2 below:

Table 2. Baseline Characteristics of Respondents to the OCAI Questionnaire. Length of Time Values Presented as Median (IQR).

Parameter	Value
Managerial Role, n (%)	8 (44%)
Length of time working in HDdUHB (months)	41 (25, 69)
Length of time working in department (months)	24 (15, 34)

As can be seen in table 2 above, just under half of respondents to the OCAI had a managerial role within their department. The median length of time working for the health board was 41 months (3 years and 5 months), with a median time of working in the department of 24 months (2 years).

Respondents were either based in the subdivision of TriTech Institute, Research and Development, or the Value-based Healthcare division. Out of the 18 respondents, 10 were based in the TriTech Institute, 4 were

based in value-based health care, and 4 in the research and development department. Overall results for the current and preferred culture in the department are shown in **Figure 3** below.

Culture	Current	Preferred
Clan	29.50	33.91
Adhocracy	22.19	24.79
Market	17.70	15.40
Hierarchy	30.61	25.90
Total	100.00	100.00

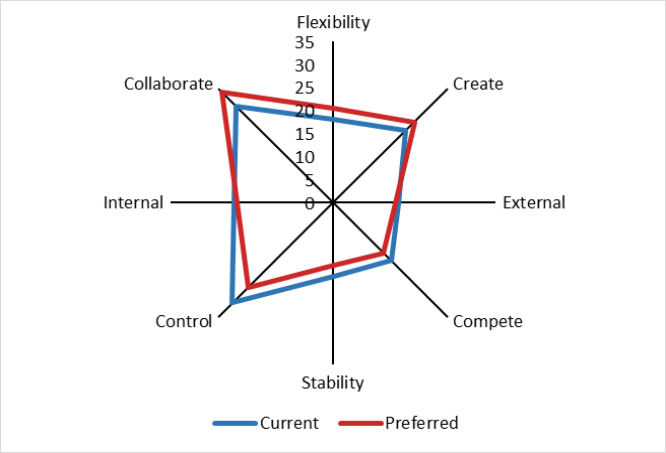

Figure 3. Organisational Culture Assessment Instrument (OCAI) Results – HDdUHB Research, Innovation and VBHC Departments (n=18).

The OCAI results indicated the dominant organisational culture in the Research, Innovation and VBHC department to be a mixture of hierarchy culture (30.60) and clan culture (29.49). This indicates an emphasis upon structure and procedures (hierarchy), mentoring and human resource development (clan). As part of the results, the preferred culture was also assessed. The dominant preferred culture in the department was a clan culture, followed by hierarchy culture, then adhocracy culture and finally market culture. The largest difference between current and preferred can be seen with hierarchy culture, with a decrease of 4.71 percent, followed by clan culture with an increase of 4.41 percent. Adhocracy culture increased by 2.60 percent, whereas market culture decreased by 2.30 percent.

When comparing the management to non-management staff, there were small differences between the perceived current and preferred culture (Figure 4 and Figure 5).

Culture	Current	Preferred
Clan	31.85	33.54
Adhocracy	21.95	26.88
Market	18.20	16.04
Hierarchy	28.00	23.54
Total	100.00	100.00

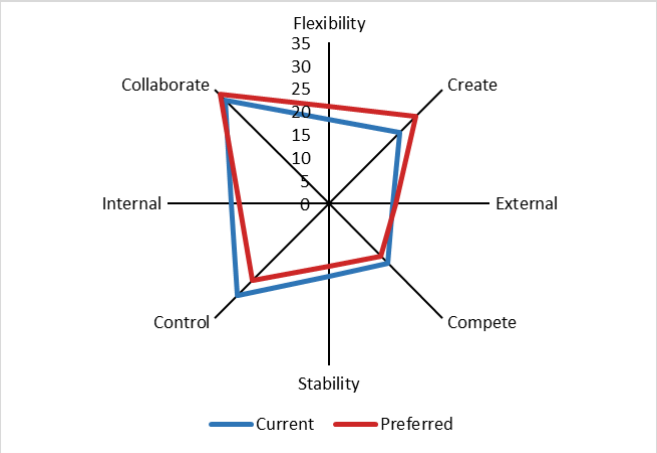

Figure 4. Organisational Culture Assessment Instrument (OCAI) results – HDdUHB Research, Innovation and VBHC Departments, management staff only (n = 8).

Culture	Current	Preferred
Clan	27.63	34.21
Adhocracy	22.38	23.12
Market	17.29	14.89
Hierarchy	32.71	27.78
Total	100.00	100.00

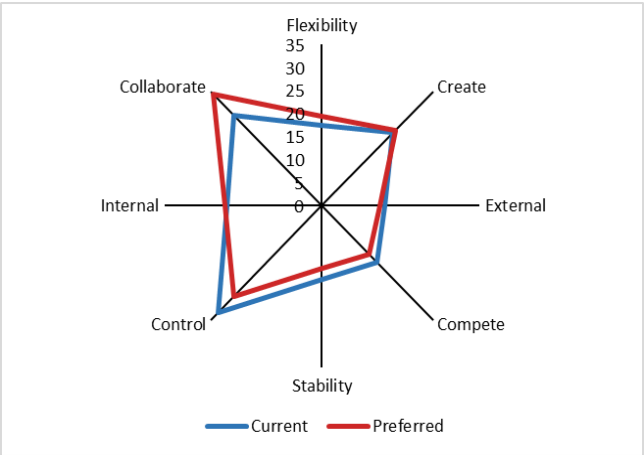

Figure 5. Organisational Culture Assessment Instrument (OCAI) results – HDdUHB Research, Innovation and VBHC Departments, non-management staff only (n = 10).

Management perceived the current culture to be more of a clan culture and less of a hierarchical culture when compared to non-management. Interestingly, when asked what the preferred culture would be, management preferred more of an adhocracy culture when compared to non-management, whereas non-management preferred more of a hierarchical culture. Both groups preferred a clan culture as the dominant preferred organisational culture. The largest change in culture between current and preferred for management staff was towards preference of an adhocracy culture, with a 4.93 percent increase. For non-management staff the largest change was towards a preference of a clan culture, with a 6.58 percent increase. Both management and non-management staff preferred a decrease in both the market and hierarchy culture. When looking at the six individual aspects of the OCAI (dominant characteristics, organisational leadership, management of employees, organisational glue, strategic emphasis, and criteria of success), culture appeared to be congruent across the six key aspects. A mixture of clan and hierarchy

culture was the dominant currently perceived culture across all the aspects except for the glue that holds the organisation together, where adhocracy was the second most dominant current culture type. The current and preferred culture types for the individual elements of the OCAI tool are shown in appendix 4. Overall, both staff groups within the Research, Innovation and Value Department wanted to see an increase in teamwork and participation, empowerment of staff, encouragement and celebration of risk taking and an increased focus on fostering creative alternatives and innovation. Furthermore, there was a desire for a reduction in rules and procedures, unneeded reports and paperwork, and a reduction in the drive for numbers.

3.2 Organisational Culture for Innovation Self-Assessment

A total of 46 staff across HDdUHB completed the organisational culture for innovation self-assessment questionnaire. Baseline characteristics of respondents are shown in table 3 below.

Table 3. Baseline Characteristics of Respondents to the Organisational Culture for Innovation Self-assessment Questionnaire. Length of Time Values Presented as Median (IQR).

Parameter	Value
Managerial Role, n (%)	16 (35%)
Length of time working in HDdUHB (months)	90 (35.25, 204)
Length of time working in department (months)	29 (12, 64.5)

As can be seen in table 3 above, 16 (35%) of respondents had a managerial role at the time of completion. The median length of time working for the health board was 90 months (7.5 years), with the median length of time working in the department of 29 months (2 years, 5 months). Respondents were from a mixture of departments across HDdUHB and were a mixture of clinical and non-clinical staff. The frequency of respondents rating an element from 0 to 10, and the mean for each element of the questionnaire is shown in table 4 below.

Table 4. Responses for the Organisational Culture for Innovation Self-assessment

	0	1	2	3	4	5	6	7	8	9	10	Mean
Risk	2 (4.3)	3 (6.5)	4 (8.7)	3 (6.5)	1 (2.2)	8 (17.4)	5 (10.9)	10 (21.7)	5 (10.9)	1 (2.2)	4 (8.7)	5.50
Resources	3 (6.5)	3 (6.5)	6 (13.0)	5 (10.9)	2 (4.3)	11 (23.9)	4 (8.7)	6 (13.0)	3 (6.5)	3 (6.5)	0 (0.0)	4.57
Knowledge	2 (4.3)	4 (8.7)	4 (8.7)	2 (4.3)	7 (15.2)	10 (21.7)	6 (13.0)	3 (6.5)	6 (13.0)	1 (2.2)	1 (2.2)	4.78
Targets	2 (4.3)	3 (6.5)	1 (2.2)	3 (6.5)	5 (10.9)	8 (17.4)	6 (13.0)	7 (15.2)	3 (6.5)	6 (13.0)	2 (4.3)	5.59
Tools	2 (4.3)	5 (10.9)	1 (2.2)	3 (6.5)	4 (8.7)	10 (21.7)	7 (15.2)	6 (13.0)	4 (8.7)	2 (4.3)	1 (2.2)	5.02
Rewards	4 (8.7)	4 (8.7)	2 (4.3)	2 (4.3)	7 (15.2)	9 (19.6)	3 (6.5)	12 (26.1)	3 (6.5)	0 (0.0)	0 (0.0)	4.63
Relationships	3 (6.5)	2 (4.3)	2 (4.3)	2 (4.3)	4 (8.7)	7 (15.2)	10 (21.7)	9 (19.6)	5 (10.9)	1 (2.2)	1 (2.2)	5.33

Most respondents rated an overall neutral culture for innovation in HDdUHB. The mean scores for the individual dimensions of innovation culture were highest for the setting of targets by leaders, followed by risk taking and relationships. The availability of knowledge, rewards systems for those that innovate, and the availability of resources scored lowest, with the availability of resources for innovation being the lowest scoring dimension.

As shown in table 5 below, ratings were similar for both managerial and non-managerial staff for the different dimensions of innovation culture.

Table 5. Comparisons of Different Dimensions of Innovation Culture in Managerial and Non-managerial Respondents. Significance Assessed via Students t-test.

	Managerial	Non-managerial	Significance Value
Risk	5.50	5.50	1.00
Resources	4.69	4.50	0.816
Knowledge	4.88	4.73	0.856
Targets	5.88	5.43	0.595
Tools	5.31	4.86	0.572
Rewards	4.88	4.50	0.313
Relationships	5.69	5.13	0.233

As can be seen in table 5 above, no significant differences were observed between management and non-management staff for the individual elements of the organisational culture for innovation self-assessment.

4 Discussion

The Organisational Culture Assessment Instrument (OCAI) showed that the was a preference for a shift towards a clan culture, and away from a hierarchy culture in the research, innovation, and value department, although a hierarchy culture remained the second most dominant preferred culture type. The non-management and management staff in the department had differing views on their preferred culture profile, in that for management staff, an adhocracy culture was the second most dominant preferred culture, and for non-management staff, a hierarchy culture was the second most dominant. The findings in this study suggest that future leadership should work towards improving the clan and adhocracy culture in the department.

The organisational culture for innovation self-assessment which was disseminated to all staff in HDdUHB indicated that there were perceived shortfalls in the health board in supporting a culture of innovation. Many of the staff believed the culture towards innovation to be neutral across the seven elements of the questionnaire, which indicates a culture that neither supports nor hampers innovation. This could limit the ability of teams to be innovative in adopting new technologies or quality improvement methods.

The results indicate that more work can be done to develop the culture across all seven of the dimensions of innovation (risk, resources, knowledge, targets, tools, rewards, and relationships). The lowest scoring dimensions were knowledge, rewards, and resources, indicating the HDdUHB could invest more strongly in these areas to better support innovation.

5 Recommendations

This study provides five recommendations. Recommendation one through four are designed to help with moving the research, innovation, and value department towards its desired culture state. Recommendation 5 is aimed towards the whole organisation for improving the culture towards innovation in HDdUHB.

There are many steps that can be taken to stimulate or dampen the dominance of a particular culture type within a department. Below are outlined some of the steps that can be taken to stimulate a culture towards a clan/adhocracy culture and away from a market/hierarchy culture (Cameron and Quinn, 2006). However, before steps are taken, it is important that a consensus is reached in the department regarding whether the answers provided in this report are an accurate reflection of existing and preferred culture in the department. A consensus around the current and preferred culture would allow for appropriate changes to be identified and to develop an action plan for the implementation of organisational change.

5.1 Recommendation 1: Development of Clan Culture

- The development and implementation of programmes to increase facilitation and multidisciplinary team building within the workforce.
- Increased involvement of employees in all phases of strategic planning. Work towards an increased empowerment of employees, by moving more decisions around things like pay rises and budgets to the lower levels.

- The development of a training programme for middle-management allows them to better understand the strategic pressure of the organisation, so they are able to see changes they can make in their role for the company to be more effective.
- Creation of an internal education function that employs a systematic training strategy for educational needs at every level of the department.
- Development of a programme to assess and meet the training needs of the workforce. Where possible, use internal staff to carry out training.
- Development of an employee suggestions system, so that employees can make suggestions for improvement.

5.2 Recommendation 2: Development of an Adhocracy Culture

- Movement away from a hierarchical structure towards a more flexible structure that emphasises speed and agility.
- Ensure that systems are developed to encourage and reward innovative behaviour.
- Engagement with the literature around organisational learning to determine if the department is an effective learning organisation. Use these findings to improve the capacity of the department to learn more effectively.
- Development of a training programme to develop practical applications of creative thinking and learning around organisational innovation.
- Develop visible rewards to recognise the innovation and creativity of individuals and teams.

5.3 Recommendation 3: Reduction of Market Culture

- Establish a less stressful environment, where the drive to achieve productivity does not leave staff exhausted.
- An increased focus on human needs within the department.
- A focus on achieving key goals in the department rather than on competition and productivity.

5.4 Recommendation 4: Reduction of Hierarchy Culture

- A review of rules and procedures with the aim of eliminating any unnecessary rules and procedures.
- A review of the paperwork and admin that is currently being carried out, with the aim of eliminating anything that is unnecessary.
- Carry out an assessment of the current decision-making processes, to determine if certain decisions can be 'pushed down', allowing non-management workforce to have an input into decisions where appropriate.

5.5 Recommendation 5: Development of an Organisational Culture of Innovation

The organisational culture for innovation self-assessment tool indicated improvements could be made across all seven dimensions of culture towards innovation. To develop and build a culture of improvement and innovation is challenging, as culture change is everybody's business, not just the sole responsibility of the head of department, or executive team. The NHS Institute for Innovation and Improvement (2005) suggests that in order to build an improvement culture, there are four steps that must be taken:

1. Decide what needs to change and what needs to remain.
    - Some valuable cultural traits already exist in the organisation that will want to be maintained. E.g. a commitment to equality in patient care.
2. Describe what an improvement culture means and does not mean.
    - An improvement in culture could mean being dynamic, being flexible and adaptive and adopting a bolder approach to innovation.
3. Define the new way of doing things.
    - Define the rules of the culture that are agreed upon, and define what is required, what is prohibited and what is allowed.
4. Test out the new ways of working.

- Used of Plan, Do, Study, Act (PDSA) cycles for testing change ideas.

The four steps of building an improvement culture are described in detail in the NHS Improvement Leaders Guide: Building and Nurturing an Improvement Culture (NHS Institute for Innovation and Improvement, 2005).

6 Limitations

The study has the following limitations:

- The organisational culture assessment instrument had 18 responses in the research, innovation, and value department out of 62 employees (response rate of 29%). A larger proportion of TriTech and Innovation staff completed the questionnaire than research and development or value-based health care staff. This was due to the researcher being based in TriTech Institute, and completion of the questionnaire by distribution of hard copies. As many staff in the department often work from home, it was not possible to distribute the questionnaire to all staff for completion. To gain a more accurate picture of the current and desired future culture a larger sample size would be needed.
- The organisational culture for innovation self-assessment questionnaire was disseminated to all health board employees. Although 46 responses were achieved, this is a small sample when compared to the total number of health board employees, which was 14,328 in 2021 (HDdUHB, 2022). This equates to only 0.3% of staff that completed the questionnaire. To get a more accurate picture of the organisational culture for innovation, a larger sample would be needed.

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8 Appendix A: Organisational Culture Assessment Instrument (OCAI)

Questionnaire Questions

What is your department?

What is your role in the department?

How long have you been employed by the health board?

How long have you been in the department?

The Organizational Culture Assessment Instrument (OCAI)

The OCAI consists of six questions. Each question has four alternatives. Divide 100 points among these four alternatives depending on the extent to which each alternative is similar to your own organization. Give a higher number of points to the alternative that is most similar to your organization. For example, in question one, if you think alternative A is very similar to your organization, alternative B and C are somewhat similar, and alternative D is hardly similar at all, you might give 55 points to A, 20 points to B and C, and five points to D. Just be sure your total equals 100 points for each question.

Note, that the first pass through the six questions is labelled “Now”. This refers to the culture, as it exists today. After you complete the “Now”, you will find the questions repeated under a heading of “Preferred”. Your answers to these questions should be based on how you would like the organization to look five years from now.

1. Dominant Characteristics		**Now**	**Preferred**
A	The organization is a very personal place. It is like an extended family. People seem to share a lot of themselves.		
B	The organization is a very dynamic entrepreneurial place. People are willing to stick their necks out and take risks.		
C	The organization is very results oriented. A major concern is with getting the job done. People are very competitive and achievement oriented.		
D	The organization is a very controlled and structured place. Formal procedures generally govern what people do.		
	Total		
2. Organizational Leadership		**Now**	**Preferred**
A	The leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing.		
B	The leadership in the organization is generally considered to exemplify entrepreneurship, innovating, or risk taking.		
C	The leadership in the organization is generally considered to exemplify a no-nonsense, aggressive, results-oriented focus.		

D	The leadership in the organization is generally considered to exemplify coordinating, organizing, or smooth-running efficiency.		
	Total		
3. Management of Employees		**Now**	**Preferred**
A	The management style in the organization is characterized by teamwork, consensus, and participation.		
B	The management style in the organization is characterized by individual risk-taking, innovation, freedom, and uniqueness.		
C	The management style in the organization is characterized by harddriving competitiveness, high demands, and achievement.		
D	The management style in the organization is characterized by security of employment, conformity, predictability, and stability in relationships.		
	Total		

4. Organization Glue		**Now**	**Preferred**
A	The glue that holds the organization together is loyalty and mutual trust. Commitment to this organization runs high.		
B	The glue that holds the organization together is commitment to innovation and development. There is an emphasis on being on the cutting edge.		
C	The glue that holds the organization together is the emphasis on achievement and goal accomplishment. Aggressiveness and winning are common themes.		
D	The glue that holds the organization together is formal rules and policies. Maintaining a smooth-running organization is important.		
	Total		
5. Strategic Emphases		**Now**	**Preferred**
A	The organization emphasizes human development. High trust, openness, and participation persist.		

B	The organization emphasizes acquiring new resources and creating new challenges. Trying new things and prospecting for opportunities are valued.		
C	The organization emphasizes competitive actions and achievement. Hitting stretch targets and winning in the marketplace are dominant.		
D	The organization emphasizes permanence and stability. Efficiency, control and smooth operations are important.		
	Total		
6. Criteria of Success		**Now**	**Preferred**
A	The organization defines success on the basis of the development of human resources, teamwork, employee commitment, and concern for people.		
B	The organization defines success on the basis of having the most unique or newest products. It is a product leader and innovator.		
C	The organization defines success on the basis of winning in the marketplace and outpacing the competition. Competitive market leadership is key.		
D	The organization defines success on the basis of efficiency. Dependable delivery, smooth scheduling and low-cost production are critical.		
	Total		

9 Appendix B: Organisational Culture for Innovation Questionnaire

To what degree do you agree with the following statements:

Risk taking

Hywel Dda provides adequate support for individuals and teams that want to try out something new, given some reasonable precautions to avoid harm to patients or completely disastrous disruptions to the organisation.

Scale 0 – 10

0 strongly disagree 10 strongly agree.

Resources for innovation

There is sufficient money, protected time, information, and authority to act for individuals and teams who wish to innovate in Hywel Dda.

Scale 0 – 10

0 strongly disagree 10 strongly agree

Widely shared knowledge

Tacit and explicit knowledge to support innovation is widely gathered (both from within and outside the organisation) and easily available, rapidly transmitted, and honestly communicated throughout the organisation.

Scale 0 – 10

0 strongly disagree 10 strongly agree

Specific targets

Formal leaders make it clear that innovation is highly desired in certain specific areas that are strategically or operationally important to the organisation.

Scale 0 – 10

0 strongly disagree 10 strongly agree

Tools and techniques

The organisation supports a conscious process and method for innovation that is not so restrictive as to stifle creativity, but not so open as to leave innovation entirely up to the native abilities of individuals and teams.

Scale 0 – 10

0 strongly disagree 10 strongly agree

Reward systems

The organisation rewards the efforts of innovative individuals and teams through a process that gives these people things that they really want (e.g. more protected time for innovation, greater access to power, recognition among peers, and so on).

Scale 0 – 10

0 strongly disagree 10 strongly agree

Rapidly formed relationships

The organisation easily forms high-performing teams and networks of intrinsically motivated individuals, with a good mix of skills and styles, who quickly accept, respect and trust each other, and who display honest and open communication.

Scale 0 – 10

0 strongly disagree 10 strongly agree

10 Appendix C: Ethical Approval Form

SCHOOL OF MANAGEMENT, SWANSEA UNIVERSITY

FIRST STAGE ETHICAL REVIEW FORM

To be completed for all research involving human subjects OR datasets of any kind OR the environment

Name of PI or PGR Student	DR GARETH DAVIES
Staff Number or Student ID	529955
Supervisors*	Dr Dan Rees Dr Roderick Thomas
Date Submitted	23rd February 2023
Title of Project	Exploring Attitudes and Culture Surrounding Innovation Strategy Implementation in Hywel Dda University Health Board
Name of Funder / Sponsor*	Welsh Government/ All-Wales Intensive Learning Academy for Innovation in Health and Social Care
Finance Code / Reference*	N/A
Duration of Project	7 months

Aim of research project (*250 words*):

The NHS is currently experiencing unprecedented pressure and demand. As such innovation is necessary to find solutions to cope with the ever-increasing demands on healthcare. The emerging new health chapter of the emerging Innovation Strategy for Wales (ISW) is in harmony with current UK and devolved Government policy which is guiding greater implementation of innovation throughout health and social care. Fostering a culture which is receptive to innovation is important for successful implementation of innovation within organizations. The Hywel Dda Research and Innovation Strategy aims to set the direction and practical steps for the delivery of the health board's research, development, and innovation agenda, and seeks to improve the profile, quality and quantity of research and innovation activity within the health board.

This project aims to explore the model of innovation in Hywel Dda University Health Board including the current working practices, attitudes and culture surrounding the implementation of innovation in a health board in South-West Wales. We aim to develop an understanding of the current innovation landscape at HDUHB.

In this study we aim to explore culture and attitudes towards implementation of the health board's innovation strategy from the perspective of relevant stakeholder in Hywel Dda Health Board (HDUHB).
By evaluating the current working practices and attitudes and culture towards innovation in the health board, the project aims to provide recommendations to support the continued development and optimization of innovation strategy.
We will endeavor to:

- Explore the current HDUHB Innovation Strategy
- Map current innovation model including activities, practices, and processes.
- Explore stakeholder perspectives on the culture and attitude towards innovation at HDUHB
- Develop recommendations to support optimization of HDUHB innovation strategy.

Year 1			Year 2		Year 3
History context /Introduction Old SCW Innovation Strategy/ summary of the story so far?	**Literature Review** Themes (co-production, collaboration, commonality of language, sector unity etc) SASCI 5 Broad Skills Y-Lab 6 challenges Research literature (You have already started this)	**Cycle 1:** Social Care Wales Innovation Strategy Development Estimated end date of cycle 1: xx.xx.xxxx Identification of themes/Sub-themes from Perspectives from 3 broad groups:	**Cycle 2:** Social Care Wales Innovation Strategy Implementation Estimated end date of cycle 2: xx.xx.xxxx Exploration/identification of themes/Sub-themes from Perspectives from groups engaged in programme implementation activities	**Cycle 3:** Social Care Innovation Strategy (outputs/outcomes/activities) Estimated end date of cycle 3: xx.xx.xxxx Identification of themes/Sub-themes from Perspectives from groups engaged in programme activities/outputs	Narrative contextualising the results with the original research question and/or hypothesis Analysis, conclusions and Recommendations
Data	Research Journals literature Reports from pre-(new?)-strategy events Y Lab Report Literature LSE Report Literature SASCI Report Literature	Survey/Questionnaire Focus groups Workshops With the broad groups: Enablers, Innovators, stakeholders/beneficiaries (others?)	Survey/Questionnaire Focus groups Workshops With the broad groups: Enablers, Innovators, stakeholders/beneficiaries (others?) Activities – projects and pillars of strategy such as Digital, Innovation Coaching etc.	Focus Groups with activity groups/teams etc	Analysing Data
Methodology	Bibliographical Review	Interviews & transcription Thematic analysis of qualitative data Quantitative Analysis of numerical data (potential) FsQCA? And/or other mixed methodological approaches			Qualitative and Quantitative analysis
Outputs	Research Gap and Research Questions	Data Capture, Questionnaires, Interviews, Capturing Response, Stake Holders etc			Results

** Complete if appropriate*

***Risk evaluation**: Does the proposed research involve any of the following?*

✓***Tick** those boxes for which the answer is **YES***

X Cross** those boxes for which the answer is **NO

Participants

X Will the study involve recruitment of patients or staff through the NHS or the use of NHS data or premises and/or equipment? If this is the case, the project **must** be reviewed by the NHS. Please see the following NHS online tools for help with this http://www.hra-decisiontools.org.uk/research/ and http://www.hra-decisiontools.org.uk/ethics/

X Does the study involve participants aged 16 or over who are unable to give informed consent? (e.g. people with learning disabilities: see Mental Capacity Act 2005. All research that falls under the auspices of the Act **must** be reviewed by the NHS)

X Does the research involve other vulnerable groups: children, those with cognitive impairment or in unequal relationships? (e.g. your students). This **may** require NHS review, and will typically require the researcher to get **Disclosure & Barring Service (DBS) clearance** (formerly CRB checks)

X Will the research harm or pose any risk to the environment? (e.g. research in environmentally sensitive areas (e.g. SSSIs); permission needed to access field sites; transport of samples between countries (e.g. soil); sampling of rare or hazardous material (e.g. invasive species) that could deplete or endanger)

Please describe the participants involved in your research (if no participants, state 'none'): max 250 words.

Participants include stakeholders relevant to the project- predominantly HDUHB staff, however particpants may include those from across, academia, Health, Social Care, Government, the Life Science Sector and others.

Volunteer Inclusion Criteria:

• Stakeholders will be relevant to innovation in HDUHB and wider life sciences sector.
• Volunteers/Participants may be identified from across academia, Health, Social Care, Government, the Life Science Sector and others.

Volunteer Exclusion Criteria:
• Persons not meeting the criteria outlined above.
• Under 18-year-olds.

Recruitment

X Will the study require the co-operation of a gatekeeper for initial access to the groups or individuals to be recruited? (e.g. students at school, members of self-help group or residents of nursing home?)

X Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (e.g. covert observation of people or use of social media content)

X Will the research involve any form of deception? (e.g. misinformation or partial information about the purpose or nature of the research)

X Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?

X Does the research involve members of the public in a research capacity? (e.g. participant research; participants as co-producers or data collectors)

Please explain the recruitment of participants involved in your research (if no participants, state 'none'): max 250 words.

Volunteer participants will be identified using the inclusion/exclusion criteria cohort will be identified by Mr Gareth Davies volunteer selection inclusion and exclusion criteria are stated in previous text box, above.

Volunteer participant contact details will be collected and held by Gareth Davies and SU Research team and will be shared with supervisors as and when relevant.

Research Design

X Will the study discuss sensitive topics or require the collection of sensitive information? (e.g. terrorism and extremism; sexual activity, drug use or criminal activity; collection of security sensitive documents or information).

X Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?

X Is pain or more than mild discomfort likely to result from the study?

X Will the study involve prolonged or repetitive testing?

X Are drugs, placebos, or other substances (e.g. foods or vitamins) to be administered to study participants, or will the study involve invasive, intrusive, or potentially harmful procedures of any kind? (If any substance is to be administered, this **<u>may</u>** fall under the auspices of the Medicines for Human Use (Clinical Trials) Regulations 2004, and require review by the NHS)

X Will tissue samples (including blood) be obtained from participants? (This would fall under the terms of the Human Tissue Act 2004. All research that falls under the auspices of the Act **<u>must</u>** be reviewed by the NHS)

Please summarise your methodology in detail and provide reflective comments with regards to the design of your research: max 250 words.

An action research methodology we will be applied its cyclic nature. This will include methods and techniques including but not limited to the following:

Interviews & transcription of data captured from interviews, Surveys/Questionnaires, Focus groups, Workshops etc

Thematic analysis of qualitative data

Quantitative Analysis of numerical data

We will plan to use validated qualitative/quantitative questions set adapted from previous published peer-review papers in relevant journals.

Finally, we tentatively suggest the use of methods such as fsQCA & Interpretive structural modelling (ISM) to explore the dependencies/interrelatedness between emerging themes.

Any real-life cases will be described very generically and will not include information on specific user-cases.

Data Storage and anonymity

X Will the research involve administrative or secure data that requires permission from the appropriate data controllers and/or individuals before use?

X Will the research involve the sharing of data or confidential information beyond the initial consent given?

X Will the research involve respondents to the Internet or other visual/vocal methods where respondents may be identified?

Please describe how you will store your research data and for how long, and, if appropriate, how you will ensure anonymity of your data subjects: max 250 words.

Information/data will be collected by the student through both recording the interviews and transcribing onto secure laptop and through completion of the ISM/fsQCA questions during the interview using the secure laptop. Access to the laptop will be password protected.

Only the project team will have access to the data which is stored on secure laptops.

Data will be kept for the duration of the study and for 3 years following its completion to ensure that it can be implemented in informing future studies, report, research journal writing and education.

All volunteer information will be anonymized. Any real-life cases will be described generically and will not include information on specific user-cases.

Safety and Risk

X Has a risk assessment been completed?

X Is there a possibility that the safety of the researcher may be in question? (e.g. in international research: locally employed researchers)

X Will the research take place outside the UK where there may be issues of local practice and political or other sensitivities?

X Could the research impact negatively upon the reputation of the University, researcher(s), research participants, other stakeholders, or any other party?

X Do any of the research team have an actual or potential conflict of interest?

X Are you aware of any other significant ethical risks or concerns associated with the research proposal? (If yes, please outline them in the space below)

Please describe the health and safety considerations in relation to both participants and researchers (250 words max): If there are significant concerns an appropriate risk assessment and management plan must be attached.

There are no significant concerns or risks foreseen in this study.

Other significant ethical issues or concerns: (If None, then please state 'None') None

*If any answer to the questions above is **YES**, then a **Second Stage (Full) Ethical Review MAY** be required.*

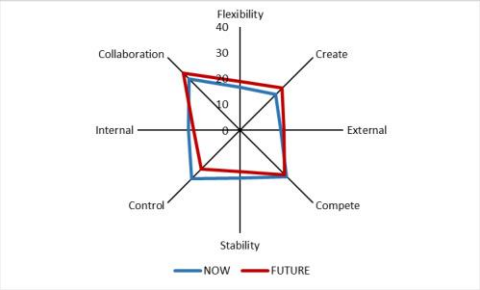
*If the project involves **none of the above**, complete the **Declaration**, send this form and a **copy of the proposal*** to **Amy Jones the School of Management Research Support Officer: amy.e.jones@swansea.ac.uk**. Research may only commence once approval has been given.

***Declaration:** The project will be conducted in compliance with the University's Research Integrity Framework (P1415-956). This includes securing appropriate consent from participants, minimizing the potential for harm, and compliance with data-protection, safety & other legal obligations. Any significant change in the purpose, design or conduct of the research will be reported to the SOM-REC Chair, and, if appropriate, a new request for ethical approval will be made to the SOM-REC.*	
Signature of PI or PGR Student	 Dr Gareth Davies
Signature of first supervisor (if appropriate)	 Dr Dan Rees
Decision of SOM-REC	
Signature of SOM-REC Chair or SOM-REC deputy Chair Date: 23.03.2023	
SOM-REC Reference number (office use only)	

Research Paper DOI: tbc ISSN: tbc

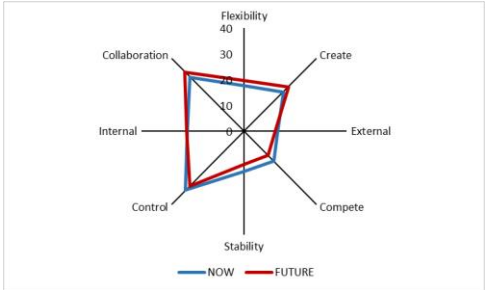
11 Appendix D: Current and Preferred Culture for Individual Elements of OCAI

Dominant Characteristic



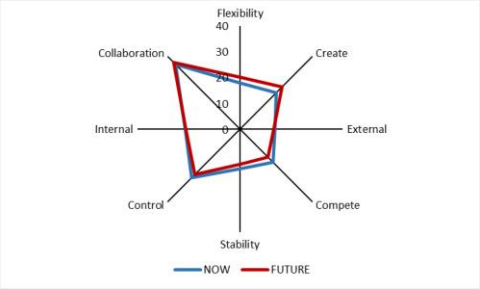
Culture	Current	Preferred
Clan	28.19	31.11
Adhocracy	19.58	23.06
Market	25.42	24.44
Hierarchy	26.81	21.39
Total	100.00	100.00

Organisational Leadership



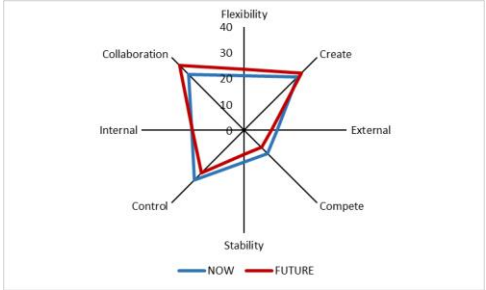
Culture	Current	Preferred
Clan	29.72	32.50
Adhocracy	21.67	24.44
Market	16.39	13.06
Hierarchy	32.21	30.00
Total	100.00	100.00

Management of Employees



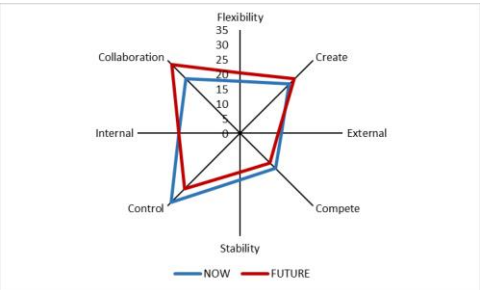
Culture	Current	Preferred
Clan	35.42	36.53
Adhocracy	19.86	23.19
Market	18.19	15.42
Hierarchy	26.53	24.86
Total	100.00	100.00

Organisational Glue



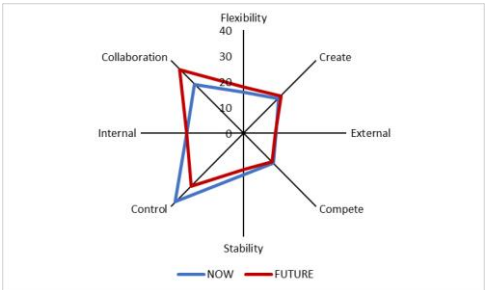
Culture	Current	Preferred
Clan	30.62	35.56
Adhocracy	29.24	31.39
Market	12.85	9.50
Hierarchy	27.29	23.55
Total	100.00	100.00

Strategic Emphasis



Culture	Current	Preferred
Clan	26.11	32.78
Adhocracy	23.62	26.11
Market	16.94	14.44
Hierarchy	33.33	26.67
Total	100.00	100.00

Criteria of Success



Culture	Current	Preferred
Clan	26.94	35.00
Adhocracy	19.17	20.56
Market	16.39	15.56
Hierarchy	37.50	28.88
Total	100.0	100.00

What enables or inhibits successful implementation of digital health and care service delivery?

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Abstract:

Background: Investigating the facilitators and barriers to the effective deployment of digital health and care services, this study was motivated by recurring challenges encountered in daily professional practice. Focusing on the persistence of technological stagnation post-pilot phase, the research aimed to unravel underlying causes. The literature review immediately revealed significant insights into both global and local (Wales) challenges, deepening the understanding of implementation efforts thus far. The research offered valuable perspectives from individuals in health and social care regarding their attitudes toward technology adoption and their strategies for overcoming challenges.

Methodology: A thorough literature review was conducted utilizing the Research Rabbit application and the Swansea University iFind system to explore the contemporary academic understanding of the subject. The search parameters were confined to articles and books published since 2010. Case study methodologies were employed to examine digital health and care services, wherein the researcher collected insights from professionals in health and social care services, as well as technology and support service providers from the private sector throughout the UK. A select number of interviewees, comprising senior managers engaged in digital health and care implementation from both health and social care sectors and private sector technology providers, were chosen to facilitate a deeper understanding of the subject matter.

Findings: Results drawn from 63 responses highlighted the significant influence of external factors, notably the Covid-19 pandemic, in shaping the adoption of digital health and care services. Additionally, internal factors such as senior management decisions and the engagement of health and social care staff emerged as key contributors. Nevertheless, despite greater acceptance, the imperative for mandatory provision of digital health and social care services faces hurdles like inadequate internet connectivity, particularly in remote regions, limited digital literacy among patients and staff, insufficient digital infrastructure, and compliance with data privacy regulations. Consequently, there is a pressing need for established standards within the health and social care sector to address these challenges effectively.

Conclusions: There is a widely held belief that enhancing digital literacy among staff is essential. Further investigation is required to ascertain the precise level of digital literacy through the use of reliable metrics, thereby facilitating targeted efforts for improvement. Moreover, governmental intervention is needed to offer clearer guidelines and support for information sharing, benefiting the broader health and social care landscape. This action would eliminate barriers to collaboration among healthcare providers, social care agencies, academic institutions, and commercial entities, thus expediting the adoption of digital health and care service delivery.

Keywords: Digital health, Technology Enabled Care, Enablers, Inhibitors, Service design, Llesiant Delta Wellbeing, Alarm monitoring, Tele Health, Digital health and care service delivery.

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Acronyms, Tables, and Figures

List of Acronyms used

Acronym	Definition
GP	General Practitioner
NHS	National Health Service
RCT	Randomised Control Trial
TEC	Technology Enabled Care
WHO	World Health Organisation

A range of terms are used in health and social care to refer to the person who is receiving a service, such as patient, service user or client. For the purposes of this report the term ‘patient’ will be used.

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1 Introduction

1.1 Background and Context

The increasing importance of digital technology in the provision of health and care services has been recognised by both government and academics (DHSC, 2022). There are numerous factors influencing this including:

- Staff and resource shortages.
- The effects of the Covid pandemic.
- Recognition of the use of data to inform decision making.
- A desire to improve outcomes and service efficiency.

1.2 The importance of digital in the provision of health and care services

The importance of digital technology has been outlined in multiple governmental and non-governmental reports (Table 1.1).

Table 1.1. Key documents outlining the issues involved in implementing digital health and care services.

Title	Year	Publisher	Main Recommendations
A Healthier Wales	2018	Welsh Government	Technology to support high quality, sustainable services.
People at the heart of care: adult social care reform white paper	2021	Department of Health and Social Care	Digital tools and technology can support independent living and improve the quality of care.
			Aim to ensure technology is fully utilised to enable proactive and preventative care and to support people's independence.
			Using the full potential of technology to support people's lives and aspirations.
			Commissioners, Integrated Care Systems (ICS) and NHS partners: effectively deploy technology that meets people's needs.
A Plan for Digital Health and Social Care	2022	Department of Health and Social Care	Digitising health and social care records.
			A life-long, joined up health and social care record.
			Digitally supported diagnoses.
Recommendations on Digital Interventions for Health System Strengthening	2019	World Health Organisation	Digital health interventions should complement and enhance health system functions through mechanisms such as accelerated exchange of information.
Global Strategy on Digital Health	2021	World Health Organisation	Adoption of Recommendations on Interventions for Health System Strengthening (WHO, 2019).

There is a significant body of academic work addressing adoption of digital technology in a secondary health setting, but a lack of studies in social care and little in an integrated health and care environment. O'Connor et al (2016) identified the gap in knowledge of the real-world application of technology due to much of the current evidence being generated through quantitative methods, particularly randomised control trials (RCT). Krasuska (2016) noted that extant literature focuses on acute hospitals, potentially distracting attention from integrated health and care systems whose importance has been recognised as part of global health policy.

The published journal articles and reports will be discussed in the next chapter.

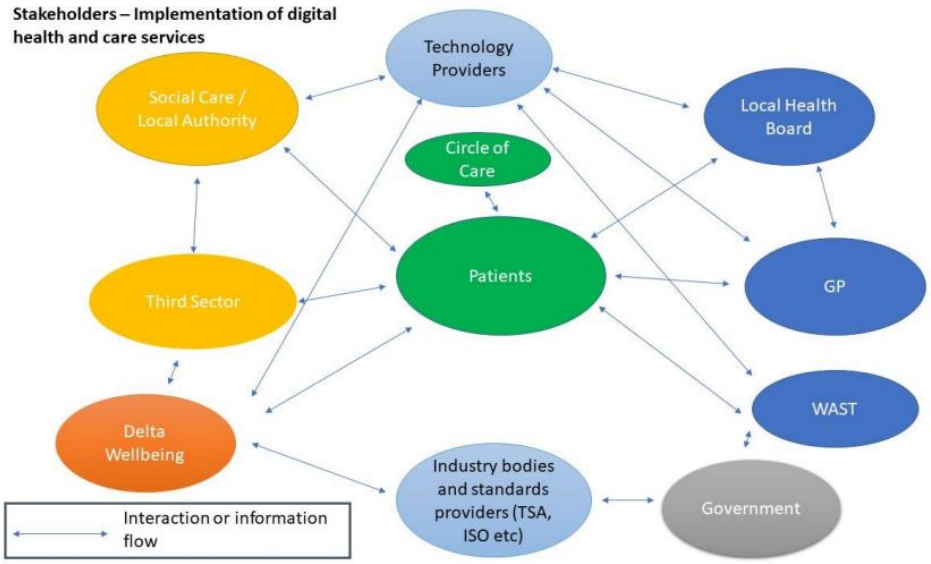


Figure 1.1. Stakeholders in the implementation of digital health and care services.

Figure 1.1 provides an overview of the stakeholders in the implementation of digital health and care services in Wales. Government reports stress the importance of the patient being at the heart of digital services (Welsh Government, 2018) and as illustrated, the wide range of stakeholders involved in the care of patients and in the specification, development, procurement, and implementation of digital services creates a complex environment.

1.3 Research Question, Aims and Objectives

The aim of the project is to gain a better understanding of the factors that influence the successful implementation of digital technology in both a health and social care context, from the perspective of staff in the sectors that either have experience of implementation or are in roles that would be impacted by implementation.

This understanding will inform Delta Wellbeing's (Delta) decision making on how digital service delivery is designed and implemented in future to increase the likelihood of successful implementation and adoption.

1.4 Personal motivation of the Researcher

The researcher is an experienced senior leader in integrated health and social care with a strong focus on technology enabled care (TEC) and a background in technology from the commercial sector. This experience has led to an interest in how to best design and implement new technologies and systems to increase the likelihood of successful implementation and improve outcomes and experiences for patients.

1.5 Conclusion and the structure of the Thesis

This chapter has provided a brief introduction to the background and complexities involved in the implementation of digital health and care services. The next chapter will provide a review of the existing literature in this field before defending the chosen research design in Chapter 3. Chapter 4 will present a brief overview of the case study of Delta and its situation in an integrated health and care system and Chapter 5 will present the findings of the research conducted. The final chapters will discuss the findings and implications of the study before presenting the conclusions and recommendations resulting from this study.

2 Literature Review

2.1 Introduction and purpose

The purpose of the literature review is to understand the current state of academic knowledge on a particular topic to inform the research to be undertaken. The literature review was conducted using the Research Rabbit application and Swansea University iFind system. The search provided 4,508,347 results, these were further refined based on date of publishing and combinations of keywords to focus the search, to 800 papers of which 32 were deemed relevant.

2.2 Services and service management (definitions)

In this study services can be defined as any health or social care provision provided by a health or care professional to a patient. Health and social care services can be viewed as processes often with multiple different professionals and organisations, combining to provide the service. Modern health and social care systems rely on information flow between clinicians, patients, their circle of care and administrator, and its importance cannot be overstated.

2.3 Service Design

High performance service design is a highly effective process designed to provide the highest possible service level in the most efficient and cost-effective way possible (Patricio et al, 2020).

2.4 Service design for health and care

Many health and social care services have grown organically or have not changed significantly since they were introduced, often decades ago. There is significant potential for improvements in service levels across health and care service delivery using high performance service design techniques. Where these techniques have been implemented it has been shown to improve efficiency for the organisation and provide better outcomes for patients (Health Foundation, 2010).

2.4.1 The role of digital health and care service delivery

The increased availability and effectiveness, and corresponding reduction in cost of technology since the development of the smartphone has resulted in an expectation that it can play a role in the delivery of health and care services. There is significant variation in the impact that digital service delivery has had to date. This study is designed to understand the reasons for that variation.

There is an abundance of academic literature that investigates the reasons for the adoption or non-adoption of various health technologies by patients and professionals, including the much-cited non-adoption, abandonment, scale-up, spread, and sustainability (NASSS) framework developed by Greenhalgh et al (2017). This literature review will consider the NASSS framework and other studies to find the key enablers and barriers according to the literature.

2.4.2 Studies of the enablers for successful implementation of digital health and care service delivery

Table 2.1. Enablers for successful implementation of digital health and care service delivery.

Enabler	Reference
Clinical Endorsement	Lennon et al, 2017
Digital health champions	Lennon et al, 2017
Social media style user interface (simple interaction)	Cingi et al, 2015
Organisational Culture	Krasuska et al, 2020
Leadership to support digital transformation	Krasuska et al, 2020; Greenhalgh et al, 2017; WHO, 2021
Workforce - Skills across the hospital workforce: the ability to perform one's role using digital tools	Krasuska et al, 2020; Greenhalgh et al, 2017
Support of the digital agenda from the hospital board	Krasuska et al, 2020

Table 2.1 provides a list of enablers from the extant literature. This section will discuss some of these in more detail, with reference to the NASSS Framework (Greenhalgh et al, 2017).

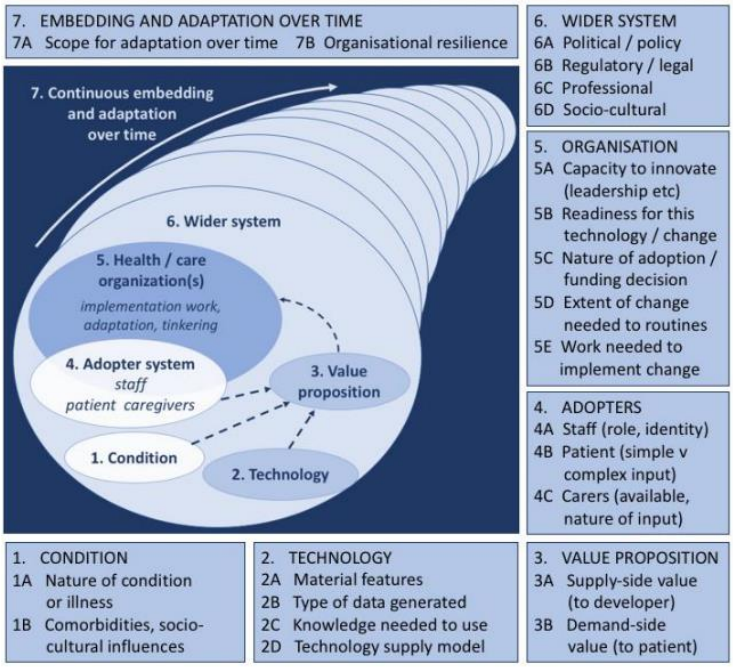


Figure 2.1. NASSS Framework (Greenhalgh et al, 2017)

The NASSS Framework divides the factors affecting the "Non-adoption, Abandonment, and Challenges to the Scale-Up, Spread, and Sustainability of Health and Care Technologies" into seven areas, which are subsequently split further to provide more detail, as illustrated in 2.1. These areas align to much of the other literature published on the subject to date.

NASSS specifically recognises the importance of both staff and patients as adopters. Lennon et al (2017) identified the importance of clinical endorsement as an enabling factor and Gyorffy (2020) highlights the doctor-patient relationship. Cingi et al (2015) noted the benefits of providing a user experience "similar to everyday social media apps" in the Physician on Call Patient Engagement Trial to overcome motivation barriers for both clinicians and patients. A social media type interface potentially reduces the level of digital knowledge required amongst staff and patients as noted by the NASSS framework.

The organisational culture and capacity to innovate are cited by Krasuska et al (2020) and the NASSS framework as key enablers along with a "willingness to transform established ways of working", and the WHO identifies leadership as a core component of a digital health strategy (Greenhalgh et al, 2017; WHO, 2021).

The importance of the wider health and care ecosystem, particularly its digital capabilities are noted by Krasuska et al (2020) and Greenhalgh et al (2017), as well as government regulation and legal considerations around data in that environment. The WHO states that "It recognizes that digital health can radically change health outcomes if it is supported by sufficient investment in governance" (WHO, 2021).

The Studies in Cocreating Assisted Living Solutions (SCALS) (Greenhalgh et al, 2016) promotes the ARCHIE framework (Figure 2.2), a set of principles for telehealth and telecare.

> *"the 'ARCHIE' framework: telehealth and telecare should be anchored in what matters to the patient or client; realistic about the natural history of illness and ageing; co-creative (evolving and adapting solutions with users); human (supported through interpersonal relationships and social networks); integrated through attention to mutual awareness and knowledge sharing; and evaluated to drive system learning."*

Figure 2.2. The ARCHIE framework (Taken from Greenhalgh et al, 2016).

The ARCHIE principles align well with Welsh Government policy relating to patient-centred and co-created care solutions (Welsh Government, 2018).

2.4.3 Studies of the inhibitors to successful implementation of digital health and care service delivery

Table 2.2. Inhibitors to successful implementation of digital health and care service delivery.

Inhibitor	Reference
Lack of / poor IT infrastructure	Lennon et al, 2017
Poor interoperability of systems	Woods et al, 2023; Devlin et al, 2015
Information governance / data protection	Lennon et al, 2017; Devlin et al 2015; DCMS, 2021
Continually changing environment	Devlin et al, 2015
Skills and training shortage / digital literacy	Choi et al; 2021; Krasuska et al, 2020; Corneliusse, 2020;
Digital poverty / isolation	Greenhalgh et al, 2017
Financial	Greenhalgh et al, 2017
Symbolic properties of technology	Brittain et al, 2010; Greenhalgh et al, 2017

The need to address the integration of digital systems across health and social care is noted by Krasuska et al (2020). Integration and interoperability of systems is stated as a major inhibitor of digital health and care service delivery by numerous research studies and reports (Woods et al, 2023; Devlin et al,2015). Devlin et al (2015) link the challenges of interoperability with information governance, noting the impact of “proprietary commercial models” and the differences between systems in differing organisations. This supports the inclusion of the technology supply model within the NASSS Framework (Greenhalgh et al, 2017).

Lennon et al (2017) also link interoperability with uncertainty on information governance and describe a “lack of incentives to prioritize interoperability” as a barrier, further supporting the technology supply model, which they describe as a market that is “difficult to navigate”.

Devlin et al (2015) point to the “tension between embracing innovative co-design and achieving delivery at pace and at scale”, an issue which is heavily influenced by the organisational culture and leadership referenced by Greenhalgh et al (2017) in the NASSS framework.

Staff and patient perceptions of technology are noted as a significant factor, with Greenhalgh et al (2017) noting the symbolic nature of mobile phones with youth, and Brittain et al (2010) linking the telecare pendant with being perceived as identifying a person as needing help.

Education and training of both staff and patients is recognised as an inhibitor to implementation of digital, Choi et al (2021) described “the largest clinician hurdle in implementing a new platform has been addressing the needs for education…”, additionally the need for “developing competence within digital transformation” was identified by Corneliussen (2020).

Inequalities in digital literacy reflect inequalities in “access, uptake, and use of health and care technologies by age, sex, socioeconomic status, or ethnic group” as described by Greenhalgh et al (2017). This also reflects the model-reality gap, which is the gulf between the ideal world situation that technology is designed around and the reality of health and care service delivery, which is complex and ever changing, where a one size solution will not fit all.

2.5 A new conceptual model

The literature to date identifies many enablers and barriers, but the most widely accepted framework (NASSS) and the study considered most useful in a social care context, SCALS are both over five years old. The impact of several environmental factors in health and care since those were published, namely Brexit, the Covid-19 pandemic and the rapid development of artificial intelligence mean that a new conceptual model is required.

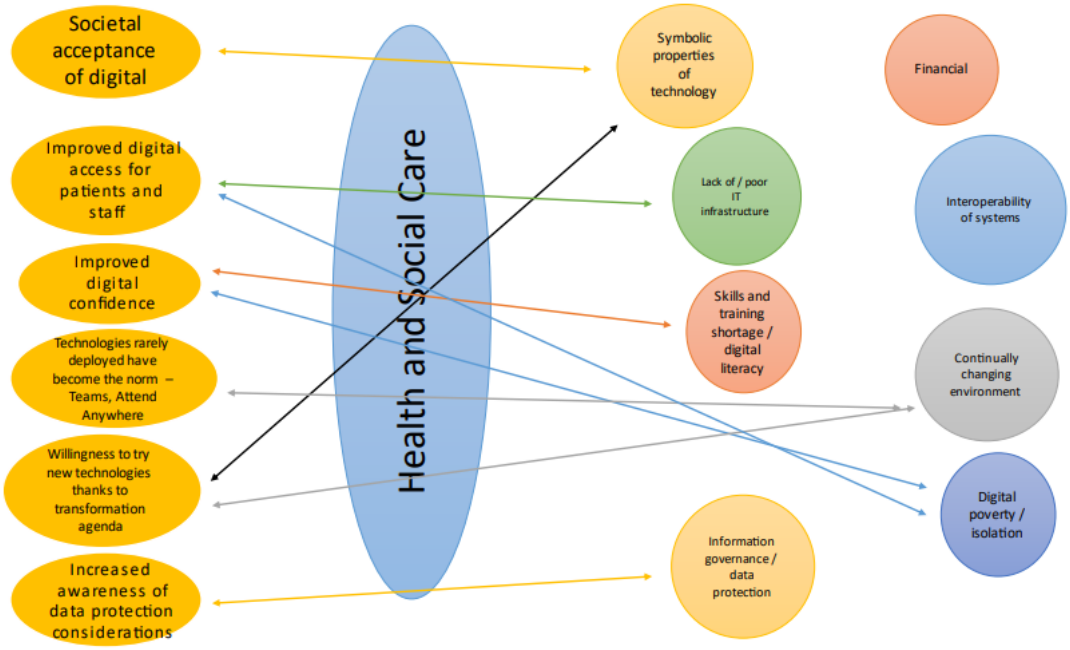


Figure 2.3. A new conceptual model.

This model is one where a greater number of people, both patients and professionals, are already comfortable with digital applications, those applications are easier to navigate, and there is a significantly improved ability to analyse the data provided by digital services.

- Greater acceptance of digital by the public and professionals.
- Improved access to digital technologies for patients.
- Greater confidence in the use of digital technologies by patients and staff.
- Employed by NHS Wales organisation.
- Technologies that had rarely been deployed for more than a pilot study have become the norm e.g., Attend Anywhere, Microsoft Teams.
- A greater willingness to try new technologies and processes due to the 'transformation agenda'.
- An increased awareness of data protection considerations.

2.6 Summary and Conclusions

The literature on the topic is growing rapidly with new articles, particularly focusing on the impact of the pandemic being published regularly. There seems to have been far greater emphasis placed on studying factors that inhibit success than on studying enabling factors. This could be because there have been significant challenges for projects, or perhaps because there is a greater focus on what did not work than what did when evaluating projects.

3 Research Methodology and Design

3.1 Introduction and Purpose

This section of the report will outline the research methodology that has been selected for the project and demonstrate how it has been developed to answer the question posed by the project, "What enables or inhibits successful implementation of digital health and care service delivery?".

3.2 Definitions

The table below defines the terms used in this chapter.

Table 2.3. Table of Terms.

Term	Definition
Epistemology	
Positivist	An approach which "involves establishing which variables one wishes to study in advance and seeing whether they fit in with the findings. Focus is often on testing and refining theory on the basis of case study findings." (Crowe et al, 2011)
Critical	An approach that questions "one's own assumptions taking into account the wider political and social environment." (Crowe, 2011)
Interpretivist	An approach that "Involves understanding meanings contexts and processes as perceived from different perspectives, trying to understand individual and shared social meanings. Focus is on theory building." (Crowe et al, 2011)
Methodology	The way that the research study has been designed to gather and analyse data.
Case study	"Research strategy that involves the empirical investigation of a phenomenon within its real-life context, using multiple sources of evidence." (Saunders et al, 2019)
Semi-structured Interviews	An interview method which uses but is not limited to preset questions and allows further investigation of themes.
Perceptual questionnaire	A survey conducted to gather the opinion of the informant.

3.3 Real world enquiries

In studying real life examples (compared to laboratory testing) in management science, the context in which the example is set is extremely important. The best method to enable the investigation of all the factors affecting the subject is the case study method.

3.3.1 Generalisation

The organisation is similar to others in different parts of the UK and generalisation is based on a similar organisation operating similar processes.

3.4 Conducting a literature review

Literature reviews are conducted to understand the current state of academic knowledge on the subject which helps to guide the research. A literature review was undertaken at the beginning of this research.

Table 3.2. Search Terms.

NHS	Digital	Implementation	Service Delivery
Enables	Inhibits	Barriers	Technology
Healthcare	Social Care		

The literature review used the Research Rabbit application and searched under the Swansea University iFind system. The contemporary nature of the subject area being studied meant that older (pre-2010) literature was deemed not relevant. For this reason, the searches were limited to articles and books published since 2010. The literature identified by these searches was used to establish the conceptual framework presented in Chapter 2.

3.5 Defining a case study strategy and its benefits

Crowe (2011) describes a case study thus "…a research approach that is used to generate an in-depth, multi-faceted understanding of a complex issue in its real-life context."

In this context the 'case' is the implementation of digital health and care services, and the researcher seeks to gather the views of professionals involved to identify the enablers and inhibitors.

Table 3.3. Types of Case Study (Adapted from Ryan, Scapens and Theobald, 2002).

Case Study Type	Definition and Usage
Descriptive Case Study	Where the objective is restricted to describing current practice
Illustrative Case Study	Where the research attempts to illustrate new and possibly innovative practices adopted by particular companies (or organisations)
Experimental Case Study	Where the research examines the difficulties in implementing new procedures and techniques in an organisation and evaluating the benefits.
Explanatory Case Study	Where existing theory is used to understand and explain what is happening

The case study chosen takes a national (UK) view of the implementation of digital health and care services from the perspective of individuals professionally involved and will be discussed in Chapter 4. The approach that was chosen for this research was an experimental case study.

3.5.1 Informant selection

Informants for the questionnaire were professionals from the health and social care services, and private sector providers of technology and support services across the UK. Specific individuals were invited to complete the questionnaire as well as it being shared widely on social media for others that wished to provide their views.

A conscious decision was made to exclude patients and service users from the survey, as the researcher felt that this should be investigated separately.

A limited number of interviewees were selected to enable greater depth of understanding. Interviewees were senior managers involved in digital health and care implementation from health and social care and private sector technology providers.

3.5.2 Interviews and Types

Boyce and Neal (2006) define an interview as a research technique which involves “conducting intensive individual interviews with a small number of respondents to explore their perspectives on a particular idea, program or situation.”

Table 3.4. Types of Interviews and their purpose.

Interview Types	Appropriateness for this study
Structured	Not particularly suited to this study, as it does not enable themes that arise in the interview to be pursued or investigated further.
Semi-structured	Well suited to this study, as it enables themes from the questionnaire and literature review to be investigated more fully.
Informal Interviews	Not well suited to this study. The free ranging nature of informal interviews would make it more difficult for the researcher to direct the interview to areas of interest and make analysis of the data significantly more challenging and time consuming.
Explanatory Case Study	Where existing theory is used to understand and explain what is happening

Semi-structured interviews were deemed to be the most suitable type for this study. Interviews were planned to take around thirty minutes. The following questions were provided to interviewees in advance to enable consideration prior to the interview.

Table 3.5. Interview Questions.

Question		Purpose
1.	**a.** What do you consider to be the three key enablers of successful implementation of digital health and care service delivery?	To compare how senior managers in both health and social care and technology

	b. Please explain your reasons for choosing these enablers and give examples if possible.	providers view the enablers and map this against the questionnaire results.
	c. Can you rank them in order of importance?	
2.	**a.** What do you consider to be the three key barriers to successful implementation of digital health and care service delivery?	To compare how senior managers in both health and social care and technology providers view the barriers and map this against the questionnaire results.
	b. Please explain your reasons for choosing these barriers and give examples if possible.	
	c. Can you rank them in order of importance?	
3.	How do you believe that health and care organisations can ensure that the enablers are in place?	To identify possible solutions.
4.	How do you believe that health and care organisations can remove the barriers?	To identify possible solutions.

The interviews lasted between 30 and 45 minutes. Two people were interviewed.

Table 3.6. Interviewees.

Type of person	Purpose
Senior manager in health and social care	To identify key enablers and inhibitors from a health and social care management context and compare with survey data.
Senior manager in technology provider to health and social care	To identify key enablers and inhibitors from a technology provider viewpoint and compare with survey data.

3.6 Perceptual questionnaire design

There are multiple options for the design of the questionnaire, these include.

Table 3.7. Perceptual questionnaire design.

Questionnaire Type	Definition and Usage
Fully closed questions	Will generally generate binary responses, e.g., yes / no.
Perceptual questions	Seeks to identify the opinions of informants – well suited to this study.
Open ended questions	These allow the informants to write whatever they choose – this can lead to both very long and very short responses and are very time consuming and challenging to analyse.

A five stage Likert approach was used to develop the perceptual questionnaire. The questionnaire was shared widely on social media, specifically LinkedIn and within appropriate WhatsApp groups and was sent directly to 20 people who are involved in health and social care delivery.

3.7 Alternative methods

In developing the design of the study, other methods were considered but discounted:

Table 3.8. Alternative methods.

Alternative	Reason for Rejection
Grounded Theory	Not practical for a MSc project due to the large volume of data necessary.
Large scale questionnaire	Large dataset and potentially complex analysis.
Process research and action research	Insufficient time to complete.
Modelling	Non-availability of data.
Social network analysis	Complexities of this type of analysis make it unsuitable for a short duration study at MSc level.

3.8 Analysis of data

The researcher analysed the data from the survey using graphical representations of the results and used these to inform the questions posed to the interviewees. The analysis of the graphs was done using pattern identification and cross validation between questions asked on the same conceptual theme.

3.9 Appropriateness of the actual research design

This study approach is a well-established and accepted method for conducting research into perceptions across large organisations.

3.10 Limitations of the study

The study was limited to respondents who were willing and / or able to take part and was only available online. The study did not obtain the views of patients or their families.

3.11 Ethical considerations

Anonymity was provided to the respondents to the questionnaire. Only questions of age range, seniority level and organisation type were asked to ensure information was non-identifiable. Anonymity was provided to interview respondents, only reference to the interviewee's role and organisation type was recorded.

Initial responses to the questionnaire were securely recorded on the Qualtrix platform and results and analysis stored securely.

The study was granted ethical approval by Swansea University School of Management in June 2023. (See appendices)

3.12 Chapter summary

Chapters 1 and 2 have identified the need for a more detailed, contemporary, and contextual understanding of the enablers and inhibitors of the implementation of digital health and care service provision, particularly in social care and integrated care environments. There is limited academic study in this area, hence a perceptual questionnaire was developed and published, and interviews conducted. The following chapter details the case study.

4 The Case Study

4.1 Background

Llesiant Delta Wellbeing (Delta) is a dynamic and forward-thinking enterprise operating across various domains within the fields of health and social care, Delta was established in June 2018 as a Local Authority Trading Company under the complete ownership of Carmarthenshire County Council. It originated from a well-established Local Authority TEC service and has since witnessed remarkable growth, expanding its portfolio of contracts and reach throughout Wales. Delta operates two Alarm Receiving Centres that oversee the well-being of over 35,000 clients via its TEC monitoring platform. These centres are in Carmarthenshire and also respond to incoming inquiries from local authorities, housing associations, and out-of-hours services, and make proactive outbound calls when necessary.

Delta is integrated with the local health board and social care services, joining forces to pursue an ambitious vision of introducing novel TEC services within the community. In addition to conventional telecare equipment, Delta leverages state-of-the-art TEC solutions and cutting-edge health and social care technologies to provide essential support to patients transitioning from hospitals to community care settings. Delta collaborates with partners to bridge the gap between businesses and academia, engaging in research that places TEC at the heart of mainstream healthcare, driven by advanced technologies.

Delta's areas of work include:

- Alarm call handling (35,000+ connections).
- Out of hours call handling.
- Information, Advice, and Assistance service.

- Community Response.
- Technology Enabled Care equipment installation and management.
- Telehealth.
- Bridging care for early discharge from hospital.
- The Blue Army – a hospital-based team providing support for patient admission and discharge.
- Proactive calls.

4.1.1 Delta's purpose

Delta's stated purpose is to enable people to remain living independently at home for longer by:

- Alarm monitoring.
- Supporting people in the community.
- Working with partners in health, social care and 3rd sector.
- Developing the use of TEC.

4.2 Stakeholders

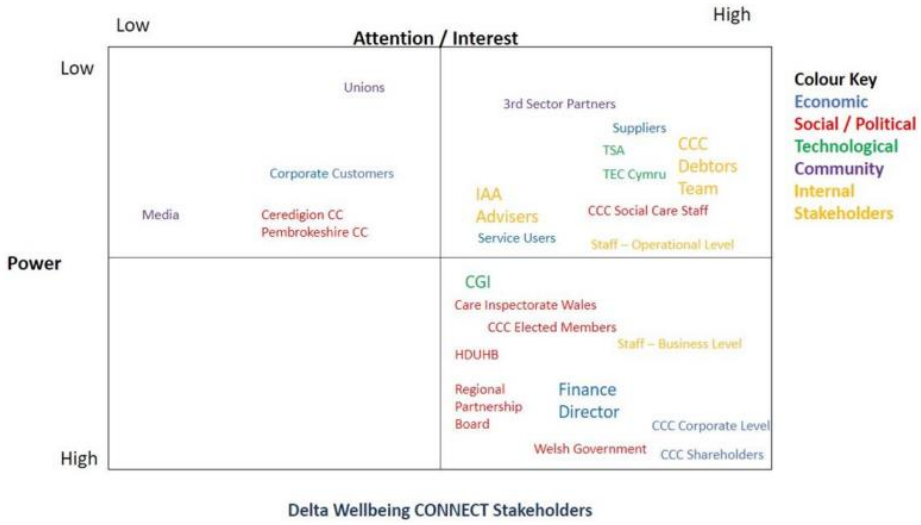


Figure 4.1. Stakeholders.

4.3 Context and challenges

In 2022 Delta began a digital transformation programme, initiated by the planned UK switch from analogue to digital telephone lines in 2025, it has been expanded to encompass all areas of the business, including Delta's work with other organisations. This work is reliant on digital technology and the successful implementation of digital services is key to Delta's continuing success. Delta has been successful in implementing relatively small-scale pilot projects in telehealth to support people with chronic obstructive pulmonary disease, heart failure and other conditions and has also successfully implemented a programme of support for people who are digitally isolated. While these projects have been successful at a regional level, they have so far failed to be adopted and spread more widely.

Table 4.1. The four Vs of Delta (Source: author's own).

Type	High or Low?	Detail
Volume	High	35000+ alarms monitored 750+ telehealth patients.
Variety	Low	Limited variety in service delivered.
Variation	Low	Limited variation in activities – 90% of telecare users have the same kit and service.
Visibility	High	Mistakes in service provision – particularly alarms – could be highly visible and impactful.

Table 4.1 illustrates how most of Delta's activities are high volume, with over one million alarm activations responded to per year from over 35,000 clients, but low in variety of service and variation of activities and equipment. The visibility is potentially very high, as a mistake could lead to the death of a client. Using digital technologies to improve service provision, resilience and safety is essential to Delta's long-term development.

This research is intended to provide guidance to Delta and other organisations on overcoming the inhibitors and promoting the enablers to implementation of digital health and care services.

5 Findings

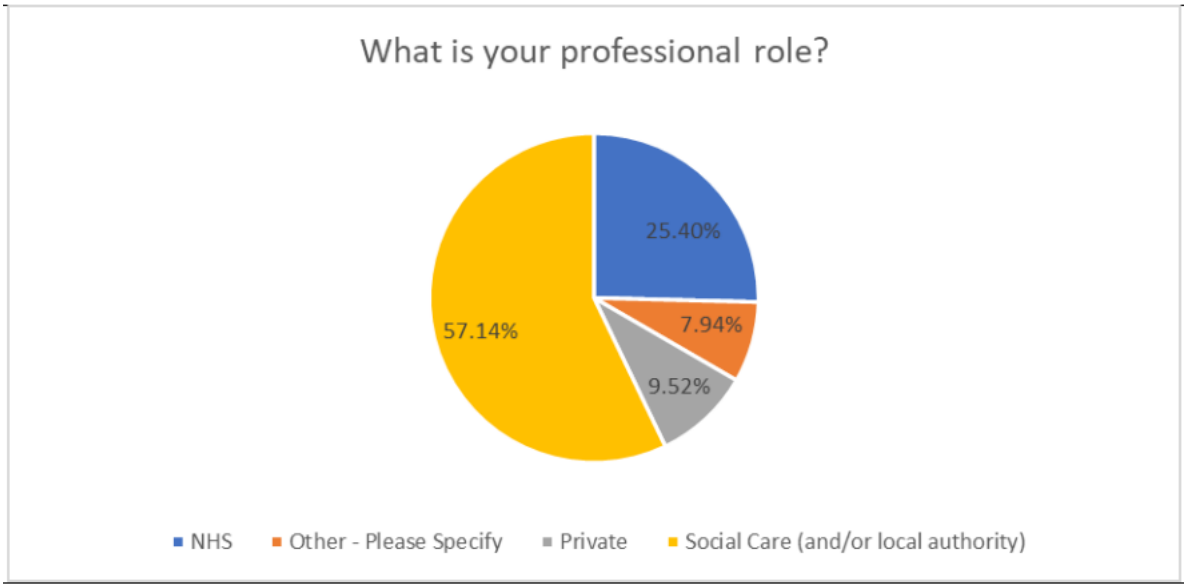
This chapter will present the research findings to show the reader the raw data returned by informants. The next chapter will discuss these findings against the existing literature reviewed in chapter 2.

5.1 Survey responses

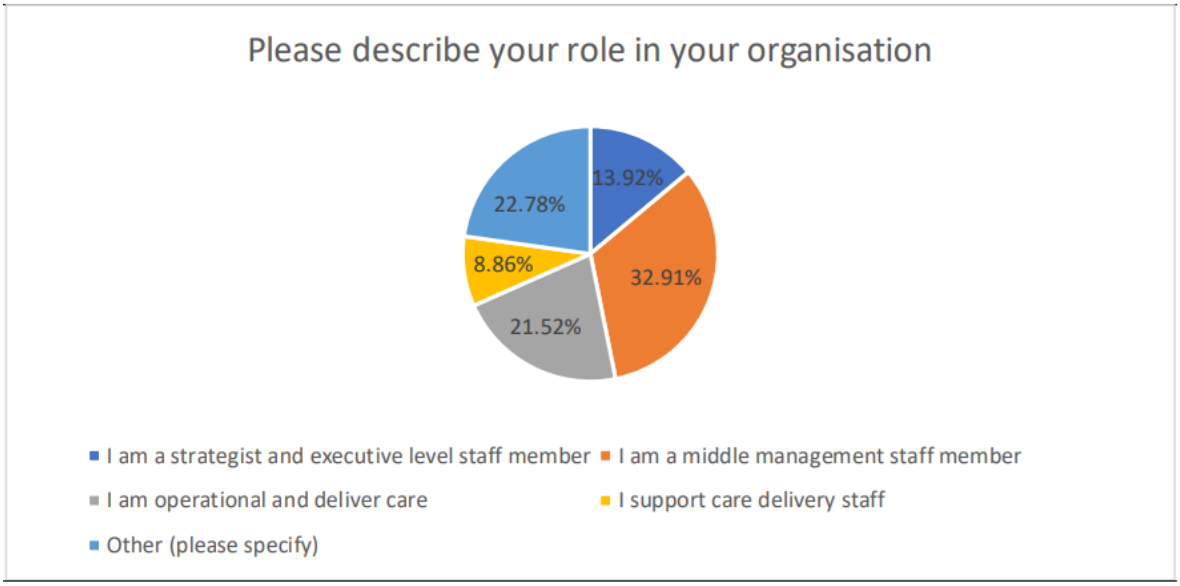
There were 63 completed responses and the average time to complete the survey was four minutes and eighteen seconds.

5.2 Background

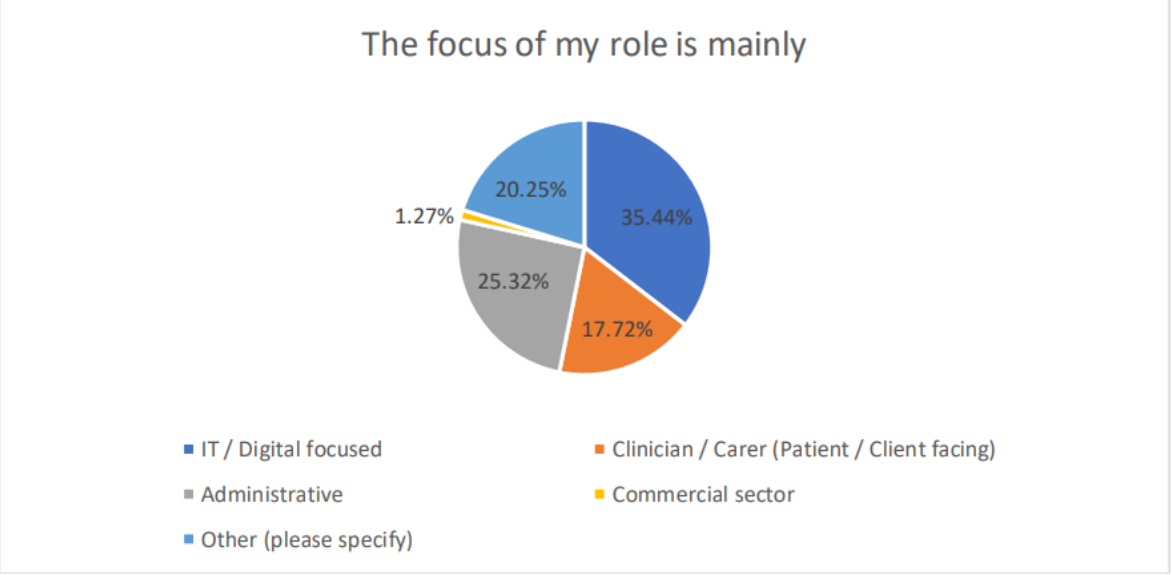
The initial questions were designed to understand the background of the respondents.



1. There were more respondents from social care than any other sector. This is likely to be as a result of a strong response to the survey from staff at Delta Wellbeing.

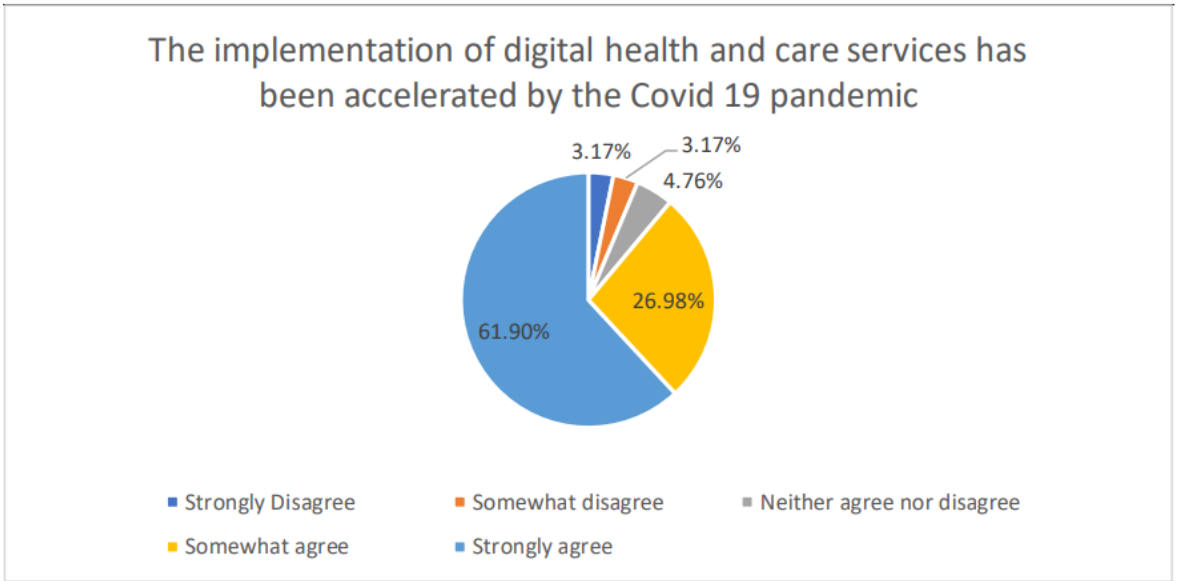


2. There is a fairly even split between role types. The use of LinkedIn to share the survey may have positively contributed to higher proportion of middle management staff respondents.

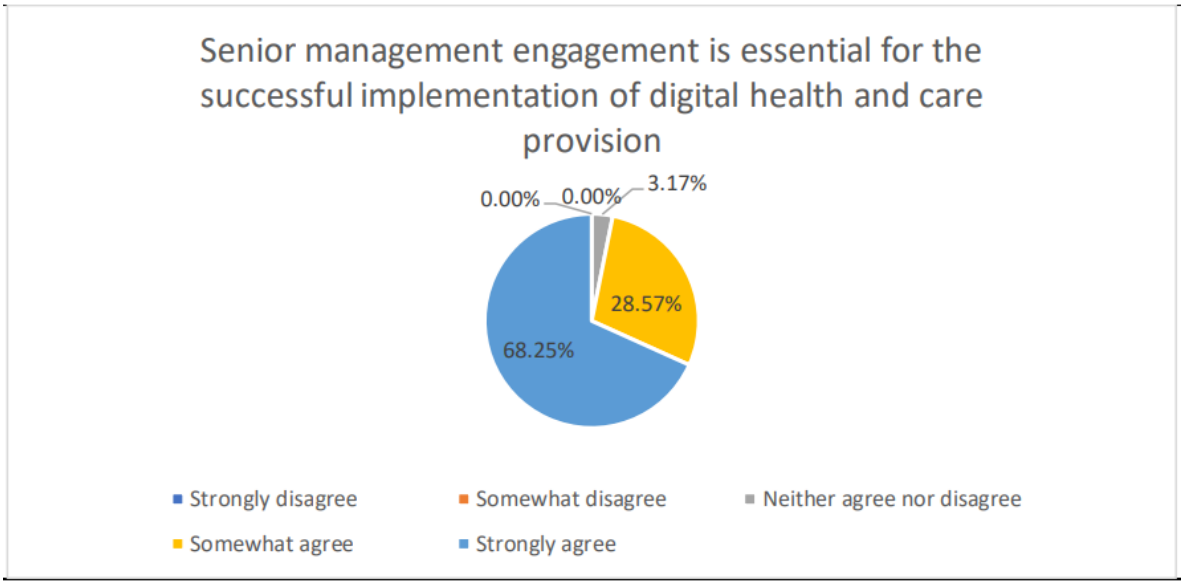


3. This shows a higher proportion of respondents in an IT / Digital focused role, who could be more likely to respond to a digital focused survey request.

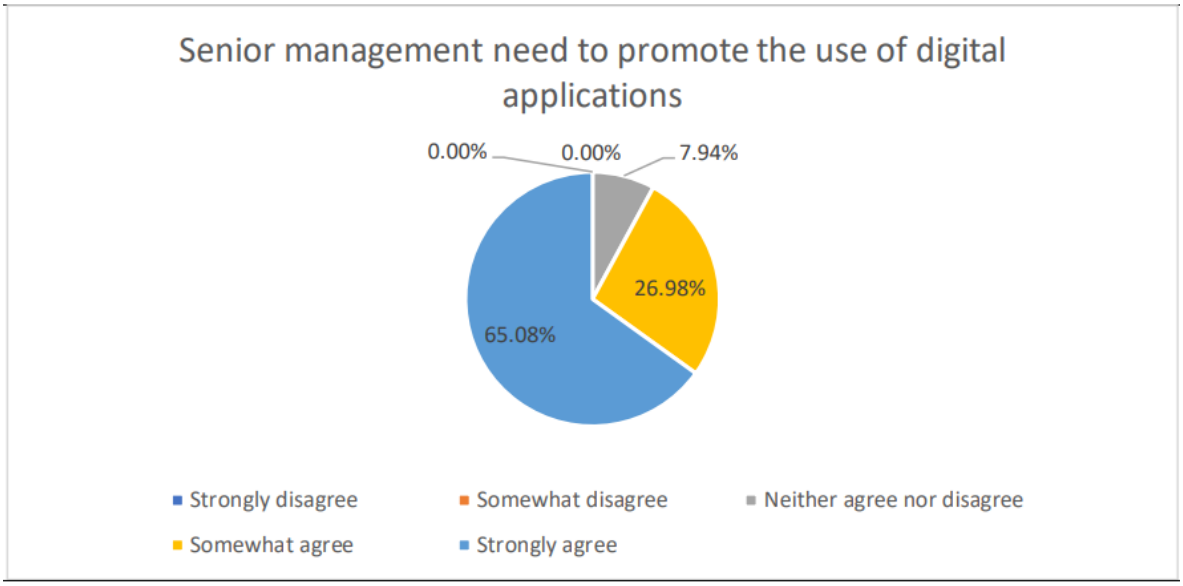
Perception of respondents.



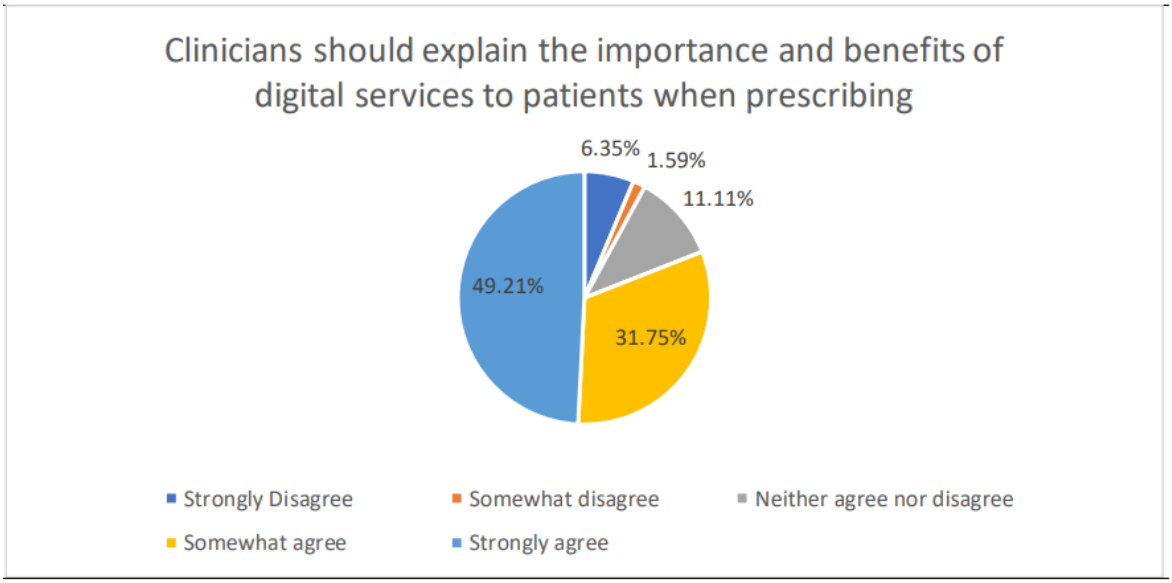
4. This chart shows a very strong response agreeing that the Covid-19 pandemic accelerated the implementation of digital health and care services.



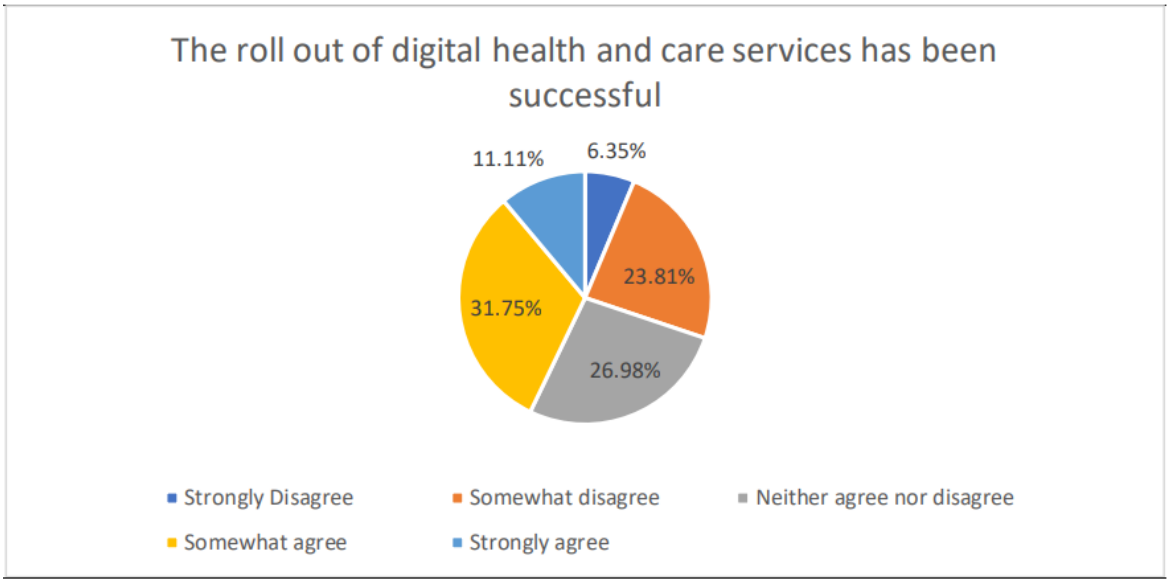
5. 97% of respondents agree that senior management engagement is essential, this shows an appreciation that organisations require direction to implement change.



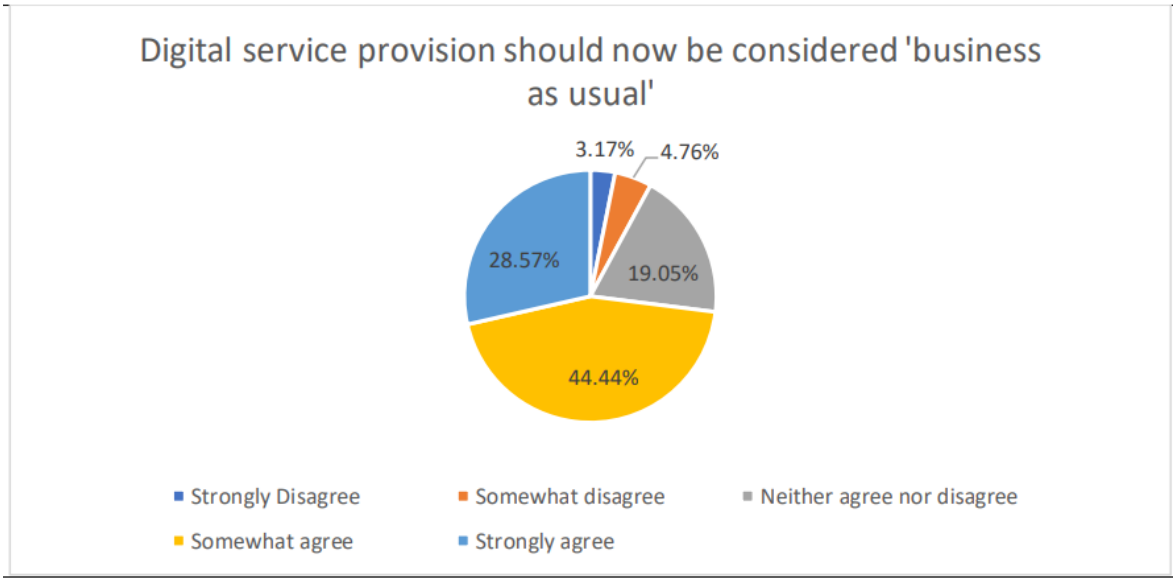
6. 92% of respondents agree that specific promotion of the digital agenda is essential from senior management to ensure adoption of digital applications.



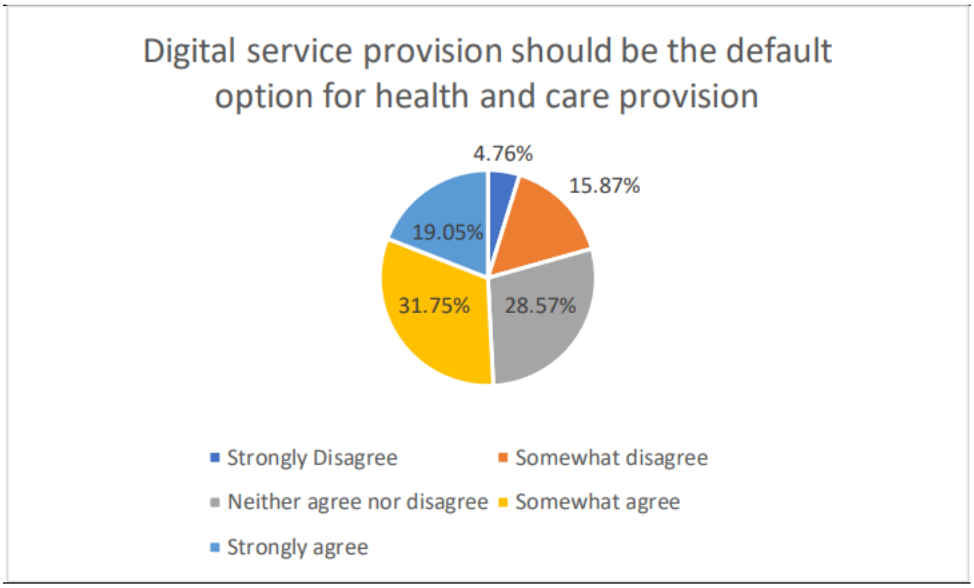
7. Over three quarters of respondents agree that clinicians should explain the importance and benefits of digital to patients. This demonstrates recognition of the importance of the doctor / patient relationship in transformation of service delivery.



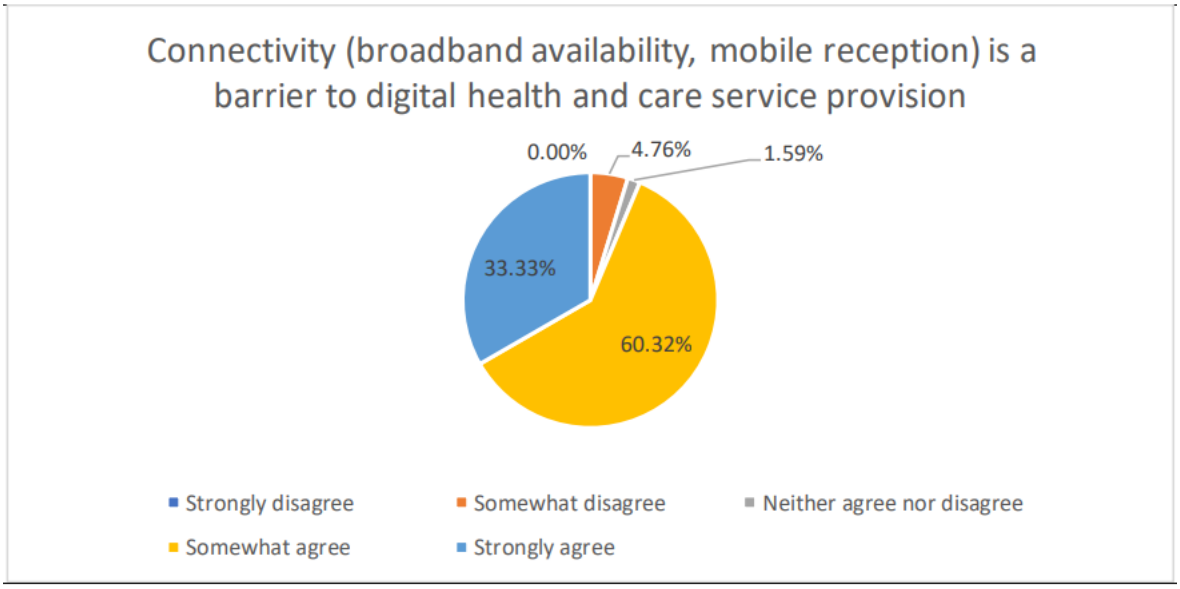
8. There was a broad spread of opinion on whether digital rollout has been successful, showing that opinions can differ based on experience and individuals' definitions of success.



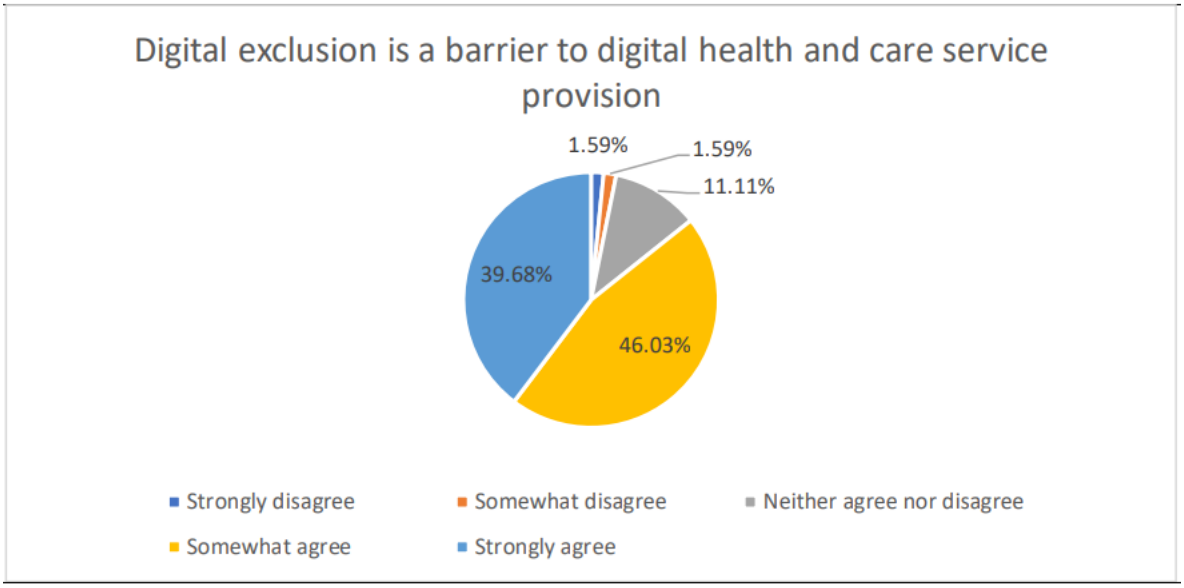
9. 73% of respondents agreed that digital service provision should be business as usual. This shows a clear majority have accepted digital as the norm in health and care.



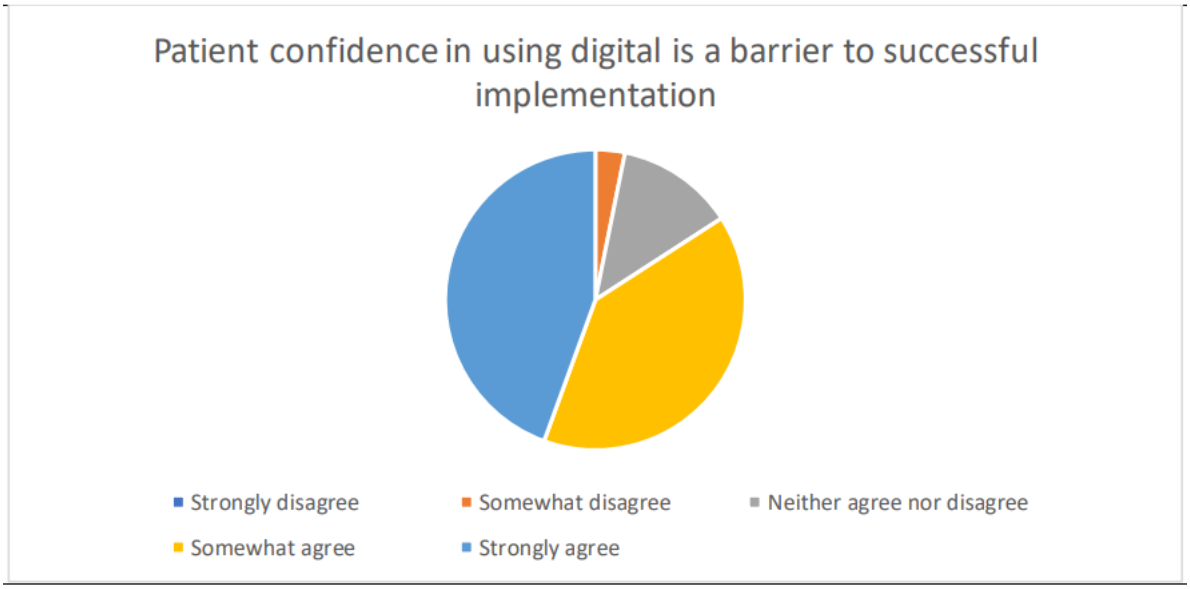
10. A small majority, 51% agree that digital service provision should be the default option, but over a quarter neither agree nor disagree, showing that many respondents feel that digital may not always be the best choice.



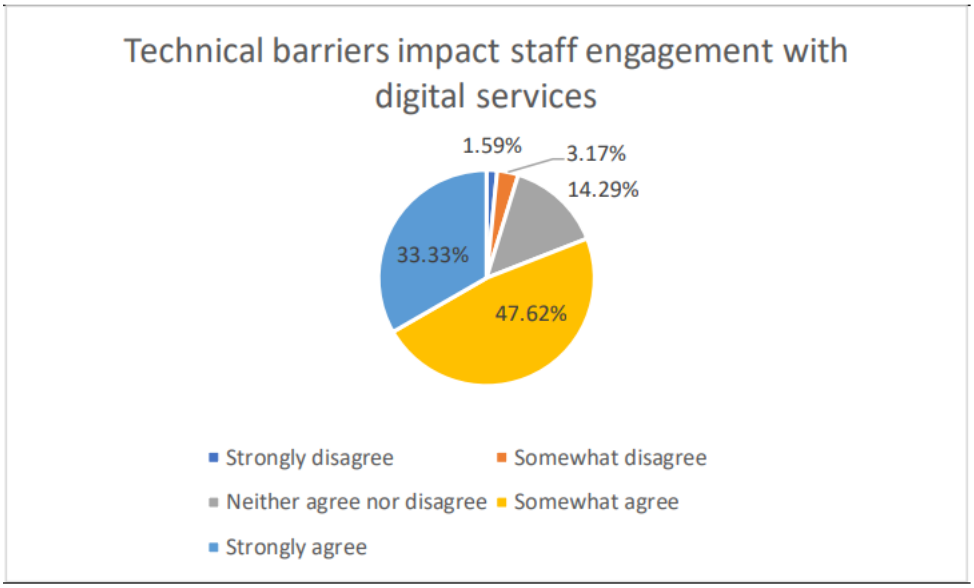
11. 94% of respondents agree that connectivity is a barrier, showing that there is a strong perception that a lack of connectivity is a major issue to be addressed in the implementation of digital health and care service provision.



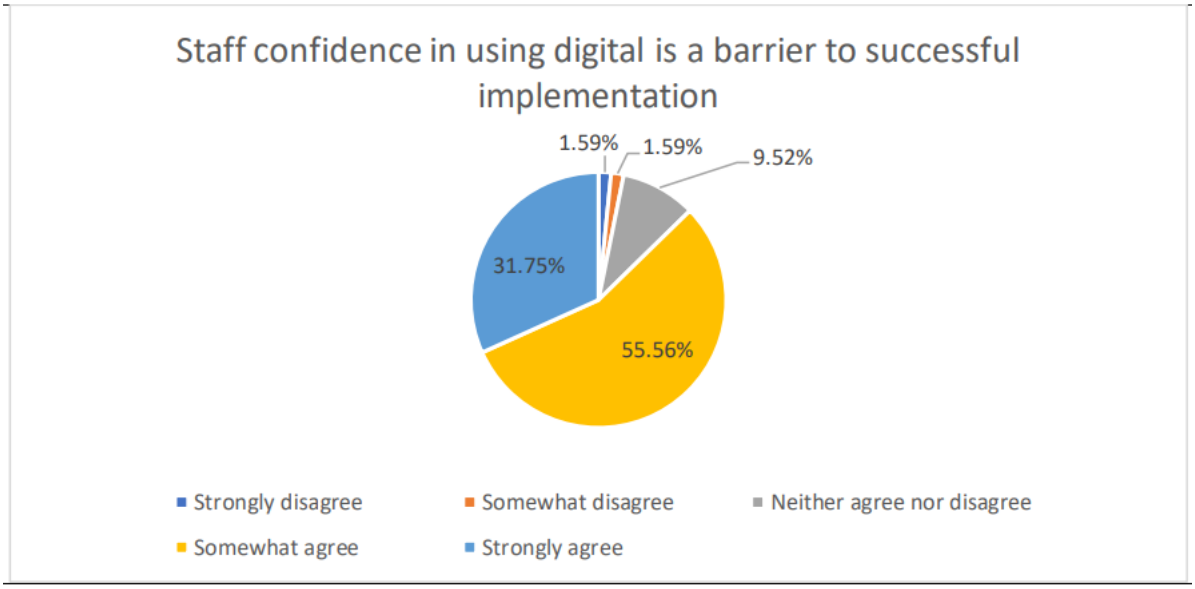
12. 85% of respondents agree that digital exclusion is a barrier, demonstrating that there is real concern amongst health and care staff that access to digital can hinder patients' ability to access services.



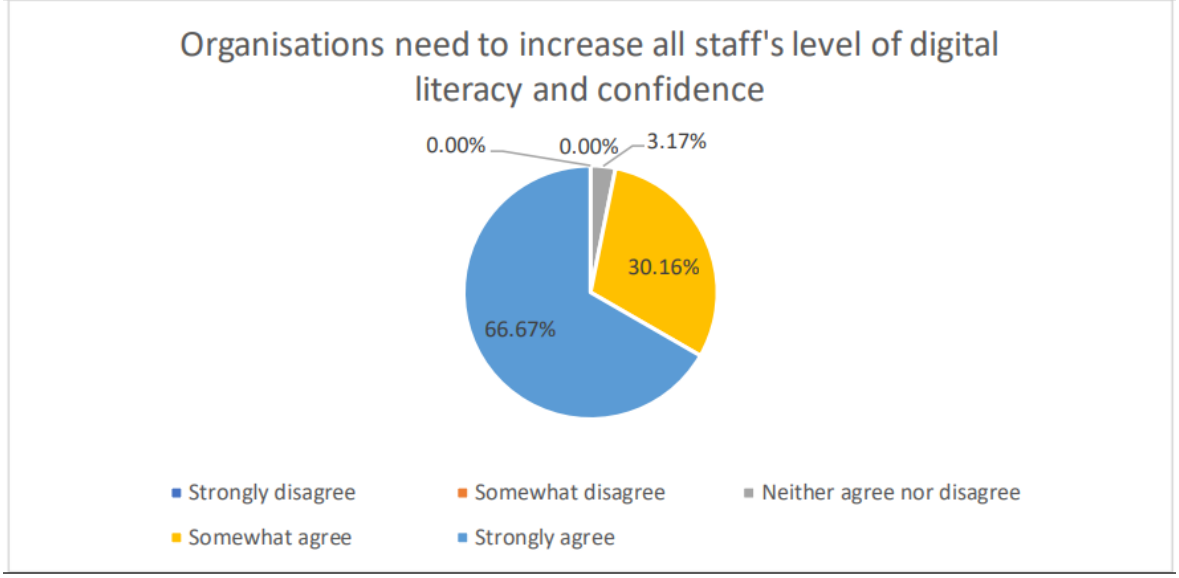
13. Over three quarters of respondents agreed that patients' digital confidence is a barrier, demonstrating concern over digital literacy levels amongst patients.



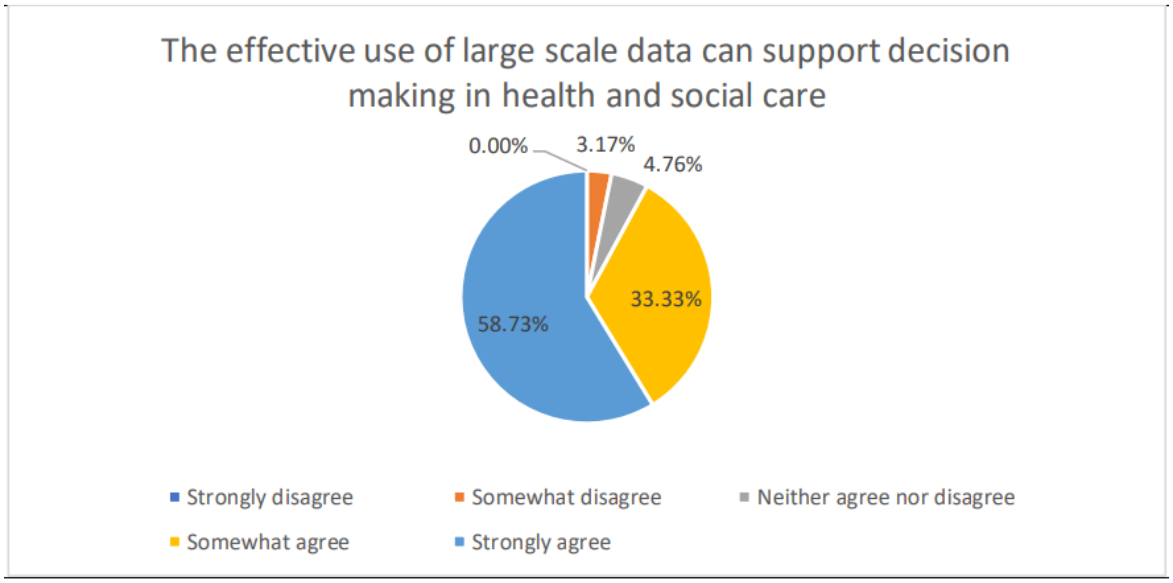
14. 81% of respondents agreed that technical barriers impact staff engagement, a perception developed from experience and / or hearsay.



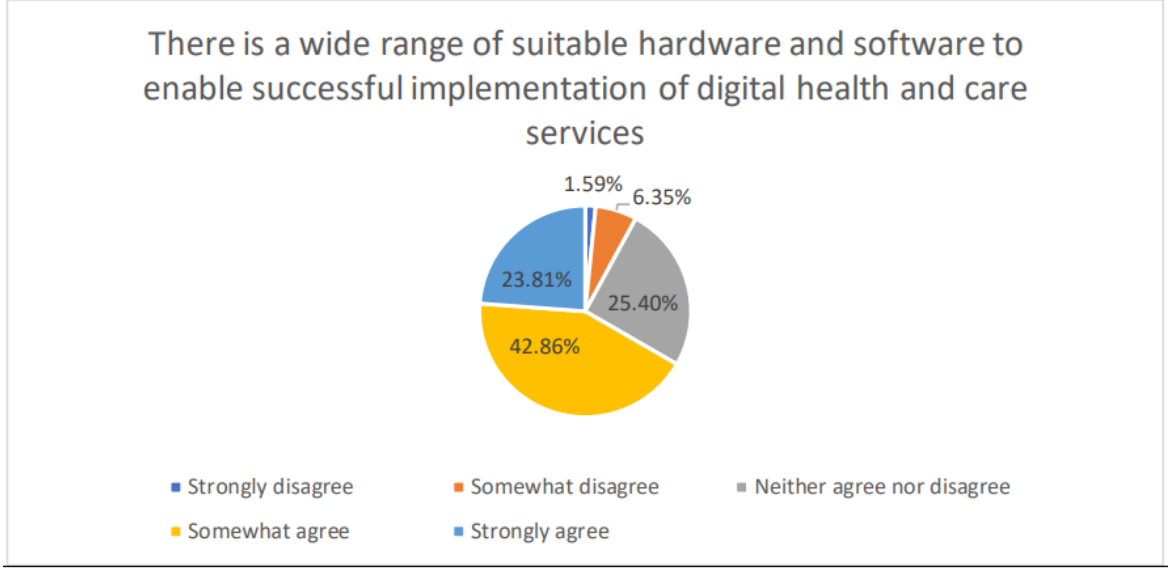
15. The overwhelming majority of respondents agreed that staff confidence in using digital is a barrier even though the majority of respondents scored their own digital literacy highly.



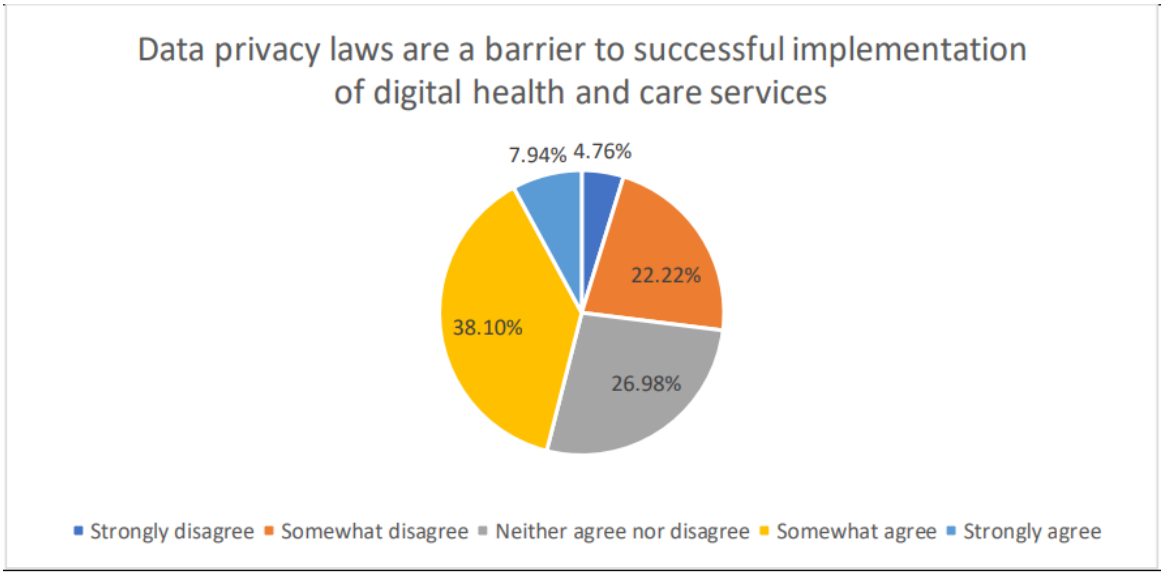
16. Almost all respondents agreed that organisations need to increase all staff's level of digital literacy, showing a high level of importance being placed on digital literacy in health and social care provision.



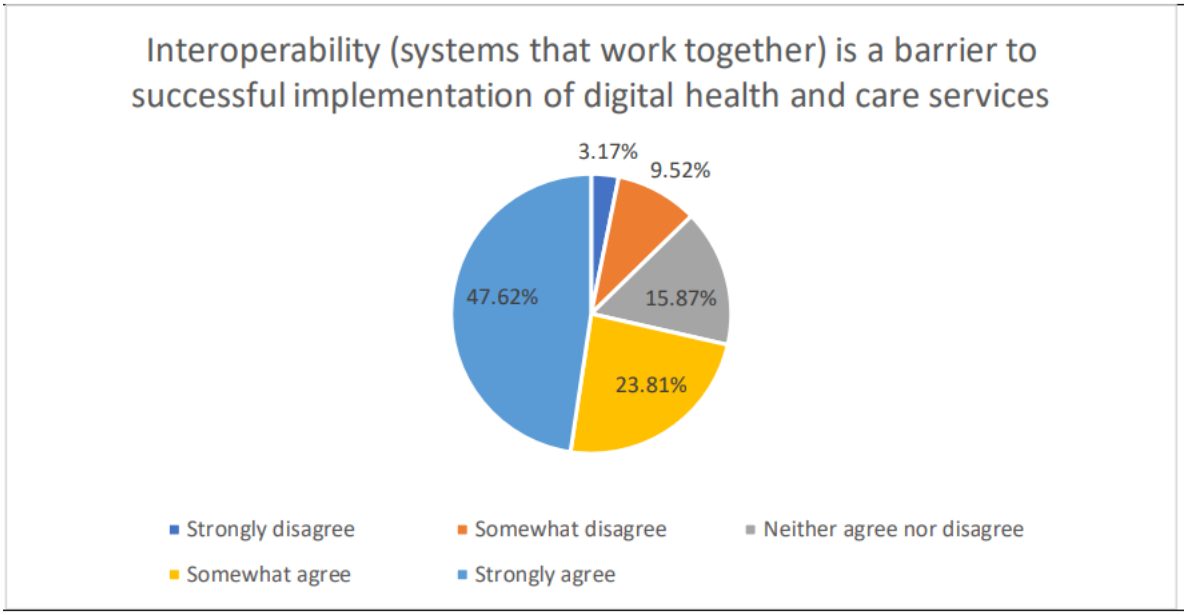
17. The vast majority of respondents agreed that the use of large-scale data can support decision making in health and social care, demonstrating that there is an appreciation of the potential to harness the power of the data that is generated.



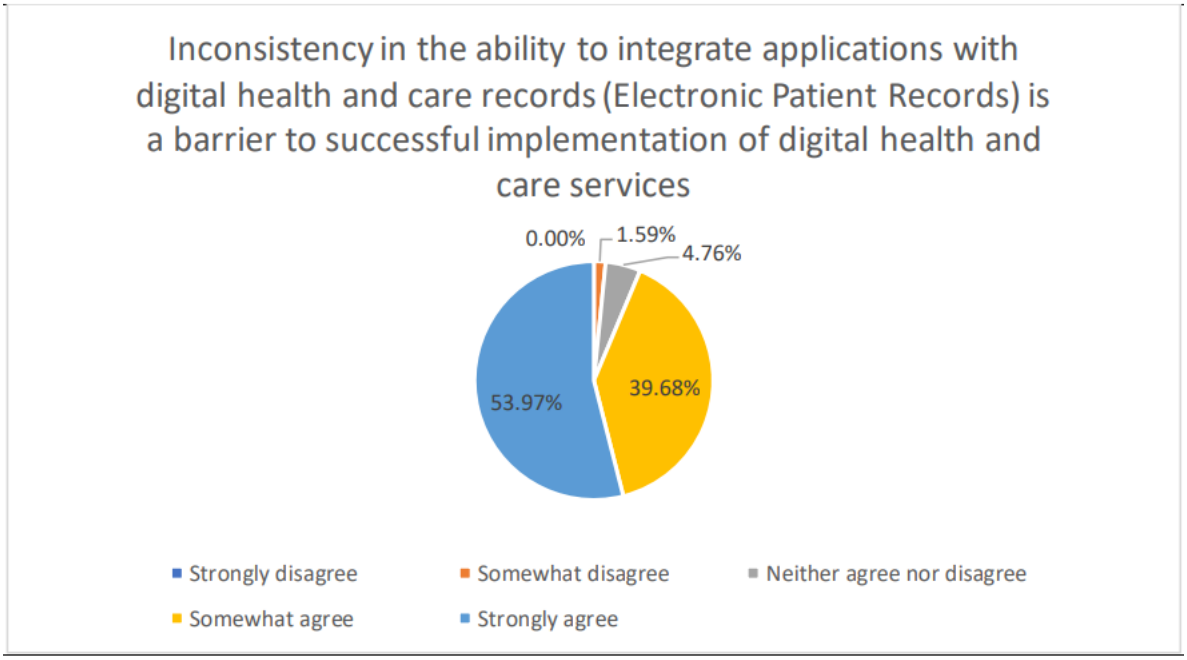
18. The majority of respondents agree that there is a range of suitable hardware and software, showing a general acceptance that technology readiness is at a suitably advanced level.



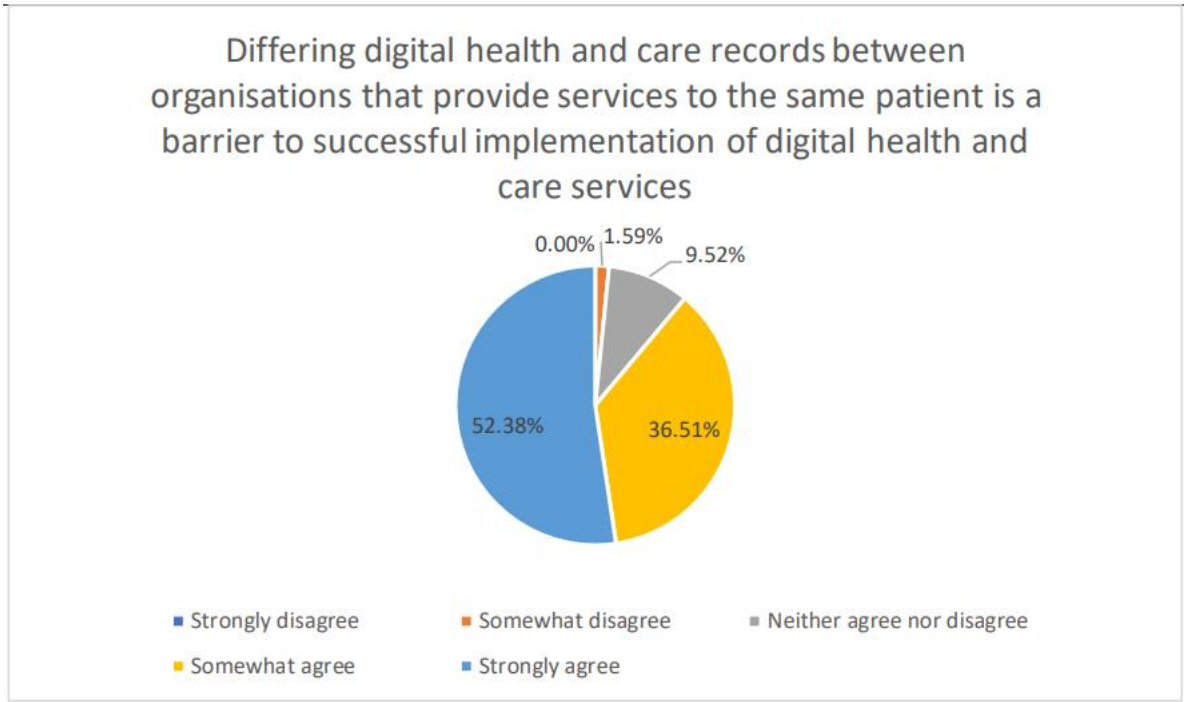
19. A minority of respondents believe that data privacy laws are a barrier to implementation of digital health and care services. Significantly, over a quarter neither agree nor disagree, perhaps demonstrating an uncertainty about their impact.



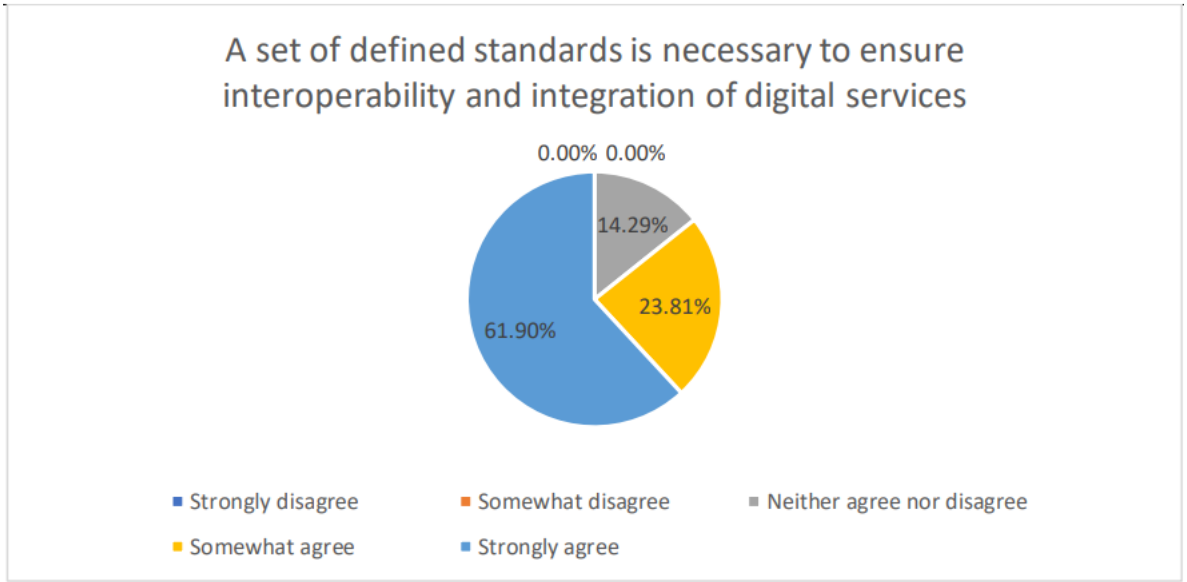
20. The majority of respondents agree that interoperability is a barrier to successful implementation. This shows a widespread recognition that different systems need to work together.



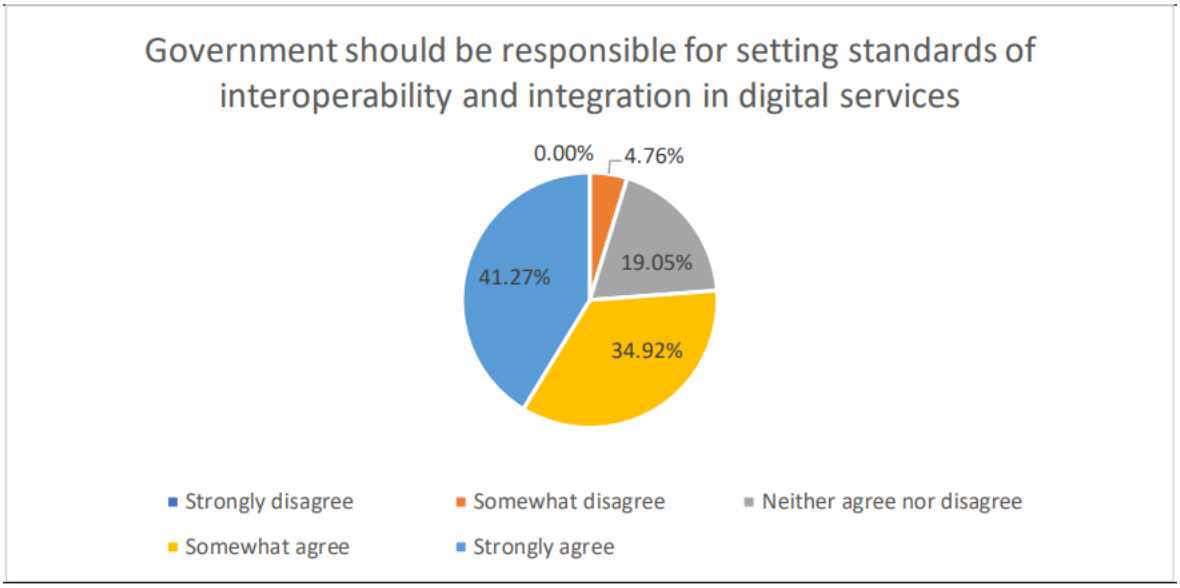
21. Almost all respondents agreed that inconsistency in integration capability is a barrier. This demonstrates an awareness of the importance of integration of systems and the challenges that currently exist.



22. Almost 9 in 10 respondents agreed that differing health records between organisations are a barrier. This aligns with the general acceptance that interoperability and integration of systems is a barrier to successful implementation.



23. The majority of respondents agree that a defined set of standards is necessary. This corresponds with the other responses around interoperability and integration, as a set of defined standards would make integration of systems much easier to achieve.



24. Most respondents agree that government should be responsible for setting standards of interoperability. This result tallies with interviewee 2's experience of the successful implementation of banking technology standards set by government.

This chapter has presented the findings, and the next chapter will use this data to answer the guiding research questions of this study and its contribution to our understanding of digital service development in health and social care.

6 Discussion

The question: What enables or inhibits successful implementation of digital health and care service delivery?

Discussion

This report will categorise inhibitors and enablers of successful implementation as defined by Greenhalgh et al (2017), "technology inhibitors, patient inhibitors, staff inhibitors, team inhibitors, business and financial inhibitors, and governance and regulatory inhibitors". In many cases the enabler may appear to be as simple as removing the inhibitor, but the reality is more nuanced and requires a significant level of consideration and analysis. A list of enablers and inhibitors is provided in table 6.1.

Table 6.1. Enablers and inhibitors.

Enablers	Inhibitors
A set of defined standards	Lack of interoperability
Simple user interface	Organisational divisions
Leadership	Data protection and information governance regulations
Organisational culture	Connectivity
Improved digital literacy	Digital poverty
Doctor patient relationship	Low levels of digital literacy and confidence
	Lack of confidence in technology working as it should
	Safety concerns
	Complex nature of finance and cost within health and care

The survey and interviews sought to identify respondents' perceptions in these areas and whether they are still relevant in 2023. There is significant crossover between inhibitors and enablers, particularly between technology and regulatory inhibitors, where systems have been designed to protect patients' data in line with data protection laws, not to share it easily with other systems.

Technology

One of the biggest inhibitors facing an integrated health and social care system is interoperability of systems and devices (Woods et al, 2023). The 'holy grail' of integrated health and care systems is the holistic or 360-degree view of an individual. With multiple organisations being involved in the care of patients, each using different systems, often developed prior to integration of services, it is impossible for clinicians to see everything that is happening in a patient's care to be able to make fully informed decisions. As interviewee 2 stated "the organisational divisions and the structures of the organisations are a barrier". Many organisations are seeking to create a single view of a patient, but a lack of interoperability is often cited as an issue (Woods et al, 2023). This was confirmed by respondents to the survey, almost three quarters of whom either agreed that interoperability is an inhibitor, and 94% agreed that inconsistency in the ability to integrate applications with digital health and care records was a barrier to successful implementation of digital health and care services. This strong response may have been influenced by the proportion of respondents who work in technical roles and by the clinicians and care providers who must regularly access multiple systems to provide care. For example, a Community Wellbeing Officer supporting early discharge from hospital for a patient may well access Delta's system to see if TEC is in place, and Eclipse to understand the level of domiciliary care provided. They then need the discharge liaison nurse to access the Welsh Nursing Care Record (WNCR) which they do not have access to.

A set of defined standards for interoperability have been recognised as an enabler by numerous papers (European Commission, 2012) this was supported by the survey results, where 86% of respondents agreed that "A set of defined standards is necessary to ensure interoperability and integration of digital services". The question of who should define these standards is less clear, while 76% of respondents felt that government should be responsible for setting the standard, only 41% strongly agreed compared to 62% who strongly agreed defined standards were needed. A small number (5%) somewhat disagreed with the statement. What cannot be understood from the survey is why not everybody felt that the government should define the standard? This could be a mistrust or lack of confidence in government's ability to successfully define the standard, possibly based on previous experience of government led standardisation or perceived IT project failures (The Guardian, 2014). Interestingly, one of the interviewees, who had significant experience of technology implementation in the private sector, cited the example of the finance sector as an instance where government defined standards had positively affected outcomes. In their view the, now standard, one week to switch bank accounts in the UK would not have been implemented without government intervention forcing banks to create systems that allowed simple switching. It could be that the same government intervention is required to align all health and social care systems for the good of the patient.

Consideration also needs to be given to whether standards should be international, rather than national in scope. There is substantial experience of standardisation in other areas of business and public sector activity, for example ISO accreditation. In this case the question is perhaps one of the willingness of countries to engage and who would lead such an exercise? The obvious answer might seem the World Health Organisation (WHO), but this would not necessarily be the choice of all countries and is outside the scope of this report.

Connectivity is one issue that is often cited as an inhibitor of digital health and care, particularly in rural areas (House of Lords, 2023). This view was borne out by the survey results, where most respondents (93%) agreed that it was an inhibitor, however evidence shows that 97% of premises in Wales and 98% across the UK have access to a 10Mbps or faster broadband connection (Senedd, 2022). The experience of the CONNECT project in West Wales was that despite many clients' homes being in rural areas, there was rarely a problem accessing mobile phone reception for digital tablets (Digital Health, 2021). This leads to two questions, firstly, is the more significant issue that of digital exclusion through digital poverty or other reasons? Secondly, should the non-availability of a service to 3% of the population prevent delivery to the 97% of the population that can access it?

Patient

A Healthier Wales (2018) states, “health and social care services will work with them (patients) and their loved ones to find out what is best for them; we call this a ‘person centred approach’”. From the survey results it appears this approach has been accepted in health and social care, with 94% of respondents agreeing that the patient must be at the heart of any digital health and care system and 95% of respondents agreeing that the patient’s circle of care has a role to play. This approach is supported by many organisations and policy papers, including the Bevan Commission in Wales (Bevan Commission, 2019) and consideration needs to be given to how this is achieved and the impact it has on how care is delivered.

Digital exclusion was seen by 86% of respondents as an inhibitor of the implementation of digital services. This confirms what was stated in much of the literature (The King’s Fund, 2023) and was also noted by the interviewees, but what is not clear from the data is the reasons for that exclusion. Many of the respondents to the survey work either for or with Delta and as such work with predominantly older people, who evidence shows (The King’s Fund, 2023) are more likely to be digitally excluded. Health and care systems need to address the needs of people of all ages and problems of digital poverty need to be considered (Ibrahim, et al 2021) for both patients and their circle of care. Identifying all members of a patients circle of care and their level of digital literacy is likely to be an almost impossible task and perhaps a wider programme of improving digital literacy, regardless of use case is required. This is likely to be of benefit to other areas of the community such as business, industry, and education. Interviewee one listed “willing people” as the most important enabler and pointed out that as the tech savvy middle-aged people of today age, they will be more likely to willingly accept digital technology service provision in future.

Patient confidence in using digital applications was considered an inhibitor by 84% of respondents, which aligns with the data on digital exclusion – how can somebody be confident in using something that they are excluded from? The CONNECT project found that when people with no prior experience of digital technology were provided with an electronic tablet, they were far more likely to continue using it if the initial training in using the device was followed up with further contact to address any challenges or if they were supported by a digitally confident family member.

The relationship between doctor and patient is key to the successful adoption of digital technology by patients. A Nuffield Trust (2023) survey found that 81% of respondents always had trust in the doctors treating them and this trust needs to be leveraged to promote the adoption of digital services by patients and their circle of care, this assertion is supported by 81% of respondents to this survey who agree that clinicians should explain the importance and benefits of digital services to patients when prescribing. Further, a study by Gyorffy et al (2020) found that some digitally engaged physicians felt that digital healthcare solutions could help to create a deeper doctor-patient relationship, particularly in light of the aim of encouraging greater participation and involvement of patients in the creation of their care package. This point emphasises the importance of ensuring full support for digital services from staff, which will be discussed in the next section.

Staff and team

There are numerous factors to consider when identifying the staff related inhibitors to digital implementation:

- Staff confidence in their ability to use digital technology.
- Their acceptance that using digital technology is the best way to provide the service to the patient.
- Their confidence in the technology working in the way that it should.
- Acceptance of the safety of the technology.

Responses suggest a majority view that staff confidence in using digital technology is a major inhibitor to implementation, with 86% agreeing, this aligns with evidence of previous research (McAlearney et al, 2012). The survey identified an average score for level of digital confidence amongst respondents of 70 out of 100, however 35% of respondents considered that their role was digital or IT focused. Amongst the remaining 65% of respondents the average level of digital confidence was still 68. This figure may also be misleading, because the survey was completed online on either a PC or mobile device, which implies some level of digital confidence of the respondent. 60% of non-digital respondents scored themselves 70 out of 100 or higher for digital literacy and only two respondents scored themselves below 30, suggesting a high degree

of digital comfort amongst respondents. Despite these high figures 97% of respondents agreed that "organisations need to increase all staff's levels of digital literacy and confidence. This suggests that while respondents may be comfortable with their own digital literacy, they feel that colleagues are not at the same level.

Consideration should also be given to the wide range of roles amongst social care and allied health professionals. To successfully implement digital health and care service delivery organisations need to involve all aspects of the services, and all staff need to be capable of using digital technology where necessary for their role. This could be as simple as using a device to set temperatures within estates or more complicated, but in many cases staff in health and care are recruited without a requirement for digital skills, because the role did not previously require them, and person specifications have not evolved. A Royal College of Nursing (2017) report identified four key factors in improving digital literacy amongst staff: leadership within an organisation, informal and social learning, improving access to digital and digital champions.

Use of digital technology must not be seen as an added burden for clinical staff. Hywel Dda University Health Board implemented a trial of a telehealth remote monitoring system for patients with COPD, heart failure and diabetes in 2021. Interim results reveal higher than usual levels of patient adherence to their care plan, this has been in part due to the use of a third-party installer (Delta) to provide patient training, enabling the clinician to focus on clinical issues, and to the proactive call system maintaining regular patient readings.

Cingi et al (2015) identified that a user interface that resembles consumer technology, such as social media applications can improve the chance of successful adoption. This is backed up by the survey which showed that 81% of respondents believe that technical inhibitors impact staff engagement, and by interviewee one who stated, "if the technology's not user friendly, then people are not going to use it", and was also looking at this from a patient and circle of care perspective.

From an initial view of the data, just over half of respondents agree that digital should be the default option for service provision, however there were a high proportion of respondents that are neutral on the question (29%). Closer analysis of the data shows that, perhaps surprisingly, there is limited variation in responses between those in clinical or digital focused roles, given that Booth et al (2021) cited "some nurses' reluctance to adopt digital approaches to healthcare". Further research is needed to understand the reasons for this.

Attitudes to the acceptance of transformational technology were tested with a range of questions that relate to areas of technology that are topical. There has been significant publicity about the use of artificial intelligence (AI) and machine learning in recent years, which has escalated since the launch of the ChatGPT application in November 2022 (Forbes, 2023). AI has been promoted as a potential solution to numerous challenges and has also been cited as a threat to jobs (Wilson et al, 2017), so is a subject which can elicit strong opinions. The survey sought to understand respondents' attitudes to AI in a health and care setting with two questions, one that views AI in a positive light and one that highlights AI as a potentially high-risk option. Surprisingly, given the sometimes-negative narrative around AI, responses were generally positive towards AI with only 3% strongly agreeing that AI is too high-risk for use in health and care, and only 10% disagreeing with the statement that AI and virtual reality applications have the potential to positively transform the way that health and care are delivered. This may be due to the already accepted use of AI in X-Ray and mammogram scanning to support radiologists, or possibly an acceptance that AI could be used for repetitive tasks such as ordering and administration (Davenport, 2019).

Over two-thirds of respondents agreed that digital service provision should now be considered business as usual, but it is not. This response raises the question of how to create a culture within an organisation of digital being business as usual, of acceptance of transformative technologies. The NASSS framework identifies leadership as being at the core of an organisation's culture and the survey data supports this with 97% of respondents agreeing that senior management engagement is essential for digital success and 92% believing that senior management should be promoting the use of digital applications (Greenhalgh et al, 2017).

Business and financial, government and regulatory

Calculating the costs and benefits of any type of health and care service provision is made more complex by an integrated health and care system. Where a normal medical intervention might be measured using

quality of life (QoL) measures such as EQ-5D (EUROQOL, 2023), this is more difficult when multiple co-morbidities, organisations and interventions are involved. For example, if a social care worker refers a person living with very mild frailty to an occupational therapist and they are provided with a smartwatch and an exercise plan, this may have the effect of slowing the progression of their frailty. This may mean the person is able to continue living at home independently for longer before needing more support from statutory care. It may also mean that they are less likely to suffer a fall and require an ambulance call out, hospital treatment, hospital stay and an increase in domiciliary care on discharge. Although the initial cost of the intervention has been borne by the occupational therapy team, the benefits have accrued in multiple organisations, and in the community more widely through increased economic output.

A report by the NHS Confederation (2022) found that for every additional £1 investment in primary and community care, there is a £14 increase in Gross Value Added. This is pertinent in the implementation of digital health and care service provision, because in some cases the investment cost in digital appears relatively high. The survey responses suggest that more than half of respondents believe digital services provide good value, but interestingly 32% of respondents neither agreed nor disagreed. This may be, at least in part, because most people do not know how much digital service provision costs. In some cases, it can be difficult to know what the true cost of a digital service will be at scale. There have been many pilot studies, which are often short term and grant funded and regularly fail to move beyond the pilot phase despite positive outcomes (Dang et al, 2020; Sacchi et al, 2023). Further consideration needs to be given to how successful pilot studies can be adopted and spread more effectively.

Awareness of data protection regulations in the UK has grown significantly since the introduction of the General Data Protection Regulations (GDPR) in 2018 (Petrosyan, 2022). This awareness manifests itself both amongst patients and amongst those who care for those patients or their data. It has been recognised at a UK Government level that GDPR presents challenges to organisations in the complexity of the regulations and the activities to which it applies. The 360 view of a patient is not possible without data sharing amongst organisations, and this is a challenge due to the complexity of ensuring the protection of any data and the responsibility of the organisations holding and processing it. The survey data shows a very high level of support (91%) for the contention that the effective use of large-scale data can support decision making in health and social care, but a comparatively low level of concern that data protection regulations are a barrier (46%). This may align with an acceptance that data protection is important and the greater level of awareness of data protection mentioned earlier. Further research is needed to understand respondents' views on the best way to harness the power of data while protecting patients' rights. Peek et al (2020) noted the impact of short-term exceptions to the use of patient data during the Covid-19 pandemic for the wider benefit of the public. A longer-term exemption utilising anonymised or pseudonymised data could be used to enable the development of large-scale datasets, like SAIL databank, thus enabling the development of digital twins, data modelling and machine learning.

A further opportunity is provided by the devices that patients already own themselves. As well as the obvious financial advantage for health and care providers of not needing to provide digital devices, smartphones and smartwatches are constantly recording data relating to the activity levels of users. Smartphones can monitor steps and sleep patterns, and smartwatches increase the parameters significantly to include heart rate, hydration levels, pulse oximetry and other data points depending on the device. This data could be used by clinicians to understand a patient's situation more accurately and with greater context, as described by interviewee one, who used the example of conversations with a GP, providing them with heart rate data from a smartwatch. Use of data from the patients' own devices presents some data protection challenges, although these should not be insurmountable, but also some technical challenges. The interoperability challenges that were discussed earlier in the report would need to be overcome, patients' own devices could be from any manufacturer, and even if they use one of the main operating systems, such as Android, iOS or Tizen, the system architecture for holding the data will vary across devices and providers. A method of capturing the relevant data will need to be designed and deployed.

The impact of the Covid-19 pandemic

The impact of the Covid-19 pandemic on the use of digital devices, online meeting platforms and social media has been widely reported (Vargo et al, 2020). There has also been some early research on the impact of the pandemic on the implementation digital health care service delivery, and how inhibitors were removed, and enablers promoted. The survey showed a very strong perception amongst respondents, 89% of whom agreed that the pandemic had accelerated the implementation of digital health and care service delivery.

Peek et al (2020) argue the rapid transformation of service delivery at the beginning of the pandemic is proof that digital health technologies had already reached a sufficient level of maturity to be able to be deployed at speed and scale. Although this assertion assumes that those technologies were all successfully deployed, it could be argued that the known success of numerous technologies e.g., Attend Anywhere (TEC Cymru, 2022) proves a more general readiness. Although survey respondents mostly agreed that there is a wide range of suitable digital hardware and software for digital health provision there was a significant proportion who appeared unsure (25%). This could be because many members of staff are not involved in the selection of technologies, they use whatever they are told to use. The level of maturity in the market should also be considered, many respondents work at Delta and are involved in the use of telecare equipment. The telecare market is relatively stable, with limited disruptive innovation (Christensen, 2009) seen in its 40-year history, compared to other recent developments in mobile technology, social media, and wearable technology.

Conclusions

This chapter has demonstrated that the survey and interview findings align with the expectations of the researcher overall, based on the existing literature. Greenhalgh et al's (2017) categorisation of enablers and inhibitors as technological, patient, staff and, business, financial and regulatory remains apposite.

What is clear from the findings is that acceptance of digital technology in health and care service delivery is at a high level amongst respondents and that the acceleration of adoption caused by the pandemic has shown that the technology is ready to support service delivery in this way.

The next chapter will conclude this study and explore the implications of this work on professional, governmental, and academic stakeholder groups.

7 Conclusions

7.1 Summary of key findings and relevance

The findings of the study support the points made in the development of a new conceptual model in Chapter 2.

- Greater acceptance of digital by public and professionals.
- Improved access to digital technologies for patients.
- Greater confidence in use of digital technologies by patients and staff.
- Technologies that had rarely been deployed for more than a pilot study have become the norm, e.g., Attend Anywhere, Microsoft Team.
- A greater willingness to try new technologies and processes due to the 'transformation agenda'.
- An increased awareness of data protection considerations.

There is a general acceptance amongst respondents that digital service provision has a significant part to play in health and social care, and that improved access to digital technology supports this.

The data shows a high level of confidence in using digital technologies amongst respondents, however there is a clear belief that digital literacy amongst staff needs to improve. Further research is necessary to understand the true level of digital literacy using an accurate measure and to guide where that improvement effort should be targeted.

Further research is needed to understand whether willingness to try new technologies and processes due to the 'transformation agenda' is a longer-term trend or solely a brief change caused by the Covid-19 pandemic.

Research is needed into how people who are middle aged now expect health and care services to be delivered in 10 to 15 years' time when they are in their sixties. There are a significant number of older people who are digitally excluded or have low levels of digital literacy, but the proportion of people meeting those criteria in that age group in 10 to 15 years' time will be much lower. It may be that programmes to improve digital literacy amongst patients only need to be planned for 5 to 10 years or perhaps there should be a greater focus on younger age groups.

There needs to be greater clarity and support provided by government on information sharing for the wider benefit of health and social care, this would remove an inhibitor to collaboration amongst health, social care, academics, and the commercial sector and accelerate the implementation of digital health and care service delivery.

7.2 Improvements

If more time had been available for the study, it would have allowed a greater number of interviews to further investigate and contextualise the survey results.

A more in-depth analysis of the data using data science programmes and techniques could have provided a greater level of understanding of responses according to age, role, or seniority level.

Future research could focus more specifically on one of the four areas of technology, staff, patient, and financial/regulatory/government, thus allowing a more detailed analysis of perceptions.

7.3 Implications for Delta

The study results show that Delta's strategy of digital transformation is focused on areas that are relevant to digital health and social care service provision.

Specific areas of focus that would support Delta Wellbeing's further development are:

- Development of tools to measure the clinical and financial impact of digital service provision.
- The development of interoperability standards to aid the integration of Delta Wellbeing's systems with those of its partners.
- Further research into use of wearable technology, its ethical considerations and use of data for service improvement.

7.4 Implications for management practice and professional service delivery

The data from the study shows that there are areas of management practice and service delivery that are perceived to have high impact on successful implementation. The areas in need of particular focus are:

- Leadership and organisational culture
- Information sharing between organisations
- Training and levels of staff digital literacy

7.5 Implications for Government Policy

- Leadership is necessary at Welsh and UK government level to create a culture of digital technology as the norm and to facilitate safe data sharing amongst organisations to reap the potential benefits that digital technology can provide to health and social care.
- Government needs to lead the development and definition of standards in digital technology to ensure interoperability and integration between systems.
- Health and care professionals are ready for digital service delivery, but leadership is needed from government and investment is required in the upfront costs of technology and in raising digital literacy levels.

7.6 Implications for university teaching

There is notably more literature available based in a healthcare setting than in social care. This may be because there is greater funding available in the health sphere, perhaps due to an environment which is more suited to corporate involvement. It could also be that it is more straightforward to measure impact, both clinically and financially in a health setting than in social care. Further consideration needs to be given to impact measures in a social care setting.

This study did not specifically focus on the acceptance of digital wearable technology. This is an area of digital healthcare which is growing rapidly and has the potential to revolutionise health and social care delivery, the ethical and legal considerations around it need further research and guidance.

Recommendations for further research:

- Research to understand the patient perceptions of the enablers and inhibitors of successful implementation of digital health and care service delivery.
- Research to support the financial assessment of technology in social care.
- Research into the true level of digital literacy amongst staff and patients to better focus programmes of training for greatest impact.
- A study to compare the successes and challenges of implementing digital service delivery for Delta and other similar organisations internationally would be useful to develop new opportunities and overcome the challenges.
- Research and development of guidelines on the use of wearable technology and the use of the resulting data.

This study has taken many hours of work and will hopefully provide the basis for others to take forward the ideas and opportunities identified within it.

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9 Appendix

Participant Consent Form

Swansea University
Prifysgol Abertawe

Project title: What enables or inhibits successful implementation of digital health and care service delivery?

Name and Contact details of the principal researcher: Gareth Rees, MSc Student at Swansea University, 2135770@swansea.ac.uk

		Participant initial
1.	I (the participant) confirm that I have read and understand the information sheet for the above study (dated …. /…. /……..) which is attached to this form.	
2.	I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reasons.	
3.	I understand what my role will be in this research, and all my questions have been answered to my satisfaction.	
4.	I understand that I am free to ask any questions at any time before and during the study.	
5.	I have been informed that the information I provide will be safeguarded.	
6.	I am happy for the information I provide to be used (anonymously) in academic papers and other formal research outputs.	
7.	I am willing for my information to be audio recorded.	
8.	I have been provided with a copy of the Participant Information Sheet.	
9.	I agree to the researchers processing my personal data in accordance with the aims of the study described in the Participant Information Sheet.	

Thank you for your participation in this study. Your help is very much appreciated.

Print name of participant	Signature	Date
Print name of researcher	Signature	Date

This study is being conducted by Swansea University, School of Management.

When complete: Original copy for participant, one copy to be retained by researcher

Swansea University
Prifysgol Abertawe

PARTICIPANT INFORMATION SHEET

What enables or inhibits successful implementation of digital health and care service delivery?

You are being invited to take part in some research. Before you decide whether or not to participate, it is important for you to understand why the research is being conducted and what it will involve. Please read the following information carefully.

What is the purpose of the research?
We are conducting research to explore what enables or inhibits successful implementation of digital health and care service delivery. The study is part of an MSc in Advanced Health & Care Management for Innovation and Transformation. The research will include undertaking qualitative and quantitative research with people working in health and social care and related services testing a hypothesis generated from extant literature. Gareth Rees will undertake the interviews and evaluation. The results will be published to support further development in this important field. Your participation in this study will take approximately ***30 minutes***.

Who is carrying out the research?
The data will be collected by Gareth Rees, MSc Student at Swansea University's School of Management. Gareth can be contacted at 2135770@swansea.ac.uk. The research has been approved by the School of Management Research Ethics Committee.

What happens if I agree to take part?

By agreeing to take part you will be asked a series of questions from a validated qualitative question set adapted from previous published papers to understand what enables or inhibits successful implementation of digital health and care service delivery. The approach will seek to gain insight into the challenges and the barriers facing health and care service providers in implementing digital service provision.

Are there any risks associated with taking part?
The research has been approved by the Swansea University School of Management Research Ethics Committee. There are no significant risks associated with participation.

Data Protection and Confidentiality
Your data will be processed in accordance with the Data Protection Act 2018 and the General Data Protection Regulation (GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher/research team.

All electronic data will be stored on a password-protected computer file on a laptop. All paper records will be stored in a locked filing cabinet at the School of Management. Your consent information will be kept separately from your responses to minimise risk in the event of a data breach.

Version 1, GDPR compliant

Swansea University
Prifysgol Abertawe

Please note that the data we will collect for our study using a will be recorded on a Microsoft Teams platform and will be made anonymous following a 24 hour settling period. Thus, it will not be possible to identify and remove your data later, should you decide to withdraw from the study. Therefore, if at the end of this research you decide to have your data withdrawn, please let us know before you leave, or within 24hr of conducting the research questionnaire.

Should you wish for your data to be destroyed prior to anonymisation during the 24hr settling period- please contact the researcher by email at 2135770@swansea.ac.uk

What will happen to the information I provide?
An analysis of the information will form part of our report at the end of the study and may be presented to interested parties and published in scientific journals and related media. *Note that all information presented in any reports or publications will be anonymous and unidentifiable.*

Is participation voluntary and what if I wish to later withdraw?
Your participation is entirely voluntary – you do not have to participate if you do not want to. If you decide to participate, but later wish to withdraw from the study, then you are free to withdraw at any time, without giving a reason and without penalty.

Data Protection Privacy Notice
The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data, and can be contacted at the Vice Chancellors Office.

Your personal data will be processed for the purposes outlined in this information sheet. Standard ethical procedures will involve you providing your consent to participate in this study by completing the consent form that has been provided to you.

The legal basis that we will rely on to process your personal data will be processing is necessary for the performance of a task carried out in the public interest. This public interest justification is approved by the College of Human and Health Sciences Research Ethics Committee, Swansea University.

The legal basis that we will rely on to process special categories of data will be processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.

How long will your information be held?
We will hold any personal data and special categories of data for no longer than is necessary for purposes stated above.

Automated decision making and profiling [only required if applicable]

Version 1, GDPR compliant

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Prifysgol Abertawe

No automated decision making, or profiling will be used for this study.

What are your rights?
You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights.

Any requests or objections should be made in writing to the University Data Protection Officer:-

University Compliance Officer (FOI/DP)
Vice-Chancellor's Office
Swansea University
Singleton Park
Swansea
SA2 8PP
Email: dataprotection@swansea.ac.uk

How to make a complaint
If you are unhappy with the way in which your personal data has been processed you may in the first instance contact the University Data Protection Officer using the contact details above.

If you remain dissatisfied then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: -

Information Commissioner's Office,
Wycliffe House,
Water Lane,
Wilmslow,
Cheshire,
SK9 5AF
www.ico.org.uk

What if I have other questions?
If you have further questions about this study, please do not hesitate to contact us:

Gareth Rees
School of Management
Swansea University
2135770@swansea.ac.uk

Nicholas Rich
School of Management
Swansea University
N.L.Rich@Swansea.ac.uk

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Prifysgol Abertawe

PARTICIPANT INFORMATION SHEET

What enables or inhibits successful implementation of digital health and care service delivery?

You are being invited to take part in some research. Before you decide whether or not to participate, it is important for you to understand why the research is being conducted and what it will involve. Please read the following information carefully.

What is the purpose of the research?
We are conducting research to explore what enables or inhibits successful implementation of digital health and care service delivery. The study is part of an MSc in Advanced Health & Care Management for Innovation and Transformation. The research will include undertaking qualitative and quantitative research with people working in health and social care and related services testing a hypothesis generated from extant literature. Gareth Rees will undertake the evaluation. The results will be published to support further development in this important field. Your participation in this study will take approximately ***5 minutes***.

Who is carrying out the research?
The data will be collected by Gareth Rees, MSc Student at Swansea University's School of Management. Gareth can be contacted at 2135770@swansea.ac.uk. The research has been approved by the School of Management Research Ethics Committee.

What happens if I agree to take part?

By agreeing to take part you will be asked a series of questions from a validated qualitative question set adapted from previous published papers to understand what enables or inhibits successful implementation of digital health and care service delivery. The approach will seek to gain insight into the challenges and the barriers facing health and care service providers in implementing digital service provision.

Are there any risks associated with taking part?
The research has been approved by the Swansea University School of Management Research Ethics Committee. There are no significant risks associated with participation.

Data Protection and Confidentiality
Your data will be processed in accordance with the Data Protection Act 2018 and the General Data Protection Regulation (GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher/research team.

All electronic data will be stored on a password-protected computer file on a laptop. All paper records will be stored in a locked filing cabinet at the School of Management. Your consent information will be kept separately from your responses to minimise risk in the event of a data breach.

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Please note that the data we will collect for our study using a will be recorded on a Qualtrics platform and will be made anonymous. Thus, it will not be possible to identify and remove your data later, should you decide to withdraw from the study. Therefore, if at the end of this research you decide to have your data withdrawn, please let us know before you leave, or within 24hr of conducting the research questionnaire.

Should you wish for your data to be destroyed prior to anonymisation during the 24hr settling period- please contact the researcher by email at 2135770@swansea.ac.uk

What will happen to the information I provide?
An analysis of the information will form part of our report at the end of the study and may be presented to interested parties and published in scientific journals and related media. *Note that all information presented in any reports or publications will be anonymous and unidentifiable.*

Is participation voluntary and what if I wish to later withdraw?
Your participation is entirely voluntary – you do not have to participate if you do not want to. If you decide to participate, but later wish to withdraw from the study, then you are free to withdraw at any time, without giving a reason and without penalty.

Data Protection Privacy Notice
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Automated decision making and profiling [only required if applicable]
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Nicholas Rich
School of Management
Swansea University
N.L.Rich@Swansea.ac.uk

Version 1, GDPR compliant

Swansea University
Prifysgol Abertawe

Approval Date: 15/06/2023

Research Ethics Approval Number: 1 2023 6636 5879

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	What enables or inhibits successful implementation of digital health and care service delivery?
Applicant name	MR GARETH REES
Submitted by	MR GARETH REES /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/ProjectIndex/8353

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low risk to the University.

No additional conditions.

Statement of compliance

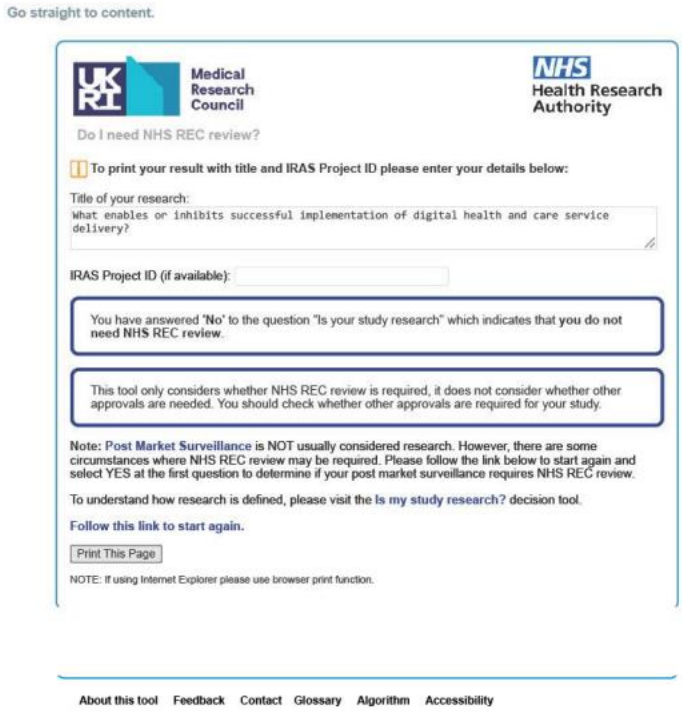
The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any query regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk


Go straight to content.
Medical Research Council
NHS Health Research Authority
Do I need NHS REC review?
To print your result with title and IRAS Project ID please enter your details below:
Title of your research:
What enables or inhibits successful implementation of digital health and care service delivery?
IRAS Project ID (if available):
You have answered 'No' to the question "Is your study research" which indicates that you do not need NHS REC review.
This tool only considers whether NHS REC review is required, it does not consider whether other approvals are needed. You should check whether other approvals are required for your study.
Note: Post Market Surveillance is NOT usually considered research. However, there are some circumstances where NHS REC review may be required. Please follow the link below to start again and select YES at the first question to determine if your post market surveillance requires NHS REC review.
To understand how research is defined, please visit the Is my study research? decision tool.
Follow this link to start again.
Print This Page
NOTE: If using Internet Explorer please use browser print function.
About this tool
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Glossary
Algorithm
Accessibility

10 Survey Questions

Q1 – What is your professional role? NHS / Social Care (and/or Local Authority) / Private sector / Other (please specify)

Q2 – Please describe your role in your organisation.

1. I am a strategist and executive level staff member.
2. I am a middle management staff member.
3. I am operational and deliver care.
4. I support care delivery staff.
5. Other (please specify).

Q3 – The focus of your role is mainly:

1. IT / Digital focused.
2. Clinician / Carer (Patient / Client facing).
3. Administrative.
4. Commercial sector.
5. Other (please specify).

Q4 – What is your age range?

1. 16 to 25
2. 26 to 35
3. 36 to 49
4. 50 to 65
5. 65+

Q5 – Please move the slider to the position that best describes your answer:

1. I would rate my digital literacy as ... (0 = no knowledge and 100 is an expert).
2. I love technology and am always an early adopter of digital products and services (0 is never to 100 which is always).

Q6 – Context

3. The patient must be at the heart of any digital health and care system.
4. The patient's circle of care has an important role to play in digital health and care.
5. The implementation of digital health and care services has been accelerated by the Covid 19 pandemic.
6. The roll out of digital health and care services has been successful.
7. Digital service provision should now be considered "business as usual".
8. Digital service provision should be the default option for health and care provision.
9. There are too many pilot studies of digital services in health and care.
10. The health and care environment are too complex for large scale technology implementation.
11. A significant amount of my role has been automated.
12. Digital provision is the solution to a shortage of health and care resource.

13. Digital provision is part of the solution to a shortage of health and care resource.
14. Digital applications help teams to work together more effectively.
15. Digital technology in health and care service provision offers good value for money.
16. Digital technology is key to improving services for health and care system users.
15. Clinicians should explain the importance and benefits of digital services to patients when prescribing.
16. Artificial intelligence (AI) and virtual reality applications have the potential to positively transform the way that health and care are delivered.
17. AI is too high risk for use in health and care services.

Q7 – Digital literacy and services

1. Connectivity (broadband availability, mobile reception) is a barrier to digital health and care service provision.
2. Digital exclusion is a barrier to digital health and care service provision.
3. Patient confidence in using digital is a barrier to successful implementation.
4. Technical barriers impact staff engagement with digital services.
5. Staff confidence in using digital is a barrier to successful implementation.
6. Organisations need to increase all staffâ€™s level of digital literacy and confidence.

Q8 – Thinking about the digital world

1. The effective use of large-scale data can support decision making in health and social care.
2. There is a wide range of suitable hardware and software to enable successful implementation of digital health and care services.
3. Data privacy laws are a barrier to successful implementation of digital health and care services.
4. Interoperability (systems that work together) is a barrier to successful implementation of digital health and care services.
5. Inconsistency in the ability to integrate applications with digital health and care records (Electronic Patient Records) is a barrier to successful implementation of digital health and care services.
6. Differing digital health and care records between organisations that provide services to the same patient is a barrier to successful implementation of digital health and care services.
7. A set of defined standards is necessary to ensure interoperability and integration of digital services.
8. Government should be responsible for setting standards of interoperability and integration in digital services.

Q9 – Thinking about the future of digital service:

1. Senior management engagement is essential for the successful implementation of digital health and care provision.
2. Senior management need to promote the use of digital applications.
3. Government should mandate the implementation of digital applications to ensure they are successful.

11 Research Interview Questions

Q1:

1. What do you consider to be the three key enablers of successful implementation of digital health and care service delivery?
2. Please explain your reasons for choosing these enablers and give examples if possible.
3. Can you rank them in order of importance?

Q2:

1. What do you consider to be the three key barriers to successful implementation of digital health and care service delivery?
2. Please explain your reasons for choosing these barriers and give examples if possible?
3. Can you rank them in order of importance?

Q3 – How do you believe that health and care organisations can ensure that the enablers are in place?

Q4 – How do you believe that health and care organisations can remove the barriers?

An investigation into whether Wales 'Values' Healthcare Innovation and Life Sciences

Jason Lintern
Head of Innovation, Technology and Partnerships
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Abstract:

Wales, like the rest of the United Kingdom (UK), is looking to leave the Covid-19 public health emergency in the rear-view mirror. However, it is arguably faced with operating in the most fragile of Volatile, Uncertain, Complex, Ambiguous (VUCA) environments. In the past, similar circumstances have negatively affected the importance of innovation. Conversely, post Covid-19, there has been a growing focus on innovation and life sciences as key concepts for improving a nation's health and wealth. Consequently, this study investigated whether Wales values healthcare innovation and life sciences. Through semi-structured interviews with, and a self-completion survey by, senior system leaders and key individuals, the study conducted primary research and reviewed both academic and government literature in the exploration of relevance and value (or importance) of both healthcare innovation and the life sciences to Wales. The study identified healthcare innovation and life sciences as having 'value' to Wales, but significant variation as to how that value is assessed when applied to innovation. The evidence further concluded that life sciences is unequivocally perceived as a key sector of importance for Wales; one that needs to be better positioned within the UK context. It is the main evidence-based recommendation of this report that an industry-led life sciences and healthcare innovation leadership council should be established to support this re-positioning. The council should be commissioned to develop a collaborative approach that supports Welsh Government (WG) to design and develop robust interventions and initiatives that ensure Wales is acting with 'one voice, one narrative' in this agenda, becoming better equipped to compete within the UK while maintaining its high export levels in life sciences.

Keywords: Life Sciences, Innovation, Value, 'A Healthier Wales', Value-based Healthcare, Health, Government Policy.

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Tables and Figures

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1 Introduction

The purpose of this report is to summarise research undertaken by the Author over a 12-week period between June to August 2023, which sought to explore the fundamental question of whether healthcare innovation and the life sciences are 'valued' by Wales. In doing so, this report seeks to complement previous work undertaken by Willson (2021a) and Delbridge et al (2021a), both of which highlighted:

- The current state of innovation activity in Wales.
- The need for greater prioritisation of the same by WG which, in response, launched its new integrated innovation strategy for Wales, Wales Innovates: Creating a Stronger, Fairer, Greener Wales (WG, 2023a).

The overarching objective of this study is to form a better understanding of whether healthcare innovation and life sciences are valued in Wales, recognising both as being integral for driving closer alignment of the health-wealth policy agenda in Wales (Welsh NHS Confederation, 2021a, p2). The importance of such alignment has been recognised by an emerging body of government policy (OLS, 2021a; BEIS, 2021; WG, 2023b). It is intended that the study will help to inform future leadership, policy and investment decisions that seek to create a more confident, healthier, innovative, and stronger Wales.

The next section of the report broadly sets out the relevance and value of healthcare innovation and life sciences to Wales, described by Rees et al (2020a) as the health care-life sciences nexus. For the purposes of this study, this definition is extended to include 'innovation' (see point (1) below). The study methodology and supporting literature review are also briefly described, which identified two sub themes in support of addressing the research question:

1. The importance of system leadership in maintaining the 'healthcare innovation-life sciences nexus' (the 'nexus'); and
2. the need to better prioritise the life sciences sector in Wales to help address long-standing poor productivity levels and widening health inequalities.

Following this, the main findings are presented and critically discussed. The report is completed by a summary of the leading conclusions drawn from the research and the presentation of its key recommendations.

2 Relevance and value of healthcare innovation and life sciences to Wales

2.1 Context

As Wales looks to leave the Covid-19 public health emergency in the rear-view mirror, the WG, in common with all other parts of the United Kingdom (UK), is faced with operating in a more fragile Volatile, Uncertain, Complex, Ambiguous (VUCA) environment. This is underpinned by a significantly declining financial position that is 'up to £900m lower in real terms than when that budget (for 2023-24) was set by the UK Government at the time of the last spending review in 2021' (Drakeford, 2023a). The unprecedented government borrowing to help combat the economic and health impacts of Covid-19 demonstrates the VUCA environment and means that countries and regions across the United Kingdom are operating within unprecedented deficits and limited resources (Assi et al, 2020), resulting in a growing focus on innovation in healthcare and optimisation of the life sciences sector (OLS, 2021b; UK Government Innovation Strategy, 2021).

2.2 Study Methodology

Having received approval from Swansea University's Research Ethics Committee (see Appendix 1), the study used a mixed method action research-based approach, comprising 19 semi-structured interviews and 23 surveys, supported by a literature review completed through an iterative content analysis in real time. The study engaged with specific leadership groups and senior stakeholders from across the whole ecosystem in Wales. To ensure the research benefitted from external viewpoints informed contributions were obtained from England and Scotland. See following a full list of contributors by category:

- Senior leaders from across WG.

- Senior leaders from across NHS (National Health Service) Wales.
- Scottish Government senior policy officers.
- UK Government senior managers in the Office for Life Sciences.
- Parliamentary Review Team (Health and Social Care).
- Health and life sciences ecosystem delivery partners in Wales.
- Health and life science industry.
- Innovation leads from across Wales.
- Next generation leaders.

As an anonymous participation study, individual respondents are not identified. Appendix 2 contains an example of the interview / survey questionnaire. The interviews and surveys occurred between 26 June and 2 August 2023. An analysis of the semi-structured interviews and survey responses is presented in Section 3.

2.3 Literature Review

The initial literature review for this report was conducted in June 2023, and included peer reviewed articles and journals, as well as government publications, reports and policy statements, with the aim to examine:

- The growing policy focus on healthcare innovation and the life sciences, and
- Whether both areas are truly 'valued' by Wales'.

The Literature Review drew upon the policy knowledge of the Author, WG Library and Information Services, Google Scholar, and Google. The search terms used were: "life sciences", "innovation", "A Healthier Wales", "health", "value", "value-based healthcare" and "government policy". An initial search generated over 9,000 articles. Due to the limited timeline for producing the report and the nature of its specific focus, the search was further refined to academic and policy literature post 2010, manually capturing only items most relevant to the study's specific scope resulting in under 200 articles. A methodology of identifying inter-related factors (Bacon et al, 2019) was applied to the extant literature both academic and professional, resulting in a total of 75 articles being reviewed in more detail. A selection of summarised key WG innovation policy documents and their year of publication is at Table 1. The search method is further detailed in Appendix 3.

2.3.1 Defining the relevance and value of healthcare innovation and life sciences to Wales

The NHS Wales Planning Framework for 2020-23 defines healthcare innovation as:

> *"…a purposeful approach to finding and applying new and better ways of delivering health and care services, increasing healthcare value through improved patient outcomes, improved patient experience and increased resource efficiency." (WG, 2019, p27.)*

WG describes life sciences as biotechnology, medical technology, pharmaceuticals, diagnostics, regenerative medicine, neuroscience, and e-health (Business Wales, 2023) with the UK Government identifying Wales as being "critical to the UK's life sciences sector" and important to its growth plans (Badenoch, 2022a). Therefore, the fundamental question posed by this study:

> **Is healthcare innovation and life sciences 'valued' by Wales?**

Little detailed research exists on how healthcare innovation and life sciences are valued in tandem by Wales, with the bulk of literature focused on core or supporting themes and concepts, such as 'value' itself (Porter and Teisberg, 2006a), 'leadership' (Weintraub and McKee, 2019), 'priority-setting' (Charlton and Rid, 2019a), and 'innovation processes' (Herzlinger, 2006). Since 2010, the government and wider public sector in Wales has placed a 'value' upon improving health and economic outcomes through innovation, via funding and prolific policy development (see Table 1 below and Appendix 4). Despite this investment the literature documents an ever-widening gap in health inequalities and poor labour productivity levels experienced by Wales since the 1990's (Marmot and Bell, 2012a; KPMG, 2017; PHW, 2021). The result of this is summarised by the Organisation for Economic Co-operation and Development (OECD):

> *"Wales is facing difficulty catching up with UK average levels of economic prosperity. For example, in 2000-18, Wales's GDP per capita remained the lowest among the 4 UK nations, representing 72% of the UK average." (OECD, 2020a, p.22).*

In acknowledging the need to catch up, Wales is confronted by an aging workforce with Jones (2017) noting that "the number of workers in Wales aged over 50 has risen by almost a quarter – 24.8% – between 2006 and 2016. In contrast, the number of younger people in the workforce has fallen during this period. Workers in the 16-24 age group have fallen by 10.1%, with a 3% drop for 25-49-year-old workers".

> *"Health inequality has been a longstanding issue in Wales: people living in the most deprived areas have a much higher chance of death from avoidable causes (3.7 times for males and 3.8 times for females) (ONS, 2019) and much worse health with fewer years of healthy life expectancy at birth (16.9 years for males and 18.3 years for females) (ONS, 2021) compared to those living in the least deprived areas." (CHEW Report, 2021, p.4)*

Notwithstanding the impact of the Covid-19 pandemic or the policy obligations created by the Wellbeing of Future Generations Action 2015, 'A Heathier Wales's (AHW) (2018a), 'Age Friendly Wales' (2021), and 'Wales Innovates' (2023b), it can be concluded that health and economic inequalities appear increasingly more entrenched in Wales, not less, with the societal cost unlikely to be evenly experienced by those living in the more deprived areas of Wales (Kadel et al, 2022). Aligning healthcare innovation and life sciences to help address these inequalities would seem logical (Care Quality Commission, 2023; Accelerated Access Collaborative, n.d.).

Table 1. A selection of key innovation policy documents published by the Welsh Government since 2010. (Source: Author's Own)

Policy Document	Published	Summary
Together for Health	2011	**Delivering a Modern NHS** set out a vision to improve the health of everyone living in Wales while also reducing health inequalities with a focus on prevention, quality and transparency. **1** reference to innovation.
Science for Wales	2012	**Science and Innovation** set out an ambitious approach to help science thrive to help create a stronger economy with enhanced health outcomes. Part of this to be provided through four grand challenge areas, with expected priority investment in innovation capacity to occur – one of these areas being Life sciences and Health. **105** mentions of innovation.
Innovation Wales	2014	**Innovation Anywhere** notes that Wales needs a step change in our level of wealth generation; and that innovation contributes directly to productivity growth and creates high value jobs. Collaboration between the life sciences and health expected to deliver big social and economic benefits. **238** mentions of innovation
Well-being of Future Generations (Wales) Act: the essentials	2015	**Population Transformation** requires public bodies to think long-term and to prevent persistent problems such as *poverty, health inequalities* and climate change. **0** reference to innovation.
Social Services and Well-being (Wales) Act	2016	**Reforms and integrates social services law.** The Act provides the legal framework for improving the well-being of people who need care and support, and carers who need support, and for transforming social services in Wales. Also brings Local authorities and health boards come together in new statutory partnerships to drive integration, innovation and service change. **1** reference to innovation.
Prosperity for All	2017	**Driving Integration** across the Welsh public sector through Our long-term aim is to build a Wales that is *prosperous* and secure, *healthy* and active – increasing the pace of innovation and integration and the system's contribution to raising prosperity. **9** mentions of innovation.
A Healthier Wales	2018	**Plan for Health and Social Care** set out a long-term future vision of a 'whole system approach' that promises to *reduce health inequalities* and better align what happens *within* the healthcare system with the wider *economy*. **17** references to innovation.
The Economic Action Plan	2019	**Supercharging Industry** sets out a vision for inclusive growth, built on strong foundations, supercharged industries of the future and productive regions. The Plan drives the twin goals of *growing the economy* and *reducing inequality*. **5** references to innovation.
Wales 4.0 Delivering Economic Transformation for a Better Future of Work	2019	**Digital Innovation** identifies need to exploit the potential of digital innovation to move *Welsh economy* into more skilled and intensive activities, *including health boards* improving outcomes for their service users. **233** references to digital innovation.
COVID-19 Reconstruction: Challenges and Priorities	2020	**Key Priorities for reconstruction** promise to make up lost ground within the NHS in Wales, and points to the virus exposing *long standing health and economic inequalities*. **1** reference to innovation (digital).
Wales Innovates: creating a stronger, fairer, greener Wales	2023	**Cross government Innovation Vision** notes that innovation is not an end goal, but that developing a culture of innovation is. Health and Economy are two of the 4 missions therein. **298** mentions of innovation.

The exploration of whether healthcare innovation is 'valued' in Wales, is of direct relevance to the existing evidence base and future policy development within WG in this area; Nesta (the UK's innovation agency for social good) reports that Wales has a 'strong desire for innovation and change', and has identified where people believe that innovation should be prioritized, see Table 2 below:

Table 2. What Wales thinks about how innovation should be targeted (Source: Nesta, 2020).

Q6. In which of these areas do you think that innovation is most important to society?

Areas for innovation	% selecting each in their top 3
Addressing the causes of climate change	47%
Making the UK's population healthier	46%
Improving the UK economy	43%
Making the UK safer	40%
Improving education	35%
Increasing employment	28%
Making the UK a more equal society	25%
Improving local communities	13%
Improving the UK's military strength	10%
Improving the arts and creative sector	4%

There is a clear notion of innovation as a 'value' in a UK healthcare setting, one that conforms with value-based considerations or 'social values' promoted by NICE (the National Institute for Health and Care Excellence), which include reducing health inequalities and minimising the financial burden on the National Health Service (Charlton and Rid, 2019b). This focus on reducing the financial burden on health systems was central to the work of Porter and Teisberg (2006b), who highlighted the concept of healthcare and innovation intersecting with 'value' noting that value in health care systems is created by doing a few things well, not by trying to deliver everything. Willson (2021b, p.9) further notes a key driver for this being the ability of an integrated landscape to maximise 'the value of our health and social care through innovation', a key principle embedded within the Quadruple Aim of 'AHW' (Figure 1 below):

Figure 1. The Quadruple Aim (Source: A Healthier Wales, 2018).

There is evident value (importance) attributed by policy literature (or grey literature) to innovation (Table 1 and Appendix 4 refer) in healthcare as a strategic means to achieving different or desired outcomes:

> *"(innovation is) widely seen as an important contributor to the prosperity and growth of regional and national economies…also as an enabler of solutions to societal grand challenges such as the aging population…." Delbridge et al (2021b, p.6)*

This perspective of innovation and its importance is supported by Nesta (2020) as highlighted in Table 2. Willson (2021c, p17) suggests that the "…value of understanding the importance of innovation and applying its opportunities in an evidenced-based fashion" must be addressed as an 'integral' part of service delivery by the NHS in Wales. This is reinforced by Professor Gary Ford (NHS Reset, 2020) who emphasises the "value of innovation (in healthcare) is through 'combinatorial' rather than single point innovation". That innovation in healthcare is valued appears largely uncontested within the various literature with evident support from government and healthcare practitioners. There is a risk that some innovations can be seen as 'customer fads' resulting in irrational decision making and diffusion of unproven innovations with limited value (Dixon-Woods et al., 2011). There are many influencing factors and domains that impact value (or importance), not least variable interpretation according to the reference sample (Charlton and Rid, 2019c; Pacifico Silva et al., 2018), which will be further discussed in the next section of this report. Before proceeding, it is worth noting that the initial analysis of the literature identified two complementary areas for testing in the research activity, and these are introduced at 2.3.2 and 2.3.3, namely leadership and prioritisation.

2.3.2 Importance of system leadership to the Nexus

Good leadership is at the core of 'AHW' (2018b) which notes the need for a more dynamic, stronger, systemic leadership that is equipped to embrace innovation, embed collaboration and support prudent risk-taking that any complex, interwoven system requires. Under such conditions, leading innovation and transformation can reasonably be considered as being vital to tackling the 'mounting health-care challenges' (Rees et al, 2020b) and inequalities already introduced by this study, many of which the literature describes as being long standing issues (Wales Centre for Public Policy, 2021; Marmot and Bell, 2012b). In May 2021, the First Minister (Mark Drakeford) made clear that innovation and flexibility within the system was the lifeblood of Wales's response to Covid-19, stating:

> *"And then innovation, making sure that all the things the health service has done so quickly to cope with coronavirus, that we don't lose that culture of getting things done quickly and doing things differently, because to get the health service back on its feet, it can't just be trying to go back to how things were before coronavirus ever began." (Source: Wales Online, 2021, May 9)*

The new integrated innovation strategy for Wales (Wales Innovates, 2023c), contains a core mission for Health and Wellbeing which is to bring together a coherent healthcare innovation ecosystem that collaborates seamlessly with industry, academia, and the voluntary sector to create an appropriate environment where new approaches can be tested at the pace transformational change demands. The existing literature in this study suggests that such a change in behaviours requires strong leadership commitment to encouraging and rewarding risk-taking that is "more likely to be successful, at all phases of the innovation process" (Weintraub and McKee, 2019; Willson, 2021d). To summarise, the literature review clarified the need for the research activity to include an exploration of the system's need "to demonstrate strong leadership" (Delbridge et al, 2021c, p 32), including its embrace of innovation.

2.3.3 The need to prioritise the Life Sciences Sector in Wales

Despite relatively good performance in manufacturing in comparison to the rest of the UK, data collected by the Office for National Statistics (ONS) in 2019, confirmed Wales's overall 'productivity' ranking as 11 of 12, confirming a fragility to the Welsh economy that was highlighted when the pandemic hit (BBC News Wales, 2021). A fragility that continues to directly widen Wales's health inequalities (Section 2.3.1 refers).

2.3.4 Life Sciences Sector in Wales

The Life Sciences sector generates £88.9bn of turnover in the UK of which Wales contributes over £2.62bn employing some 12,509 people across 265 companies (OLS, 2022a; WG, 2023), see Figure 2, and is recognised as being a key driver of long-term growth (OLS, 2022b), for both the UK and Wales.

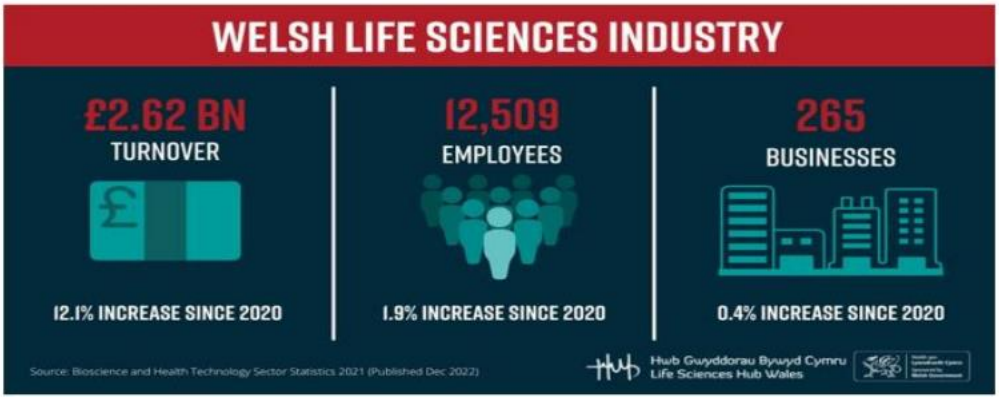


Figure 2. Welsh Life Sciences Industry (Source: LSHW, 2023).

The industry turnover saw a 12.1% rise on 2020 while turnover for the sector across the UK grew by 9%. This demonstrates that it is a key sector for growing the health and wealth of Wales, not least through its high productivity compared to other sectors, e.g. 25% higher than aerospace, and arguably demands to be better prioritised by government if Wales is to see any further improvement in its widely cited and persistent productivity gap compared to the rest of the UK (Henley, 2021; OECD, 2020b; KPMG, 2017b; PWC, 2019). Figure 3 demonstrably captures this gap (as at 2017), with the highest level of productivity, as measured by Gross Value Added (GVA) per hour worked, being London which sat about 40% above the UK average, whereas Wales scored 18% below the national average.

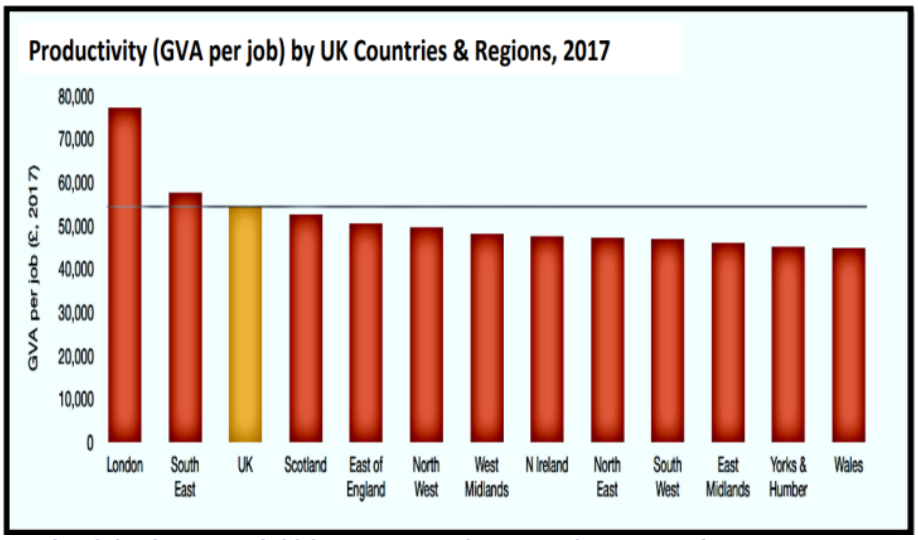
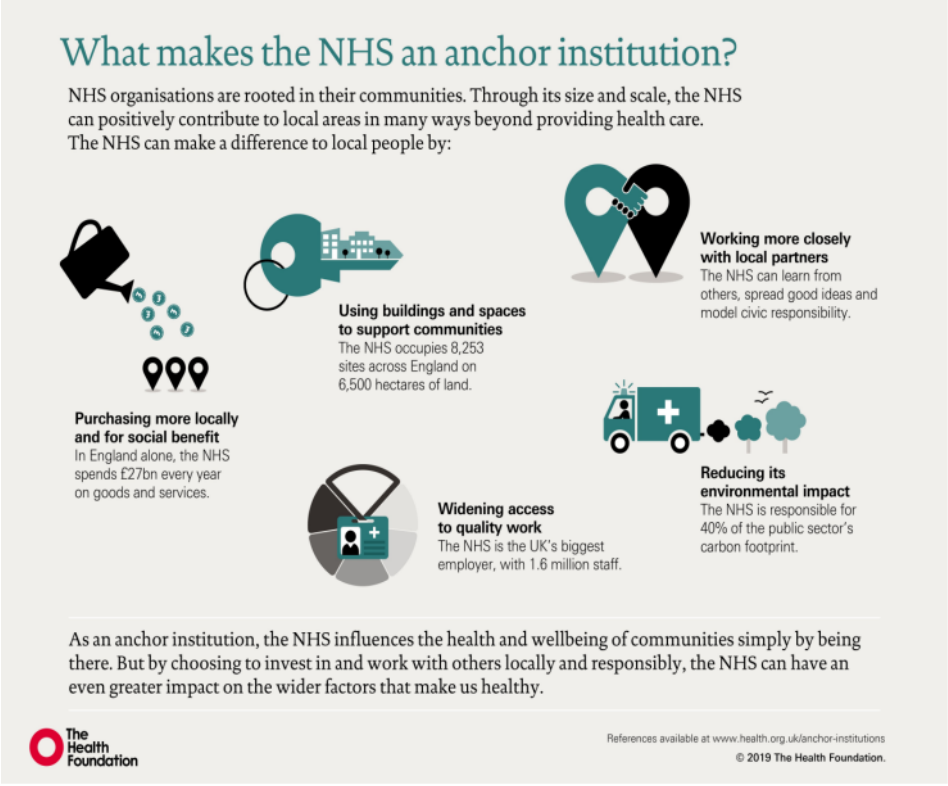


Figure 3. Productivity (GVA per job) by UK Countries & Regions, 2017 (Source: ONS & PWC, 2019).

This outcome is despite a deliberate and successful wider WG strategy that began in 2010 to promote the life sciences sector in Wales (Wilson, 2023), which now boasts a £2.6bn contribution to the Welsh economy. This suggests that life sciences alone cannot improve Wales's productivity standing and other sectors where public money is at stake, such as the Foundational Economy, have an important part to play to solving place-based social challenges (Coenen and Morgan, 2021) and supporting the concept of health as an anchor institution (as illustrated by the Infographic below), which is not a new idea but one that UK Government's Life Sciences Vision has ramped up with its ambition to make the UK a 'science superpower' (OLS, 2021c, p.3; UK Board of Trade, 2022).



Infographic used with permission of The Health Foundation (2019).

Since 2017, UK Government policy has signaled its intent towards a long-term investment in life sciences that has clear relevance to Wales, as demonstrated in Table 3 below.

Table 3. UK Strategic Context for Life Sciences (Source: Author's Own in collaboration with LSHW).

Strategy / policy	Year	Key Actions	Relevance to Wales
Life Sciences Vision	2021	• Building on the new ways of working from COVID-19 to tackle future disease missions • Build on the UK's world class science and research capabilities • Make the NHS the country's most powerful driver of innovation • Create an outstanding business environment for Life Science companies Identifies key healthcare challenges	• Strategy outlined aims to enable innovation adoption into Welsh health and care to drive improvements to citizen and system outcomes • Strategy outlined is dependent upon Wales' science and research capabilities and their collaboration with industry • Lessons learned from COVID-19 have been incorporated into the strategy outlined
Life Sciences Industrial Strategy	2017	• Ambition for the UK to be the best place for Life Sciences businesses to thrive	• Strategy outlines the need for a coordinated, integrated environment drawing on industry, academia and health services • Strategy is underpinned by UK/local sector strengths in industrial capacity and academic research
Life Sciences Sector Deal	2018	• Strengthening the UK's environment for clinical research • Raising the intensity of R&D in the UK • Supporting innovation in the NHS	• Focus on enabling the adoption of innovation into NHS Wales by supporting evidence generation aligns with the Sector Deal's ambition to improve outcomes for patients and the NHS
Industrial Strategy	2018	Five foundations: • Ideas • People • Infrastructure • Business environment • Places Grand Challenges • AI and Data • Ageing Society	• Strategy outlined supports the UK to be the world's most innovative economy • Supporting innovators' development in Wales creates good jobs and enhances earning power • Strategy outlined contributes to the UK being the best place to start and grow a business • Focus on data and digital theme aligns with the ambition to put the UK at the forefront of the AI and data revolution • As an ageing population creates demands for technologies, products and services, including new care technologies, the focus on prevention and providing care closer to home contributes to ensuring that older citizens can lead independent, fulfilled lives and continue to contribute to society

To conclude this section, Figure 4 is a conceptual model derived from the literature review, highlighting the inter-connected notions or themes that appear to be 'valued' by the system (this model is revisited at the conclusion of the research findings). Having established that the nexus has both relevance and value, a strong platform and structure has been created from which to create relevant questions for testing with practitioners and decision/policy makers and subsequently examine the findings as primary data.

Figure 4. A high-level model of the inter-connected 'value' themes derived from literature review (Source: Author's Own).

3 Analysis of the Research Findings

3.1 Introduction

This section of the study focuses on the primary data collected via self-completed survey questionnaires and semi-structured interviews with specific leadership groups and senior stakeholders from across the innovation ecosystem in Wales, as detailed in Section 2.2. The primary data collected examined the main contribution of this study - whether health care innovation and the life sciences sector are 'valued' concepts by Wales.

3.2 Description of the Combined Findings (Coding and Thematic Analysis)

Prior to presenting the statistical analysis created from the research, the report will outline the findings from the combined data collected through semi-structured interviews with 19 senior leaders from WG, NHS Wales, UK Government, Scottish Government, Industry, and independent experts that have worked in Wales and 23 survey questionnaires completed mainly by industry representation, UK Government stakeholders and delivery partners, providing key services within health and social care on behalf of WG. The significant amount of data collected across the semi structured interviews and completed questionnaires was coded using Direct Content Analysis (DCA) as the preferred method for identifying frequency of common 'findings' arising from the 12 questions spread across four main areas identified from the literature - both relevant and subordinate to the central question of the research. This model (see Figure 5) was also used due to its flexibility for iteratively assessing the data coding (Potter and Levine-Donnerstein,1999; Mayring, 2000). A sample of the data collected using this model is summarised in Table 4, which uses colour coding to track the raw data and emerging commonalities more easily to the 'host' main areas identified from the literature. These findings are discussed in more detail following (**see page 14**).

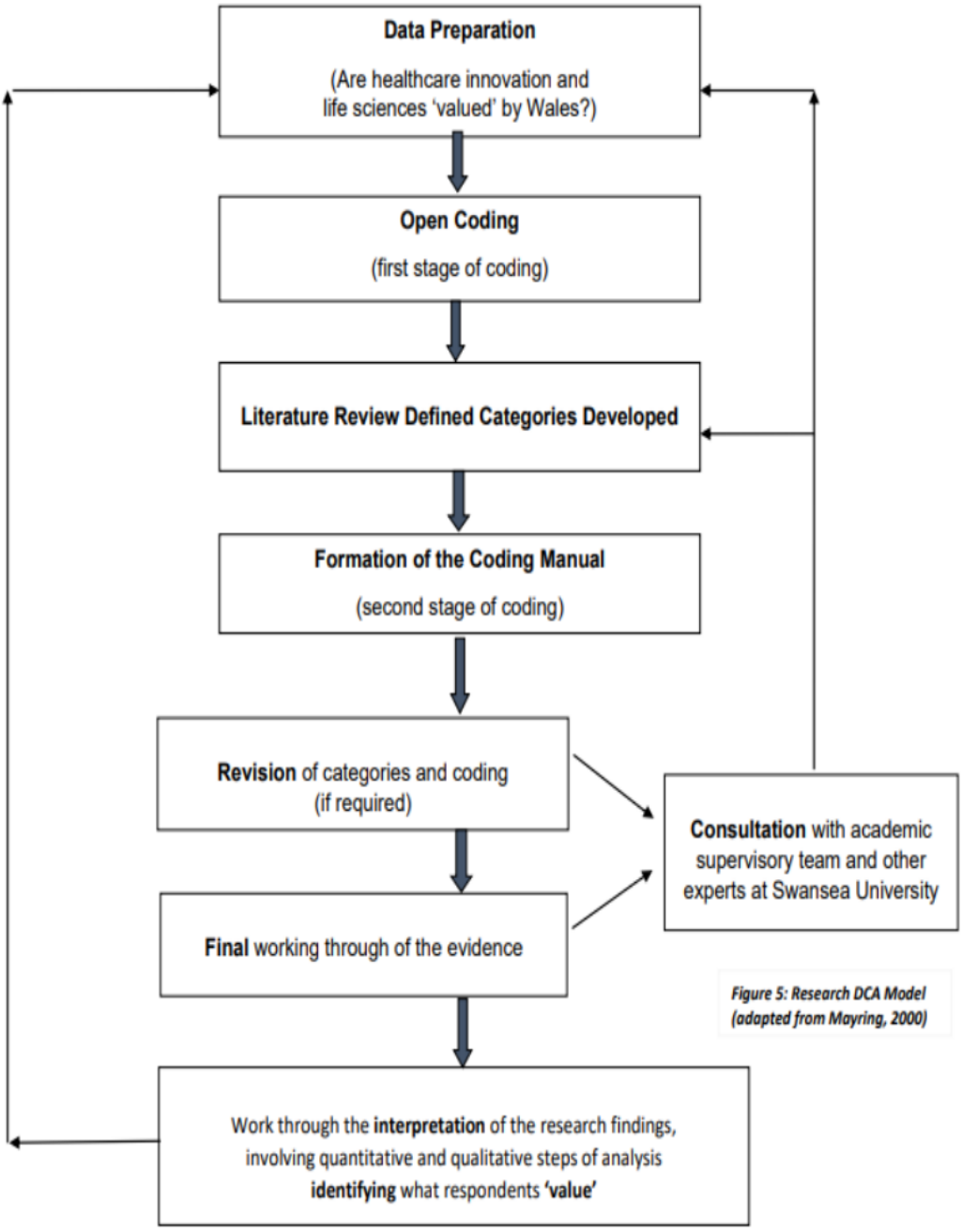


Figure 5. Research Direct Content Analysis (DCA) Model (Source: Author's Own).

Table 4. Is healthcare innovation and life sciences 'valued' in Wales? Survey Sample Data Coded.

Main Theme	Sub Theme	Priori Code	Open Codes	Raw Data
An investigation into whether Wales 'values' Healthcare Innovation and Life Sciences	A. What 'Value' is placed upon innovation in healthcare in Wales?	Value	Strategic	demonstrated through strategies
				some awareness of strategies but not confident it is valued
			Prioritised	lot of effort not always supported financially
				short term mindset
				valued with caveats (short termism, resources, money getting tighter)
				Lots of related investment in digital innovation and the life sciences
			Capacity	appointment of innovation leads in Health Boards
				strong network of innovation leads across Wales
				creation of Value Based Healthcare Teams
	B. How competitive is Wales' Life Sciences Sector?	Investment	Competitive	risk that we are falling further behind other nations
				is public purse driving commercial interest in Wales
			Investment	Brexit damaged Wales as an investment location
				point whole system at task and avoid duplication of effort
				little confidence that UKG will invest in Wales
			USP (unique selling point)	ideal size to present as a 'test bed nation'
				need for clear focus on the 'one thing' we want to be world leading
	C. Are there policy barriers constraining growth in LS and healthcare innovation?	Constraints	Focus	too many strategies, not enough action
				AHW set right tone but too many domains covered
				need to see AHW through, not find a new action plan
			Health & Wealth	lack of ambition
				need to become more productive
				need to embed a culture of innovation beyond government first
				align innovation with goals
			VBHC	need to turn philosophy into standardised approach to patient outcomes
	D. The importance of system leadership	Importance LS Plan	Visibility	leadership visibility high in own organisation
				recent visible investment in innovation leadership
				across the system seen as variable
			Head Space	too much focus on now and not enough upstream thinking
				greater role for universities – learn from other nations
			Direction	'One Wales' coherent offer
				government to resource and co-ordinate but not manage
				lack of coherent leadership across life sciences sector in Wales

Through the thematic analysis of all responses across both semi-structured interviews and survey questionnaires, a number of prominent sub-themes emerged, as highlighted in Table 4. These themes provide valuable insights into the perceptions and considerations surrounding healthcare innovation, life sciences, policy barriers to growth and the importance of system leadership in these agendas. The following are examples drawn from these themes, supported by associated comments, derived from the analysis.

Sub-Theme A: What 'Value' is placed upon innovation in healthcare in Wales?

Universally Valued Innovation with Caveats

Respondents universally acknowledged the value of innovation in healthcare in Wales, however, participants demonstrated a tendency to qualify their assessments of innovation's worth, suggesting that the concept of 'value' is multifaceted but one that should be continually prioritised.

> *"I'm going to say agree but with significant caveats…we're firefighting all the time, people haven't got the head space to properly engage with the agenda." (Interview Response Senior Government Official)*

Tangible Investment as a Key Indicator

A striking finding was respondents' perception of innovation value being through tangible investments, such as an increase in resources, including people, expanded networks, a supportive ecosystem, and strategic frameworks. These elements were seen as tangible investment and therefore indicators of the value of innovation initiatives. Surprisingly, there was a notable absence of references to healthcare outcomes when discussing the value of innovation, highlighting a potential gap in the evaluation process which potentially presents an opportunity for further research.

> *"The appointment of Innovation Leads within health boards, and value-based healthcare teams, is a strong signal…(and) the commitment to Intensive Learning Academies to support NHS staff ability to adopt innovation." (Survey Response from Industry)*

Sub-Theme B: How Competitive is Wales's Life Sciences Sector?

Self Help

Strong sense of being good at strategy but weak on implementation, a long standing, complex system issue for government (Gunn, 1978a; Braithwaite et al., 2018; Hudson et al., 2019a) that arguably is preventing Wales making best use of assets already in place, including its geographic size. This feeling was underpinned by an equally strong sense from some respondents that UK Government investment will continue to 'fail to support Wales'. This finding suggests that Wales needs to do more to identify and strengthen its existing infrastructure and support high potential opportunities to flourish, as part of a cohesive proposition.

> *"I don't believe that there is necessarily the capacity to increase investment from Welsh Government – a more realistic aim would be to make better use of the investment that is already available by reducing duplication of effort and spreading effective innovations across healthcare in Wales." (Survey Response from Social Care Leader)*

World Leaders

The analysis demonstrated a lack of clarity across all respondents as to what is the 'one thing' that Wales is or wants to be world leading in. This suggests that creating a clear narrative around the offer would help to showcase Wales's area(s) of competitive strength and advantage. There is a perception (Badenoch, 2022b; WG, 2022a – Genomics Wales 2022-25) that this could be in genomics, cell and gene therapies and or mental health although more work is required in building the critical mass around the offer. This potentially creates an opportunity for investment to be proactive and targeted by better marketing Wales's as a global 'test bed' nation.

> *"I think there's a good architecture in Wales to engage with the life sciences and industry…you know, Wales as a system is relatively small (and)... can be easily accessed and it's the ideal size as a test bed…for people who want to innovate and bring in industry solutions to the NHS, so it should be a real selling point for us in terms of promoting opportunities of working in Wales." (Interview Response from NHS Executive)*

Sub-Theme C: Are there policy barriers constraining growth in life sciences and healthcare innovation in Wales?

Prioritise Excellence

An interesting finding was the re-emergence of the demand for focus and prioritisation with respondents encouraging the 'pick one area' and make Wales the go to place for that, creating an opportunity to sit within the wider UK framework. Responses emphasised the need to build closer relationships with UK policy, invest wisely and become truly competitive. There was an element of 'the proof will be in the pudding' potentially highlighting cynicism around capabilities in tackling Wales's health and economic inequalities.

> *"…a strategy is only as good as the delivery plan that underpins it. Whilst we are seeing more cohesion around the innovation landscape across Wales, the future remains to be seen." (Survey Response from NHS Senior Leader)*

From Strategy to Action

Respondents queried whether policy can truly make a nation more innovative, and there was evidence of frustration around the slow pace it can take to move from strategy to action. The importance of good governance, decision making, leadership and balancing cost versus outcomes were emphasised as positive elements for managing constraints in the system. Some respondents noted that without specific mention within Programme for Government, it can be harder to drive implementation when priorities are not aligned and prioritised within government.

> *"I think we are still trying to overcome the same barriers. Programme for Government commitment created common narrative, now that's gone (it) just makes it harder when you've two different Directorates within government that have their own priorities, and those priorities don't always align to allow that working together." (Survey Response from NHS Senior Leader)*

Sub-Theme D: The importance of system leadership

A Resourced Life Sciences Programme

Respondents universally acknowledged the value and importance of Life Sciences as a key sector for Wales, emphasising the need to involve industry more in the decision making and leadership system, as well as the importance of resourcing the co-ordination of any life sciences programme jointly between the private and public sector. This was caveated with a request that government help govern and co-ordinate but not manage. These elements were seen as part of the need to work more 'up front' and strategically with industry. This finding highlights the opportunity for a new approach and operational framework for life sciences in Wales.

> *"I strongly agree because it's a complete no brainer because we all know resource is finite and demand is infinite. There's never going to be enough to go around so it's only ever going to be increasingly important to target what you've got to best effect… need to take risk but the returns on the investment can be huge." (Interview Response from Director of a National Body)*

Collaborating with Industry

Respondents noted the lack of 'headspace' or 'thinking time' within the public sector innovation sphere, a lack of direction and the need to involve industry leads more. A prominent finding was the lack of common reference to the Life Sciences Hub Wales as a natural leader and focal point for Welsh healthcare and life sciences collaboration, having been established in 2014 by WG for that purpose (WG, 2017). This underscores the need for promoting the role of the organisation as an All-Wales asset purposed to do this, and to also consider bringing in leadership from other sectors such as data science and the semi-conductor cluster.

> *"…why don't we put people from different sectors in charge of bits of the puzzle and hold them to a set of outcomes? Let people with experience and expertise in those areas get together a group and tap into the brilliant young leaders and hold them to account but don't manage it…have that forum where…you need that level of expertise in your guiding counsel… include leaders who come from industry as well as from health and other sectors to manage that….government will be part of it but you need a really dream council to be able to do that well." (Interview Response from NHS Director)*

3.2.1 A Brief Summary of the Combined Sample Data Findings

In terms of the collective knowledge, the findings highlight that healthcare innovation is universally valued across the health and social care ecosystem. However, this value was not consistent and respondents often felt the need to 'qualify' their view, manifesting a multifaceted perception of 'value' when discussed alongside innovation (Charlton and Rid, 2019d; Pacifico Silva et al, 2018). A common thread throughout the survey responses was a recognition that innovation 'value' in health care systems is created by prioritising and doing a few things well, not by trying to deliver everything, a key aspiration that is supported by the literature (Porter and Teisberg, 2006). This was not directly linked by respondents to improving health outcomes, rather importance was attached to increased resources, expanded networks, a supportive ecosystem, and strategic delivery frameworks. This is possibly a hangover from the pandemic during which 'innovation' was fully enabled by the whole system, and in doing so has raised both the innovation appetite and expectation levels across the workforce (NHS Confederation, 2020). This finding suggests an opportunity for innovation to be introduced as a standard module across workforce education and training.

There was a clear and collective call for greater prioritisation for doing 'fewer things better' in terms of healthcare innovation, although the understanding of what that might look like was not clear. This provides an opportunity for WG and its partners to determine its ambition and build consensus around the offer (for example, precision medicine genomics), where Wales is recognised as being particularly strong (WG, 2022b)). Identifying strengths is a key requirement for targeting future policy and investment decisions (Delbridge et al, 2021d, p11), and was a driver for this study. In terms of leadership and focus, some respondents noted 'Wales Innovates' (p.6, 2023d) as a move in the right direction. Again, this was heavily caveated with its implementation, which some described as being the "proof in the pudding" test in terms of effectiveness and impact.

3.2.2 A Percentage Summary of the Combined Sample Data Findings

To conclude this sub-section, Table 5 below displays a breakdown of the responses from each participant, primarily made up of senior and executive leaders from across the system. As experienced and knowledgeable participants, obtaining a degree of nuance rather than simple yes/no responses was

paramount. To mitigate bias in the sample responses (Lee et al, 2021), the survey was limited to one specific question about respondents' own organisation and used a Likert Scale to capture anticipated variations in attitudes and opinions (Bhandari and Nikopoulou, 2020, revised 2023).

Table 5. Combined Interview and Survey Data Analysis (percentage).

Questions	Text	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Outcome 1	Outcome 2	Outcome 3
1	Do you agree that innovation in healthcare is 'valued' in Wales?		2	9	27	4	74% **agree**	21% neither	5% disagree
2	Do you agree that 'A Healthier Wales' has embedded a 'culture' of innovation and transformation across the NHS in Wales?	3	16	11	12		45% **disagree**	29% agree	26% neither
3	Do you agree that Welsh Government has successfully created an environment for healthcare innovation to be fostered and spread?	1	15	15	9	2	38% **disagree**	36% neither	26% disagree
4	To what extent do you agree that Wales has reacted strongly to the UK Government's growing emphasis on an innovative life sciences sector?	1	9	8	23	1	57% **agree**	24% disagree	19% neither
5	Do you agree that Wales needs to increase its own investment in healthcare innovation and life sciences?	1	3	3	22	13	83% **agree**	10% disagree	7% neither
6	To what extent do you agree that UKG and other non-UK investors in Life Sciences are more likely to invest in Wales now that Brexit has been fully implemented and the Covid-19 pandemic is no longer considered a public health emergency?	4	10	21	7		50% **neither**	33% disagree	17% agree
7	Do you agree that 'A Healthier Wales' has made Wales more innovative?		10	18	14		43% **neither**	33% agree	24% disagree
8	Do you agree that the recently launched *Wales Innovates: creating a stronger, fairer, greener Wales* will overcome the key barriers it identifies as preventing Wales becoming more innovative and stronger – constrained public finances, silo working, achievable goals?	1	13	12	15	1	38% **agree**	33% disagree	29% neither
9	Do you agree that Value Based healthcare has a key role to play in helping life sciences and innovation better focus on improved health and care outcomes?	3	3	3	19	14	81% **agree**	14% disagree	5% neither
10	In the current environment compared to the pre-pandemic period (i.e. before March 2020) do you agree that system leadership is actively visible in supporting collaborative innovation in your Organisation?	1	4	12	21	4	59% **agree**	29% disagree	12% disagree
11	Do you agree that Life Sciences is a key sector of importance to Wales? And if yes, what are the leadership not policy barriers preventing Wales from becoming an excellent location for life sciences, not just good? (minus Scotland)			1	25	14	98% **agree**	2% neither	0% disagree
12	To what extent do you agree that Welsh Government needs to strategically develop and manage a co-ordinated life sciences programme that provides a clear steer to the NHS and industry on shared priorities?		7	1	11	23	81% **agree**	17% disagree	2% neither

The results displayed suggest that most of the respondents (74%) believe that innovation in healthcare has 'value' and an overwhelming 98% see the life sciences as a key sector of importance to Wales. The Primary Data collected suggests a very positive response to the fundamental question of the study, however it should be noted that this study was conducted over a relatively short period of time (12 weeks) and participants have indicated that responses can be both nuanced and loaded with caveats, such as the 'request' for WG to help govern and co-ordinate a strengthened life sciences programme but not be seen to manage it.

3.3 Semi-Structured Interview Findings

Nineteen Interviews were conducted with senior leaders from across the whole system, supported by video and audio recording, where permitted. The interview / survey questionnaire is at Appendix 2. The data is presented and contained in Figures 6.1 to 6.12. The results displayed in Figure 6.1 indicate that 79% of those interviewed answered "agree" or "strongly agree" to the central question of the study. Where respondents answered 'neither' the study found a more negative view than positive, for example, "it's valued rhetorically, but less operationally" (senior participant from health board).

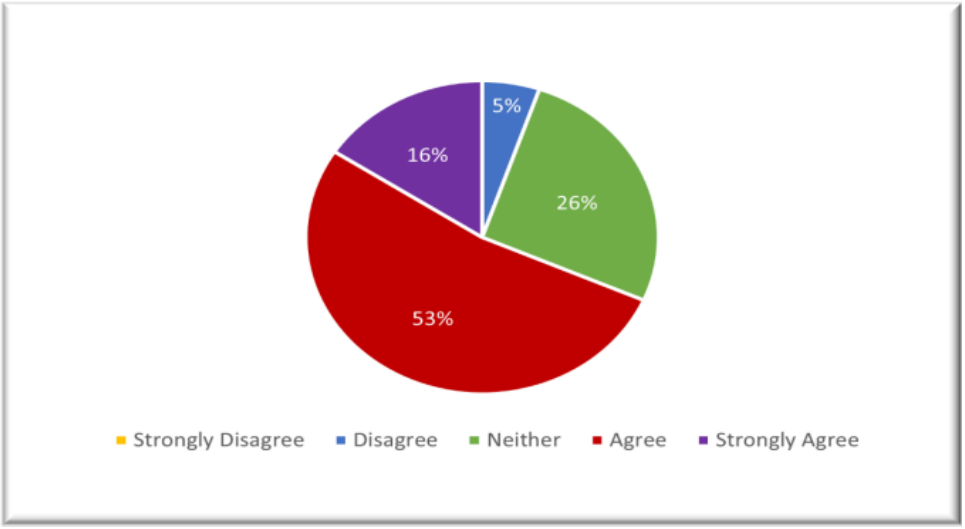


Figure 6.1. Do you agree that innovation in healthcare is 'valued' in Wales?

However, it is interesting to note at Figure 6.2 that 52% of respondents disagree with a further 21% "neither" regarding whether 'AHW' had embedded a 'culture' of innovation within the NHS in Wales. Within this group there is a strong feeling that AHW has 'died on the shelf' or is still in the foothills of implementation.

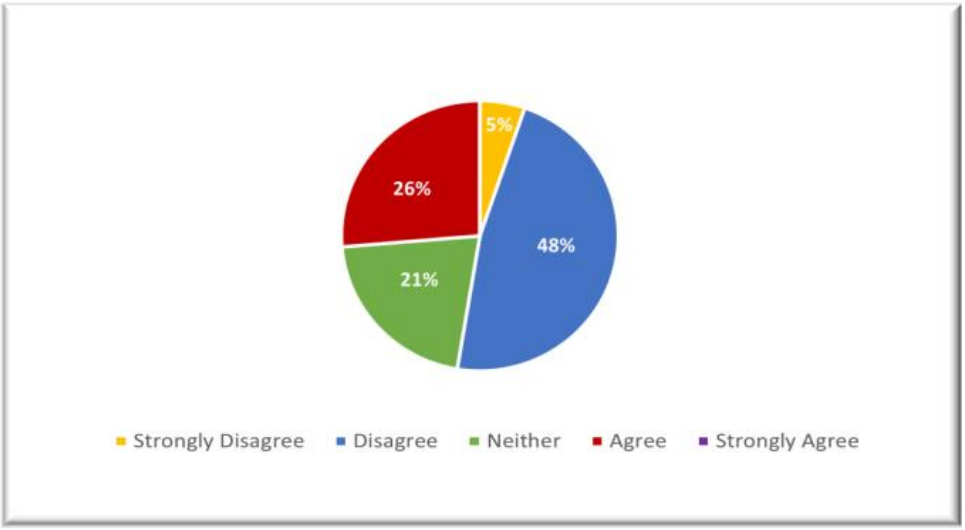


Figure 6.2. Do you agree that 'A Healthier Wales' has embedded a 'culture' of innovation and transformation across the NHS in Wales?

Figure 6.3 relates to innovation adoption and the responses were more evenly spread with the “agree” and “disagree” evenly matched. The “neither” took an interesting 42% of the vote. It was found that the lack of a ‘central coordinating’ function or guidance for making spread happen was a strong factor in this seemingly negative score.

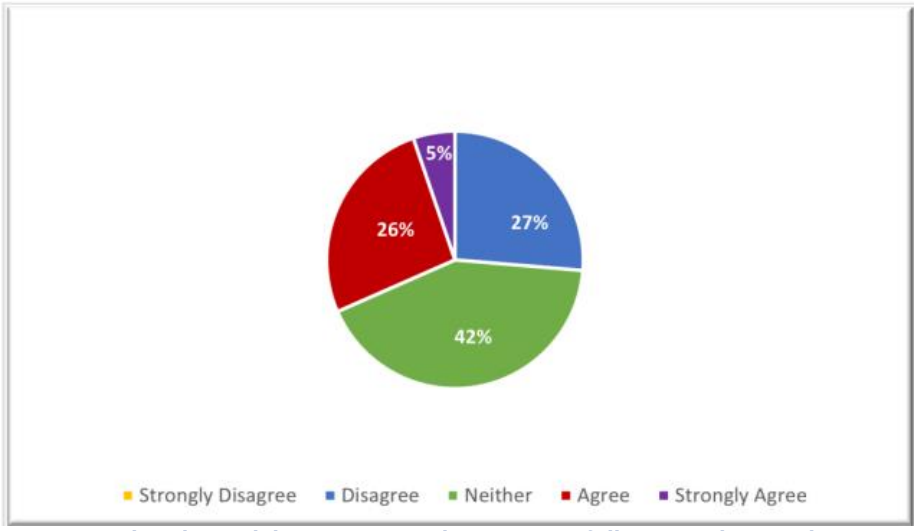


Figure 6.3. Do you agree that the Welsh Government has successfully created an environment for healthcare innovation to be fostered and spread?

There is a positive feeling (68%) that Wales has responded to the UK Government’s growing emphasis on life sciences, this being extended to the life sciences vision. 21% indicated they did not agree / strongly disagree with this, with 11% unsure or unsighted as shown in Figure 6.4.

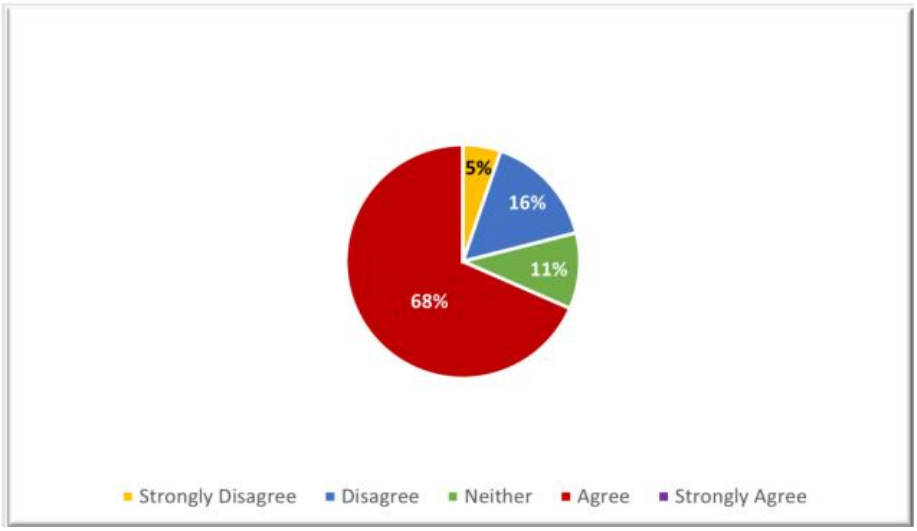


Figure 6.4. To what extent do you agree that Wales has reacted strongly to the UK Government’s growing emphasis on an innovative life sciences sector?

Figure 6.5 below summarises the results from the respondents as to whether Wales should invest more in its healthcare innovation and life sciences. 79% of respondents were in favour and only 10% in disagreement. 11% of respondents were not sure either way. This finding potentially indicates the value attributed to these areas by the ecosystem through the strong response for greater investment.

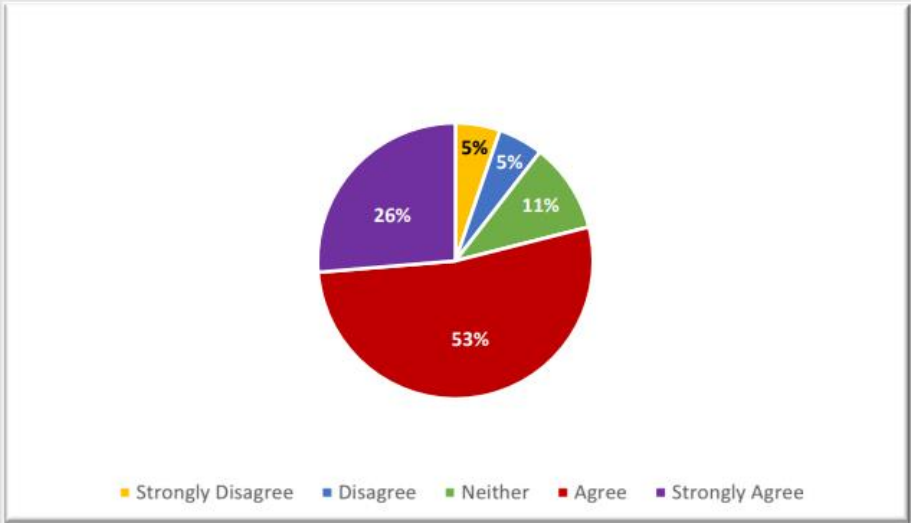


Figure 6.5. Do you agree that Wales needs to increase its own investment in healthcare innovation and life sciences?

Noting the previous response to a related question, it is striking that the same percentage of respondents who were clear in their agreement (53%) that Wales should increase its own investment (see Figure 6.5) appear more unsure when it came to a view as to whether other investors are presently inclined to (53%). Figure 6.6 refers.

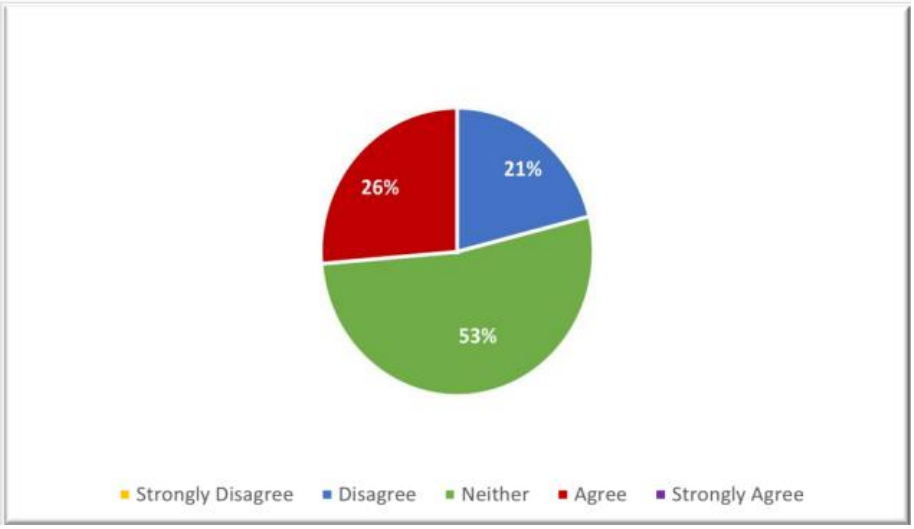


Figure 6.6. To what extent do you agree that UKG and other non-UK investors in Life Sciences are more likely to invest in Wales now that Brexit has been fully implemented and the Covid-19 pandemic is no longer considered a public health emergency?

In asking individuals to consider the impact 'AHW' has made on making the country more innovative, the responses were evenly distributed with roughly one-third answering "agree" (32%), "disagree" (31%) or "neither" (37%) as shown in Figure 6.7.

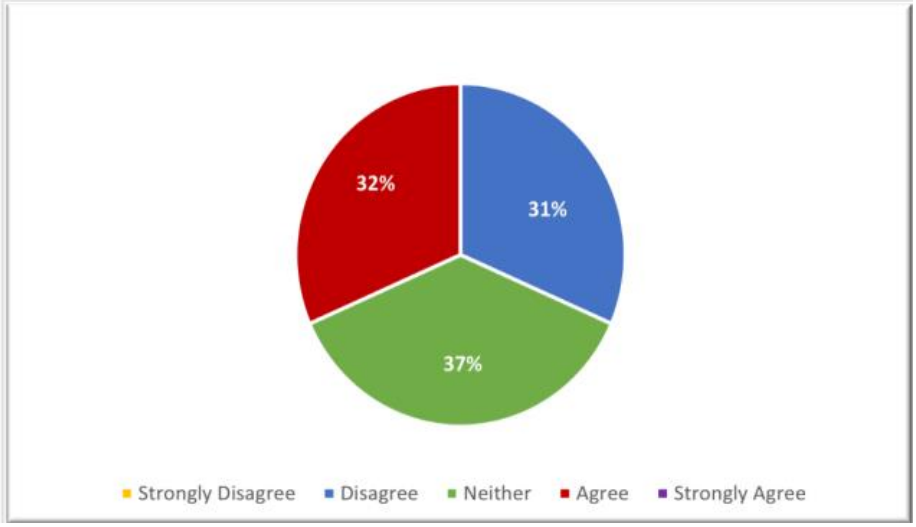


Figure 6.7. Do you agree that 'A Healthier Wales' has made Wales more innovative?

Based on the results in Figure 6.8 it was found, and not unexpectedly, that respondents remain split on the future success of the WG integrated innovation strategy, with one respondent articulating a common sentiment across the responses, that this would be heavily dependent on its implementation and the need to "follow through on actions, otherwise like all other strategies it won't have the desired effect".

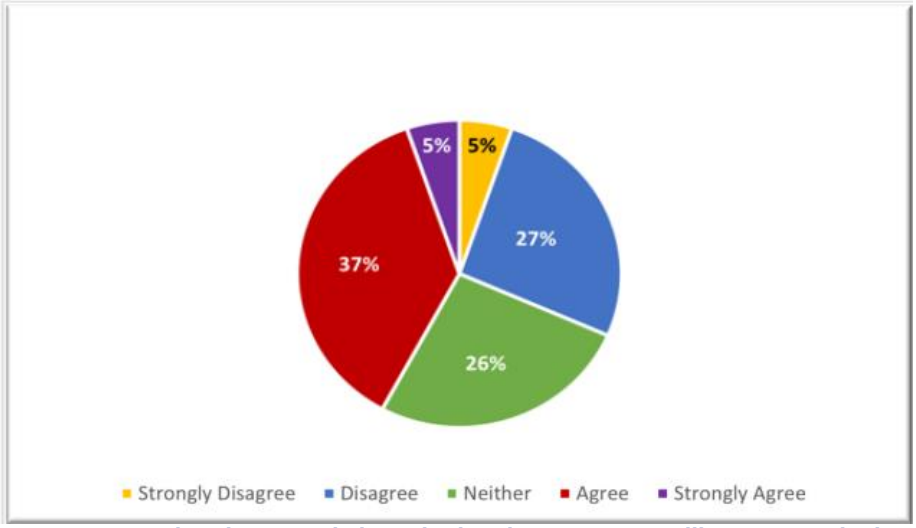


Figure 6.8. Do you agree that the recently launched Wales Innovates will overcome the key barriers it identifies as preventing Wales becoming more innovative?

In Figure 6.9, 73% of respondents confirmed that value-based healthcare (VBHC) has a key role to play in helping both life sciences and innovation achieve better health outcomes for the people in Wales, suggesting that VBHC may be a logical addition to the nexus. It should be noted that 11% of responses were 'unsure' and 16% in disagreement.

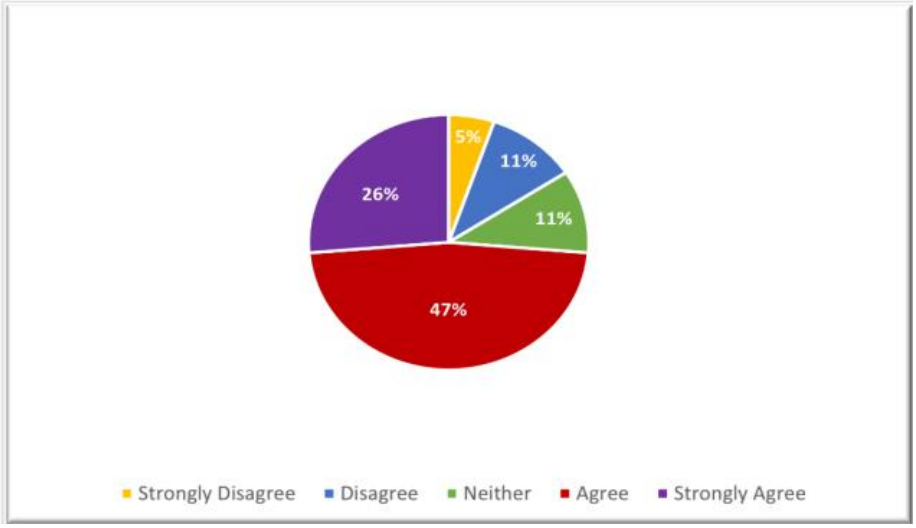


Figure 6.9. Do you agree that Value Based healthcare has a key role to play in helping life sciences and healthcare innovation better focus on improved health and care outcomes?

When asked if their organisational leadership was actively more visible in supporting collaborative innovation post pandemic, 68% "agreed or strongly agreed". Interestingly, 27% of respondents were unable to agree or disagree visibility, with the remainder (5%) stating "disagree". See Figure 6.10.

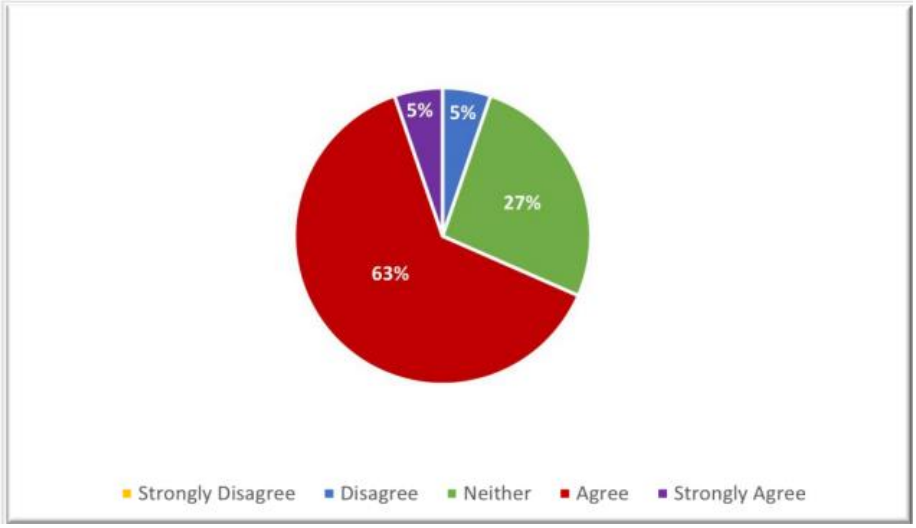


Figure 6.10. In the current environment compared to pre-pandemic period do you agree that system leadership is actively visible in supporting collaborative innovation in your Organisation?

The most striking finding from this question (Figure 6.11 refers) was the unequivocal support for the life sciences (100%) as a key sector of importance to Wales and creating opportunities for it to become an excellent location for life sciences companies. This suggests there is potential appetite for the NHS in Wales to develop commercial and other strategic partnerships with industry.

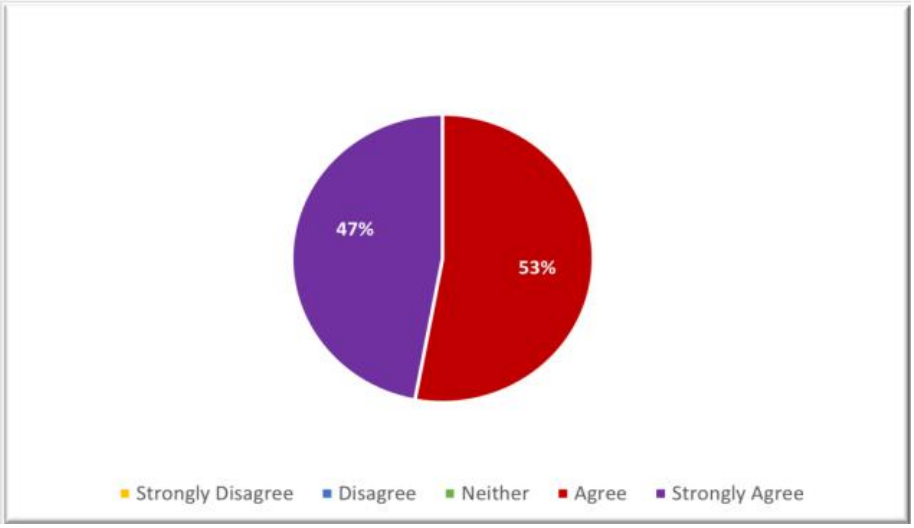


Figure 6.11. Do you agree that Life Sciences is a key sector of importance to Wales?

In response to a related question, see Figure 6.12, on whether WG should be developing and managing a new coordinated programme for life sciences that delivers shared priorities across the two sectors, the response was again very strongly in favour with some 84% answering “agree” or “strongly agree”. 5% did not hold a view and 11% “disagree”.

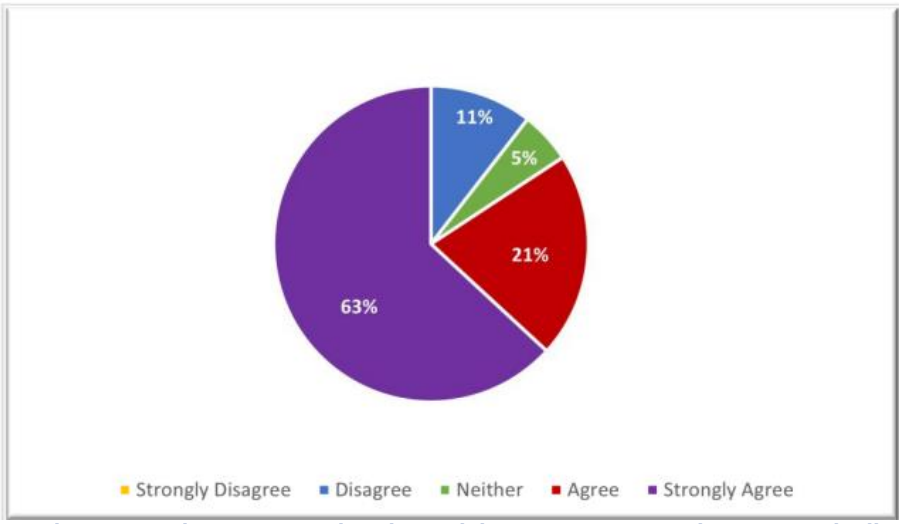


Figure 6.12. To what extent do you agree that the Welsh Government needs to strategically develop and manage a coordinated life sciences programme that provides a clear steer to the NHS and industry on shared priorities?

To conclude this sub-section, the evidence suggests there is clear support and value attributed to healthcare innovation, and the life sciences is seen as being important to Wales. Encouraging continued system prioritisation and management of innovation within a healthcare setting through a multi-sectoral and whole of government approach is a logical enabler to achieving better population outcomes and tackling long standing socio-economic inequalities (Teisberg et al, 2019; Charlton and Rid, 2019e; WG, 2012-23 (Table 1 refers); WHO, 2020). The strategic agility (Doz and Kosonen, 2010) of WG’s management of its innovation strategy for Wales, specifically in terms of ‘leadership unity’ within the business model, could potentially offer the necessary sense of purposeful and sustained mission required if Wales is to succeed in tackling such complex and long-standing issues.

3.4 Quantitative Self-Completion Survey Findings

Figure 7 below summarises the survey questionnaire results which again sought to gather the individual's perspective on the questions raised (Appendix 2). As noted with the semi-structured interviews, questions 8 and 11 were adapted to capture learning from England or Scotland around potentially different approaches to healthcare innovation and the life sciences sector. The survey highlights a strong acknowledgement that healthcare innovation is valued by the system, although there are again accompanying caveats, such as an 'agree' could become a 'strongly agree' once more translation of the policy imperative into practice occurs. Such nuance is again evident in question 11 which asks whether life sciences is a key sector of importance to Wales and is scored extremely positively (98%). However, supporting comments note that taking risks, trying different approaches, and failing is difficult in the public sector arena; resolution of this is identified by participants as a leadership challenge. This potentially offers a developmental opportunity for the 'Innovation in Health and Social Care Intensive Learning Academy' to help leaders in Wales to become more confident, innovative, and resilient, understanding the 'value' or power of 'failing fast, failing forward' (Cousins, 2023a).

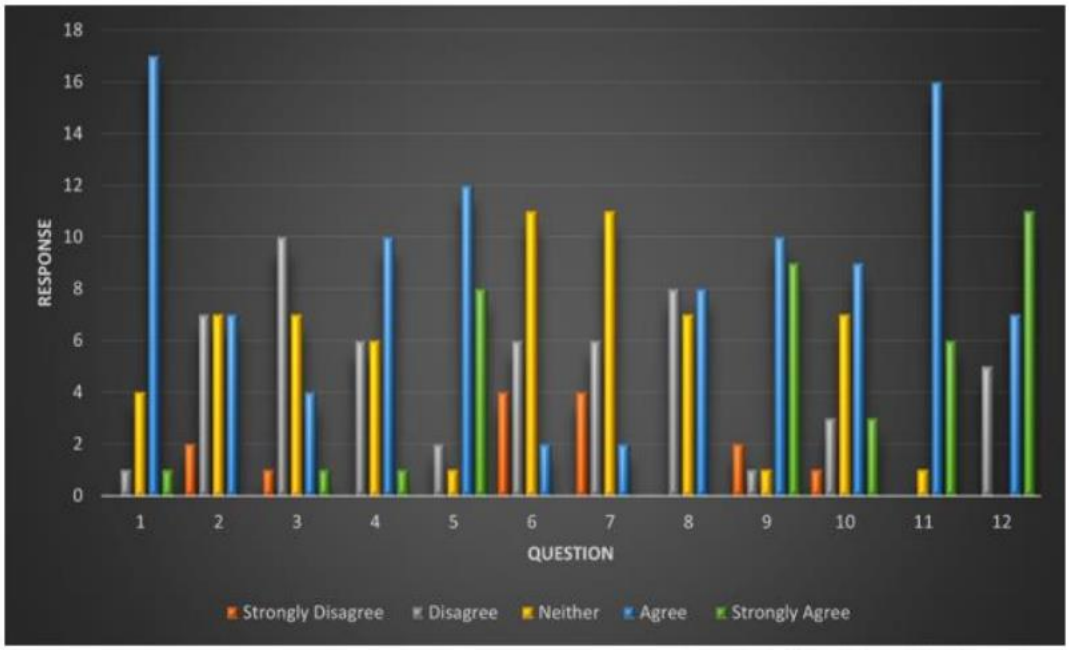


Figure 7. Findings of Survey Questionnaires.

3.5 Statistical Analysis Statement

For the purposes of this study, Inferential Statistics (see Appendix 5) can be used to gain a deeper understanding of quantitative data (Bhandari, 2023). In this data set, various test methodologies have been applied to the data to check the assumption of normality and variance in the data, both of which have shown the data passes the assumptions. The statistical analysis of the two sample groups (interview and survey) suggests central tendencies (means) of both groups for the set of questions tested are not significantly different. This could infer both groups have a similar opinion or perception of the measured variables overall. However, because there is no statistical difference between the two groups, that does not mean there is no difference between individual questions, as illustrated by Figure 6.1 which includes the responses of 19 interview participants to the question "Do you agree that innovation in healthcare is 'valued' in Wales?". Using a five-point scale, the distribution of responses is as follows: Strongly Disagree (0), Disagree (1), Neither (5), Agree (10), and Strongly Agree (3). The mean rating of 3.79 suggests a moderately positive view overall, with standard deviation (SD) of 3.34 indicating a moderate degree of variability in responses. For a complete breakdown of the SD across both the interviews and the self-completed surveys, see Appendices 6 and 7 respectively.

4 Conclusions

As Wales continues to grapple with the socio-economic effects of Covid-19, it is doing so in the toughest financial environment post devolution (Drakeford, 2023b). Since 2010, Wales has placed an emphasis on innovation to improve health and economic population outcomes. This is no different to the rest of the UK (Edler and Fagerberg, 2017), although Wales appears to have inadvertently manifested a constant stream of policy and strategy formulation (see Table 1; Appendix 4) with little focus on the policy implementation required to 'closing the gap' (Hill and Hupe, 2015) in terms of its health inequalities and poor productivity levels, that have been steadily declining since the 1990's (Marmot and Bell, 2012a; KPMG, 2017; PHW, 2021).

The primary data indicates that healthcare innovation capability and collaboration with life sciences is heavily reliant on inter-related themes which effectively create the 'value' when the nexus combines. This arguably has potential to create a paradigm shift in organisational behaviours from 'value through strategy' to 'value through implementation', these are:

- Strong, dynamic leadership that is equipped to take risks, try different approaches and when necessary, supported to fail fast, learn quick (Cousins, 2023b; Weintraub and McKee, 2019b).
- Policy output prioritisation, focus on 'value' not as a cliché but as a key test, potentially reducing the amount of 'priorities' that issue during any single government term, providing headspace for the workforce to think and do evidence-based sustainable healthcare innovation differently (The NHS Wales, 2020; WG 2023e, p.9).
- 'Closing the gap' with a strong, confident 'one voice' offer to industry and investors. This could potentially include presenting Wales as a global 'test bed' nation to see what the health and care system can do alongside innovative business to tackle an identified and prioritised cluster of inequalities through a cross-organisational partnership approach (NHS Confederation, 2021).
- Improve productivity through providing the NHS in Wales with 'freedom to operate' commercially in its role as an anchor institution that engages and collaborates effectively with industry (Walpole et al, 2022) through reducing complexities, regulations, and risk aversion; using its spend power to affect economic impact (Welsh NHS Confederation, 2021b, p.8).

The above are key conclusions drawn from the primary data supported by the literature review. It is noteworthy that content-rich data mined by the research potentially opens avenues for further research including:

1. The role of government in 'guiding' and not overly managing life sciences.
2. The potential gap in the Wales evaluation process for measuring innovation driven healthcare outcomes.
3. Building an understanding of the 'one thing' that Wales is or wants to be globally recognised as being excellent in.
4. Further exploration of the perception that 'AHW' has not embedded a 'culture' of innovation and transformation across the NHS in Wales.

This research concludes that healthcare innovation and life sciences are 'valued' by Wales, albeit subject to 'variation' in understanding. Figure 8 below develops the conceptual framework beyond Figure 4, taking account of the inter-connected notions derived from the research findings which suggest Wales needs to transition from healthcare innovation being 'valued' to it becoming a prudent 'value' in its own right. It is proposed that the conceptual framework at Figure 8 offers a model to aid the focus of future policy development in healthcare. A focus that has relevance and importance to redesigning how an over-stretched system uses limited resources wisely to tackle the increasing health inequalities and deteriorating productivity levels that have sunk deep roots in Wales over recent decades (OECD, 2020a, p.22; CHEW Report, 2021, p.4).

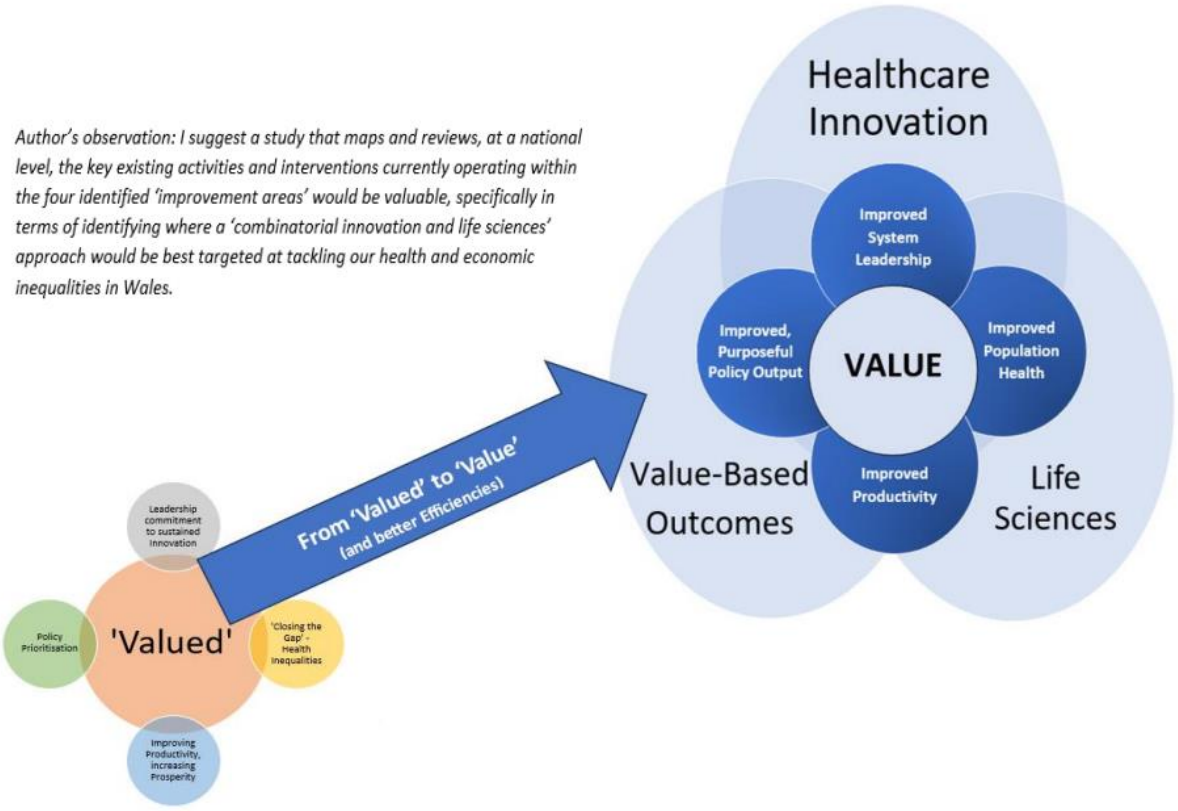


Figure 8. The 'Value' Nexus – a conceptual framework (Source: Author's own).

5 Key Recommendations

A common thread throughout the study was a recognition that 'value' in healthcare systems is created by prioritising and doing a few things well, not by trying to deliver everything. This is a fundamental behavioural change advocated by the literature and confirmed by the primary data. This Report offers several inter-connected recommendations for consideration by Welsh Government and its partners.

5.1 Recommendation 1

The Delivery Action Plan beneath 'Wales Innovates' has the significant role to play in implementing a consistent approach and focus on areas that matter most to the population of Wales (see Table 2). Linked to this is a need to create an effective, 'light touch' framework for agile and pro-value decision making that is focused on prioritising operational outcomes and impacts from policy that directly and demonstrably reduce health inequalities and or improve productivity levels in Wales (OECD, 2020c). Consequently, this would allow the 'Action Plan' to act as a catalyst for joint leadership working between the public and private sectors.

5.2 Recommendation 2

To demonstrate the importance of system leadership by reducing the proliferation of new strategies and priorities that risk 'swamping' our delivery partners in trying to deliver everything (Porter and Teisberg, 2006); instead bringing into focus 2 or 3 identified priority innovation areas that overcome the 'policy implementation gap' (Delbridge et al, 2021d, p.32; Gunn, 1978b) by making best use of assets and long-term visions already in place (Hudson et al., 2019b).

5.3 Recommendation 3

There is clear support for a resourced 'life sciences function' that is inclusive (Mazzucato et al, 2021) consisting of membership from across the key policy areas of economy, health, and education that all have

impact on healthcare and life sciences. This needs to be a more ambitious approach that is enabled to embrace risk and pursue strategic partnerships with industry. To do this, Welsh Government should establish:

1. A joint office for healthcare innovation and life sciences at the centre of government, reporting directly to the Permanent Secretary; this would add value to and strengthen the next programme for government through better policy co-ordination, contribute to informed investment decisions and lead activities in responding to developments elsewhere in the UK (as exemplified in Figure 9 below); and
2. A Life Sciences and Healthcare Innovation Leadership Council led by industry and attended by Welsh Ministers, UK Government partners specifically Innovate UK and OLS, and next generation leaders. It should adopt an 'agency' approach to ensuring 'one voice, one narrative' and identifying joint public-private strategic partnership opportunities for growing local businesses, increasing productivity, and spreading proven innovations that have been shown to drive down costs and increase Value-Based outcomes for patients. The inclusion of representation from UK Government would arguably create more effective relationships with the potential to attract greater investment from UK Government which could help strengthen the research and innovation base in Wales (Reid Review, 2018).

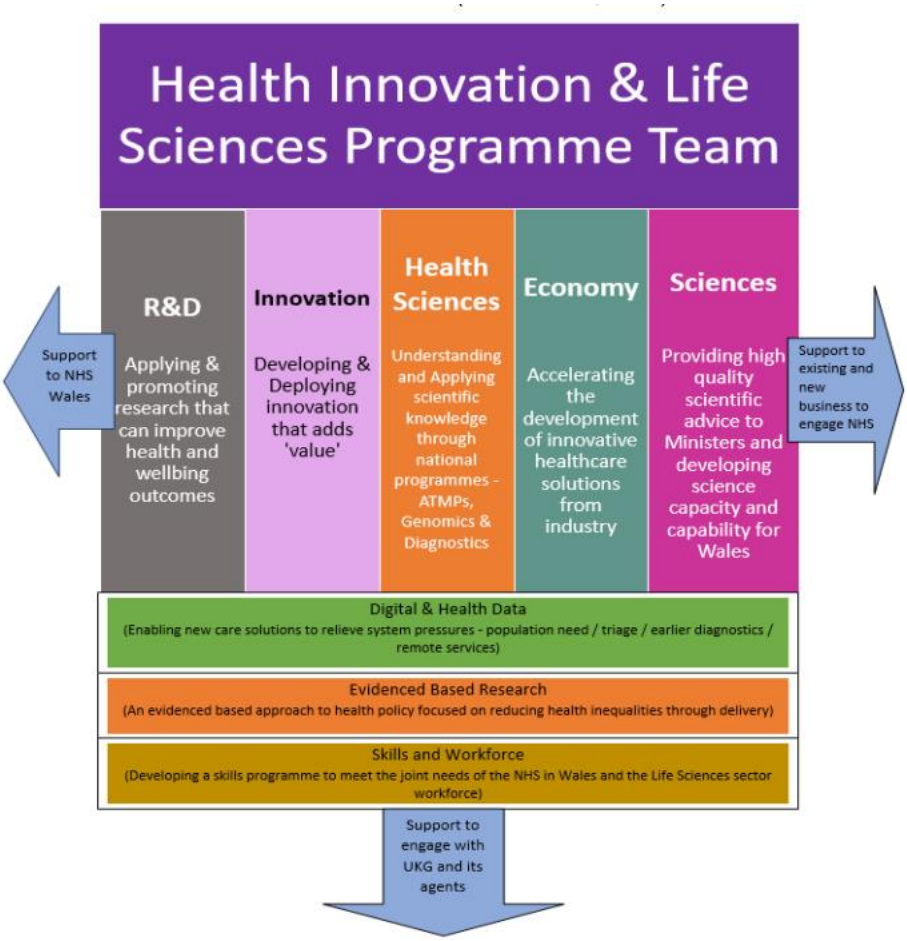


Figure 9. Conceptual Framework for a Health Innovation and Life Sciences Programme (Source: Author's own).

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7 Appendix 1: Research Ethics Committee Approval

Swansea University
Prifysgol Abertawe

Approval Date: 12/06/2023

Research Ethics Approval Number: 1 2023 6926 5756

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	An investigation into whether Wales truly 'values' Healthcare innovation and Life Sciences?
Applicant name	DR RODERICK THOMAS
Submitted by	DR RODERICK THOMAS /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/Project/Index/8651

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any query regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

8 Appendix 2: Semi-structured interview and survey sheet

Swansea University
Prifysgol Abertawe

PARTICIPANT INTERVIEW / SURVEY SHEET

An investigation into whether Wales truly 'values' healthcare innovation and Life Sciences.

Lead Interviewer:

Date Completed:

Participant Name:	
Title:	
Organisation:	

You have agreed to take part in some research. Before we commence important to check that you've returned a completed participant consent form and read the information sheet provided. Yes / No? delete as appropriate

Quick Recap and summary of the purpose of the research?
I am conducting research as part of my Masters in Advanced Health and Care Management (Innovation and Transformation). The purpose of the study is to explore whether healthcare innovation and life sciences are 'valued' by Wales. This is particularly pertinent for government in prioritising future leadership, policy and investment decisions that can help, or not, to create a more confident, healthy, innovative and resilient Wales.

Participating in this study is voluntary and participants may withdraw from the research without giving a reason at any time and without penalty.

Participants must agree for the interview to be recorded (anonymously) on their consent form.

What are the possible benefits of taking part?
Whilst there are no immediate direct benefits for those people participating in the project, it is hoped that this work will influence policy and practices at Welsh Government more widely. More specifically, in ways that will help form a better understanding of the importance of healthcare innovation and life sciences, their future potential as key strengths for Wales and how that might align with and support the delivery of better value outcomes for patients across Wales. And in doing this, how that contributes to economic growth that can support Wales to better *'help itself'* within a competitive UK environment.

Data Protection and Confidentiality
Your data will be processed in accordance with the Data Protection Act 2018 and the General Data Protection Regulation (GDPR). Your data will only be viewed by the researcher and supervisory team.

The data controller for this project will be Swansea University.

Swansea University
Prifysgol Abertawe

Key Themes

A. What 'value' is placed upon innovation in healthcare in Wales? And how is this measured?

Q1. Do you agree that innovation in healthcare is 'valued' in Wales.

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain what measure(s) you applied to support your answer.

Q2. Do agree that 'A Healthier Wales' has embedded a 'culture' of innovation and transformation across the NHS in Wales?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible.

Q3. Do you agree that Welsh Government has successfully created an environment for healthcare innovation to be fostered and spread.

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible.

Version 1, GDPR compliant

Swansea University
Prifysgol Abertawe

B. How competitive is Wales' life sciences sector across the UK? Is there a clear, cohesive strategy to support life sciences and healthcare innovation in Wales?

Q4. To what extent do you agree that Wales has reacted strongly to the UK Government's growing emphasis on an innovative life sciences sector?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible.

Q5. Do you agree that Wales needs to increase its own investment in healthcare innovation and life sciences?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible.

Q6. To what extent do you agree that UKG and other non-UK investors in Life Sciences are more likely to invest in Wales now that Brexit has been fully implemented and the Covid-19 pandemic is no longer considered a public health emergency?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible, including the impact, some four years on, of the 2019 Reid Review (gov.wales).

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C. Are there policy barriers to A Healthier Wales that are constraining Wales' growth in the life sciences and innovation sector? And what is the evidence to demonstrate that these are key issues?

Q7. Do you agree that 'A Healthier Wales' has made Wales more innovative?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible, including the key factors that influenced your response.

Q8. Do you agree that the recently launched *Wales Innovates: creating a stronger, fairer, greener Wales* (Wales innovates: creating a stronger, fairer, greener wales (gov.wales)) will overcome the key barriers it identifies as preventing Wales becoming more innovative and stronger – constrained public finances, silo working, achievable goals?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible.

Q9. Do you agree that Value Based healthcare has a key role to play in helping life sciences and innovation better focus on improved health and care outcomes?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible.

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Swansea University
Prifysgol Abertawe

D. What is the importance of system leadership to 'A Healthier Wales' and is it the key aspect to developing the Life Sciences Sector in Wales?

Q10. In the current environment compared to the pre-pandemic period (i.e. before March 2020) do you agree that system leadership is actively visible in supporting collaborative innovation in your Organisation?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible.

Q11. Do you agree that Life Sciences is a key sector of importance to Wales? And if yes, what are the leadership not policy barriers preventing Wales from becoming an excellent location for life sciences, not just good?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible taking into consideration leadership not simply policy barriers.

Q12. To what extent do you agree that Welsh Government needs to strategically develop and manage a co-ordinated life sciences programme that provides a clear steer to the NHS and industry on shared priorities?

Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
☐	☐	☐	☐	☐

Please explain your answer and provide supporting evidence where possible.

Jason Lintern
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Swansea University
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roderick.a.thomas@swansea.ac.uk

20 June 2023 | 20 June 2023

Version 1, GDPR compliant

9 Appendix 3: Search Methodology

This Research Report deployed a literature search that comprised of the following approach:

Search Methodology

Sources	**MEDLINE, Welsh Government Libraries, Google Scholar, and Google**
Search Terms	Healthcare or health care or social care (innovation) = over 2000 items.
	Value, value-based = 133 items.
	A Healthier Wales = 3 items.
	Government healthcare policy = over 2000.
	Life sciences, life sciences Wales = over 5000 items.
Included	UK, Wales, England, Scotland and only papers in the English Language*.
Excluded	Pre-2010 and without relevance to either UK or Wales.
Additional	11 Key Policy papers and publications known to the Report Author were included (Table 1 refers), as well as those through reference checking and additional reading.
*Europe published papers were included through reference to the OECD but only where they related specifically to the UK and or Wales.	

The search commenced with a healthcare innovation and life sciences focus, to specifically support the main thrust of the study, using the terms captured in the table above. These searches returned a huge number of results, over 9,000 items, requiring a narrowing of the search parameters by adding 'value' or 'Wales' to make each search more meaningful and manageable. Irrelevant or out of scope papers were subsequently rejected, as were duplicates, mainly through review of titles and abstracts and use of advanced search techniques to ensure only the most relevant results relating to the key themes of the study were reviewed in detail (75 in total).

The results were rated as follows: R1 – Highly Useful, R2 – Useful, R3 – Wider interest or implications for the study. It is acknowledged that any form of prioritisation is a subjective task, and this method has been applied being both flexible and appropriate to the timeline of the research project – it is noted that not all rated papers were directly referenced or quoted in the final report but assisted with the wider understanding of the author. Ratings also took account of the list of adequate sources recommended by Swansea University with greater prioritisation afforded to government publications, peer reviewed journals and organisational reports, underpinned by Year of Publication and inter-connected factors within the literature. Links to all the sources referenced within the study have been provided at Section 6 of the Report.

Rating 1 sources introduce specific government policies or strategies that might be of relevance, with a narrower focus on value or importance of innovation within health and care, life sciences sector or related system leadership environments. This includes health and economic inequalities relating to Wales.

Rating 2 sources focus on broad overviews of innovation theories relating to value and importance within a health and care setting, introducing overarching theories of innovation, system leadership or comparing several different theories or health and economic inequalities across the UK countries and regions.

Rating 3 sources are presented for wider information and presents a range of material either with a very general contextual focus on innovation theory, or with a narrower focus on particular facets of healthcare innovation or specific innovation leadership examples.

Welsh Government library and archive services were used, as well as health database MEDLINE and more broader tools Emerald Insights, Google Scholar, and Google.

The final text cites 61 references including duplicates of which includes 17 references added through the additional reading and iterative design of the study.

The report is framed more for the workplace rather than as a traditional 'dissertation thesis, and therefore is deliberately presented as a 'research project' that can impact upon and be used by the employee's organisation.

10 Appendix 4: Key Welsh Government health policy documents published in One Assembly Term (2011-16) (source: National Assembly for Wales Research Briefing May 2016) rs16-007-e.pdf (senedd.wales)

Performance

- An NHS outcomes framework was first published in April 2015.
- A public health outcomes framework was published in March 2016.
- The social services outcomes framework was published in November 2015.

Quality and safety

- Achieving excellence - The quality delivery plan for the NHS in Wales 2012 – 2016.
- Delivering safe care, compassionate care (published 2013).
- The Welsh Government's response to the report of the Inquiry into failings in the Mid Staffordshire NHS Foundation Trust (the Francis report).
- Safe care, compassionate care - A national governance framework to enable high quality care in NHS Wales.
- Health and care standards (2015).

Complaints

- Putting things right (2011).
- Keith Evans' independent Review of concerns (complaints) handling in NHS Wales (June 2014).
- A guide to handling complaints and representations by local authority social services (2014).

Welsh Language

- Strategic framework for Welsh language services in health, social services and social care (2012).

Cross-border healthcare

- Cross-border healthcare Protocol for cross-border healthcare services (2013).
- Cross-border healthcare and patient mobility - Guidance for the NHS (2015).

Major conditions etc.

- A strategic vision for maternity services in Wales (2011).
- Stroke delivery plan (2012).
- See also: − Health and Social Care Committee inquiry into stroke risk reduction (report published 2011, follow up 2014).
- Cancer delivery plan (2012). **See also**: − Health and Social Care Committee inquiry into progress made on implementing the cancer delivery plan (report published 2014).
- End of life care delivery plan (2013).
- Heart disease delivery plan (2013).
- Delivery plan for the critically ill (2013).
- National oral health plan (2013). **See also**: − Children, Young People and Education Committee inquiry into children's oral health in Wales (report published 2012) − Health and Social Care Committee inquiry into orthodontic services in Wales (report published 2014).
- Diabetes delivery plan (2013). **See also**: − Health and Social Care Committee inquiry into the implementation of the national service framework for diabetes in Wales (report published 2013).
- Eye health care delivery plan (2013).

- Neurological conditions delivery plan (2014).
- Respiratory health delivery plan (2014).
- Liver disease delivery plan (2015).
- Welsh implementation plan for rare diseases (2015).

Mental health

- National dementia vision for Wales (2011).
- Together for mental health - A strategy for mental health and wellbeing in Wales (published 2012, 10-year strategy). Also: Together for mental health - Delivery plan 2012-16. Consultation on Together for mental health – delivery plan 2016 – 2019 (ended April 2016).
- Talk to me 2 - Suicide and self-harm prevention strategy for Wales 2015-2020 (2015).
- The duty to review final report - post-legislative assessment of the Mental Health (Wales) Measure 2010 (2015). The Welsh Government's evaluation of the Mental Health (Wales) Measure 2010 (this is a requirement of the legislation). **See also**: − Health and Social Care Committee post-legislative scrutiny of the Mental Health (Wales) Measure 2010 (report published January 2015).
- Together for children and young people (2015). **See also**: − Children, Young People and Education Committee inquiry into child and adolescent mental health services.
- Refreshed autistic spectrum disorder strategic action plan Wales (consultation, ends May 2016).

Public health

- Chief Medical Officer for Wales's annual report (published October 2015) provides an overview of population health in Wales.
- Tobacco control action plan for Wales (2012) and Tobacco control delivery plan.
- Working together to reduce harm - The substance misuse strategy for Wales 2008-2018. A consultation on a delivery plan for 2016 – 2018 ended March 2016. **See also**: − Health and Social Care Committee inquiry into new psychoactive substances (report published March 2015) − Health and Social Care Committee inquiry into alcohol and substance misuse (report published August 2015).
- Draft Public Health (Minimum Price for Alcohol) Bill (consulted on during 2015).
- Sexual health and wellbeing action plan for Wales 2010-2015.
- All Wales obesity pathway (2010).
- Turning the curve on childhood obesity in Wales - Preventing childhood obesity steering group: Final report (2015).
- Child measurement programme for Wales. Surveillance programme which monitors patterns of child growth to inform service planning. The programme publishes annual reports. **See also**: − Children, Young People and Education Committee inquiry into childhood obesity (report published 2014) − Health and Social care Committee inquiry into the availability of bariatric services (report published 2014).

Social Care

- Sustainable social services for Wales: A framework for action (2011).
- Three-year plan for social services improvement: 2013-14 – 2015-16.
- Carers strategy in Wales and Carers strategy delivery plan 2013-16.
- A framework for delivering integrated health and social care for older people with complex needs (2014). **See also**: − Social Services and Well-being (Wales) Act 2014.
- Regulation and Inspection of Social Care (Wales) Act 2016.

11 Appendix 5: Statistical Analysis Statement

In Excel, visualisations have been generated in both the "LD Survey" and "LD Interview" tabs. These charts display aggregate responses for each respective group as well as breakdowns for individual questions. Additionally, each type of response (e.g., positive, neutral, negative) has been assigned a numerical score. These scores enable the calculation of total values, which facilitate both descriptive and inferential statistical analyses.

Stats have been carried out on LD surveys, LD interviews and Variance and T test tabs.

Inferential Statistics can be used to gain a deeper understanding of quantitative data. Standard deviation is used to conduct t-tests or Mann-Whitney U test, which can help determine if the means of two groups are statistically different.

To understand whether to carry out a t-test or Mann-Whitney test the assumptions of the data should be tested to see if it meets the assumptions of normality, equality of variance, and independence. It can be safely assumed that independence assumptions are met for this data set, so we just needed to test for normality. Independent assumptions are mostly dealt with through the research design rather than statistical tests.

In this data set I have used a Jarque-Bera test to check the assumption of normality.

https://www.statology.org/normality-test-excel/

In this data set I have used a Levene's test to check the assumption of variance.

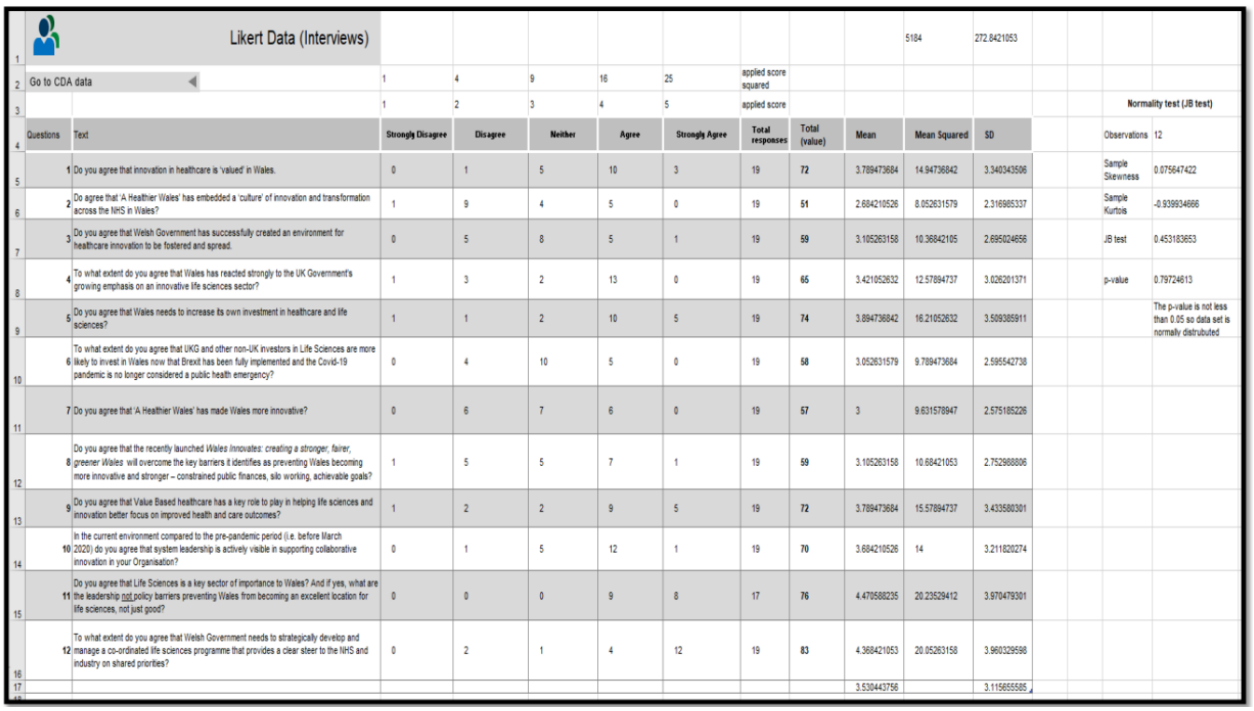
https://www.statology.org/levenes-test-excel/

As both tests have shown the data pass the assumptions, it is appropriate to use a t-test to conduct the statistical analysis. As there are two samples in this study, a two-sample t-test has been used.

https://www.statology.org/two-sample-t-test-excel/

The result on the t-test tab suggests the central tendencies (means) of both groups for the set of questions tested are not significantly different. This could mean both groups have a similar opinion or perception of the measured variables overall. However, just because there is no statistical difference between the two groups, that does not mean there is no difference between individual questions.

12 Appendix 6: Statistical Analysis Breakdown of the Semi-structured Interview Findings



Likert Data (Interviews)

Go to CDA data

												5184	272.8421053			
			1	4	9	16	25	applied score squared								
			1	2	3	4	5	applied score							Normality test (JB test)	
	Questions	Text	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Total responses	Total (value)	Mean	Mean Squared	SD			Observations	12
	1	Do you agree that innovation in healthcare is 'valued' in Wales.	0	1	5	10	3	19	72	3.789473684	14.94736842	3.340343506			Sample Skewness	0.075647422
	2	Do agree that 'A Healthier Wales' has embedded a 'culture' of innovation and transformation across the NHS in Wales?	1	9	4	5	0	19	51	2.684210526	8.052631579	2.316985337			Sample Kurtois	-0.939934666
	3	Do you agree that Welsh Government has successfully created an environment for healthcare innovation to be fostered and spread.	0	5	8	5	1	19	59	3.105263158	10.36842105	2.695024656			JB test	0.453183653
	4	To what extent do you agree that Wales has reacted strongly to the UK Government's growing emphasis on an innovative life sciences sector?	1	3	2	13	0	19	65	3.421052632	12.57894737	3.026201371			p-value	0.7972461
	5	Do you agree that Wales needs to increase its own investment in healthcare and life sciences?	1	1	2	10	5	19	74	3.894736842	16.21052632	3.509385911				The p-value is not less than 0.05 so data set is normally distrubuted
	6	To what extent do you agree that UKG and other non-UK investors in Life Sciences are more likely to invest in Wales now that Brexit has been fully implemented and the Covid-19 pandemic is no longer considered a public health emergency?	0	4	10	5	0	19	58	3.052631579	9.789473684	2.595542738				
	7	Do you agree that 'A Healthier Wales' has made Wales more innovative?	0	6	7	6	0	19	57	3	9.631578947	2.575185226				
	8	Do you agree that the recently launched *Wales Innovates: creating a stronger, fairer, greener Wales* will overcome the key barriers it identifies as preventing Wales becoming more innovative and stronger – constrained public finances, silo working, achievable goals?	1	5	5	7	1	19	59	3.105263158	10.68421053	2.752988806				
	9	Do you agree that Value Based healthcare has a key role to play in helping life sciences and innovation better focus on improved health and care outcomes?	1	2	2	9	5	19	72	3.789473684	15.57894737	3.433580301				
	10	In the current environment compared to the pre-pandemic period (i.e. before March 2020) do you agree that system leadership is actively visible in supporting collaborative innovation in your Organisation?	0	1	5	12	1	19	70	3.684210526	14	3.211820274				
	11	Do you agree that Life Sciences is a key sector of importance to Wales? And if yes, what are the leadership not policy barriers preventing Wales from becoming an excellent location for life sciences, not just good?	0	0	0	9	8	17	76	4.470588235	20.23529412	3.970479301				
	12	To what extent do you agree that Welsh Government needs to strategically develop and manage a co-ordinated life sciences programme that provides a clear steer to the NHS and industry on shared priorities?	0	2	1	4	12	19	83	4.368421053	20.05263158	3.960329598				
										3.530443756		3.115655585				

13 Appendix 7: Statistical Analysis Breakdown of the Self-completed Survey Findings

Likert Data (Surveys)

Go to CDA data

		1	4	9	16	25	applied score squared						
		1	2	3	4	5	applied score						Normality test (JB test)
Questions	Text	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree	Total responses	Total (value)	Mean	Mean Squared	SD		Observations	12
1	Do you agree that innovation in healthcare is 'valued' in Wales.	0	1	4	17	1	23	87	3.782608696	14.85217391	3.296902367		Sample Skewness	0.075647422
2	Do agree that 'A Healthier Wales' has embedded a 'culture' of innovation and transformation across the NHS in Wales?	2	7	7	7	0	23	65	2.826086957	8.913043478	2.467175819		Sample Kurtois	-0.939934666
3	Do you agree that Welsh Government has successfully created an environment for healthcare innovation to be fostered and spread.	1	10	7	4	1	23	63	2.739130435	8.391304348	2.377430107		JB test	0.453183653
4	To what extent do you agree that Wales has reacted strongly to the UK Government's growing emphasis on an innovative life sciences sector?	0	6	6	10	1	23	75	3.260869565	11.43478261	2.859005604		p-value	0.79724613
5	Do you agree that Wales needs to increase its own investment in healthcare and life sciences?	0	2	1	12	8	23	95	4.130434783	17.7826087	3.694884831			The p-value is not less than 0.05 so data set is normaly distrubuted
6	To what extent do you agree that UKG and other non-UK investors in Life Sciences are more likely to invest in Wales now that Brexit has been fully implemented and the Covid-19 pandemic is no longer considered a public health emergency?	4	6	11	2	0	23	57	2.47826087	6.913043478	2.105892354			
7	Do you agree that 'A Healthier Wales' has made Wales more innovative?	4	6	11	2	0	23	57	2.47826087	6.913043478	2.105892354			
8	Do you agree that the recently launched *Wales Innovates: creating a stronger, fairer, greener Wales* will overcome the key barriers it identifies as preventing Wales becoming more innovative and stronger – constrained public finances, silo working, achievable goals?	0	8	7	8	0	23	69	3	9.695652174	2.587595829			
9	Do you agree that Value Based healthcare has a key role to play in helping life sciences and innovation better focus on improved health and care outcomes?	2	1	1	10	9	23	92	4	17.39130435	3.659413115			
10	In the current environment compared to the pre-pandemic period (i.e. before March 2020) do you agree that system leadership is actively visible in supporting collaborative innovation in your Organisation?	1	3	7	9	3	23	79	3.434782609	12.82608696	3.064523511			
11	Do you agree that Life Sciences is a key sector of importance to Wales? And if yes, what are the leadership not policy barriers preventing Wales from becoming an excellent location for life sciences, not just good?	0	0	1	16	6	23	97	4.217391304	18.04347826	3.718344653			
12	To what extent do you agree that Welsh Government needs to strategically develop and manage a co-ordinated life sciences programme that provides a clear steer to the NHS and industry on shared priorities?	0	5	0	7	11	23	93	4.043478261	17.69565217	3.694884831			
									3.365942029		2.969328781			

14 Appendix 8: Participant Information Sheet

Swansea University
Prifysgol Abertawe

PARTICIPANT INFORMATION SHEET

An investigation into whether Wales truly 'values' healthcare innovation and Life Sciences.

You are being invited to take part in some research. Before you decide whether or not to participate, it is important for you to understand why the research is being conducted and what it will involve. Please read the following information carefully.

What is the purpose of the research?
I am conducting research as part of my Masters in Advanced Health and Care Management (Innovation and Transformation). The purpose of the study is to explore whether healthcare innovation and life sciences are 'valued' by Wales. This is particularly pertinent for government in prioritising future leadership, policy and investment decisions that can help, or not, to create a more confident, healthy, innovative and resilient Wales. This key question is, therefore, important for several reasons:

- there is a growing focus on innovation and life sciences at the UK level (LSV, 2021; UK Innovation Strategy, 2021) that threatens to widen the well-documented health inequalities between England, Scotland and Wales;
- the consideration of Wales as a 'hot spot' for life sciences (Badenoch, 2022), and its importance (or value) as a key priority for Wales; and
- to help understand the impact of leadership on 'A Healthier Wales' (2018), as the long-term plan for achieving 'better value' in health and social care through innovation, including redesigning our systems through an upskilled leadership and workforce.

This includes undertaking Qualitative Research with Senior Decision Makers from across Health and Care, governments, and the Life Sciences Sector. Understanding the policy barriers and what 'value', or not, the system leadership extends to successful innovation and a competitive, innovative life sciences sector in Wales will contribute to future decision making and, potentially, policy development. The research project will look to complement and build upon previous work undertaken by Willson (2021) and Delbridge et al (2021), both of which highlighted the current state of innovation activity in Wales, and the need for greater prioritisation by Welsh Government.

Face to face interviews are offered to those who wish to participate, and where people either feel uncomfortable or are unavailable for live interview, they will be invited to complete a 'survey' type questionnaire or potentially take part in a virtual 'peer group' workshop undertaken via MicroSoft Teams; the range of options being deployed will combine as a complete fieldwork package for the research (time period estimated as June-July 2023). The results will potentially inform development of future Welsh Government in Life Science and Healthcare Innovation. Your participation in this study

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will take no more than ***60 minutes***, and will be recorded for the purposes of analysis and accuracy.

Who is carrying out the research?
The data is being collected by Jason Lintern, Head of Innovation, Technology and Partnerships, Health and Social Services Group, Welsh Government as part of his studies. He can be contacted at Jason.lintern001@gov.wales or 2138656@swansea.ac.uk. The research has been approved by the School of Management Research Ethics Committee and the Director General, Health and Social Services Group, Welsh Government.

What happens if I agree to take part?
By agreeing to take part you will be asked a series of questions from a validated qualitative question set adapted for the purposes of this study. The approach will seek to gain insight into examples and perceptions of the importance of innovation in healthcare in Wales, including the role of a clearly constructed, competitive and innovative life sciences sector in that. Through interpretive methodology using a Likert 5-point scale rating, the study will explore further the importance of developing an innovative healthcare and life sciences sector and the role of system leadership in understanding the 'value' of both within a competitive UK environment.

Participating in this study is voluntary and participants may withdraw from the research without giving a reason at any time and without penalty. If you decide to withdraw you will be asked what you wish to happen to the information you have provided up that point. Please note that it will not be possible to withdraw retrospectively from the completed research. To withdraw, participants should contact Jason Lintern directly by email.

Recordings
Participants must agree for the interview to be recorded on their consent form. If the interview takes place online, there is no obligation for participants to have their camera on. Recordings will be stored securely, used only for research analysis and accuracy; all recordings will be safely destroyed when the researcher has completed all reports related to the research project. Cut-off date for the deletion of recordings is December 2023.

What are the possible disadvantages and risks of taking part?
There are no obvious disadvantages to taking part in this research, which has been approved by the Swansea University School of Management Research Ethics Committee and Welsh Government. There are no significant risks associated with participation through the exercise of anonymity.

What are the possible benefits of taking part?
Whilst there are no immediate direct benefits for those people participating in the project, it is hoped that this work will influence policy and practices at Welsh Government more widely. More specifically, in ways that will help form a better understanding of the importance of healthcare innovation and life sciences, their future

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potential as key strengths for Wales and how that might align with and support the delivery of better value outcomes for patients across Wales. And in doing this, how that contributes to economic growth that can support Wales to better *'help itself'* within a competitive UK environment.

Data Protection and Confidentiality
Your data will be processed in accordance with the Data Protection Act 2018 and the General Data Protection Regulation (GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher and supervisory team.

All electronic data will be stored on a password-protected computer file on a laptop. All paper records will be stored securely at the Researchers Premises. Your consent information will be kept separately from your responses to minimise risk in the event of a data breach.

Please note that the data collected for the study using a voice recording device will be made anonymous, following a 24hr settling period. Thus, it will not be possible to identify and remove your data later, should you decide to withdraw from the study. Therefore, if at the end of this research you decide to have your data withdrawn, please let Jason Lintern know before you leave, or within 24hr of conducting the research questionnaire.

Should you wish for your data to be destroyed prior to anonymisation during the 24hr settling period - please contact the Researcher by email at jason.lintern001@gov.wales or 2138656@swansea.ac.uk.

What will happen to the information I provide?
An analysis of the information will form part of the study report at the end of the research project and may be presented to interested parties and published in appropriate journals and related media. *Note that all information presented in any reports or publications will be anonymous and unidentifiable, and subject to Welsh Government approval.*

Data Protection Privacy Notice
The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data, and can be contacted at the Vice Chancellors Office.

Your personal data will be processed for the purposes outlined in this information sheet. Standard ethical procedures will involve you providing your consent to participate in this study by completing the consent form that has been provided to you.

The lawful basis that will be used to process your personal data will be - processing is necessary for the performance of a task carried out in the public interest, namely the 'research purposes' for special category data.

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How long will your information be held?
Your personal data will be processed so long as it is required for the research project. Personal data will be pseudonymised and we will endeavour to minimise the processing of personal data wherever possible.

Automated decision making and profiling [only required if applicable]
No automated decision making, or profiling will be used for this study.

What are your rights?
You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights.

Any requests or objections should be made in writing to the University Data Protection Officer:-

University Compliance Officer (FOI/DP)
Vice-Chancellor's Office
Swansea University
Singleton Park
Swansea
SA2 8PP
Email: dataprotection@swansea.ac.uk

How to make a complaint
If you are unhappy with the way in which your personal data has been processed you may in the first instance contact the University Data Protection Officer using the contact details above.

If you remain dissatisfied then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: -

Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow, Cheshire, SK9 5AF. www.ico.org.uk

What if I have other questions?
If you have further questions about this study, please do not hesitate to contact Jason Lintern or the School of Management, Swansea University:

Jason Lintern c/o School of Management Swansea University 2138656@swansea.ac.uk	Roderick Thomas School of Management Swansea University roderick.a.thomas@swansea.ac.uk
20 June 2023	20 June 2023

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15 Appendix 9: Participant Consent Form

Participant Consent Form

Swansea University
Prifysgol Abertawe

Project title: An investigation into whether Wales truly 'values' Healthcare innovation and Life Sciences.

Name and Contact details of the principal researcher: Jason Lintern, MSc Student (2138656@swansea.ac.uk) at Swansea University, School of Management – Advanced Health and Care Management (Innovation and Transformation).

		Participant initial
1.	I (the participant) confirm that I have read and understand the information sheet for the above study (dated 20/06/2023) which is attached to this form.	
2.	I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reasons.	
3.	I understand what my role will be in this research, and all my questions have been answered to my satisfaction.	
4.	I understand that I am free to ask any questions at any time before and during the study.	
5.	I have been informed that the information I provide will be safeguarded.	
6.	I am happy for the information I provide to be used **(anonymously)** in academic papers and other formal research outputs.	
7.	I am willing for my information to be audio recorded.	
8.	I have been provided with a copy of the Participant Information Sheet.	
9.	I agree to the researchers processing my personal data in accordance with the aims of the study described in the Participant Information Sheet.	

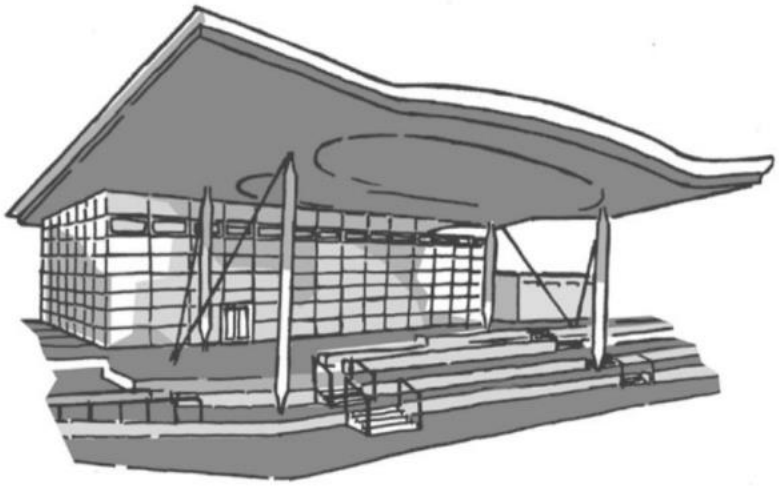
Thank you for your participation in this study. Your help is very much appreciated.

Print name of participant	Signature	Date
Print name of researcher	Signature	Date

This study is being conducted by Swansea University, School of Management.

When complete: Original copy for participant, one copy to be retained by researcher

Llywodraeth Cymru
Welsh Government



Can Metaphorical Analysis of Organisations Help to Interpret the current Context and Help Facilitate Development of Integration in Wales

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Abstract:

In Wales, despite repeated policies emphasizing integrated health and care since devolution in 1999, the achievement of seamless pathways of integrated care remains elusive, leading to a perceived lack of progress. This study investigates the conceptualization of integration and its enactment within Welsh systems, employing metaphorical analysis to explore its potential as a tool for facilitating integration.

Utilizing semi-structured interviews conducted through the "clean language" methodology, this research uncovers how metaphors influence perceptions and shape the possibilities for integration. The study analyses metaphors within the framework of organizational theory, revealing insights into the underlying characteristics of organizations and their association with integration.

Findings suggest that metaphors provide a means to express deeply held values and perceptions, offering new insights into entrenched issues and potential mechanisms for transformative change. The research culminates in a set of recommendations for leveraging metaphors to drive change and realize the ambition of creating integrated seamless pathways of care in Wales.

Keywords: Integrated care, Wales, Metaphorical analysis, Organizational theory, Healthcare integration, Policy implementation.

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1 Introduction

There is no single Welsh policy document that mandates integrated health and care in Wales (Lewis, 2015), but since devolution in 1999, repeated policies and strategies have focused on integration, with the resounding message of A Healthier Wales (Welsh Government, 2019) being on 'seamless pathways of integrated care'. However, this reiteration suggests to many a 'lack of progress' (Lewis, 2015).

In theory, integrated care is a 'simple principle of combining separate parts to work together as a whole' (Thompson, 2018). In practice, however, it has proven to be 'extremely complex, difficult to describe and notoriously difficult to achieve' (Mossialos, 2018). Integration across the UK has been described as 'patchy at best' (The King's Fund, 2022), with some commentators describing the two sectors as steadfastly 'split' as the 'Berlin Wall' (Glasby, 2003)

This report explores the possibility that part of the problem lies in the conceptualisation of integration and the systems within which it is enacted and uses metaphor as the focal construct of the framing process. It asks if metaphorical analysis of organisations can help to interpret the current context and be used as a tool to help facilitate integration in Wales.

The research uses data from semi-structured interviews to reveal how metaphors influence perceptions of underlying reality and help determine what solutions seem possible. Interviews were conducted using a methodology called 'clean language' recommended for academic research as it enables researchers to naturally draw out metaphors that are not influenced or 'contaminated' by their own and thus limits bias (Lawley & Tosey, 2002).

Metaphors are collected to describe the current organisational context as well as for organisations working at their best to envisage the impact of effective transformational change. It analyses themes through a framework in organisational theory where eight metaphors are used to provide insights into characteristics of organisations associated with each metaphorical group. Insights suggest that metaphors present the opportunity to express deeply held values and perceptions that otherwise would be difficult to declare, thus providing entrenched issues with new insight that could provide a mechanism for reconciliatory transformation.

The research goes on to provide a set of recommendations on how to use metaphors to affect change and realise the ambition to create 'integrated seamless pathways of care' in Wales.

2 Project Requirements

The aim of this study is to explore if organisational metaphors can help to interpret the context of and identify conditions for successful integration in Wales.

2.1 Context of Integration in Wales

The drive for health and social care integration is apparent not only in Wales but across all developed countries (Glasby, 2016). What is less clear is how to achieve it. Integrated care has many definitions but can be broadly understood as 'an organising principle that aims to improve care and experience through improved coordination' (Thompson, 2018). While integration can take many forms, this research applies it to integrating primary and community health and social care for adults. A recent policy document, 'Further, Faster,' (Welsh Government, 2023), prioritised integration for older people as demand and complexity posed by increasing levels of frailty have been described as the 'wicked issue' (Rutten-van Mölken, M. 2018) of healthcare. This group is often prioritised because of a higher instance of co-morbidities requiring multi-disciplinary cross-sectional care. Integration is also a crucial component of value-based healthcare, emphasising that the delivery structure should be based on integrated practice units around diseases or populations with similar needs (Porter, 2013).

Wales introduced a statutory duty for partners to collaborate in 2014 (Welsh Government, 2014). However, nearly ten years later, another initiative was introduced that upheld the 'policy vision' of integration but acknowledged that delivery was 'struggling to keep up' (Welsh Government, 2023). Mounting evidence substantiates the assertion that ‘integrated care has shown disappointing results’ (Hughes et al, 2022).

Whilst relatively little is known about what factors are associated with successful integration (Goodwin, 2013), it's clear that organisations have predominantly relied on structural, organisational change that has

not appreciated the relational aspects of culture and norms that often hold the power to success (Lewis, 2015). Research has shown these 'top-down', centralised approaches are inadequate to achieve meaningful change for integration (The King's Fund, 2022). Emerging evidence suggests that the success of integration is 'largely dependent' upon the attitudes and culture of the workforce (Thompson, 2018).

The historical design of health and social care as separate entities in Wales has created different organisational cultures routinely cited as 'barriers' to integration (Lewis, 2015). There is no 'definitive blueprint' (Thompson, 2018) for integration overall and no consistent Welsh model. Each area organises services within their specific context (Miller, 2016).

The overall picture in Wales is one of complexity, compounded by the 'culture clash' between health and social care. (Rixson, Allen & Gillen 2016) and whilst integrated care is an essential component of Welsh healthcare reform, complexity and inadequate approaches seem to have resulted in a 'void of shared understanding' (Goodwin, 2013) which has ultimately failed to deliver meaningly benefits in Wales (The Nuffield Trust, 2021).

2.2 Metaphors in Organisational Theory

A metaphor represents something through a visual image that makes an association with another, which can help to understand one thing in terms of another (Lakoff & Johnson, 1980). The fact that metaphor plays a part in organisational and management theorising is now widely accepted (Fogartey, 2023) as it can simplify complex ideas and reveal 'hidden truths' (Grant & Oswick, 1996). Schön (1993) coined the term generative metaphor for supporting the cultivation of fresh perceptions and theories, characterised by carrying over frames or perspectives from one domain to another.

Metaphors are often used in the realm of complexity as they can provide insight into complex issues as they contain symbolic language, which is 'basic to the intellectual process's humans use to determine truth, facts, and meanings, to interpret meanings and make sense of the world (Ortony, 1975). Their ability to simplify also comes with a warning as they can also be 'incomplete, biased, and potentially misleading', but an awareness of this makes them a useful tool to stimulate new ways of thinking which are 'liberating in orientation' (Grant & Oswick, 1996).

Using metaphors for integration could be considered especially appropriate, as they can 'identify and explore tacit knowledge and behaviour embedded in complex organisations that shape health and care practices' (Aita et al, 2003). Lusardi Tomerrelli & Artoli (2015) saw metaphors as an essential tool by which to explore and improve 'professional collaboration' in healthcare, as they are 'tools that forge relationships' (Lusardi et al., 2015).

The most recognised propagator of metaphorical organisational theory is Gareth Morgan, who, in his innovative book Images of Organisation (1986, 1996, 1997 & 2006), suggested a 'constructivist view' (Tohidan, 2019) to the discipline. He is considered one of the field's most 'innovative and radical thinkers' (McCabe, 2016), as he places organisational theory in a 'philosophical and sociological context' (Morgan, 2006). Morgan (1986) emphasises that metaphors are the 'cornerstones' of our understanding and thinking and asserts that all traditional organisational theories are fundamentally metaphorical.

According to Jermier & Forbes (2011), Morgan's work is an essential resource for theorists to interpret complex or ambiguous phenomena, as well as gain awareness and knowledge of the 'intricacies, vagueness, and paradox' of organisational life, which in turn creates conditions for change.

Morgan categorises metaphors in eight domains: machines, brains, organisms, cultures, psychic prisons, systems of politics, transformation, and tools of domination, outlined in Table 1 below.

Table 1: Morgans.

Metaphor	Definitions	Related theories	Examples
	An organisation is a series of interconnected parts designed and arranged in logical order and operated to produce repeatable outcomes. Emphasises closed systems, efficiency, and mechanical features of organisations	Scientific Management as the machine has been designed and is operated by management.	Machine Factory Production line
	An organisation is a living thing that responds to its environment and in order to survive adapts. Emphasises open system and adaptation.	Behaviourist theory. Human resource management theory. Systems theory. Contingency theory. Population ecology theory. Organisational ecology theory. Complex Adaptive System.	Animals (non- human) Vegetation Plant Eco-system Garden
	An organisation is designed to processes information and learning over time. Emphasises open system and learning.	Systems thinking (focuses on the cognitive features of organisations) Learning organisation. Learning Theories Highly Reliable Organisations Cybernetics Complex Adaptive System	Flock of birds Colony of ants
	An organisation is a mini society with its own culture, defined by its values, norms, beliefs, and rituals. Emphasises symbolic and informal aspects of organisations and creation of shared meaning.	Elements of contingency thinking. Human resource management theory Behaviourist approaches	Family Group Club Society Nationality
	An organisation is a game of individual influence and gaining power. Emphasises dominance and shifting alliances, conflict, and power in organisation	Stakeholder theory. Diversity of interests. Some aspects of behaviourist approaches.	Games Political alliances
	An organisation is a collection of myths and stories that restrict people's thoughts, ideas, and actions. Emphasises concepts of hegemony and coercion and ways that organisations 'entrap' employees.	Psychoanalytical theories that examine the psyche, the unconscious.	Patriarchy Cult Childhood toys
	An organisation is a means to impose individual will over others and exploit resources. Emphasises exploitation.	Marxist and critical theories to highlight exploitation, control and unequal distribution of power performed in and by organisations.	Violent political systems Wars (violence) Slavery
	As organisation is an ever-changing system indivisible from its environment. Emphasises transformation.	Emphasises processes, self-reference and unpredictability. Chaos theory Complexity theory Complex Adaptive Systems	Volcano Storms Smelting

Adapted from https://twitter.com/Haypsych/status/1532361446054629376 and Örtenblad (2016).

Morgan used a deductive approach to analysis. He developed metaphors to describe and explain organisational characteristics (Grant & Oswick, 1996) and then determined if they were of value for leaders to gain insight. There is an alternative methodology, where a conscious attempt is made to find underlying metaphors and assess if they influence 'ways of thinking and seeing' (Grant & Oswick, 1996), which is inductive and especially effective in revealing the attitude of employees (Renz et al. 2018).

Morgans acknowledged that he struggled to get people to be 'more open' and willing to offer images (Katzman, 1996) which may have guided his approach as Lawley & Tosey (2002) argue that despite substantial interest in metaphors, an explicit, systematic method for eliciting naturally occurring metaphors is lacking. They propose a method called Clean Language to resolve this issue because of its ability to stimulate natural metaphor.

Clean language was developed by a psychotherapist called David Grove, who noticed that many of his patients were often subtly influenced by his choice of language and that this was particularly true when using metaphors. Grove developed an approach to remove his own assumptions and metaphors in interactions to combat this. He proposed that this framework provides direct access to an individual's 'metaphorical world free from contamination or influence and, as such, named the approach Clean Language (Lawley & Tompkins, 2002). A detailed overview of Clean Language is included in Appendix 1.

It has been suggested that when used in an academic context, Clean Language may also help improve qualitative research by addressing the tendency for researchers to unintentionally introduce their own metaphors into an interviewee's account, thereby introducing an element of bias or influence (Lawley & Tosey, 2002).

2.3 Methodology

The aim of this study is to:

- Explore if metaphors used to describe organisations can help to interpret the context and identify conditions for successful integration in Wales.
- The objectives to achieve this aim are:
- Investigate the context and ambitions of integration.
- Investigate the use of metaphor as a tool in organisational theory and its appropriateness in the given context.
- Investigate what metaphors are used to describe health, social care and integrated services in the current context and future desired state.
- Investigate how metaphors can be used to interpret, understand, and develop both the current and future state of integration in Wales.
- The research approach is outlined in Table 2:

Table 2: Research Approach.

Approach	Rationale
Inductive and deductive	An inductive approach is suitable as it takes a small sample for analysis in great depth. Whilst deductive approaches usually large numbers in low depth they also allow analysis from theory into data through coding. Suddaby (2006) states that in practice research usually combines elements of both.
Qualitative and quantitative	Qualitative as it emphasises in-depth investigation, and qualitative to get the data from that investigation.

The *research methods* used to conduct the research are summarised in Table 3:

Table 3. Research Methods.

Method	Rationale
Literature review	To review critical information associated with integration and metaphorical analysis and provide a theoretical perspective for the research.
Semi-structured interviews	Semi-structured in-depth interviews are the most frequent qualitative data source in health services research (DeJonckheere, & Vaughn, 2019). They allow collection of open-ended data, to discover participant views, feelings, and beliefs essential for collecting metaphors. The use of Clean Language as a framework to conduct the interviews will support effective data collection and limit any bias.
Thematic analysis	According to Braun & Clarke (2006) this involves searching across a data set to find repeated patterns of meaning' and encourages coding of data. It will allow the research to identify, analyse, and interpret patterns generated through qualitative data and allow for in-depth understanding.

Table 4: Overview of Research Questions, Method, Design, and Data.

Research Question	Method	Design	Data
What is the context and ambitions of integration of health and social care in Wales?	Literature review	A broad search using the key terms 'integration' 'health and social care' 'integrated care' and 'integration Wales'. Identify relevant sources and mine references cited section of each relevant source for additional key sources. Analyse and categorise sources.	Case for change (Section 2.1) Definition (Section 2.1) Conceptualisation (Section 2.1)
Can metaphors be used as a tool in organisational theory and are they appropriate in the given context?	Literature review	A broad search using the key terms 'metaphor' 'metaphors for organisations' 'organisational theory' 'metaphors for health', 'metaphors for social care', 'metaphors for integrated care'. Identify relevant sources and mine references cited section of each relevant source for additional key sources. Analyse and categorise sources.	Rationale (Section 2.2) Conceptualisation (Section 2.2) Theoretical framework (Section 2.2)
What metaphors are used to describe health and social care in the current context and future desired state?	Semi-structured interviews	Interview questions created using clean language methodology (Appendix 2) Participant inclusion criteria of English-speaking and working within a health and social care setting with anyone under the age of 18 years and those with less than 1 year of experience in Welsh health and social care being excluded. Ethics approval requested and received (Appendix 3) Email sent to recruit participants (Appendix 4) Participants chosen to represent diversity of geography, employment status and background (Appendix 5) Participants sent research information and consent form (Appendix 6 and 7)	Participant interviews were anonymised to maintain confidentiality and transcribed (Appendix 8 to 19)

Can metaphors be used to interpret, understand, and develop both the current and future state of integration in Wales?	Thematic analysis	Coding framework (Appendix 20). A broad data scan of predominant metaphors for meaning. Coding of metaphors in line with the coding framework. Further analysis of transcripts to determine context and meaning. Final thematic analysis where codes were generated inductively. (Appendix 25)	Metaphors Map of predominant metaphors (Appendix 21) Coded analysis of data with rationale. (Appendix 22) Codes connected with sentiment and context. (Appendix 23) Coding matrix, with codes counted and sorted (Appendix 24) Final inductive thematic analysis of general themes (Appendix 25)

3 Analysis

Analysis shows that metaphors allowed participants' perceptions of their experience to be discursively shaped and developed through imagery, which meant that complex and sometimes multiple ideas were conveyed. As seen in Figure 1 the organisation as a machine was the most common metaphor overall. There was a strong correlation between the choice of metaphor and context, with political system, instrument of domination and psychic prison exclusively used for current services and flux and transformation, brain and organism being more heavily featured when services were working at their best. Some metaphors defied classification which were generally related to shapes or inanimate objects.

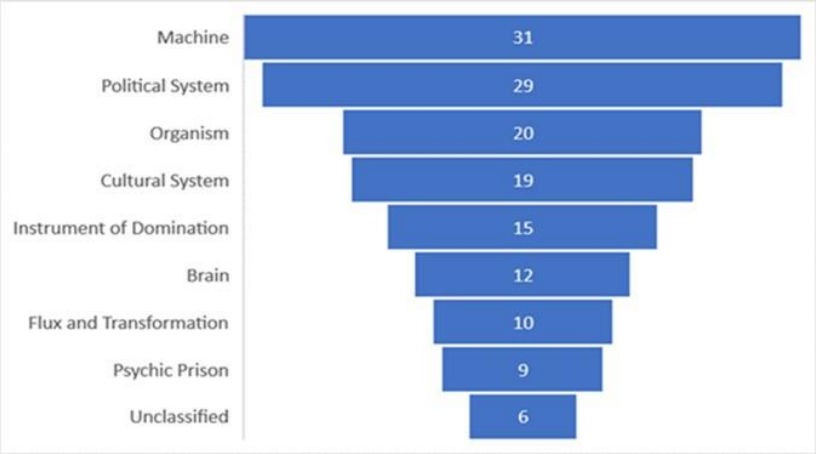

Figure 1: Metaphor Codes.

There was also consistency of words used overall as shown in the word frequency cloud in Figure 2 taken from the metaphor map (Appendix 21).

Figure 2: Word Cloud of Metaphors Overall.

Figure 3 shows the definite link between choice of metaphor and organisational affiliation. Health was dominated by the machine, social care cultural systems and integrated services political systems.

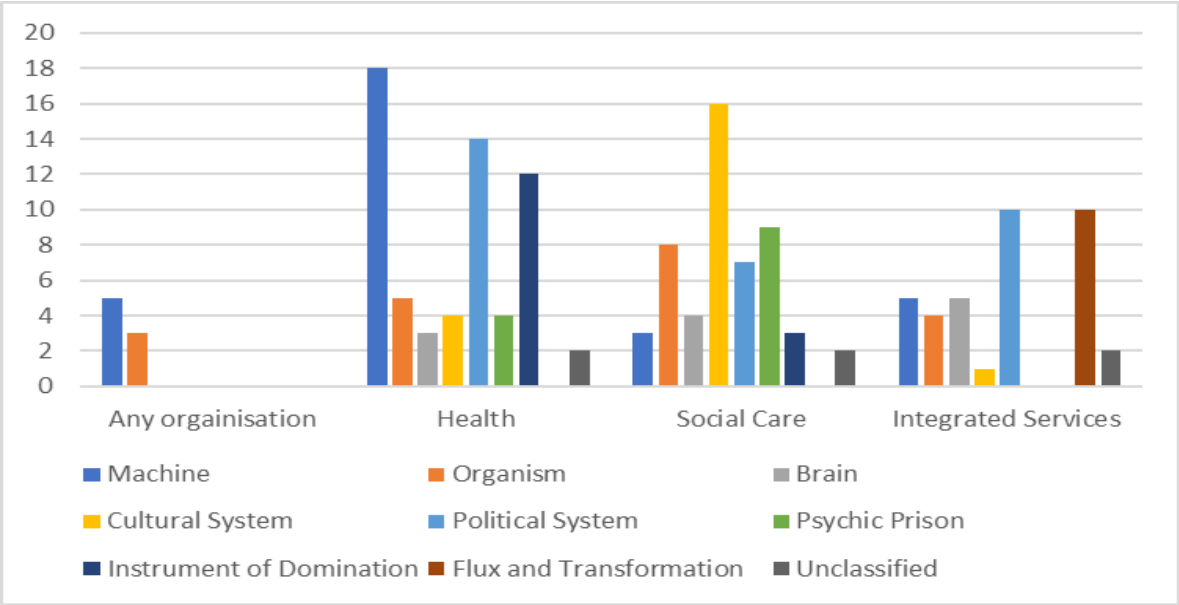

Figure 3: Codes and Organisation.

A visual representation of how organisations are perceived metaphorically across both contexts through word clouds of frequency is illuminating. Figure 4 shows all metaphors to describe health boards.

Figure 4: Words Used to Describe Health Boards.

Figure 5 shows consistent words used for social care.

Figure 5: Words Used to Describe Social Care.

Figure 6 shows that word frequency for integrated services used less repetition, other than duplication of the word arguing and the repeated use of one for services working at their best.

Figure 6: Words Used to Describe Integrated Services.

Context was of great significance, with current circumstances dominated by organisations as a political system, instrument of domination and machines, as shown in Figure 7.

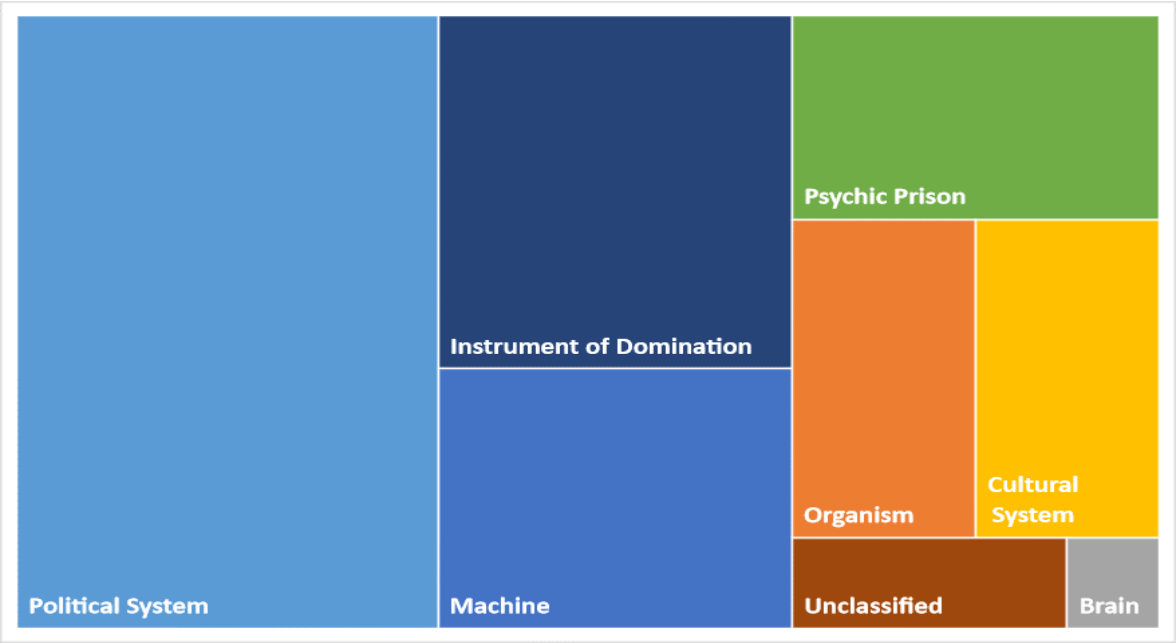

Figure 7: Metaphors for Organisations Now.

Word frequency in Figure 8, depicts the current situation as focusing on power, broken-down machines, and dysfunctional families.

Figure 8: Words for Current Context.

When organisations are working at their best, metaphors are entirely different. As expected, Figure 9 reveals a complete absence of metaphors associated with power and control (political system, domination, psychic prison). Although the machine metaphor still strongly features, there is more of a balance with organisations also described as organisms, brains as well as flux and transformation.

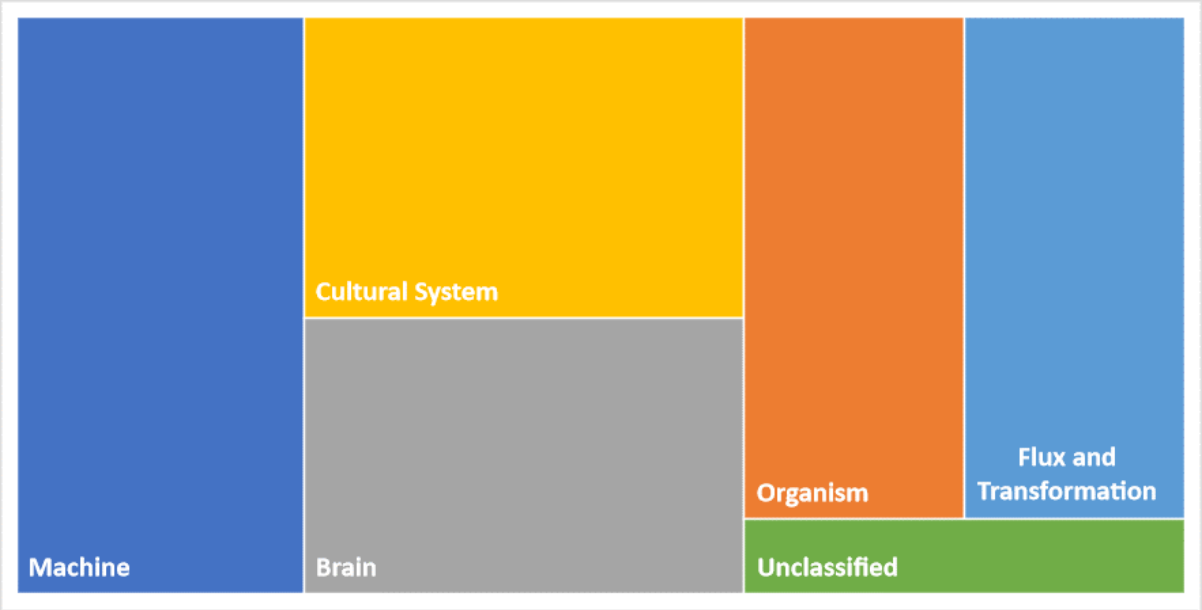

Figure 9: Organisations Working at Their Best.

In terms of word frequency, Figure 10, there are now more organic and circular words but also adjectives to quantify previous metaphors (e.g., well-oiled).

Figure 10: Words for Organisations Working at their Best.

The relationship between context remains with organisational affiliation; Figure 11 shows that health continues to be described as a machine now and, when working at its best, just described differently.

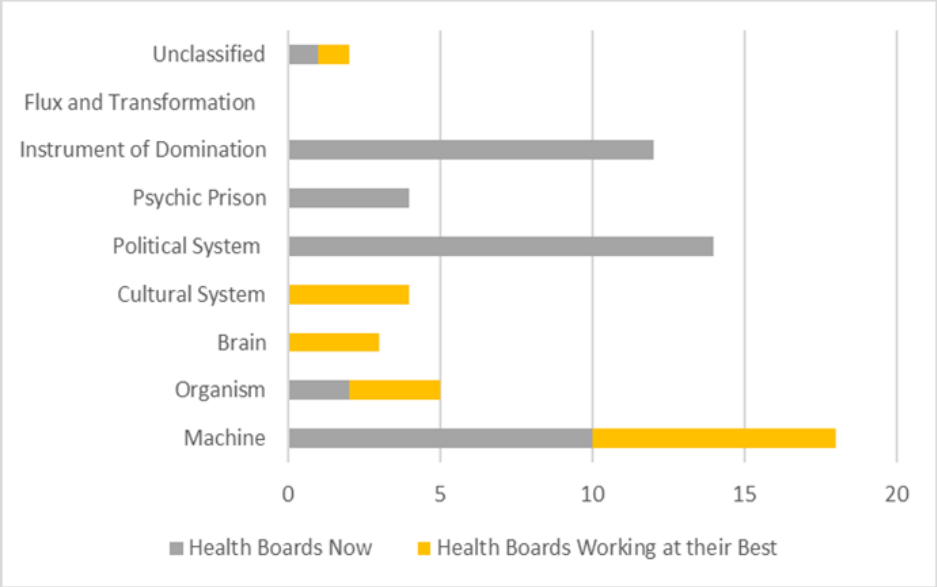

Figure 11: Metaphor Codes for Health Boards and Context.

Figure 12 shows that in social care the cultural system metaphor also endures.

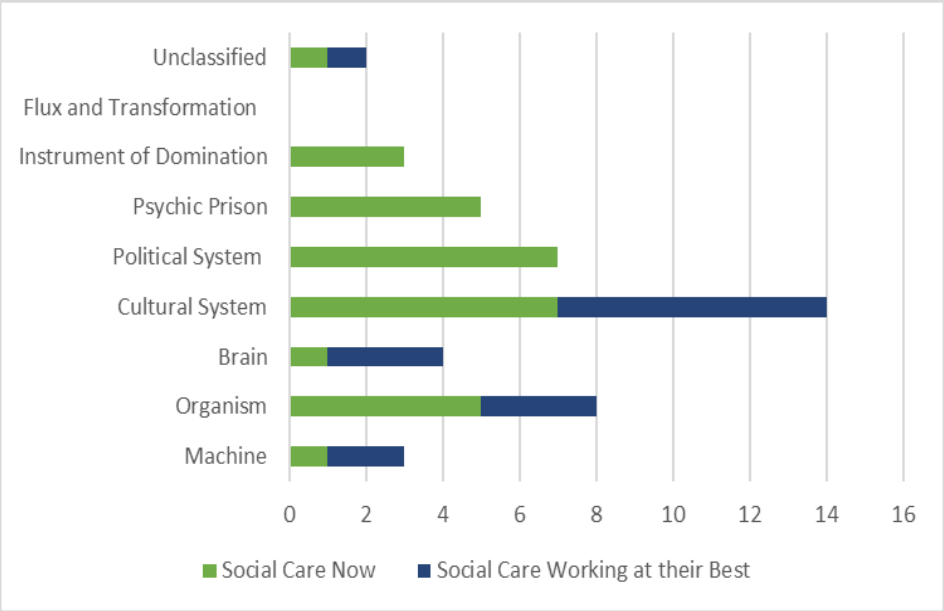

Figure 12: Metaphor Codes for Social Care and Context.

The starkest contrast in metaphors is those for integrated services, Figure 13, with the current landscape dominated by a political system and when working at its best by flux and transformation.

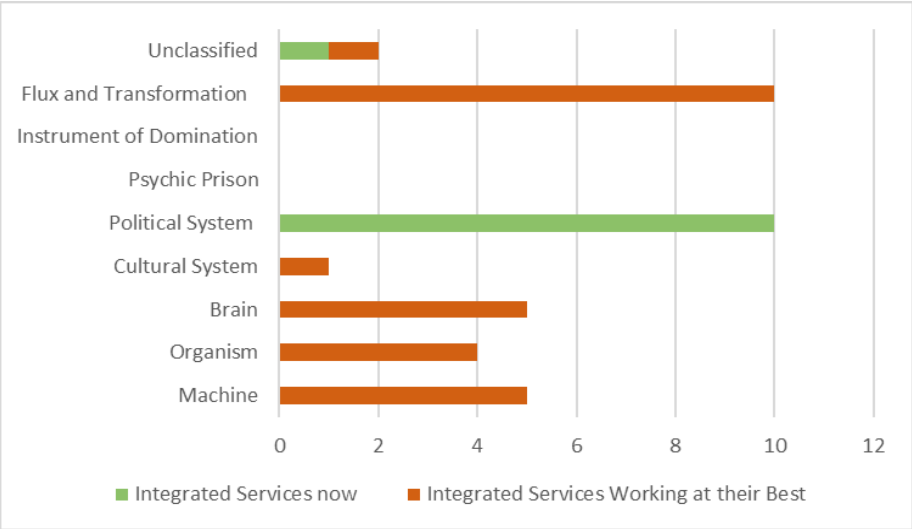

Figure 13: Metaphor Codes for Integrated Services and Context.

Participants used more than one metaphor to describe an organisation, so no direct correlation was found between metaphors used to describe integrated services working at their best and participants' employment status. There was some relationship, however, with chosen metaphor for sovereign organisation and vison for integration. This meant that those employed by health were more likely to describe good integration in mechanistic terms and social care in cultural ones, but this was often qualified which meant that the metaphors could be interpreted in multiple ways. For example, whilst artificial intelligence (AI) is a machine it also includes elements of the brain metaphor. The data suggested an organisational link between preferred metaphor and requirements for integration, but it could not be proved.

3.1 The Machine Metaphor

The organisation as a machine originally emerged from a modernistic confidence in science and rationality where there was a belief that an organisation could be designed to perform a defined process with consistent results. Unsurprisingly, an organisation in a mechanistic model relies on the centralisation of power where authoritarian leadership is necessary.

Figure 14 shows the enduring popularity of the machine metaphor across all organisational boundaries.

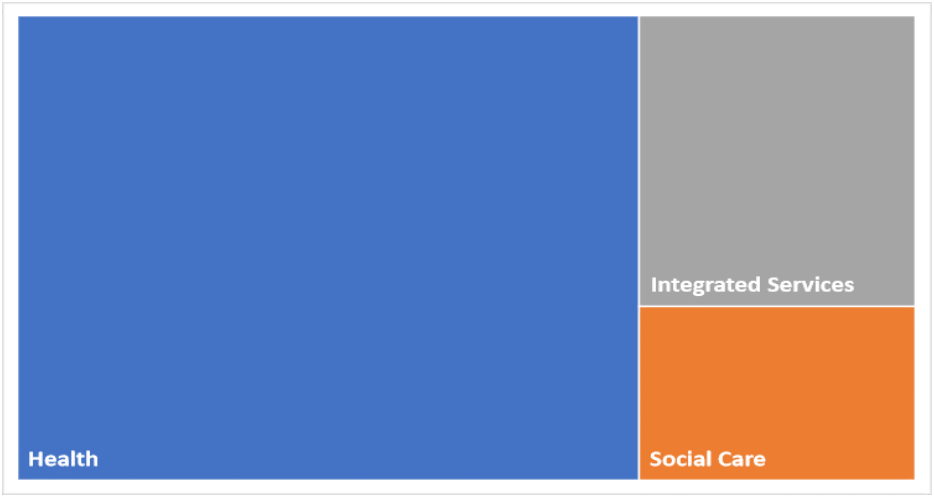

Figure 14: Organisations Coded to the Machine Metaphor.

However, it was most frequently used in a health context which is consistent with critical findings. Critics believe that the machine metaphor is ‘central’ to the NHS's identity, as it was conceived from a 'faith in

scientific rationalism' and as such designed as a machine to make 'generally available the benefits of scientific medicine', using the tools of planning and management as instruments of delivery (Klein, 2006).

The machine metaphor remains so pervasive that critics describe it as a 'meta-metaphor' (McCabe, 2016). and argue that mechanistic thinking perpetuates without conscious acknowledgement of the assumptions it brings (Akin, 2000).

Envisaging an organisation as a machine puts emphasis on 'efficiency and maximum utilisation of labour' (Itkin & Nagy, 2014) and exemplifies principles of scientific management, where jobs are broken down into functional parts, each with a specific and well-defined purpose. The extent of the faith in this model is shown in Figure 15, where organisations working at their best described as machines outweigh current depictions.

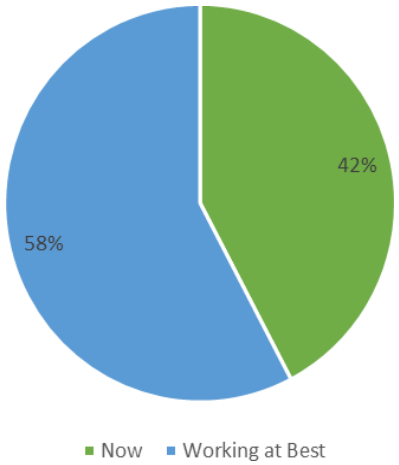

Figure 15: Organisations as Machines in Context.

This may be explained by the fact that metaphors for current practice include negative ones that are absent from the desired state, but it is evident that the machine is a compelling picture of efficiency and effectiveness for many participants, especially in health boards as Figure 16 shows.

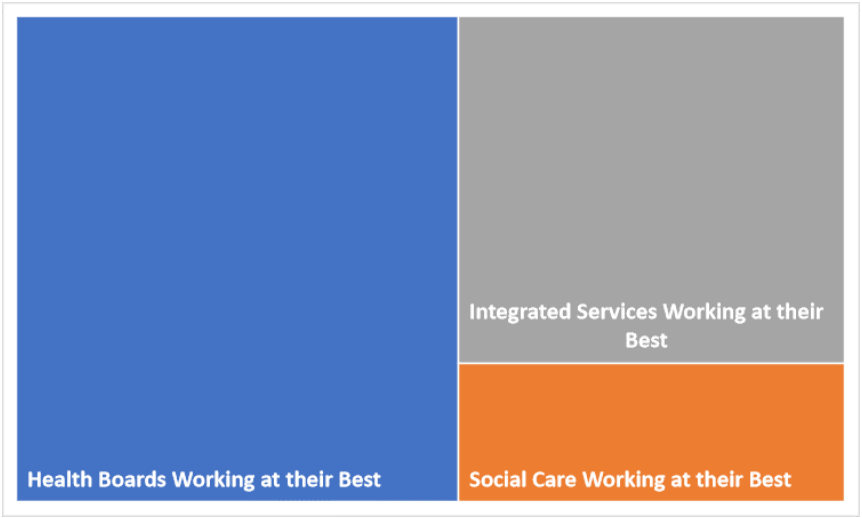

Figure 16: Organisations as Machines Working at their Best.

The current context is dominated by health boards as a machine, apart from one exception where social care is described as a 'pin-ball machine'. This image could also be interpreted as a game (political system) or childhood toy which matches Morgans's definition of a psychic prison. (Morgan, 1986).

The most significant contrast in the use of the metaphor across contexts is the extent to which efficiency is achieved. Figure 17 shows the repetition of words used to describe machines, described as 'well-oiled' when working well but currently as 'broken'.

Figure 17: Words of the Machine Metaphor.

Participant 8 highlights the use of this term to describe health when working at its best.

> *"I hate to be cliche, but I'm going to say it's like a well-oiled machine. And by that what I mean is there are multiple cogs in the system and each one of those cogs supports one another, there are big cogs, and there are small cogs but they're all as equally as important as the next in terms of keeping the machine running. Yes, but there is something missing in that machine. I think what that metaphor was missing, though, is the importance of good leadership, because each of the cogs should be equal in the System.*
>
> *The oil in the machine are the things that hold it together you know. I would class them as values, so the oil could be kindness, compassion, understanding, empathy. We need those things to make it run. And I think that helps the cogs work smoothly together and work with each other to achieve the best outcome."*

Machines working well are often described as having cogs that 'fit together'. The machine described by Participant 7 below exemplifies Taylorism, where organisations are broken down into cogs or interchangeable, functional parts with specific and a well-defined purpose.

> *"It's a Swiss clock ..... all the cogs are working properly and the mechanism is working fine and it just all fits together, ... going round and round and all fitting together, predictable. It just works properly with all the cogs inside." Participant 7.*

Participant 2 echoes scientific management principles with their description of an organisation working in a systematic, repetitive, and programmed way, where precision, standardisation, reliability, and productivity are of principal value. Every effect in this machine has a cause, and any issue can be solved by identifying problematic parts.

> *"A complex machine. Where every part knows what every other part is doing and doesn't vary around its function. Its predictable. It's quiet. It's smooth and it produces the same results every time. There's no emotion. There's no feeling involved and it's always the same. It's consistent. It hums along and it produces the same results over and over again." Participant 2.*

This description also reveals the underlying tension of a mechanistic organisation where 'no emotion' is prized. It ignores complex human dynamics, which acknowledges that organisations are made up of people with emotions. Organisations can have a mechanistic element such as formal structures, policies, and

procedures but are also made up of informal structures and relationships, with norms and patterns of behaviour which people create, often to meet their own practical and emotional needs (Burnes, 2011).

Many critics argue that the machine metaphor is an 'over-simplified fiction' that gives an 'illusion of control' (Edmonstone, 2019). This illusion is confronted in Participant 2's metaphor of a production line, a defining construct of scientific management principles, where they aim to reconcile its limitations when applied to a value-based health care system.

> *"A conveyor belt is like a pathway of care. It's clear what comes next what that patient needs and when, its sure because it's a process a formula. That's how I see pathways ..... a long line .... and that patient gets the right treatment at the right time and then moves onto the next. It is difficult, though, because sometimes the patient needs more than one thing at one time. That's tricky because then they don't know what order so maybe not that. It's hard because that's all I can think of. That means efficiency to me, and we have to make health boards more efficient.*

There is a strong sensory element to many descriptions where machines working well are often described as 'quiet' or 'humming'. In contrast, Participant 1 describes the health board currently as a machine that is 'old- fashioned' and not fit for purpose.

> *"Like a factory before computers or planning or automation. There is confusion and risk everywhere, so many near misses everywhere. Things being patched up and taped over and propped up and people with ladders trying to look for things that they don't know ..... shouting at other people because something's broken and nobody knows how to fix it." Participant 1*

This reveals the intrinsic flaw of the machine metaphor – they break down or need upgrading as technology or knowledge increases. The organisation as a machine is experiencing many attempts to 'patch it up' shown by Participant 1, who reveals the sensory discomfort this brings.

> *"I just picture it with breakdowns everywhere and workmen and repairs and people everywhere patching things up, not knowing why or what they're doing and there is smoke and steam and sweat and noise, so much grinding noise everywhere. And some parts are glowing, even on fire and some parts covered in mess." Participant 1*

A metaphor used by Participant 5 reveals the struggle to create an adequate analogy for improvement or transformation in machines, as they need to be 'shut down' or 'upgraded' to improve or 'keep up', which limits their ability to adapt to change.

> *"Its slick, you know when a machine runs out of oil and you have to and repair, there should be more opportunity to stop and repair and put in new parts or oil because its sticking, breaking. I think what health is not very successful is implementing successful change because the landscape around them keeps changing and they can't stop, pull up the drawbridge and patch things up." Participant 5.*

This attempt to reconcile an improvement with a machine is also shown by Participant 10, who reiterates that changes cause chaos, confusion, and danger.

> *"Multiple pipes, sort of all being randomly connected to each other. Just adding on to bits. Makes no sense and bits aren't connected and cobbled together The tree being a more natural organic thing and then this system being sort of man-made and added to and bolted on. And ultimately, if you could start again, you wouldn't design it like this, would you? You would create something much more streamlined and simple, but because of the way the system works, things just keep getting bolted on and keep getting messier and messier and stuff." Participant 10*

Participants 1 and 3 attempt to resolve this issue through metaphor by combining machines with more natural or organic elements that imply adaptation when working at their best.

> *"So not just one big bulky factory in the middle of an industrial estate but potentially multiple factories within this big green ecosystem, creating clean energy and sustainable natural produces that don't clog landfill or cause the air to be poisoned Literally would be like factories, but not a factory in an industrial sense, it would be like a smooth factory in that all bits equally play their part, like using the elements of the ecosystem, nature and putting them in and just submerging it so that you can 't actually distinguish ..... I don't know now because when I say factory in in my head, it's not, ... If it was working well it wouldn't have to be an industrial factory. It would be .... it would be multiple*

networks of making or creating something it isn't noisy, and it isn't dirty, it isn't that kind producing heat and smoke." Participant 1

"When something works really well it's like a machine something that's running smoothly. So perhaps the engine of a new car. But not a normal engine. Yeah, that's it's an engine of an electric car so that it not only runs smoothly, but it's running quietly as well. Its calm and quiet and smooth." Participant 3

This is further emphasised by Participant 2, who adapts a machine to involve a learning function which creates association to both brain and organism metaphors.

"Well I say machine but when you really think about it, that's wrong there's nothing more efficient than the human body and brain and animals and nature. So maybe I mean AI or the robots from Westworld that are able to think and have escaped!!" Participant 2

Whilst all machines described involve complexity, there remains an underlying assumption that even the most complicated can be understood by breaking it down into component parts and analysing them so that the machine can be 'repaired' or 'fixed'. Participant 2 highlights frustration with the system's ability to do this when they draw an analogy of repairing a complex machine by hitting it with a hammer.

"We are trying to repair this machine that's broken, ... fix that machine by banging with a hammer and telling the machine to just work harder, work harder, work harder. But all the only thing we can do is bang the machine ... harder and harder ... but they don't know how it works. And you know what they say when you've got a hammer the whole world looks like a nail." Participant 2

The person wielding the hammer reveals a correlation with a depiction of hierarchy and centralised control that was echoed by many and highlighted by Participant 5.

"You can't work a slick machine with just high-level people. you need people to make sure that that we keep it turning, that cogs keeps revolving around because without varying levels of people and it's not just about seeing the management senior management, this is about the people who make that machine tick over. We focus on the the top and organisation have defects or poor results." Participant 5

"A triangle. and its all about the little, tiny bit of the triangle at the top, its disconnected. And the wide part at the bottom, well, what's more important? But it's the small part of the triangle that makes the biggest decision on their own. The bottom makes the cogs turn. Decision making around those little triangles seems out of balance." Participant 5

The machine metaphors seem to describe a fundamentally defensive position, often accompanied by displays of personal unease, powered in particular by the cultural distance between senior management and operational staff, described by Participant 1.

"It's all so unmanageable ..... so it's being kind of ripped apart and whatever type of the machine it is or factory is breaking down and they are hiding away in an office, ... with their suits on glad to have taken off their overalls. And who can blame them. Because it's still kind of working We'll tell everybody that we fixed it. We'll put like a big sheet over that .... That's too big, too dirty." Participant 1.

Machine metaphors generate linear, simplistic models of delivery, management, and change that promote hierarchy and bureaucracy based entirely on processes of analysis and logic and are congruent with the 'top- down' approaches that have already been deemed inadequate to deliver effective integration. One study noted that the machine metaphor had a detrimental impact on collaboration and integration in healthcare. It found that the preference for the machine metaphor had a high correlation with low levels of collaboration, relationship difficulties and conflict between departments and management and summarised that this.

'metaphor seems to accompany a regressive process of relationship isolation ….. which impacts negatively on collaborative dynamics essential for healthcare' (Lusardi et al., 2015).

An overall evaluation of the consequence of the machine metaphor for integration is outlined in Table 5.

Table 5: Implications of the Machine Metaphor for Integration.

Benefits	• Clarifies the purpose or function of an organisation, e.g. to tell the time, to discharge from hospital within two days or to rehab older people. However, such a singular purpose is rarely attributed to one team or function in integrated provision. • It can also clarify the thinking behind bureaucratic structures and operations, with an attempt to view the parts of the machine working together for one function. • It works in some health contexts when there is a straightforward task, a stable environment, a repeatable outcome, and a focus on precision, such as an operating theatre; however, these environments are limited in the integrated agenda. • Emphasises the need to modernise and update an organisation, e.g. the need for an iPhone, but a machine produces a telephone from the 1930s.
Disadvantages	• Is not adaptable to a changing environment, so there is built-in obsolescence and 'breaking down'. • Struggles to create a meaningful model of transformational change – the only option is to 'start again' on a new machine; the challenge would be to deconstruct the old to create the new. • Integration is characterised by complexity; this metaphor assumes that the behaviour of any complex object can be explained and controlled in reference to its parts. There is increasing evidence that integrated systems are characterised by complexity and have many characteristics that define it as a Complex Adaptive System (CAS) • Employees act on a set of prescribed actions only, which does not fit a professional autonomy and judgment model. It directly contradicts value-based health care, where provision is designed around individual outcomes and must be unique.

3.2 The Cultural System Metaphor

When an organisation is associated with the cultural system metaphor, it focuses on people, their patterns of shared meaning, and the behavioural norms they create. The importance of culture lies in its reality shaping impact through the ability of people to see and understand situations and events collectively. Schein's famous cultural model identifies the importance of values to understanding both the expressed and implicit elements of organisational patterns of behaviour (Schien, 2016).

Figure 18 highlights that this metaphor is predominantly used to describe social care.

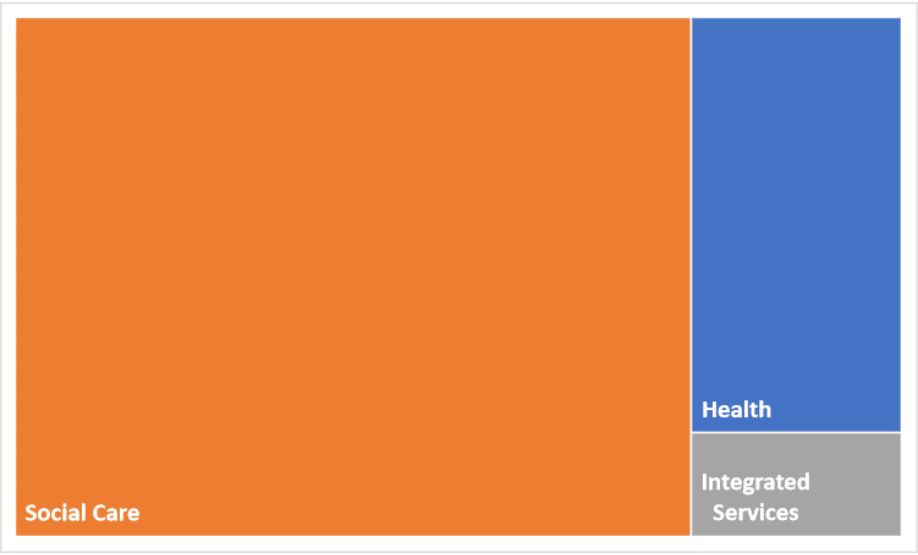

Figure 18: Organisations Coded to the Cultural Systems Metaphor.

It was used to describe both the current and desired future state as outlined in Figure 19 with a preference for the future.

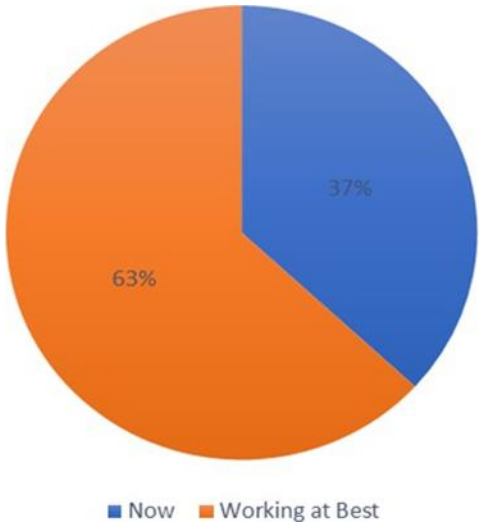

Figure 19: Organisations as Cultural Systems in Context.

Figure 20 shows that social care continues to dominate when describing organisations working at their best, with an equal number used to describe it now and in the desired state.

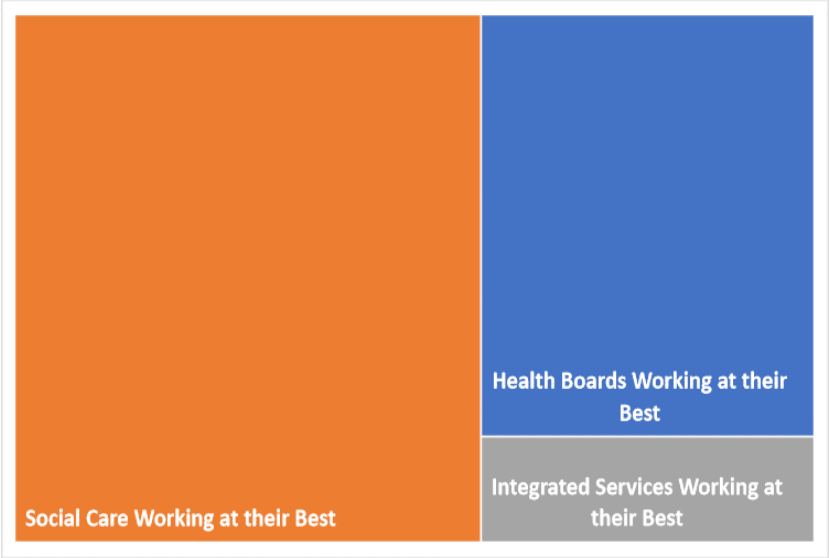

Figure 20: Organisations Working at Their Best Described as a Cultural System.

The need to understand and interpret culture is a strong theme of organisational theory espoused by behavioural approaches. Numerous studies have shown that existing internal culture frequently disrupts attempts at transformation and suggest that culture, values, and behaviours should be a 'primary focus' of any major organisational change (Edgren, 2008).

Figure 21 shows that the most applied cultural system metaphor used was family, and again was often modified by adjectives to describe context.

Figure 21: Words Used to Describe the Family.

Bolman & Deal have compared the human resource framework with the family metaphor (2008). Participant 3 substantiates Astashova's assertion (2021) that organisations as families reveal a primary focus on cooperation and interpersonal relationships.

> *"I suppose it's like a family where everybody looks out for each other and some people get annoyed with you sometimes, but it's OK, you're forgiven for it, you know? ..... with bonds and trust and you have to work at it but there is an understanding that you put the work in." Participant 3*

Rules were often emphasised in descriptions but often in the context of governing appropriate behaviour, so success in organisational terms was defined by sensitivity, concern for people, with valued placed on teamwork and consensus as shown again by Participant 3.

> *"With at (families) the way that you talk to each other is important ..... I have to challenge them (health) and have to say don't talk to us that way." Participant 3*

The function of social care may well determine the chosen metaphor, as its primary aim is to support people to live well, which usually involves significant family involvement. But it's clear that the focus of metaphors was not on the organisations purpose by structure and working practices.

Whilst some characterised social care as a family currently working in a nurturing or supportive way (and importantly, was the only organisation that included metaphors with a positive characteristic for existing working practices) it was also often described currently as authoritarian, defined by rigid, arbitrary rules that created another metaphorical dimension associated with a psychic prison shown by Participant 7.

> *"Like a family but a dysfunctional one. The children aren't very well behaved, you love them you know but they are irritating. Nobody really listens, in the family because the rules don't make sense. Kids get told off." Participant 7*

Morgan notes this link is a common phenomenon as there is a danger that culture can control rather than express, which means that the metaphor 'may prove to be quite manipulative and totalitarian in its influence' (Morgan, 2006). Participant 7 describes the family within the repressive ideology of patriarchy.

> *"A family. But a very regimented family, that is run very strict. A Victorian family you know ... A family with rules." Participant 7*

The analogy of culture as a way to psychologically control its members also resonated with other images. Participant 2 described social care as a 'cult', 'communal garden' or 'commune', where the common distinguishing feature of the group was interpersonal conflict and dominating behaviour.

> *"In an allotment or communal garden ... an expert always comes in to come in to give you some advice about the soil. Its some know it all who tells you how to do things and wants to boss everyone around but you put up with it ..... you all need to eat." Participant 2*

This metaphor illuminates the theory that attempts to control a cultural system by whatever means fundamentally misunderstand the fact that culture is 'self-organising and continuously evolving and often resists attempts at manipulation from the top' (Itkin & Nagy, 2014). These descriptions are consistent with the organisation being associated with a bureaucratic management approach primarily characterised by hierarchical chains of command and control, which requires that group members 'follow orders' from those in positions of perceived power.

Some positive cultural metaphors were used, with reference to democracies and governments associated with fairness and learning. Whilst a political system, these metaphors were not coded to the political systems metaphor but to this metaphor because they were used to emphasise shared values and norms or, in some instances, brains, as Participant 12 emphasised learning as a critical characteristic.

> *"Sweden, or the Northen European countries are run. Like their model of government, that democracy you know. It isn't all about power and status. Like the idealised version that I have of Sweden. It's not about blame you know; they learn from their mistakes and make changes." Participant 12*

Other metaphors were similarly adapted. Participant 4 described a sports team that ceased to be a political system of power and became a cultural system when they equated social care working at its best with a game of total football.

> *"Total football, everybody being part of an adaptive team. There is a coach and a manager, but we all want to play the game. And it's a creative team. But it's not quite football, because it's not like there's no enemy here, no competitor. Feel comfortable attacking and the attackers feel comfortable defending. And there's creativity within that and you don't know what's what and how you're going to behave. So, there's spontaneity involved as well. Most importantly it's fun." Participant 4*

It is evident in Participant 4's metaphor that culture often includes those who belong and excludes and isolates those who do not.

> *"Social Care is definitely not royal ... not sure that they can even marry in. They are one up from the serfs they are definitely the poor relations, but still political you know ..... not invited to the t able unless the royal families are desperate. It wouldn't be a marriage of equals. It would be like an arranged marriage, where they don't even speak the same language, eat the same food - everything different. Bitter and unhappy." Participant*

The difference in culture between health and social care is one of the most cited reasons for the failure of integration, where 'clashes in organisational cultures and values are often the most divisive' (Rixson et al., 2016), which has led one critic to note that 'only by being honest about our own values and the underlying assumptions that they reflect can we ensure integration that draws successfully on both sectors' (Dickinson & Glasby, 2010). Metaphors allow these underlying assumptions to be revealed.

Professional cultures have also been shown to play a vital role in shaping culture, as individual professions often internalise values, beliefs, and practices that guide behaviour. It has been noted that these cultures are often so distinct that people around the world, as members of occupations, often find shared meaning and understanding (Bélanger, 2014). Morgan noted that 'many of the major cultural similarities in the world today are occupational rather than national' (Morgan, 1986). This insight is essential in our understanding of integration where distinct professional groups are a defining feature.

It was noted in the interviews that certain metaphors were consistent across some professional groups, which was not analysed in detail. However, of the OTs interviewed, there was a focus on organic metaphors and social workers' cultural systems. A deeper analysis may be of value in further research.

Implications of the cultural systems metaphor for integration are summarised in Table 6.

Table 6: Implications of the Cultural System Metaphor for Integration.

Benefits	• Helps to explain how a change in culture is often intractable as it emphasizes the pervasive aspect of organisational life – that is not just about performing a task but also involves 'ideologies, values, beliefs, language, norms, ceremonies, and other social practices' (Morgan, 1997) • Expands the extent of leadership accountability to adapt an organisation to meet the needs of workers. In the machine paradigm, leaders focus on designing efficient and effective structures, but in this, they must design processes to meet environmental and human needs. Integration needs this focus on behaviours and attitudes. • Highlights the need for establishing strong relationships as they contribute to organisational life. • Shines a light on the value social care places not only on culture but also on connection and bonds. • In a recent study found that perceiving the organisation as a family can increase work satisfaction and motivation (Furlich, S 2023).
Disadvantages	• Can ignore external forces to change in favour of group cohesion. • Homogenous culture can often drive out sub-cultures, which within this context could be represented by the other organisation. It favours tradition or 'the way things are done around here' and, as such, becomes resistant to any change, especially a perceived threat of loss of identity that integration may bring. • Often associated with top-down bureaucratic structures where rules are inflexible – resulting in the inability to create shared policies and procedures.

3.3 The Organism Metaphor

The organisation as an organism assumes that an entity needs to survive and grow through 'adaptation, flexibility, and the importance of the environment in which the organisation exists' (Itkin & Nagy, 2014), which is in direct contrast to a machine which sees organisations as devices without the capability of developing. Therefore, organisations as organisms shift the focus from structure, efficiency, and top-down control to survival, adaptation, and effectiveness (Itkin & Nagy, 2014). Organisms exist and can be seen, felt, and touched in a natural world with material characteristics that influence survival and well-being which are the dual objectives of health and social care.

Figure 22 shows that this metaphor is applied mostly to social care.

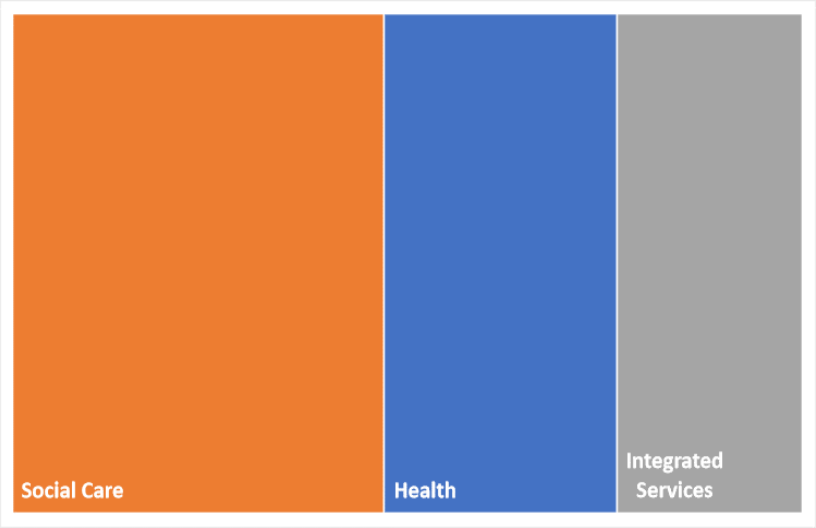

Figure 22: Organisations Coded to the Organism Metaphor.

Using an organism to describe organisations is being applied on a much broader scale (Bélanger, 2014) as the image emphasises survival as the primary objective of any organisation. It focuses on utilising and attaining resources, which may explain its popularity in social care, where it is perceived that the environment is 'turbulent with a preoccupation with resources as they are so scarce' (Cornelissen, 2008).

Whilst various living things were described within this category, the most common description was of vegetation, illustrated by the word frequency cloud in Figure 23.

Figure 23: Words Used to Describe Organisations as Organisms.

There was a preference to use this metaphor when describing organisations working their best as shown in Figure 24, but in the existing environment, it had stronger associations with social care.

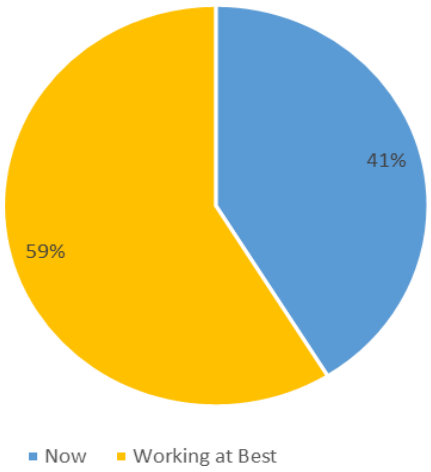

Figure 24: Organisms Metaphor and Context.

A recurring theme was vegetation quantified by shape or dimension. Organisations working at their best were often described as flat and connected to the leaves and roots, as described by Participant 10.

> *"So it's like a circle of life type thing. I suppose it's not as big as the tree and it's much more flatter. And a bit more spread thinly. So it doesn't have the same depth, but the breadth is greater. I don't know what it would be." Participant 10.*

Participant 9 contrasts this with organisations that were tall or isolated.

> *"It's wide and broad. There is no tall central branch, because it can't get too high." Participant 9*

Such descriptors suggest that the shape and dimensions of organism metaphors provide an association to hierarchical power, substantiated by Participant 10, who uses the image of a tree to emphasise hierarchy in the current context.

> *"Now it's like all these separate flowers, with all the work in trying to keep them upright, but what does all the hard work. If you can imagine it it's the soil and the roots and the stems do the work but it's only the pretty bits that get seen and noticed, the pretty bits, the, the flowery bits on the top, the executive board." Participant 10*

Organisms directly challenge scientific management models focused on power and control as they are systems of composites that create an interconnected whole with no hierarchy of importance or power. The organism view does not make assumptions about power but has a holistic approach and brings to attention to how organisations create a single entity through collaborative efforts. Such a description is associated with a systems approach, where organisations are defined as 'open systems' made up of 'interrelated and inter- dependent parts that interact as sub-systems' (Hogarth & Rowe, 2005).

Whilst systems theory focuses on the internal dynamics of an organisation, organism metaphors are also related to contingency theory, a dominant perspective in modern organisational analysis, as they also embrace external determinants. (Itkin & Nagy, 2014) This theory builds on the principle that organisations, like organisms, are open to their environment and must achieve an appropriate relationship with it to survive.

Organism metaphors often referred to the external or environmental conditions needed to 'thrive', with Participant 6 describing social care currently as defined by scarcity.

> *"And there aren't enough resources for it to thrive .... water and light." Participant 6.*

However, they also made a direct comparison when describing a health board, which was an organism of rampant growth and imbalanced resources.

> *"It's more like some kind of fungus. or a huge ivy growing up a wall. It's huge isn't it ... and unstoppable. It's everywhere and it has a life of its own. It reaches all over the wall and in all the nooks and crannies. Some bits just get bigger and overwhelm the ones that are not. The ideal would be that we could prune and look after that huge ivy ... it just keeps growing." Participant 6.*

Three participants adapted the organism metaphor to describe social care and combined it with a cultural reference. Participant 5 saw social care as a garden but located it within the culture of a specific context and so created a mixed metaphor because Morgan distinguished between organisms, i.e. plants and animals and 'human phenomena' (Morgan, 1986).

> *"And so that's why I'm seeing a very kind of landscaped kind of photograph of with lots of flowers, lots of plants all that kind of things, you know, so that's my kind of initial vision. More of a garden in a family house." Participant 5.*

Participant 2 emphasised collaboration and the impact of human endeavour to support organisms to thrive and grow.

> *"Maybe a commune, that grows its own food, you're all there putting into that garden. An allotment or communal garden. And you all understand that actually there are different parts of that garden, but you all understand the purpose of digging and the importance of needing an expert to come in and give you some advice about the soil." Participant 2.*

This merging of metaphors was especially interesting as event though the organisation as organism suggests complexity, some metaphors were simpler than others, a singular, a bush or a tree; however, other organisms were numerous and placed in context, which extends our understanding of the context that organisms live in and may be congruent with the concept of organisations as living Complex Adaptive Systems (CAS) (Kernick, 2002). In this theory organisations are often described as organisms and placed in the context of an ecosystem, where 'each individual organism is independent, they also coexist and depend on each other, creating a balance of interdependent elements' (Hogarth & Rowe, 2005).

There is a growing interest in the potential of CAS (or complexity theory) to support insights not only in organisational theory (Mainzer, 1994) but integrated care. Tsasis et al. (2012) believes that CAS theory provides an alternative and potentially useful mental model for conceptualizing health systems integration.

Analysis of metaphors within Morgan's model would suggest that solely equating the organism as a complex adaptive system is too limiting. Participant 2 described an organisation as an animal where the emphasis was on learning and linked it to the brain metaphor.

> *"It should be like an octopus. An octopus is an intelligent creat re, it has a central guiding principle, but each of those arms has knowledge and intelligence." Participant 2.*

Rowe and Hogarth (2005) use a complex adaptive systems (CAS) metaphor to explain the nature of organisational change in a healthcare organisation; they argue that an organisation's ability to adapt is

constantly in flux because the environment is dynamic, which would also link CAS with the flux and transformation metaphor.

Traditionally, CAS have been viewed more organically or biologically, however, Jones (2003) argues that 'any group or collection of people can constitute a complex adaptive system', which would include cultural systems within the CAS paradigm. Characteristics of a CAS therefore seem consistent across many of Morgan's metaphorical models and are explored more in Table 7.

Table 7: Metaphors and CAS.

	Organism	Brain	Flux & Transformation	Cultural System
Non-linear, open systems which are often in flux	□	□	□	□
Adaptation to environment	□	□	□	□
Internal behaviour is a result of observed consistencies in experience	□	□	□	□
Emergence	□	□	□	□
Constructed, self-organised, and emergent.	□	□	□	□
Internal behaviour results from both interacting with other parts of the system as well as existing models.	□	□	□	□

Adapted from (Doolittle, 2014)

It is suggested therefore that CAS is viewed as a meta-metaphor that helps frame metaphorical understanding of organisms, brains, flux and transformation, and cultural systems.

The organism metaphor which is often associated with a CAS supports the necessity for health and social care to adapt to survive, so that integration could be seen as simply part of organisational life. The implications of this metaphor for integration are summarised in Table 8.

Table 8: Implications of the Organism Metaphor for Integration.

Benefits	• Congruent with CAS, which many critics state is particularly relevant to health systems and appropriate for integration. (Edgren, 2008) • Reinforces the assertion that separate organisations need to adapt to change. • It helps develop an appreciation of complexity and is a direct challenge to hierarchical top-down approaches seen in the machine metaphor, which has proved inadequate to realise integrated change.
Disadvantages	• It may encourage a belief that an organisation can achieve the unity and harmony characteristic of organisms and that equilibrium will be achieved – if it does not, it has failed. • May reinforce and focus on the imbalance of 'resources' between the two organisations. • Morgan emphasises that organisations are human constructs; they operate as a collection of tasks and personal interests and that when these paralleled with natural phenomena, 'difficulties are bound to emerge' (Morgan, 1996) • Whilst it may suggest natural adaption, some organisms do not automatically respond to changing external conditions and become extinct.

3.4 The Flux and Transformation Metaphor

This metaphor sees organisations as entities prone to constant change, emphasising self-creation, where something new emerges. Concepts refer to organisations as a matter 'of self-reference, chaos, complexity, paradox, contradiction, and crisis'(Itkin & Nagy, 2014), which links it closely to chaos and complexity theories.

Complexity suggests that the most productive state for a system is the 'edge of chaos where there is maximum variety and creativity (Edgren, 2012).

Flux and transformation seem analogous to the development of integrated services, as a new entity arising from a situation of complexity but also paradox, represented by the artificial divide between health and social care. This correspondence is demonstrated by metaphorical analysis as it is exclusively used to describe integrated services working at their best.

Figure 25 reveals the lack of consistency in images which initially defy superficial classification associated with the flux and transformation metaphor; what they have in common is the creation of something new as a response to both internal and external forces.

Figure 25: Words Used for the Flux and Transformation Metaphor.

The most explicit image of this metaphor is provided by Participant 4.

> *"It's like smelting, melting two metals together. You get a stronger metal from making an alloy. There is nothing left of the original ones. You get a bit of a waste product, from the smelting. Some things are lost, so you'll lose overall mass in the metal, but you end up with a stronger metal that's better suited for the purpose for which you've put the two together. Not one metal is stronger - each is different. And for that you need heat, and destruction and fire ..... and pressure." Participant 4*

Organisations which reflect flux and transformation are the ones that alter and evolve in response to both internal and external surroundings (Bélanger, 2014). This complex phenomenon has been described as autopoiesis by Varela & Maturana (1972) and whilst this concept equally applies to all living things, the idea of 'self-creation' is key where something 'new' is created, distinct from its parts and involves a significant paradigm shift.

Flux and transformation are highly congruent with a CAS approach, including self-creation or self-emergent behaviours. Insights from complexity science that define organisations as 'complex, dynamical, non-linear and co-creative' also note that they are also 'far-from-equilibrium' in which 'chaos and order always and forever coexist' (Rowe & Hogarth, 2005). The belief that new developments will emerge out of this process is a crucial element of CAS and the flux and transformation metaphor add to understanding the characteristics of a CAS.

Critics note that CAS are not 'wholly organic' as some organisms do not automatically respond to a change they die (Rowe & Hogarth, 2005). This metaphor emphasises the conditions or 'rules' of adaption which results in emergence; so, in practice returning to the metal analogy, when heated to a specific temperature a mixed metals will melt and create a new metal, thus emphasising that emergence occurs through a specific set of conditions.

Whilst this metaphor may be challenging to conceptualise, it is instrumental as a model for transformational change in integration and is summarised in Table 9.

Table 9: Implications of the Flux and Transformation Metaphor for Integration.

Benefits	• Emphasises self-creation and differentiates from previous entities a beneficial paradigm for integration. • Congruent with CAS, which many critics state is particularly relevant to health systems and appropriate for integration. (Edgren, 2008) • Challenges the view of organisations as isolated entities and replaces it with an understanding of organisations in and a part of larger or multiple ones, especially valuable within a complex system of regulatory control and public perception, with inevitable reactions associated with those factors. • Provides acceptance of chaos as a necessary element to change, a dominant theme of interviews was the system defined within these terms, with chaos reported frequently in negative terms.
Disadvantages	• Not an understandable concept for many, it can often be seen as a superficial image of chaos, which many find difficult to articulate and conceptualise. • Difficult to identify emergent processes. • Requires high levels of creativity to conceptualise and is time and resource intensive. • Challenges traditional approaches in terms of chaos and may be too and thus unachievable.

3.5 The Brain Metaphor

This metaphor focuses exclusively on learning; brains process information, make intelligent decisions, and interact. An organisation as a brain reflects these values and as aligned with a learning and highly reliable organisation, where knowledge acquisition and learning are the focus of quality improvement and change (Morgan, 2006). It was used to describe various organisations when working at their best, but predominantly

integrated services as seen in Figure 26. It was used once to describe social care currently, but the context was more of confusion.

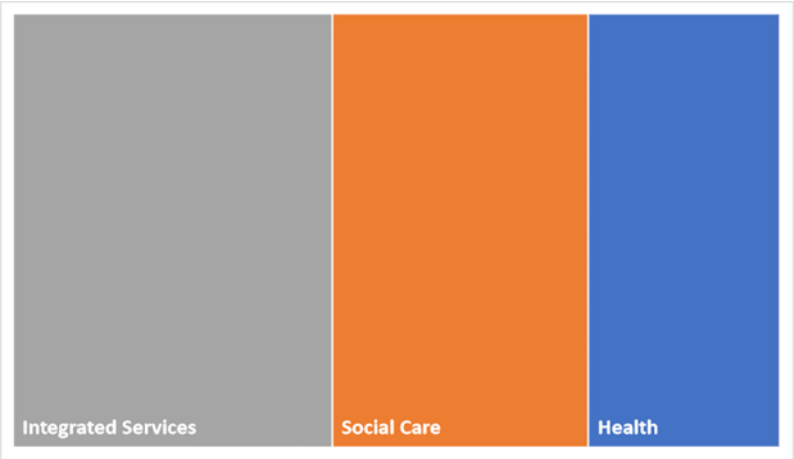

Figure 26: Organisations Coded to the Brain Metaphor when Working at their Best.

Central concepts underlying organisations as brains are information processing, learning, connection, and networks, including concepts of cybernetics and homeostasis (Tohidan, 2019). From this perspective, it is understood that organisations are multi-faceted, holographic units that amalgamate centralised and decentralised characteristics, complex systems of learning, and information processing (Itkin & Nagy, 2014). Use of this metaphor provided insight into many metaphors that included shape as an essential element.

Participant 11 expressed metaphors almost entirely through physical gestures and reference to shapes. There was a high correlation to organisations working at their best as circular, rounded, networked, and connected, which was in glaring contrast to the negative association of lines, triangles, and vertical structures.

> *"I's should be round. A circle. No lines. It should be a network .... all around. A network all connected. Connected together - learn from each other." Participant 11.*

The brain metaphor has been described as the most complex of all the metaphors as it is not figurative but embraces the 'notion of connectivity, or being richly joined' (Walters, 2004). It includes descriptions of

networks, connections, and interdependencies, which directly challenge a scientific management model that retains information and decision-making in the restricted lines and chains of hierarchy. It reflects the necessity for integration to be connected and embed learning where each part of the system shares knowledge and learns from the rest; in an industry that relies so heavily on the knowledge of staff, this seems especially relevant.

Overall implications of this metaphor are summarised in Table 10.

Table 10: Implications of the Brain Metaphor for Integration.

Benefits	• Works well in a health and social care environment, which are often full of unknowns but relatively stable in terms of knowledge and learning, so that knowledge is relevant over time. (e.g., medicalknowledge, disease progression and patterns) • Supports change through knowledge. • Supports a CAS approach. • Congruent with a highly reliable organisation where the stakes are high. • May help explain why integration has not been realised – it needs a radical and completely different approach, and the system works in ways where the response to • change is only based on past events – working in old ways.

Disadvantages	• When change is so unprecedented that prior knowledge cannot predict and mirror response to current events, e.g. COVID. • Assumes that past knowledge is always predictive of future behaviour, meaning that changes can be rationalised and planned for with enough hindsight and pattern recognition. • Learning requires a degree of openness and self-criticism that is 'foreign to traditional modes of management' (Morgan, 1986).

3.6 The Political System Metaphor

Organisations as political systems focus on human assertiveness in the realm of 'self-interest, conflict and power' (Morgan, 1996). In politics, self-egotism, power dynamics, struggle, and conflict are rife, a pervasive image across all organisations in the current context, as shown in Figure 27. It is used exclusively to describe the contemporary situation.

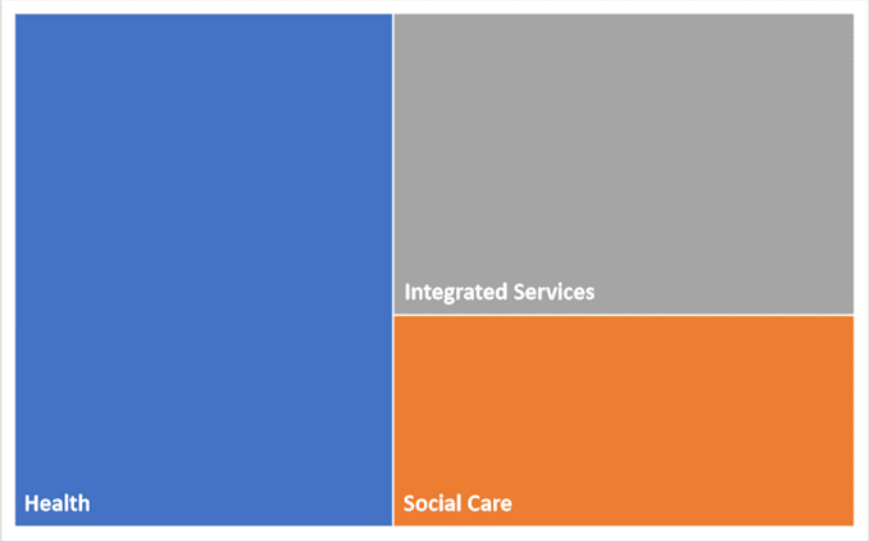

Figure 27: Organisations Coded to the Political System Metaphor in the Current Context.

This metaphor is a fascinating way to interpret how power dynamics are expressed in organisations. Descriptions of the current context of integrated services are dominated by this metaphor, with Participant 2 emphasising the rivalry between health and social care.

> *"It's like housemates arguing, they actually don't like each other very much and just blame each other for stealing the milk or breakfast. But they do that behind each other's backs. They smile and say everything's fine. But actually, they are blaming each other ... they spend most of their time complaining about each other." Participant 2.*

The political system metaphor acknowledges that human power dynamics are a force in determining organisational life, and whilst this is implied in other models (mechanistic aims to control human behaviour; organisms considers human development; brains tap into human potential through thinking and culture addresses people as social beings) this metaphor accentuates the competitiveness and quest for control that characterises many organisations, especially those with a strong affiliation with scientific management approaches. This dominating behaviour and power dynamic defines integration for Participants 10 and 6.

> *"Health board trying to be the boss ..... jumping on their backs you know, take the lead ..... push, push, you know, that sort of thing." Participant 10*

> *"Power Play that this only thing I can use to describe it." Participant 6.*

Whilst Morgan acknowledges that conflict is a given in organisational life, he also believes that sometimes, power can be a means to resolve struggle, especially when it involves alliance and collaboration. However, positive political metaphors were completely absent from the data; whilst some participants referenced

political systems (Sweden, Democracy), they focused on a shared value system, promoting fairness and equality rather than the construction of a coalitions.

The strength and impact of political metaphors for health boards were especially powerful as they often involved a physical element, as described by Participant 7.

> *"It's like a, you know, a lunch break in a nursery, a bit chaotic, running around, only seeing themselves, no one else matters you know. It sounds so bad but it's true. All about them running around, outside bumping into each other, pushing, shouting over each other, things that are happening to that group of kids is all about what they want, no order and kids will play with each other but only when it suits them, and they can run off and do thing on their own and fight, or push each other over." Participant 7.*

Chaos and collision were stressed by Participant 3 where each part of the system is isolated in their attempts to 'row faster', which again is consistent with the implications of a mechanistic organisation.

> *"Like boats ... they should all travel together in the same direction in a shape in the sea. And .. there is no shape all travelling in different directions and bumping into each other. And there are a few people steering ... in charge of the boat and they all want to get there but perhaps there's too many people in charge. Everyone is working so hard, and some boats are going fast, winning, but they are separate you know, not in that shape you would expect. Boats bang into each other, and they get annoyed. Row faster." Participant 3.*

Metaphors of political systems within health boards provide further evidence of the consequences of working in a mechanistic model, where control is created by force, often represented by a loud voice, as described by Participant 8.

> *"I would almost describe it as a crowd of people, so there's lots of individual conversations or individual voices that are all talking together, with no structure it's just about the loudest. Who shouts the loudest." Participant 8.*

The power of the voice was a recurring metaphor echoed by Participant 11.

> *"All the different sections on a pie chart shows how separated everybody is, there's a wall. There shouldn't be any lines like a pie chart dividing but they don't hear its just about who shouts the loudest who gets the biggest piece." Participant 11.*

The strength of the voice also includes strong images of disempowerment consistent with scientific management described by Participant 8.

> *"With us (health) every time that a player goes for a tackle, they have to check it's OK with the coach. So they take the eye off the ball. Players can't use their talents. They go onto the pitch and have to check it's OK ... can I kick it? The coach is shouting. We should come onto the pitch with a game plan." Participant 8.*

Reference to political power was often more explicit in social care where it was described in terms of 'power-play' or included a direct reference to political structures of Local Government.

The disadvantages of organisations as political systems are clear; they involve conflict, but there are benefits in diagnosing, measuring, and understanding the extent to which power and control dominate and how that power is exerted.

In the context of integration, it has some limitations as it does not take into consideration metaphors that suggest a power imbalance between the two organisations. Pluralist management may be too superficial in this context, conflict is multi-dimensional between employees, leaders, and organisations (Bres, 2018). It does not address deeper inequalities between the two organisations, where the power struggle could be interpreted as a quest for equality.

A summary of the implications of the political system metaphor is outlined in Table 11.

Table 11: Implications of the Political System Metaphor for Integration.

Benefits	• Helps to explain why health and social care have struggled to become integrated systems because they are made up of people with diverse interests and expose the • truth that personal and not organisational motives often drive activities. • Organisations can be seen as coalitions of changing interests that need to be managed and have the potential to be harnessed, thus creating integrated services. • The pluralistic management approach suggests that an organisation has more than one power source. It assumes that whilst conflict is inevitable, it is a key component for innovation and organisational growth (Bres, 2018).
Disadvantages	• Consistent with scientific management models which emphasise top-down control, which has not achieved integration thus far. • In a political system, people usually choose a 'side' which emphasises health and social care as opponents. • Highly associated with scientific management approaches. • Recent research has shown the importance of psychological safety in healthy environments, which conflict directly opposes. (Harrison, C. 2020).

Further analysis of this metaphor was revealed through the coding process. It showed a strong correlation between health boards as a political system dominated by domination, whilst social care was more strongly linked to exerting psychological control, shown in Figure 28.

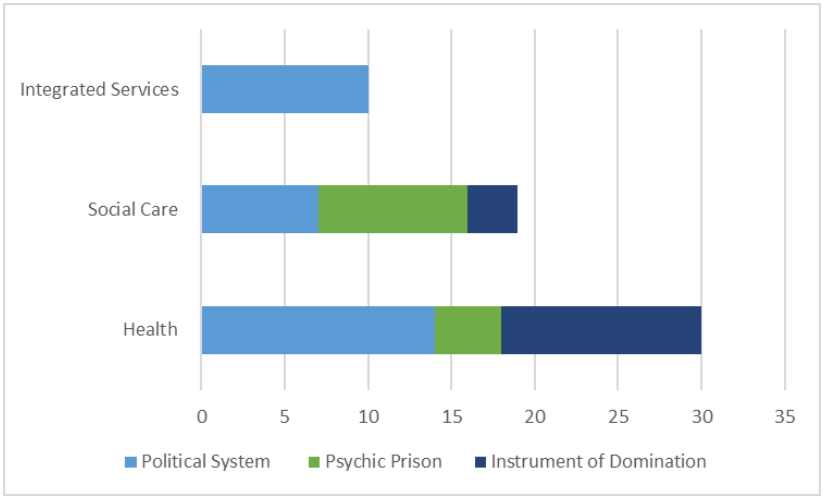

Figure 18: Organisations Coded to the Political System, Instruments of Domination and Psychic Prison Metaphors.

3.7 The Instrument of Domination Metaphor

Organisations are defined as instruments of domination when they further the interests of elites at the expense of others (Tohidan, 2019). It takes several forms, often evidenced by stress, 'over-work, high uncertainty, conflict, and other contextual factors' (Morgan, 2006). It draws on the work of Marxist and critical theories focusing on unequal power distribution (Örtenblad, 2016).

Figure 29 shows that this metaphor is used predominantly to describe how health boards work currently.

Figure 29: Organisations Coded to The Instrument of Domination Metaphor.

The metaphors paint a vivid picture of the implications of a strongly hierarchical system emphasised by the word cloud in Figure 30.

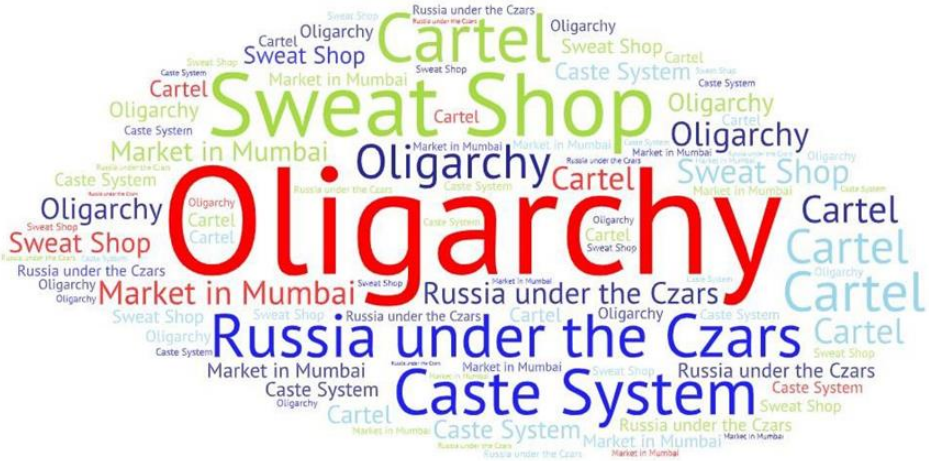

Figure 30: Words Used for Instrument of Domination Metaphor.

Jermier & Forbes (2011) note that the instrument of domination metaphor highlights how power structures exploit and control members of an organisation, vividly depicted by Participant 4.

> *"It's an oligarchy ..... with a despot and a favoured few .... the people who have connections do better because of their relationship to the master.Like Russia in the time of the Czars. And Rasputin .... they are often misled by the gurus that are only concerned with power and status. And clearly, I'm a serf. So, it's not my place to want anything. Looking back, it didn't go too well, for the serfs who did ... did it?" Participant 4.*

Participant 2 shows the disconnection in power structures, with a sense of anger or sometimes resignation in the face of power and dominance.

> *"It's like a sweat shop you know, like those you see on TV in a hot country .... its messy and dirty and there are so many people. But they are scared too, scared that they are not up to quota for the day .... And there's' someone looking down on them all with a big cigar, picking off the ones who are not up to it. It's not fair but that's the kind of image I see .... forced labour in a hot country Work , hard and fast or get into trouble. I can't believe that's what the way I think." Participant 2.*

Participant 1 reveals a recurring theme of disconnect between those perceived to be at the 'top' of the hierarchy and other levels.

> *"It's all so unmanageable ..... so it's being kind of ripped apart and whatever type of the machine it is or factory is breaking down and they are hiding away in an office, ... with their suits on glad to have taken off their overalls. And who can blame them. Because it's still kind of working We'll tell everybody that we fixed it. We'll put like a big sheet over that .... That's too big, too dirty." Participant 1.*

Morgan (2006) states that this metaphor 'forces us to recognise that domination may be intrinsic to how we organise and not just an unintended side effect' (p. 330). Such a strong image may force a radical review of how integration is achieved, considering the alienation of the workforce that this metaphor represents.

A summary of its consequence is provided in Table 12.

Table 12: Implications of the Instrument of Domination Metaphor for Integration.

Benefits	• The single-mindedness of such an organisation could produce tangible results. • Demands a radical rethink of the values and ideologies of a public service defined in such terms. Morgan notes that the 'negative impact that organisations often have on their employees ….. is not necessarily an intended one. It is usually a consequence of rational actions through which a group of individuals seeks to advance a particular set of aims' (Morgan,1997) • Could challenge the status quo when recognised and stimulate change.
Disadvantages	• It is sometimes difficult to distinguish from the political metaphor; involvement in politics is inevitable in organisations that create conditions that will serve their own interests. • Leaders are often singled out as a dominant, repressive force, whatever the context or style, and could tarnish all management or change models as instruments of domination. • Can create apathy and resistance to change as it assumes that powers have a right to establish and exercise control over the workers in exchange for wages, often stifling innovation, and creativity so that tasks are performed mechanically within • regulations.

3.8 The Psychic Prison Metaphor

The psychic prison metaphor illustrates how individuals and groups can become suppressed so that unconscious factors constrain their thoughts and behaviour (Cornelissen, 2011). It is not widely used in the data collected, and as Figure 31 shows, it describes the current context, where it is associated more with social care; in a health context, it is often accompanied by the instrument of domination metaphor as it acknowledges that systems also involve hegemony and psychological control.

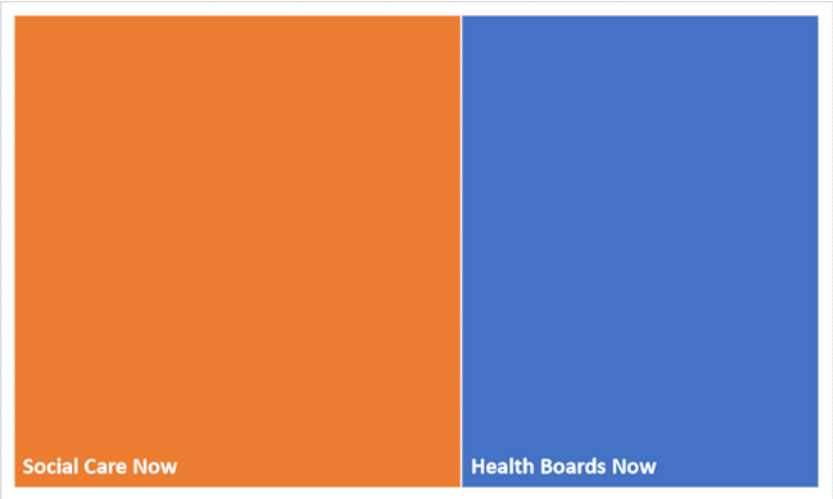

Figure 31: Organisations Coded to the Psychic Prison Metaphor.

The most predominant metaphor of the psychic prison is that of a domineering patriarchal family.

Psychic prisons are detrimental to transformational change as people can become trapped or caught in ways of thinking and acting so that preconceived ideas become ‘snares for fixed notions and biases that eventually become reality’ (Walters, 2004). According to the psychic prison metaphor, organisations are seen as socially constructed realities based on the unconscious preoccupations of people in that organisation.

Its possible implications for integrated services are summarised in Table 13.

Table 13: Implications of the Psychic Prison Metaphor for Integration.

Benefits	• Acknowledges the role of the unconscious in organisational life.
Disadvantages	• Stifles innovation and creativity needed to create a new integration model. • It can create a situation known as 'groupthink' in which people fail to question their assumptions and practices. If this metaphor dominates one organisation, it will stifle their ability to adapt to the other. • Results in 'assumed consensus' that stifle innovation and inhibit contention (Walters, 2004).

3.9 Themes

Interviews were also analysed and coded inductively, this was completed as a sense to check to ascertain if metaphors matched with information that participants identified through description and opinion. The codebook for this thematic analysis in included in Appendix 25 and revealed high levels of consistency with interpretation of metaphorical models. The strongest theme for health boards was top-down power and control with a sense of disconnection and fragmentation. A sense of rules and bureaucracy characterised social care, but with a focus also on relationships and connection. Integrated services were seen as a power struggle defined by blame that needed to transform into a singular identity.

4 Conclusion

Metaphorical analysis in the context of integration has given the ability to ignite different conceptualisations of the subject matter, which suggests that the research question contributes to innovation in this arena.

Metaphorical coding interprets the current organisational landscape as characterised by a scientific management model of political power and entrenched cultural associations, which suggests a system challenged by complexity, weak connection both professionally and organisationally within an environment of 'top-down', command and control, which are associated with poor outcomes for effective delivery of integrated services.

The current context is summarised in Table 14.

Table 14: Summary of Current Context of Integration.

Health Boards	Dominated by the machine metaphor associated with scientific management. Highly developed focus on hierarchy, structure, and rules. Propensity to assume that change can only be achieved through re- organisation or rethinking of structure (Elkind, 1998). Model is often at the expense of flexibility, professional judgment and innovation.
Social Care	Characterised as a cultural system congruent with human resource management theory and behaviourist approaches, A sense of shared belonging and loyalty but also some evidence of entrenched thinking. Strong association with bureaucratic management, emphasising rules where innovation is psychologically suppressed.
Integrated Services	Characterised by struggle where change and transformation are often sacrificed in the pursuit of dominance or control.

The visual collage in Figure 32 illuminating the current context of integration in Wales was compiled from the metaphorical map in Appendix 21 also using some using images that were unclassified.

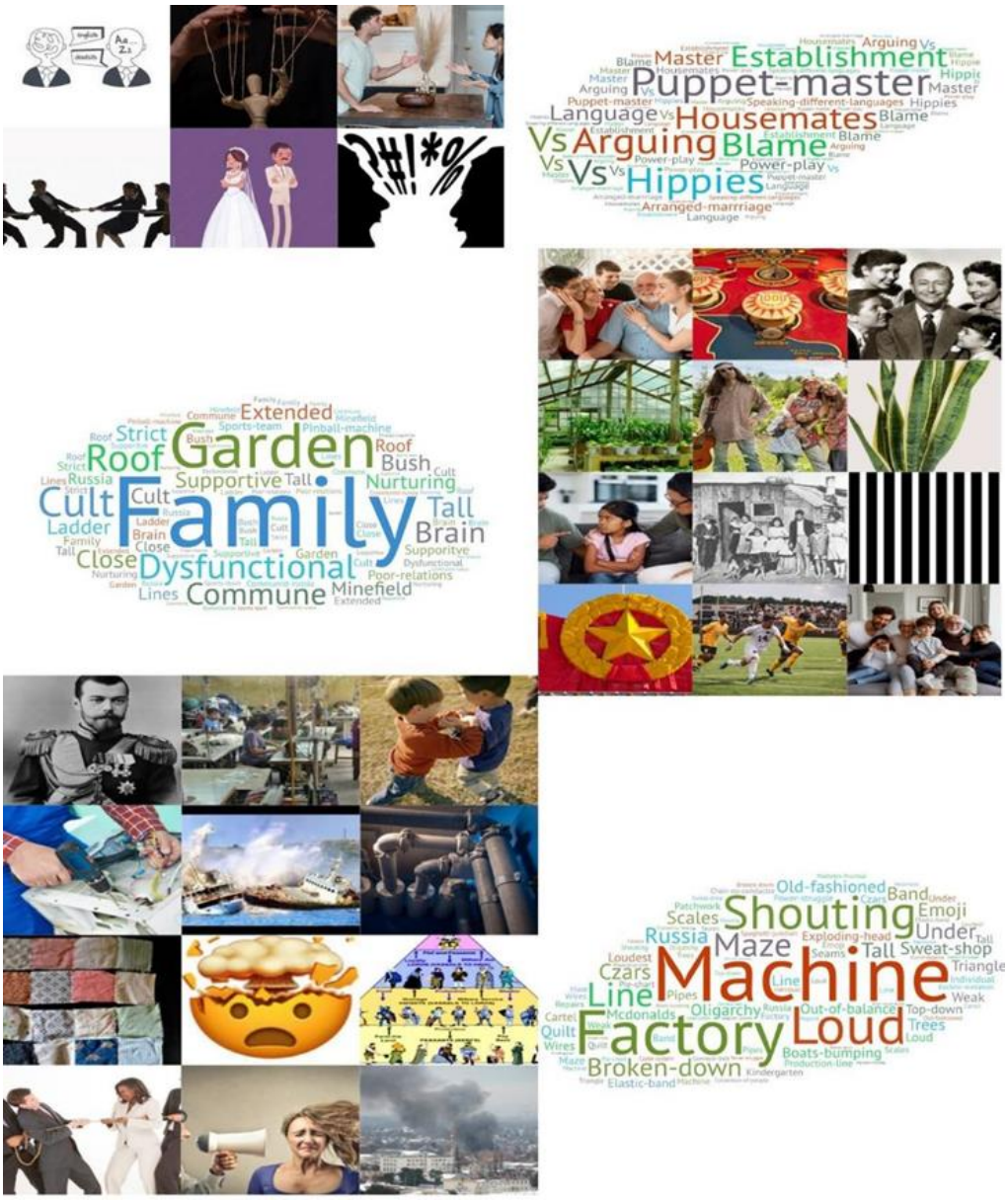

Figure 32: Collage Representing the Current Context of Integration in Wales.

The context of integration is summarised in Figure 33.

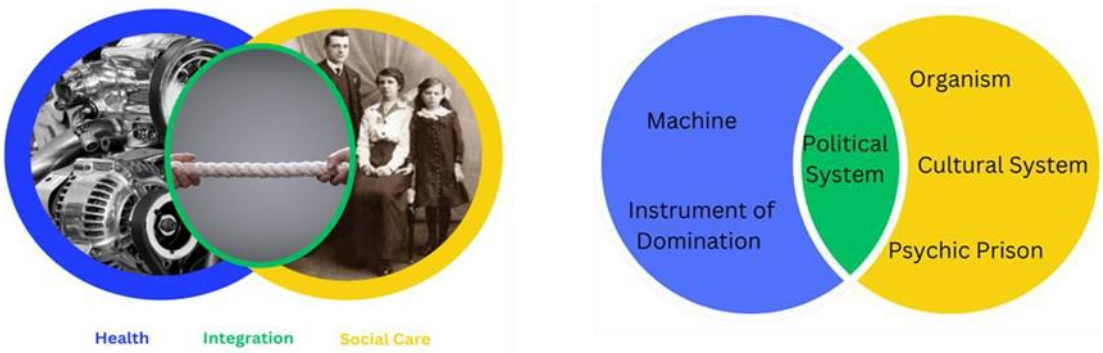

Figure 33. Summary of Current Context of Integration.

The future of integration defined by all organisations working at their best still features an enduring belief in the principles of scientific management through the machine metaphor, but it often is caveated by natural or organic elements. Metaphors associated with CAS strongly suggest that this approach is intuitively recognised as valuable to developing effective integrated systems, with a caveat that psychological control and power-struggle sometimes associated with the cultural systems metaphors should be accounted for. The metaphors show that those connected with a CAS offer an alternative paradigm to the machine or cultural systems defined by bureaucracy and hegemonic control.

Thus, metaphors allow us to navigate what integrated services could ideally look like and guide the transformation process. Figure 34 shows word frequency associated with integrated service working at their best.

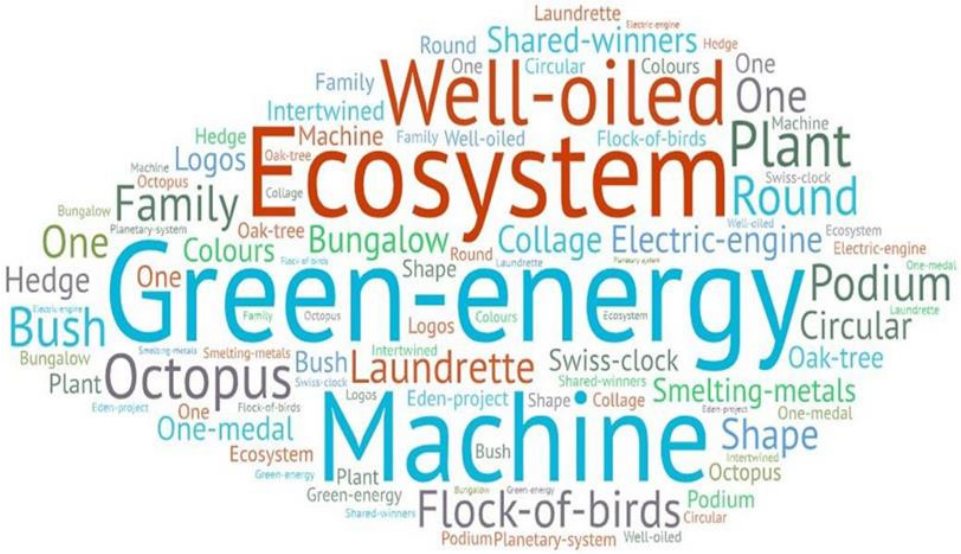

Figure 34: Words Used to Describe Integrated Services Working at their Best.

The collage of images in Figure 35 (taken from Appendix 21) is a striking image that could be used as a guide to what good looks like for seamless, integrated pathways of care in Wales.

Figure 35: Collage of Metaphors for Integrated Services Working at Their Best.

Systemic change of the health and care landscape would also support effective integration and the vision for services working at their best is summarised in Figure 36.

Figure 36: Words Used to Describe the System Working at its Best.

There is an inherent conflict between preferred metaphors for sovereign organisations and the idealised model for integration highlighted in Figure 37.

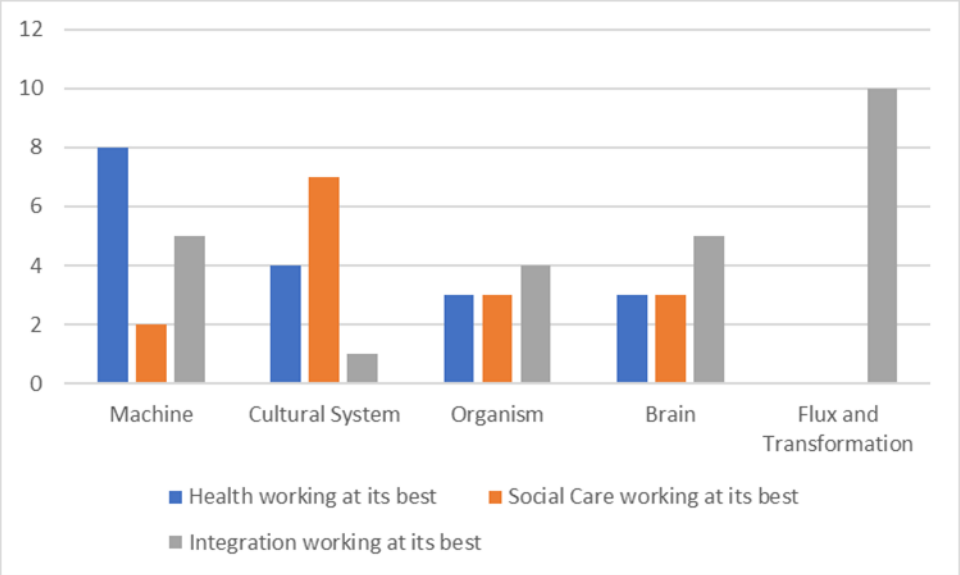

Figure 37: The System Working at its Best by Organisation and Metaphor Code.

The challenge that metaphorical analysis reveals is the need to extract each organisation from their preferred model of effectiveness towards a new paradigm that is unique to a new entity of integration. The system needs to reconcile the preference for the machine by health and cultural systems by social care to create something new and once again, an image is able to powerfully convey this message, Figure 38.

Figure 38: The system Working at its Best.

What is encouraging is the common ground expressed metaphorically, there is system wide cohesion of good practice on a more equal footing through images of the organisation as an organism and brain. Taking this into consideration it suggests that the way for forward integration is to develop three metaphorical models; the first associated directly with integration, flux and transformation, and then include the brain and organism as shared models, all highly congruent with a CAS approach.

Figure 39 portrays the future development for integration in Wales using a metaphor used for each classification (organism – plant, brain – flock of birds and flux and transformation – watercolour).

Figure 39: Metaphors that Support Integration.

It is concluded that metaphors enable interpretation of the ambiguities and paradoxes in health and social care and asserts that the system needs to go 'beyond the present dominant but outdated machine model' (Edgren, 2012) to focus on three metaphors associated with CAS, as they could provide the support national policy enactment and change needs to focus of developing effective integrated care.

5 Recommendations

This research offers an innovative approach to delivering value to Wales's health and care system. It uses a unique concept of eliciting metaphor through Clean Language and applies theoretical insights to address the 'wicked issue' facing healthcare. It contributes to conceptualising integration and adds to the body of knowledge of organisational theory by inductive generative metaphor and deductive analysis. There is an acknowledged 'paucity of studies' of real applications of this approach as they mostly address theoretical implications and are 'rarely seen to examine organisational metaphors in practice'. (Rahimian, 2019)

The research questions explored have informed six key recommendations that are summarised in Table 15.

Table 15: Summary of Recommendations.

	Recommendation	Rationale
1	Focus on future desired state of integration and use current metaphors to interprets the system for change.	• There is a plethora of research regarding the barriers to integration (Naqvi, 2019), metaphorical modelling should be framed by the Clean Language question: What do you want to have happen? Where the focus is on change and improvement, not about what is wrong. • Research is clear: health and care are dominated by scientific management models (Miller et al, 2016) yet seem stubbornly resistant to change. It is suggested that metaphors already collected are used to reveal insights and then compelling alternatives is developed that offers potential transformational change.
2	Use metaphorical modelling aimed at developing integrated care in a 'live' environment.	• There is a consensus that further research is urgently needed to examine the 'underpinning assumptions of integrated care' and assess the development and implementation process from an 'innovative perspective' (Cameron et al., 2012). As metaphors deal with implicit

		thoughts and beliefs, it is suggested that they are especially relevant in developing integrated care initiatives across many contexts. • According to Cleary (2002), using metaphors in describing organisational culture and attempting to change organisations is a promising trend. • Using metaphors to inform practical collaboration between professionals with distinct cultures in a multi-disciplinary team would be especially useful. Sennett (2021) extensively studied professional collaboration and revealed how human behaviour is powered by 'social rituals and practice filled with symbolic meaning'. • Rowe & Hogarth (2005) use a CAS metaphor to explain the nature of organisational change in a healthcare organisation, but do not suggest a mode for implementation. Critics have suggested that application in practice and development is needed (Brown, C. 2008) • Lissack (2001) states that the majority of work with organisations using metaphors for a complex system has been descriptive and real-life testing and application is needed. • The 'culture clash' or impasse between health and social care may potentially change in a metaphorical context that direct approaches could not achieve. • According to Schön, conflict cannot be resolved by appealing to the facts because all the 'relevant facts have already been selected, filtered, and embedded in the metaphors through which the situation is perceived' (Schön, 1997).
3	Use flux and transformation, organism and brain metaphors associated with CAS to frame development.	• CAS approach would mean uncertainty and experimentation become the expected form of behaviour. Erdgen (2012) believes that CAS provides integrated care with an 'alternative mindset' that could make 'significant improvements', leading to better care outcomes. • It has been argued that a linear concept of health and care must be replaced and supplemented by a complex-adaptive lens to 'help explain non-linearity and the emergent behaviours of multi-level dynamic networks of actors' (Tsasis et al, 2012).
4	Use clean language to facilitate development of metaphorical approach to organisational change.	• A study conducted during a time of organisational change in the NHS found a significant correlation between the use of metaphors elicited through clean language and staff well-being and acceptance. (Foreman, 2013) • Clean language can create group or collaborative metaphors that create conditions for change. These metaphors allow for insight and understanding and create shifts in behaviours where new metaphors integrate conflicting themes 'without sacrificing internal coherence or the degree of simplicity required for action (Doyle, 2010). • Metaphors created through clean language can create 'conditions for collaboration' where a group can explore metaphorical themes of each organisation and discuss underlying implications (Walker, 2014).
5	Re-consider the use of 'seamless of pathways care' to describe integration.	• This term is rich in metaphorical meaning. The use of lines or linear models were avoided when describing best practice, however, a pathway suggests this approach. Critics have noted that a pathway implies no 'branching or switching' as well as a 'clear understanding of process and order' (Checkland et al, 2019). Such a method procedure does not represent the reality of the patient journey or multi-disciplinary working. There was a consistent use of circular, connected, and round images when describing good integrated care, which was in direct contrast to a linear one. One participant described

		a 'pathway of care' as a 'production' line and found themselves unable to reconcile if a patient needed more than one intervention concurrently. It has resulted in one critic noting that 'it is clear that pathways do not convey complexity and whilst integration needs to be clear this metaphor distorts through oversimplification' (Checkland et al, 2019). • Seamless also suggests joining two entities rather than creating a new one. The flux and transformation metaphor were explicit: something new needs to becreated, 'one metal' rather than a forced linking of two. Again, there was a direct analogy when Participant 9 described 'a huge patchwork quilt, (which) is very separate without good thread to connect it and disjointed, ragged not sewn together well you know'.
6	Pay particular attention to the use shape and metaphorical language when describing integration.	• Language reiterates meaning, and metaphors that are not immediately visible often become an accepted way of describing reality, which has a significant impact (Geary, 2011). For example, conceptualising things impeding integrated services as 'barriers' focuses on their removal (Checkland et al, 2019) which reiterates scientific management models rather than that would emphasise accommodation or adaptation. • Implications of shape were a recurring theme, which would recommend that any images or diagrams depicting organisational models avoid using horizontal or vertical lines and utilise networks and circles.

This research asked if metaphors used to describe organisations could help to interpret the context and identify conditions for successful integration in Wales and evidence suggests that they can. Metaphor could allow the system to pay attention to, and possibly alter the narrative of this complex sector, by creatively challenging assumptions of linear top-down change to develop a model that appreciates complexity. Rowe & Hogarth (2005) capture the value of metaphorical development in the complex and challenging environment of integration perfectly when they state that ‘tensions and apparently irreconcilable differences can become productive in the paradigm of complex adaptive systems and allow development of new and emerging patterns of behaviour’.

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7 Appendices

7.1 Appendix 1: Clean Language

Clean language is a technique used in counselling, psychotherapy, education, business, organizational change, and health. It has been applied as a research interview technique called clean language interviewing. Clean language also is the basis for symbolic modelling and for systemic modelling, applied in organisational development. (Doyle, 2010)

Clean language aims to support individuals to discover and develop their own symbols and metaphors, rather than the interviewer suggesting, or contributing their own framing. Individuals can access their own metaphors by questions that are not influenced or tarnished by the interviewer's own language. An interviewer elicits a metaphor by asking "And that's like what?"

Clean language questions seek to minimise content that comes from the questioner's "maps" — metaphors, assumptions, paradigms, or sensations and identifies several questions that incorporate specific words and phrasing that have been used by the subject as well as including other components of communication such as speed, pitch, tonality, and non-verbal body language.

Clean Questions

There are between 8 and 12 basic clean language questions, but it is important to note that the concept of being 'clean' lies not only in the questions but the intention of the interviewer.

Most of the questions include only one of two verbs: 'to be' and 'to happen'.

The questions containing the verb 'to be' help to keep time still and are mostly used for developing individual perceptions:

1. Is there anything else about that … ?
2. What kind of … is that … ?
3. Where is … ?
4. Whereabouts … ?
5. That's … like what?
6. How many … are there?
7. Is there are relationship between … and … ?
8. Is … the same or different to … ?
9. Is … on the inside or the outside?

Questions containing the verb 'to happen' generally encourage the client to move time forwards or backwards:

10. Then what happens?
11. What happens next?
12. What happens just before … ?
13. What would you like to have happen?
14. What needs to happen for … to happen?
15. When … what happens to … ?

Questions which utilise other verbs are:

16. How do you know … ?
17. Does … have a size or a shape?
18. What determines … ?
19. Where does / could … come from?
20. Can … ?

Syntax

Clean questions pay specific attention to two specific words:

1. That: this allows for more specific attention to particular aspects of a metaphor or concept e.g. “I would like services to be more integrated,” then asking, “ and what kind of integrated is that integrated?”
    a. Directs attention to the word relaxed and invites them to consider it in more detail.
2. And: Follow up questions start with the word and in order to acknowledge the interviewees words and join the interviewers’ words to them words with the aim of keeping the interviewee in their own experience. E.g. and when work is difficult is there anything else about that difficult?

7.2 Appendix 2: Interview Questions

The structure of questions will be taken directly from Walker (2014):

- When Health Boards/Social care/Integrated services is working at it best that's like what? (Metaphor for desired state)
- And is it like that?' (Current sate)
- And that's like what? (Metaphor)

Additional developing questions can be used with awareness of clean language principles.

Clarifying questions included to ensure participants are describing metaphors for integrated services that deliver integrated care and not theoretical understanding of the concept of integration.

1. When is an organisation working at its best it's like what?
2. When is the Health Board working at its best it's like what?
3. And when the health board is (repeat description of working at its best) is it like that?
4. And that's like what?
5. When is Social care working at its best it's like what?
6. And when Social care is (repeat description of working at its best) is it like that?
7. And that like what?
8. What does integration mean to you? (For clarity that participant was describing organisations in scope)
9. What does integrated care mean to you? (For clarity that participant was describing services in scope)
10. Integration/Integrated services now that's like what?
11. When are integration/Integrated services working at it best it's like what?

7.3 Appendix 3

SCHOOL OF MANAGEMENT, SWANSEA UNIVERSITY

FIRST STAGE ETHICAL REVIEW FORM

To be completed for all research involving human subjects OR datasets of any kind OR the environment

Name of PI or PGR Student	Julia Wilkinson
Staff Number or Student ID	[redacted]
Supervisors*	Sian Roderick
Date Submitted	21/07/2023
Title of Project	Can metaphors be used to support effective integration of health and social care services for older people?
Name of Funder / Sponsor*	
Finance Code / Reference*	n/a
Duration of Project	6 weeks

The research study will explore if the use of metaphors will bring insight into how to create effective integrated working in health and social care. It argues that integrated pathways of care create a Complex Adaptive System (CAS), which will not be effectively delivered by top-down strategies or plans, but by creating conditions to increase the possibilities for natural adaptation. Emergence is a phenomenon which occurs because of the composition of complex adaptive systems as an array of independent, interacting agents. CAS research shows that this can be encouraged by using methods to increase creativity or 'conditions' of experimentation.
Theorists have identified the need to work with 'natural attractors' in a system rather than 'battle resistance'. It is suggested that the use of a shared metaphor for integration is a way of guiding the emergent process towards a natural attractor (i.e.compelling metaphor) rather that members of the team 'battling' with contradictory metaphorical interpretations or 'models of the world'.
The research will use a system called symbolic modelling, or clean language, to elicit organisational metaphors that professions across the system currently work within, identify any patterns, and go on to suggest that a collaborative metaphor should be developed to describe an effective integrated pathway for frailty within the paradigm of a Complex Adaptive System.

* *Complete if appropriate*

***Risk evaluation**: Does the proposed research involve any of the following?*
✓Tick those boxes for which the answer is YES
✗Cross those boxes for which the answer is NO

Participants

✗ Will the study involve recruitment of patients or staff through the NHS or the use of NHS data or premises and/or equipment? If this is the case, the project must be reviewed by the NHS. Please see the following NHS online tools for help with this http://www.hra-decisiontools.org.uk/research/ and http://www.hra-decisiontools.org.uk/ethics/

✓ Does the study involve participants aged 16 or over who are unable to give informed consent? (e.g. people with learning disabilities: see Mental Capacity

Act 2005. ~~All research~~ that falls under the auspices of the Act **must** be reviewed by the NHS)

✓ Does the research involve other vulnerable groups: children, those with cognitive impairment or in unequal relationships? (~~e.g.~~ your students). This **may** require NHS review, and will typically require the researcher to get **Disclosure & Barring Service (DBS) clearance** (formerly CRB checks)

✗ Will the research harm or pose any risk to the environment? (e.g. research in environmentally sensitive areas (e.g. SSSIs); permission needed to access field sites; transport of samples between countries (e.g. soil); sampling of rare or hazardous material (e.g. invasive species) that could deplete or endanger)

Staff currently employed in services that are within scope of proposed integration, managers and support staff that are involved in working across health and social care – in ~~the community~~ or an integrated discharge environment. Inclusion criteria of English-speaking and working within a health and social care setting with anyone under the age of 18 years and those with less than 1 year of experience in Welsh health and social care being excluded.

Recruitment

✗ Will the study require the co-operation of a gatekeeper for initial access to the groups or individuals to be recruited? (e.g. students at school, members of self-help group or residents of nursing home?)

✗ Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (e.g. covert observation of people or use of social media content)

✗ Will the research involve any form of deception? (e.g. misinformation or partial information about the purpose or nature of the research)

✗ Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?

✗ Does the research involve members of the public in a research capacity? (e.g. participant research; participants as co-producers or data collectors)

Purposive sampling will be employed to identify relevant professionals willing to participate within the context of services in scope for integration. They will be invited to participate by email invitation, with those interested being emailed the participant information sheet prior to the interview.

Written consent will be obtained for interview, recording and transcription. It will ~~be reiterated~~ to all participants that they may withdraw from the study at any point, and that they would be updated on findings of the study should this be of interest to them.

Research Design

✗ Will the study discuss sensitive topics or require the collection of sensitive information? (e.g. terrorism and extremism; sexual activity, drug use or criminal activity; collection of security sensitive documents or information)

✗ Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?

✗ Is pain or more than mild discomfort likely to result from the study?

✗ Will the study involve prolonged or repetitive testing?

✗ Are drugs, placebos or other substances (e.g. foods or vitamins) to be administered to study participants, or will the study involve invasive, intrusive or potentially harmful procedures of any kind? (If any substance is to be administered, this **may** fall under the auspices of the Medicines for Human Use (Clinical Trials) Regulations 2004, and require review by the NHS)

✗ Will tissue samples (including blood) be obtained from participants? (This would fall under the terms of the Human Tissue Act 2004. All research that falls under the auspices of the Act **must** be reviewed by the NHS)

Semi-structured interviews with some open questions to elicit participant experiences of current approaches to integrated care and questions designed to elicit a metaphor. The interview schedule will be tested prior to the sample population to ensure fluidity of conversation and clear understanding of questions. There will be a core of standard questions with follow-up ~~questions being~~ used as prompts in order to stimulate discussion and facilitate dialogue.
Clean language will be used to elicit metaphor which repats the participants words in a structured ~~question has~~ been used as to enhance the authenticity and rigour of interview-based qualitative research. It is an approach to questioning that facilitates exploration of a person's inner world through their own, naturally occurring metaphors.

Data Storage and anonymity

✓ Will the research involve administrative or secure data that requires permission from the appropriate data controllers and/or individuals before use?

✗ Will the research involve the sharing of data or confidential information beyond the initial consent given?

✓ Will the research involve respondents to the Internet or other visual/vocal methods where respondents may be identified?

All interviews will be conducted through Microsoft teams and recorded with automatic transcription. Transcripts will be downloaded immediately after the interview and anonymized to maintain confidentiality. Recordings will be used to check accuracy of transcripts and then deleted, with transcripts being labelled with role and serial number to aid analysis (eg. P1, P2, P3, etc). ~~Anonymised~~ data were stored on password protected computer systems and deleted after analysis in line with the data management policies, analysis will take place within 6 weeks.

Safety and Risk

✗✓Has a risk assessment been completed?

✗ Is there a possibility that the safety of the researcher may be in question? (e.g. in international research: locally employed researchers)

✓ Will the research take place outside the UK where there may be issues of local practice and political or other sensitivities?

- ✗ Could the research impact negatively upon the reputation of the University, researcher(s), research participants, other stakeholders or any other party?
- ✗ Do any of the research team have an actual or potential conflict of interest?
- ✗ Are you aware of any other significant ethical risks or concerns associated with the research proposal? (If yes, please outline them in the space below)

Participants will be recruited from different health and social care systems and all interviews will take place over teams within their own environment.

None

*If any answer to the questions above is **YES**, then a **Second Stage (Full) Ethical Review MAY** be required.*

*If the project involves **none of the above**, complete the **Declaration**, send this form and a **copy of the proposal** to* Amy Jones the School of Management Research Support Officer: amy.e.jones@swansea.ac.uk. Research may only commence once approval has been given.

***Declaration:** The project will be conducted in compliance with the University's Research Integrity Framework (P1415-956). This includes securing appropriate consent from participants, minimizing the potential for harm, and compliance with data-protection, safety & other legal obligations. Any significant change in the purpose, design or conduct of the research will be reported to the SOM-REC Chair, and, if appropriate, a new request for ethical approval will be made to the SOM-REC.*	
Signature of PI or PGR Student	Julia Wilkinson
Signature of first supervisor (if appropriate)	Stan Roderick
Decision of SOM-REC	

7.4 Appendix 4: Recruitment Email

Hi

I am hoping to conduct some research into integration between health and social are for older people in Wales.

I am looking for volunteers to take part in interviews that will last no longer than 1 ½ hours. Interviews will be conducted over teams so there's no need to travel.

All data will be confidential, and the questions will be about how you experience integrated care using metaphor and visual imagery.

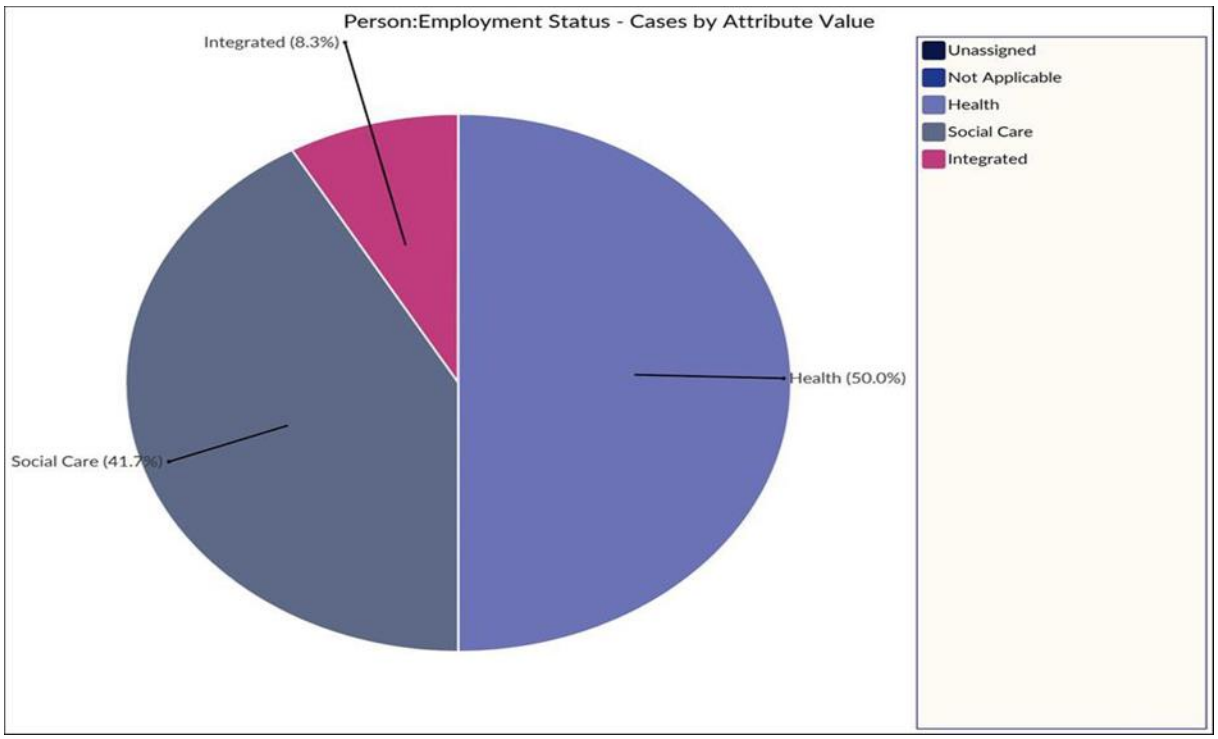
I am looking for staff who work either in adult social care, community health services, integrated services or work closely between sectors (e.g., Discharge Teams).

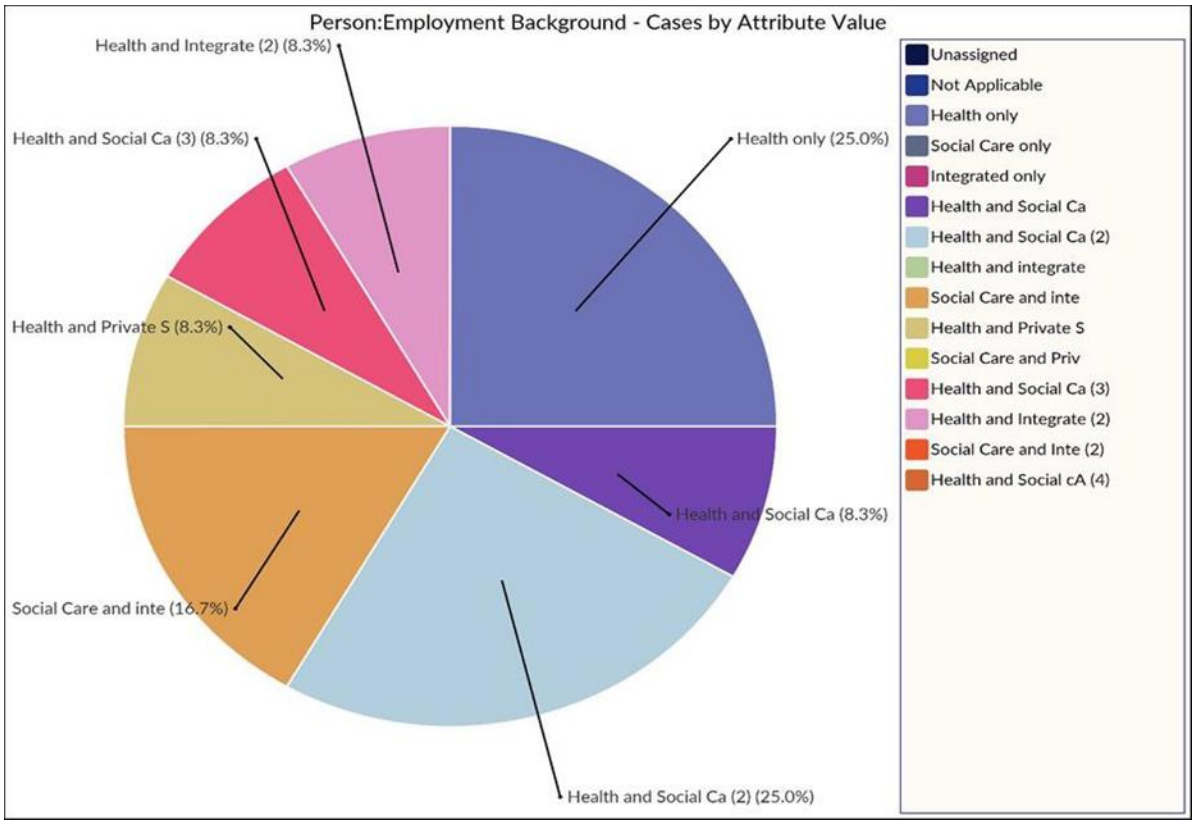
So, if you are English-speaking, over 18 and have more than a years' experience of working in Welsh health and social care please get in touch.

Thank you

7.5 Appendix 5: Participant Profile

Number of areas represented: 3





7.6 Appendix 6: Participant Information Sheet

Thank you for agreeing to be part of my research project.

- Here is some information about the topic and the interview. It should last not more than 1 hour, and I will be available for any questions or comment that you have.
- Purpose of the research
- The aim is to find out more about the current context of integration in Wales and help to facilitate successful development of a national model of 'seamless integrated pathways of care'.
- Welsh legal and policy drivers have promoted integrated 'seamless pathways of care' as a way to address the impact of rising costs, an ageing population and increasingly poor outcomes.
- There is no consistent model of integration in Wales, which means that each area organises services within their own specific context.
- Implementing the theory of integrated care into practice has been highlighted as a highly complex procedure which has proved generally difficult to achieve.

Approach

- The interviews will be predominantly based on asking you to describe metaphors or images to describe the organisational context of integration.
- Theorists of organisational change have proposed metaphors as a way to help people think in new ways1.
- Metaphors contain symbolic language which is a basic tool that humans use to determine truth, facts, and meaning and allow people to interpret meanings and make sense of their worlds and lives.
- Interviews will be based on a questioning technique called clean language2 which aims to support you to discover and develop their own symbols and metaphors, rather than the interviewer suggesting, or contributing their own framing. Individuals will then be able to access their own metaphors by questions that are not influenced or tarnished by the interviewer's own language.
- The interviewer will aim to elicit a metaphor by asking "And that's like what?" with follow-up questions seeking to minimise content that comes from the questioner's own language. This approach is supported by including other components of communication which are often non-verbal.

1 Morgan, G. (1986) Images of Organisation. Newbury Park, CA: Sage Publications Inc

2 Walker C. (2014) From Contempt to Curiosity: Creating the Conditions for Groups to Collaborate Using Clean Language and Systemic Modelling. Clean Publishing Company

Thank you!

The Impact of the future of community pharmacy model on care delivery in Wales

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Abstract:

In 2018, the Health Minister set out ambitious long-term plans for the Welsh Health and Social Care sector; "…the intention is to create even better care locally, with support and treatment available across a range of community-based services." This included moving services from general hospital facilities into the community releasing hospital capacity for more specialist care services. Welsh Governments 'A Healthier Wales: our Plan for Health and Social Care' outlined plans for a whole system change incorporating health and social care to meet the current and future healthcare needs of the Welsh population through a seamless and patient-centric approach and healthcare journey. In 2019, to meet the targets of 'A Healthier Wales', the ambitions for a future Community Pharmacy (CP) were published. To align with the vision, a new contractual approach was developed to meet the expectations and future funding of CPs. These transformational changes were outlined in the Welsh Government (WG) 'Presgription Newydd: A New Prescription'.

CP has undergone significant change in the last 10 years, moving from a predominantly dispensing service funded model to a new model which has a greater reward for service provision and less for dispensing. This change in emphasis ensures patients have access to clinical services and shifts pressure from services such as GP practices, 111 and out of hours. As part of the reform, it was recognised to free time for pharmacies to offer services and make a more significant contribution to the health agenda in Wales changes would be needed. This research addresses what these changes mean for CPs, patients and the wider health care systems and it considers what is needed to develop the CP model its future role.

Keywords: Community Pharmacy, Care Delivery, Collaboration, Continuity.

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1 Introduction

1.1 BACKGROUND AND CONTEXT

In 2018, the Health Minister, Vaughan Gethin set out ambitious long-term plans for the Welsh Health and Social Care sector; "…the intention is to create even better care locally, with support and treatment available across a range of community-based services." This included moving services from general hospital facilities into the community releasing hospital capacity for more specialist care services (WG, 2021). Welsh Governments 'A Healthier Wales: our Plan for Health and Social Care' (WG, 2019 - table 1) outlined plans for a whole system change incorporating health and social care to meet the current and future healthcare needs of the Welsh population through a seamless and patient-centric approach and healthcare journey. In 2019, to meet the targets of 'A Healthier Wales' (table 1), the ambitions for a future Community Pharmacy (CP) were published (WG, 2019b). In efforts to align with the vision, a new contractual approach was developed to meet the expectations and future funding of CPs. These transformational changes were outlined in the Welsh Government (WG) 'Presgription Newydd: A New Prescription' (WG, 2021a) (table 1).

CP has undergone significant change in the last 10 years, moving from a predominantly dispensing service funded model to a new model which has a greater reward for service provision and less for dispensing. This change in emphasis ensures patients have access to clinical services and shifts pressure from services such as GP practices, 111 and out of hours (Burns, 2022). As part of the reform, it was recognised to free time for pharmacies to offer services and make a more significant contribution to the health agenda in Wales changes would be needed (WG, 2019b). This research addresses what these changes mean for CPs, patients and the wider health care systems and it considers what is needed to develop the CP model its future role.

1.2 THE IMPORTANCE OF THE COMMUNITY PHARMACY

Table 1. Key Documents Outlining the Role of the Future Pharmacy.

Title	Year	Publisher	Main Purpose
A Healthier Wales (A Healthier Wales: Our Plan for Health and Social Care, 2019)	2018	Welsh Government	Sets out a long term future vision of a 'whole system approach to health and social care', which is focussed on health and wellbeing, and on preventing illness.
Pharmacy: Delivering a Healthier Wales (Pharmacy: Delivering a Healthier Wales, 2019)	2019	Welsh Pharmaceutical Committee	Sets out the future vision and 14 principles for transforming pharmacy in Wales as well as the goals set for 2022 and 2030
Presgripsiwn Newydd / A New Prescription (Presgripsiwn Newydd A New Prescription The Future of Community Pharmacy in Wales, 2021)	2021	Welsh Government	Sets the scene for the future of Community Pharmacy in Wales and what has been agreed as part of the contractual reform.

CP has always held a pivotal role and hub in the communities they serve. They offer advice on a wide variety of issues from over-the-counter medication queries, providing a safety net for prescribing, lifestyle support and more recently have expanded the range of services offered. The sector has consistently demonstrated their capacity to adapt and expand even during the Covid 19 pandemic when CPs remained open and rose to the challenges including delivering medication to the most vulnerable and utilising new technologies for the delivery of services (Maidment et al., 2021; Wilkinson, 2020; Wickware, 2020). Ambitious Government policies and targets have been a key driver for change and contract reforms which has had a significant impact on the operating models within pharmacy (WG 2021).

1.3 PERSONAL MOTIVATION OF THE RESEARCHER

The researcher is an experienced project manager conducting service improvement transformations and was motivated to undertake this study after working with CP in a Health Board capacity for a number of years. This stimulated her interest in the impact of health care reform on CP and whether the future pharmacy model supports the health care agenda and is beneficial to patients, pharmacy staff and pharmacy owners.

1.4 OBJECTIVES OF THE RESEARCH

- To highlight the challenges faced by CP in achieving the Welsh Governments ambitions set out in 'Pharmacy: Delivering a Healthier Wales'.
- To understand the impact of a "Presgripsiwn Newydd: A New Prescription" contract reform on CP.
- To gain an awareness of the impact of the change from the old dispensing driven model of pharmacy to a more service driven model of pharmacy.
- To highlight the enablers, barriers, and abilities of CP in delivering more services to support care delivery in Wales.

1.5 CONCLUSIONS AND THE STRUCTURE OF THE THESIS

This chapter has introduced the ongoing development of strategy/policy and its implied changes to CP practice. These strategic changes are wide-ranging as services pivot from GP practices and urgent care to CP. Chapter 2 will provide a review of the existing literature in this field of study before outlining the chosen research design in Chapter 3. Chapter 4 will present the findings of the research and Chapter 5 will discuss the findings in relation to the literature. The final chapter will then provide the conclusions, implications, and recommendations of the research study.

2 LITERATURE REVIEW

2.1 INTRODUCTION

A consistent theme in NHS literature is the need for organisations to evolve and to fit the new dynamic environment of health and care delivery (Morgan, 2023). The pressure for change includes the need to 'join up' services through blurring of the boundaries between services and changing roles (Forsyth et al., 2023). The constant flux of these dynamic changes places an emphasis on the need to plan the future role of Community Pharmacy (CP) (Tsuyuki et al., 2018). At the heart of these changes is a movement of services from secondary care to a primary care setting to reduce the resource burden on hospital services and provide care closer to home (WG, 2019a). Watson et al., (2019), propose approximately 650,000 emergency consultations and 18 million GP consultations are for ailments that could have been treated at a CP. Most NHS activity occurs in primary care whilst much of the NHS national budget is spent on secondary care services (WG, 2023).

CP has changed significantly in the last decade and generated much academic debate (Malet-Larrea et al., 2016; Mantzourani et al., 2019; Mills et al., 2021; Mossialos et al., 2015; Tsuyuki et al., 2018) but there remains little research concerning the impact of recent contract reforms or the impact of a 'Healthier Wales' (2021b), on CP services (WG, 2021b; WG, 2019b).

The government plan for a "future pharmacy" model requires transitioning to a greater emphasis on diagnostics (RPS, 2020) which implies a change in the actual services provided. The transition refocuses the traditional and 'dispensing' model from a high volume, low variety role based on demand generated by daily prescriptions, to a high variety, diagnostic and a high-volume dispensing role (where prescriptions will still be dispensed but the variety of services and patient conditions will increase). The transition to a service-driven contract without the reduction in dispensing has created tension in the system.

Pharmacists are highly trained, highly skilled and have the potential to offer more to support the wider health context and local community (Agomo, 2012). Over recent years, the services offered by CP have grown and three forms of funded service are identifiable. Under the previous contract pharmacies offered three levels of service as part of their contractual framework:

- Essential services which every pharmacy had to provide and included for example the dispensing of prescriptions, the disposal of unwanted medication and public health campaigns.
- Advanced services which were optional and included discharge medicine reviews and stoma customisations.
- Enhanced Services - National and Local and included the Common Ailment Service (CAS), Emergency Contraception (EC) and may others, these were commissioned to meet the health needs of the population and optional for pharmacies.

(Hywel Dda University Health Board, 2021).

Under the new contractual reform, essential services have remained, but the delivery of enhanced services have changed. To provide better continuity of service to the public, several services have been combined to provide Clinical Community Pharmacy Services (CCPS) including the:

- Common Ailment Service (including Sore Throat Test & Treat),
- Contraceptive Services (Including Bridging & Quick Start Contraception),
- Seasonal Flu Vaccination, and,
- Emergency Medicines Supply.

The other enhanced services have been renamed "national and local additional services", and a Pharmacy Independent Prescribing Service (PIPS) has been introduced alongside the Discharge Medicine Review Service (WG, 2021a).

This chapter will provide a review of the current academic and policy literature using the 6 key principles of the "future of Community Pharmacy" (figure 1) as described in a 'New Prescription' (WG, 2021a) to frame this review.

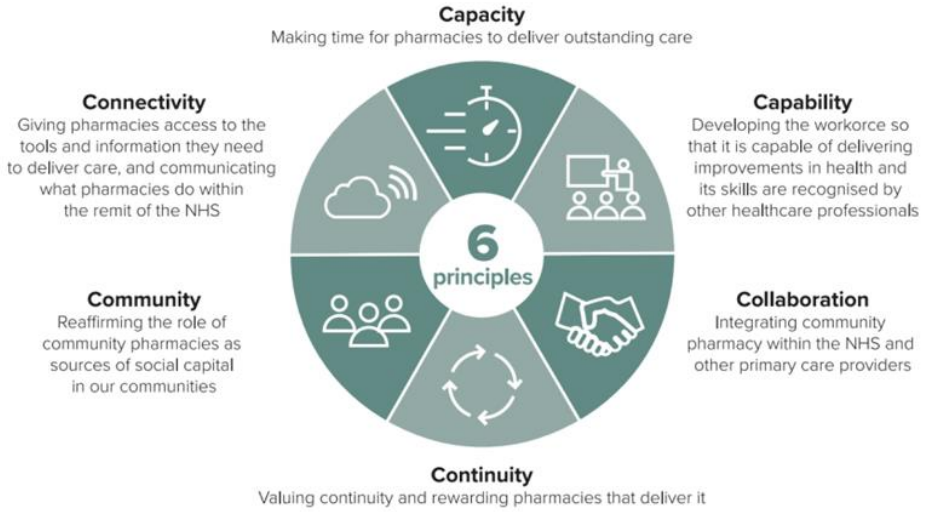


Figure 1. The six principles shaping the future of Community Pharmacy in Wales. (Source: WG, 2021a).

2.2 DEFINITIONS

A CP *"… sometimes called retail pharmacy, makes up one of the four pillars of the primary care system… along with general practice, optical services, and dentistry. It is arguably most well-known as a dispenser and retailer of medicines, but its role is in fact much broader and includes other NHS and publicly funded services."* (Baird & Beech, 2020). Dhital et al (2022) stated, *"…community pharmacies play an important role in improving economic, social and clinical outcomes for individuals and their communities"* (p.77) and provide a range of services to local patients and citizens (including the promotion of public health). It is argued, these organisations are central to effective and efficient care delivery and have played a critical role in the management of patient conditions throughout the Covid-19 pandemic (Moore, 2020). Pharmacies are independent contractors who are contracted by the NHS to deliver services and therefore represent "businesses" in their own entity. There remains a challenge for NHS commissioners in dictating how such businesses operate (e.g. safe staffing levels and standard operating procedures employed).

There are two main types of pharmacy contractor:

- Independent
- Multiple (more than 6 branches nationwide)

The following terms and features of this chapter will now be defined (Table 2):

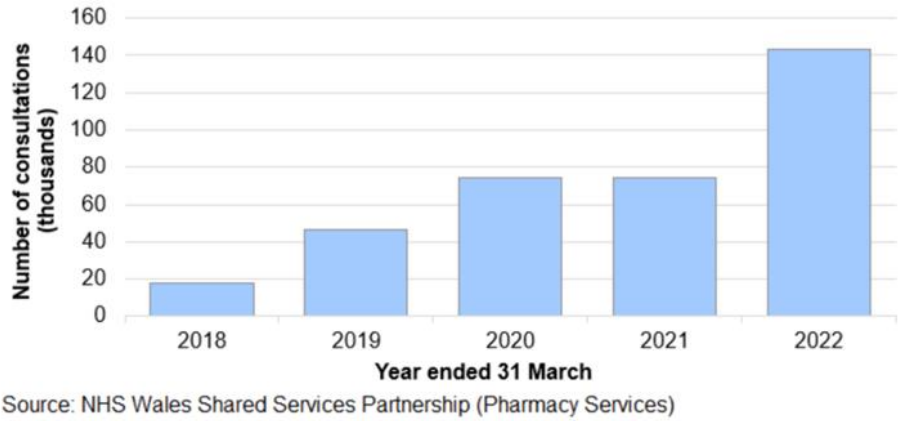
Table 2. Definition of Terms.

Term	Definition
Pharmacist	...means a person registered in Part 1 of the GPhC register or in the register maintained under Articles 6 and 9 of the Pharmacy (Northern Ireland) Order 1976. (Hambridge & Mackridge, n.d.)
Community Pharmacy (CP)	...a healthcare facility that provides pharmaceutical and cognitive services to a specific community. From independently owned pharmacies to corporately owned chain pharmacies, a variety of pharmacies are in operation. (Ibrahim, 2018)
Community Pharmacy Clinical Services	Additional NHS services provided by Community Pharmacies such as the Common Ailment Service (CAS), Discharge Medicines Reviews (DMR) and Emergency Contraception (EC) (CPW, 2022)
Pharmacy Independent Prescribing Services (PIPS)	...where suitably qualified and competent pharmacist independent prescribers can prescribe for a range of minor illnesses not covered by the common ailment service, and for routine contraception. (NHS, n.d.)
General Practitioner (GP)	... a specialist trained to work in the front line of a healthcare system and to take the initial steps to provide care for any health problem(s) that patients may have (Olesen, 2000)

2.3 CAPACITY

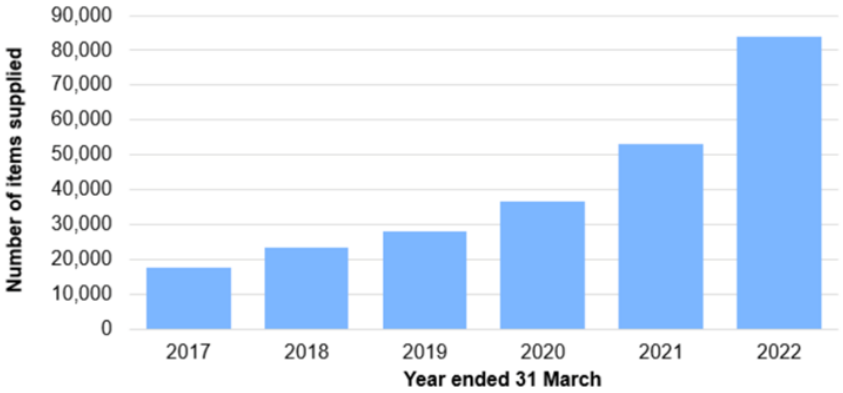
Making time for Pharmacies to Deliver Outstanding Care.

The services a CP can offer has increased significantly in the last 10 years with the introduction of the services mentioned above. The Figures 2 – 5 below show this growth over the last five years or more.



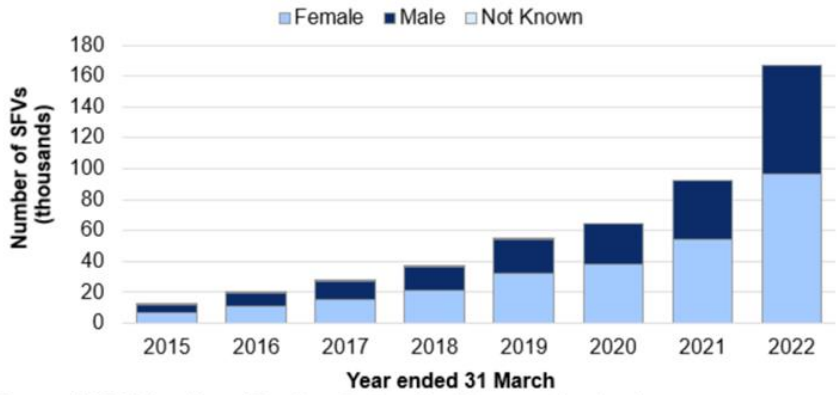
Source: NHS Wales Shared Services Partnership (Pharmacy Services)

Figure 2. Common Ailment Service. (Source: NHS Wales Shared Services Partnership (Pharmacy Services)).



Source: NHS Wales Shared Services Partnership (Pharmacy Services)

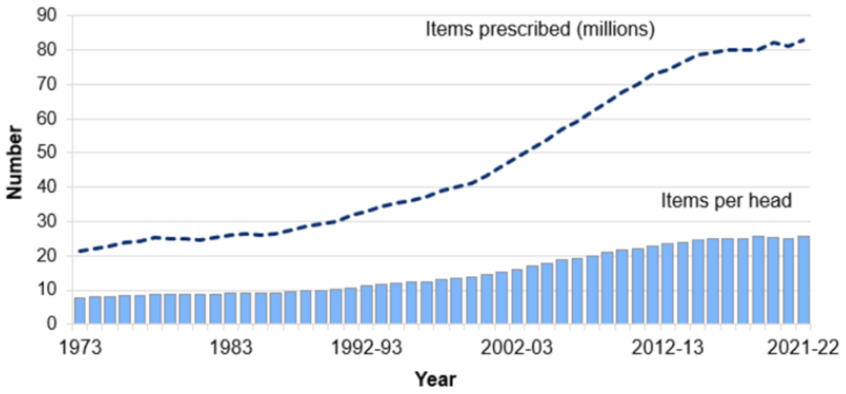
Figure 3. Emergency Medication Supply (Source: NHS Wales Shared Services Partnership (Pharmacy Services)).



Source: NHS Wales Shared Services Partnership (Pharmacy Services)

Figure 4. Flu Vaccinations. (Source: NHS Wales Shared Services Partnership (Pharmacy Services)).

These figures confirm the increased CP activity levels, but the primary role of dispensing medication remains. According to (WG, 2021b) *"Prescribing a medicine continues to be the most common therapeutic intervention in healthcare"* and over 90% of prescriptions are dispensed through this service. In 2021-22, 82.8 million items were dispensed by CPs and Figure 5 highlights the long-term growth trend in the number of items prescribed.



Source: NHS Wales Shared Services Partnership

Figure 5. Items Prescribed in CP in Wales. (Source: NHS Wales Shared Services Partnership).

Since 2007/2008 the number of prescriptions in Wales has increased by a third (Welsh Government, 2021) but the number of Welsh community pharmacies has only slight risen (rising from a minimum level of 706 to a maximum of 716 - a rise of only 2%). The PSNC 2023 Pharmacy Pressures survey showed many pharmacies are understaffed due to both insufficient funding (48%) and staff unavailability (34%) (PSCN, 2023).

Within the "New Prescription" policy there is recognition CPs must offer more value-added services which necessitates capacity building investments to accommodate the new workload. Resultantly, GP practices have increase prescribing intervals for stable patients from 28 days to 56- or 85-day prescribing cycles which is anticipated to provide slack in the system by batching up demand and dispensing less frequently (WG, 2021b).

2.4 CAPABILITY

Developing the workforce so that it is capable of delivering improvements in health and its skills are recognised by other healthcare professionals.

The New Prescription and Pharmacy Delivering a Healthier Wales reports strongly emphasise improving workforce skills and ambitiously target the appointment of an independent prescriber in all community pharmacies by 2030 (WG, 2019b; WG, 2021a). All pharmacists trained and qualified (prior to 2026) must qualify as an independent prescriber and this requires additional university training of an additional year with 90 hours in a practice placement with a designated prescribing practitioner (DPP)- (Mantzourani et al., 2023). There are significant challenges to meet these training requirements including a lack of DPPs to support the training process to become an IP. Other challenges include time to train which puts additional pressure on an already overstretched workforce. The additional training also increases the salary expectations of individuals and therefore the costs of CP operations. It is a challenging modern workforce dynamic. The capability commitment affects the pharmacist and all pharmacy staff. It is recognised that for pharmacy to increase delivery, an increase in capacity or a release from the existing pharmacist role is required. Pharmacy Technicians have a pivotal role in the dispensing function and more recently in service delivery, therefore are a key component in releasing pharmacist capacity. The number of national pharmacy technician educational places has increased by 66.7% (year 23/24) resulting in an additional 20 student places (30 to 50 nationally – (McEvoy Louise, 2023)).

2.5 COLLABORATION

Integrating Community Pharmacy within the NHS and other primary care providers.

Collaboration is the process of sharing knowledge and activities between two or more organisations or between the patient and the organisations that serve their health and care needs. Collaboration is described by (Bardet et al., 2015) as "different professional groups working together to positively impact healthcare". Research evidence shows such collaborations underpin effective and efficient care delivery by creating a streamlined and integrated approach to meeting patient care needs. Bollen et al., (2019) found,

> *"Enhancing interprofessional collaboration between GPs and CPs … is critical in order to facilitate the effective functioning of primary care services in the context of growing demand. (p21) [They added] … the co-education of these groups, including exercises relating to collaboration, creating knowledge of each other's professional roles and capabilities, and maintaining a healthy professional relationship may be valuable. (p21)"*

In summary, collaboration between professional groups is thought to be critical to enhance patient care and provide greater quality sustainable services.

2.6 CONTINUITY

Valuing continuity and rewarding pharmacies that deliver it.

Continuity of Care (COC) development, *"…between patients and community pharmacists could improve medication adherence, reduce inappropriate drug use and lower other costly services use"* (Choi & Lee, 2022 p??). The contract reform strongly emphasises continuity of access to support the public and providing 'universal minimum levels of service' (HEIW, 2023). Recent workforce shortages have been so significant that the role 'Pharmacist – all jobs' has been added to the Government 'Shortage occupation list' since 2021 ('Pharmacists Added to Government's List of Occupations Facing National Shortage', 2021). The COC

within CP poses a significant constraint and the extent of the challenge is highlighted by the number of temporary closures of CPs in the last two years (Figure 6).

	Month												
Financial Year	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Total (Days)
2021-2022	3	23	78	223	203	188	116	187	158	173	193	237	1782
2022-2023	333	171	222	330	170	133	133	94	160	158	74	128	2106
2023-2024	93												

Figure 6. Wales Recorded Number of Short Notice Temporary CP Closures. (Source: modified from (HEIW, 2023)).

A historical CP challenge is sporadic service availability resulting in a breakdown of communication with general public and referral partners (i.e. GPs and 111) regarding existing services. Service availability is dependent on the presence of a pharmacist on any given day. This can inhibit relationships with patients, organisational partners, and the community.

2.7 COMMUNITY

Reaffirming the role of community pharmacies as sources of social capital in our communities.

Various papers identify the importance of CPs for local patients ((Dhital et al., 2022; Ilardo & Speciale, 2020; Tsuyuki et al., 2018; Watson et al., 2019)). Pharmacies are the first point of contact for a variety of minor conditions. Ipsos MORI, found 89% of people said it was *"important that pharmacists are the first point of contact for common clinical conditions"* (Burns, 2022 p1). CPs also offer a social centre of the community. *"…Interactions between visitors and staff often take on a social purpose where community-related conversations are discussed alongside health topics…"* (Dhital et al 2022 P78). A person-centred CP approach was identified as critical research combined with staff 'knowing' the individual (Watson et al., 2019). Tsuyuki et al., (2018) estimated that *"primary care pharmacists see their patients somewhere between 1.5 and 10 times more frequently than they see primary care physicians"* which shows the integral role that the pharmacist holds in the delivery of 'joined up' care.

2.8 CONNECTIVITY

Giving pharmacies access to the tools and information they need to deliver care, and communicating what pharmacies do within the remit of the NHS.

Welsh Government aims to give CPs the information and tools needed for safe patient care. Goundrey-Smith (2018) found that in general digital healthcare solutions were often developed in 'professional and organisational silos.' In Wales, CP relies on an IT platform called 'Choose Pharmacy' for its clinical consultations. It was developed to support the national rollout of the Common Ailment Service and has since been developed to accommodate new services. Integration is slowly being developed with consultation details being electronically transferred to GPs and CPs having limited access to some details (such as medication) for some services where this is needed for safe patient care (DHCW, n.d.). In a recent study by Mantzourani et al., (2023) they found there was inconsistency in accessing the patient record for Independent Prescribing consultations:

> *For some consultations these limitations were not considered critical, but for some others, this limited depth of information was considered desirable by IPPs to have confidence in their decision making. Some participants also expressed the need to move beyond "read only" access to patient records to "read/write" access, and this was viewed as necessary to push the profession forward and properly integrate pharmacists in the multi-professional team.*

For Community Pharmacy to be truly integrated and realise significant benefits in Primary Care Networks greater transparent access to health records is necessary.

The services offered in CP remain largely unknown to the public and have been hampered by the sporadic availability of services. The development of the CCPS under the new contract will improve this availability and will support with the more significant promotion of Community Pharmacy services.

2.9 ACADEMIC VIEW OF THE CHANGES TO PHARMACY

At the core of this study are three long-held operations management principles:

1. The most effective organisations are designed so the operations management of the business drives and supports competitive performance and the viability of the pharmacy (Hayes & Wheelwright, 1984).

Figure 7. The Strategic Role of Operations.

2. There are only 3 viable operations management forms (the mass service of high volume and low variety), the service shop (medium volume and variety) and the professional service (low volume of high variety work). See Hayes & Wheelwright, (1984) and Slack et al., (2013) below.

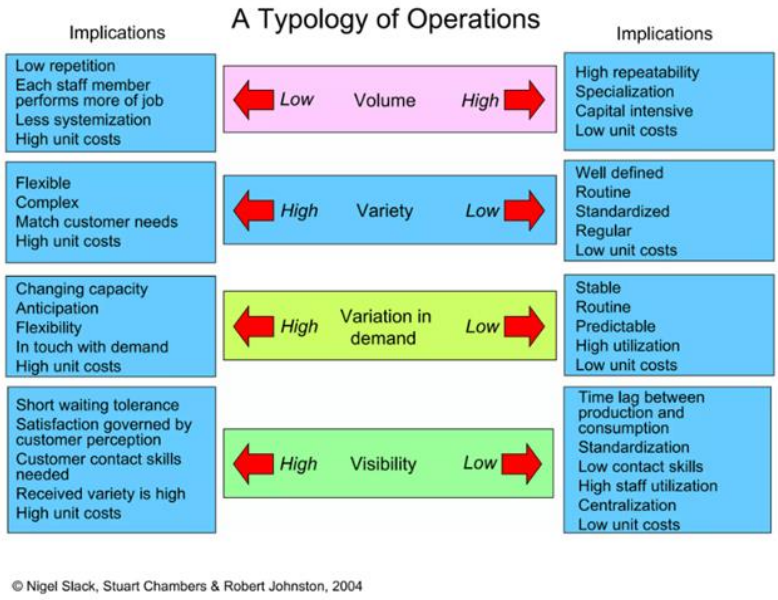


Figure 8. A Typology of Operations.

3. The "Sandcone model" (figure 9) of operational competence as developed by Rich et al., (2004) which shows how businesses master key performance indicators in health and care settings gain superior effectiveness and efficiency positions outlined in figure 8.

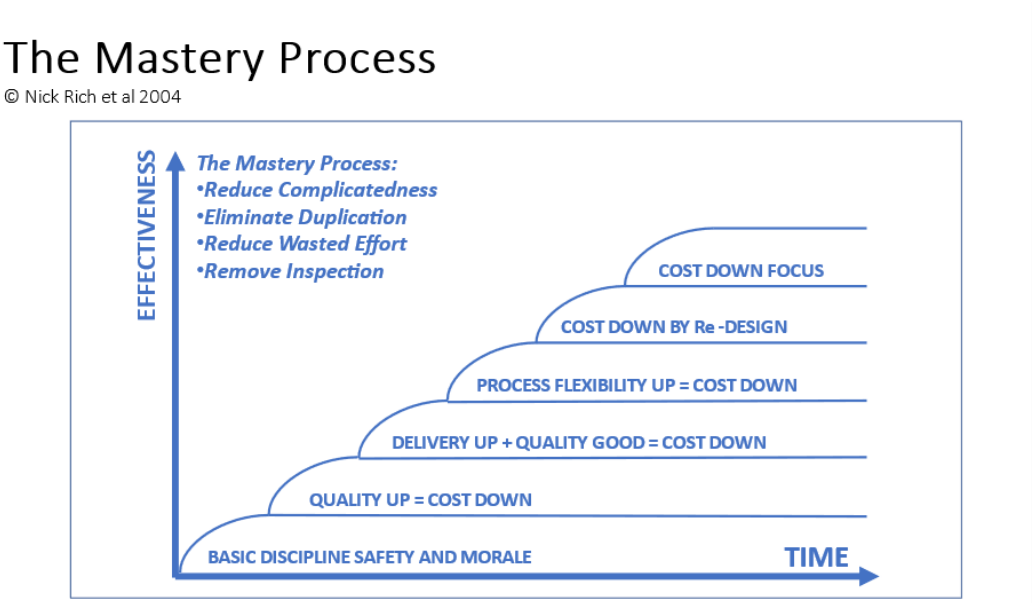


Figure 9. The Sandcone Model.

The implications of the changes to CP services suggest reinforcing a transition from large volume dispensing as an income generator to more diagnostic services and lower volume patients of higher comorbidities and complexity (Hayes & Wheelwright, 1984, Rich et al., 2004). The penalties of selecting the wrong operations management model are significant and will increase costs whilst causing problems with the quality, delivery and flexibility of the services offered to patients. This is the academic gap in the literature in terms of how any CP can switch between high and low volume activities (with ease) and service this dual demand whilst remaining economically viable. The literature suggests if the old model of dispensing remains (high volumes of repetitive tasks) then the operations design is not compatible with higher variety of services offered and this will cause problems and low levels of overall service. The costs to serve each patient therefore rises. If the model changes to high variety, then how will pharmacies manage this intermittent flow of patients. If they design their operations for low volume and high variety then process safety and quality of the service may decline as highly skilled staff are seeing patients intermittently and excess capacity of this nature is expensive due to the salaries of the pharmacists employed. In short, unless a new design can accommodate volume, variety, the physical presence of the patient (visibility) and switch between modes during a single working day to match the variation in dispensing and diagnostic service demand then the viability of the future community pharmacy is challengeable.

2.10 IN SUMMARY

There is a significant gap in the literature concerning the enactment of government policy by CPs and small pockets of research which have looked at the impact of the introduction of specific new services such as Independent Prescribing (IP) & Sore Throat Test & Treat (STT&T) (Mantzourani et al., 2019, 2023b) shows significant constraints, concerns, and potential risks for CPs making the transition. Conceptually, the future shape of CP is hard to reject but the practicalities of combining the necessary competences, capabilities, formalised services, and to all of this with economic viability for the organisations involved. This study explores the extent to which the new government policy and direction have been implemented in CPs and what impact these changes have had. The research question was designed to express the gap in knowledge and to focus the study to explore 'The impact of the future of Community Pharmacy on Care Delivery in Wales'. In essence, what will enable or inhibit the transition to an effective future CP model.

The following conceptual framework was developed, by the researcher, following the literature and policy review. The framework summarises the key elements of the Future Community Pharmacy model.

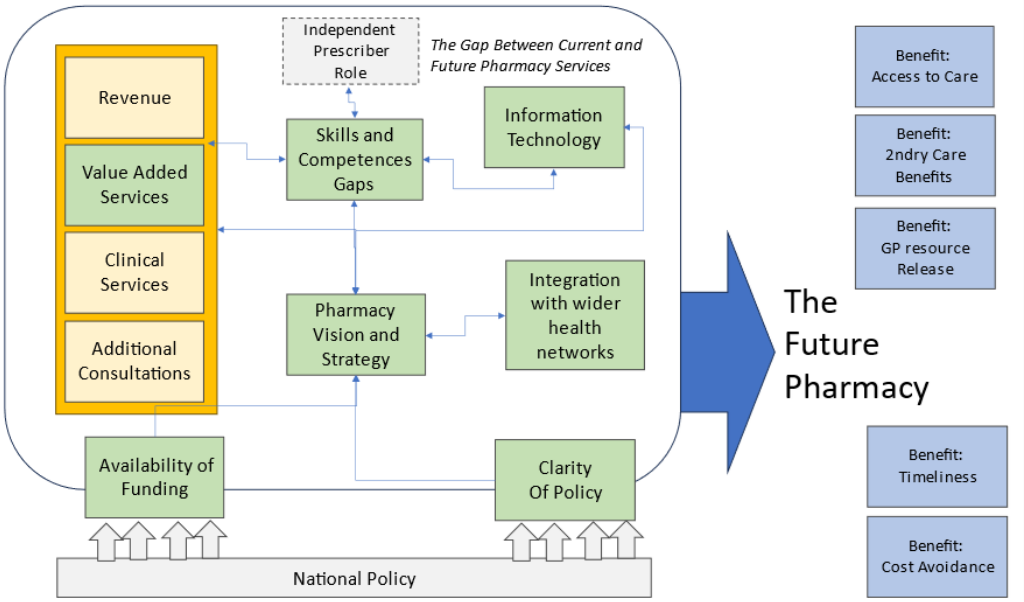


Figure 10. The Conceptual Framework. (Source: Developed by researcher).

3 RESEARCH METHODOLOGY AND DESIGN

3.1 INTRODUCTION AND PURPOSE

The purpose of this section is to present and defend the chosen research methodology and show how this design effectively answers the guiding research questions. The contemporary nature of how the future pharmacy role will be enacted has not been explored, in detail, before and requires a theory building and contextually rich approach.

This chapter is structured using the (Saunders et al., 2016) research onion.

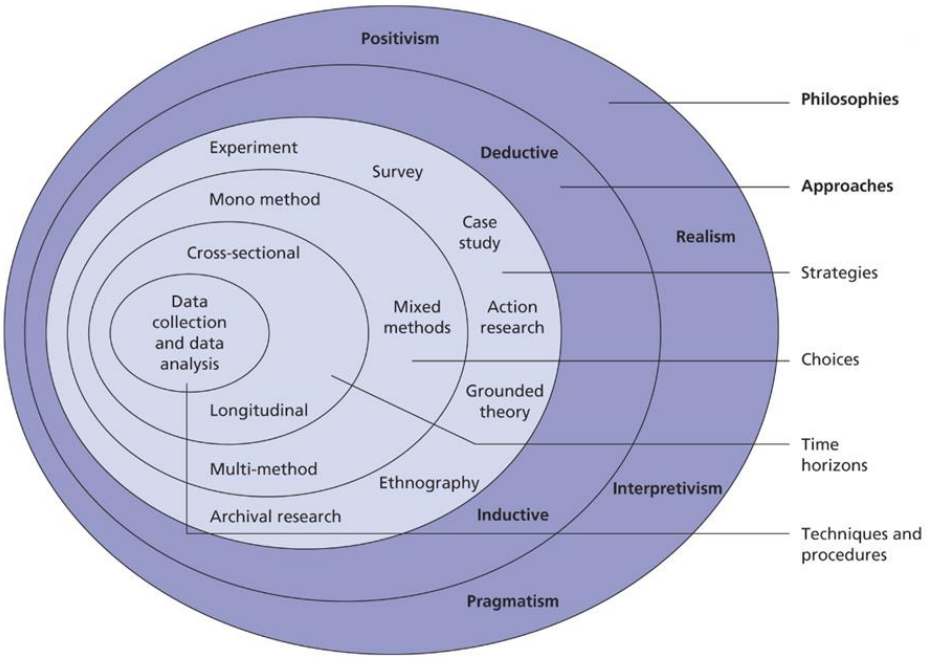


Figure 11. The Research Onion. (Source: extracted from (Saunders et al., 2016).

This is a realist and pragmatist approach to a contemporary and dynamic issue that is poorly understood. The current academic literature shows a major gap in how the roles of NHS organisations are changing and the impact of policy reform on professional practice.

Table 3. Research Design Choices.

Title	Year	Publisher	Main Purpose
A Healthier Wales (A Healthier Wales: Our Plan for Health and Social Care, 2019)	2018	Welsh Government	Sets out a long term future vision of a 'whole system approach to health and social care', which is focussed on health and wellbeing, and on preventing illness.
Pharmacy: Delivering a Healthier Wales (Pharmacy: Delivering a Healthier Wales, 2019)	2019	Welsh Pharmaceutical Committee	Sets out the future vision and 14 principles for transforming pharmacy in Wales as well as the goals set for 2022 and 2030
Presgripsiwn Newydd / A New Prescription (Presgripsiwn Newydd A New Prescription The Future of Community Pharmacy in Wales, 2021)	2021	Welsh Government	Sets the scene for the future of Community Pharmacy in Wales and what has been agreed as part of the contractual reform.

3.2 LITERATURE REVIEW

A traditional literature review was undertaken to frame and guide any study in terms of the current knowledge of academic researchers. The literature review was guided by the 6 elements of the 'New Prescription'.

Table 4. Literature Review - Activity and Purpose.

Activity	Purpose
Literature Search Criteria	Key word searches using the following terms: Community Pharmacy and the following terms: Connectivity, Community, Capacity, Capability, Continuity, Collaboration, COVID, Workforce, Training
Repositories Used	I-find, Google Scholar, Research Rabbit because they offered the greatest access to published works.
Search Criteria 2	All publications since 2010 sorted by quality of journal, ABS and a Healthcare Impact

3.3 INTERVIEWS

Semi-structured interview questions were developed to explore the implications of recent government reforms on community pharmacy, the workforce, and to understand the enablers and barriers for offering clinical services in CP.

Table 5. Interview Methods.

Participant Selection	The key informants were pharmacists working in or with CP in Wales. Interviewees were selected based on job role and knowledge of the pharmacy service and recruited through the researchers' connections and recommendations of those connections. Not all of the participants` were known to the researcher. Purposively selected based on their expertise, insight and experience
Interview Length	Up to a maximum of 54 minutes.
Types of Questions	Open questions that were themed
Interview Themes	Pharmacist background, Change to pharmacist role, Future of pharmacy, Clinical services, impact on the wider health network and the change to the community pharmacy.
Form of Recording	All interviews were conducted via teams and recorded (with permission) the videos were transcribed using TRINT.

3.4 PERCEPTUAL QUESTIONNAIRES

The interviews gave great context, but more was needed to fully understand the impact of some of the recent WG policies and the changes to the model of Community Pharmacy. Including more people adds to the validity of the study and its findings.

Table 6. Questionnaire Methods.

Participant Selection	People working with or in Community Pharmacy in Wales – and request to share with known others (snowball). Self-selecting people who were engaged with the study via the general distribution of the survey (see below)
Survey Distribution	Link shared via social media platforms, twitter and linkedin. The link was shared by Community Pharmacy Wales to all pharmacists signed up to their weekly newsletter.
Survey Design	The survey had six sections, one covering the demographic of their professional background, five themed sections containing statements covering; 1. Previous model 2. A New Prescription 3. Current model of CP 4. Pharmacy Delivering a healthier Wales 5. Clinical Services Each section had statements which were presented in a 5 point Likert scale. Followed by two open questions to gain insight into the impact of the new contract on care delivery in Wales and the future of community pharmacy expressed in the words of the informant. (Saunders et al., 2016)
Survey Format	Microsoft Forms

3.5 ANALYSIS OF THE DATA

The researcher identified themes and compared respondents from both the interviews and the questionnaires, (thematic analysis - (Braun & Clarke, 2006) and data displays were used to detect common themes as well as any outliers (Miles et al., 2013).

Table 7. Data Analysis.

Interview Analysis	The transcripts were reviewed and coded according to the themes that emerged. These were compared to the literature for validity and to assess any outliers. Themes were scored based on the number of times that they were mentioned by participants and the highest scoring became the key themes for each question.
Questionnaire Analysis	The Likert scale questionnaire was analysed using Microsoft form and generating graphical outputs. The quantitative questions were reviewed and coded according to the themes that emerged. Themes were selected based on the number of times that they were mentioned by participants.
Generalisation	The ability to generalise the findings is restricted to Wales and other nations with similar publicly funded health services of a similar structure.

3.6 ETHICAL CONSIDERATIONS

Research ethical approval for the research study was acquired through Swansea University School of Management Research Ethics Board in June 2023 (see Appendix A) Interviews were conducted in compliance with the guidelines provided by Research Ethics Board.

3.7 CHAPTER SUMMARY

The previous chapters have highlighted the need for a contextual rich understanding of the future of the community pharmacy in Wales to meet government guidelines and policies. Few people can articulate this vision and what it means in practice hence interviews were conducted, and a perceptual questionnaire developed to capture these dynamic aspects of modern pharmacy management. The next chapter will present the findings from the questionnaire and the interviews.

4 FINDINGS

4.1 INTRODUCTION

The purpose of this chapter is to provide a review of the findings from the study and the next chapter will discuss these findings against the established academic literature to directly answer the guiding research question that frames this study.

4.2 RAPID SURVEY

The rapid survey was developed using Microsoft Forms (see Appendix C) and received 42 responses. The request for respondents mandated that all participants should be pharmacists working in or with community pharmacy in Wales. The additional information provided about the respondents' role was categorised into 7 key themes (See Figure 12):

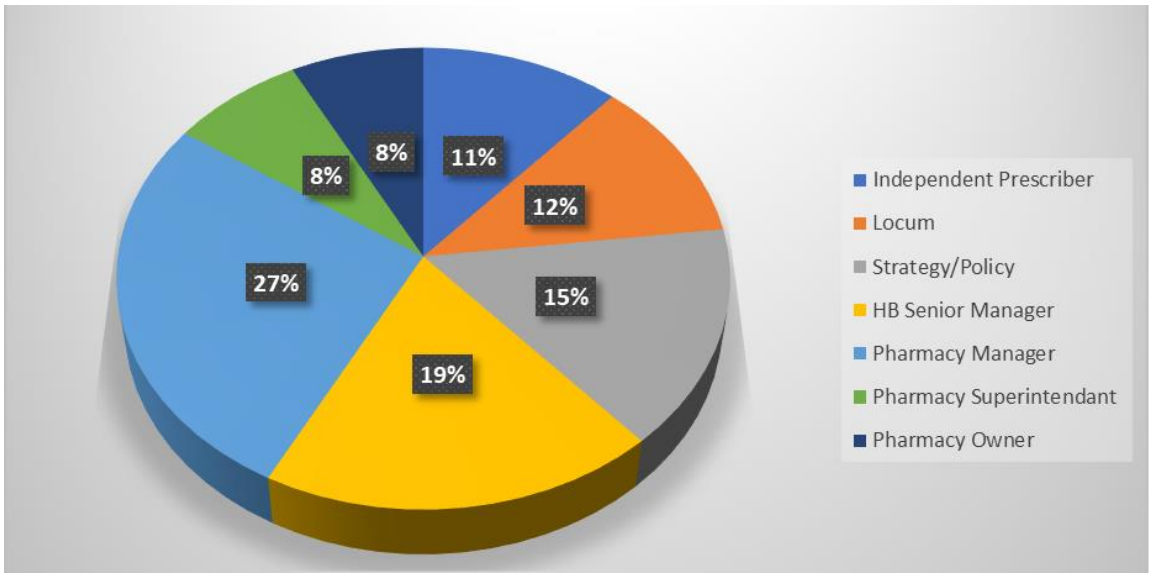


Figure 12. Additional information on respondents' job role.

4.2.1 THE PREVIOUS MODEL OF COMMUNITY PHARMACY

Respondents were asked to rate the statements below - when thinking about the community pharmacy model prior to the introduction of 'a new prescription' in 2021 (WG, 2021a).

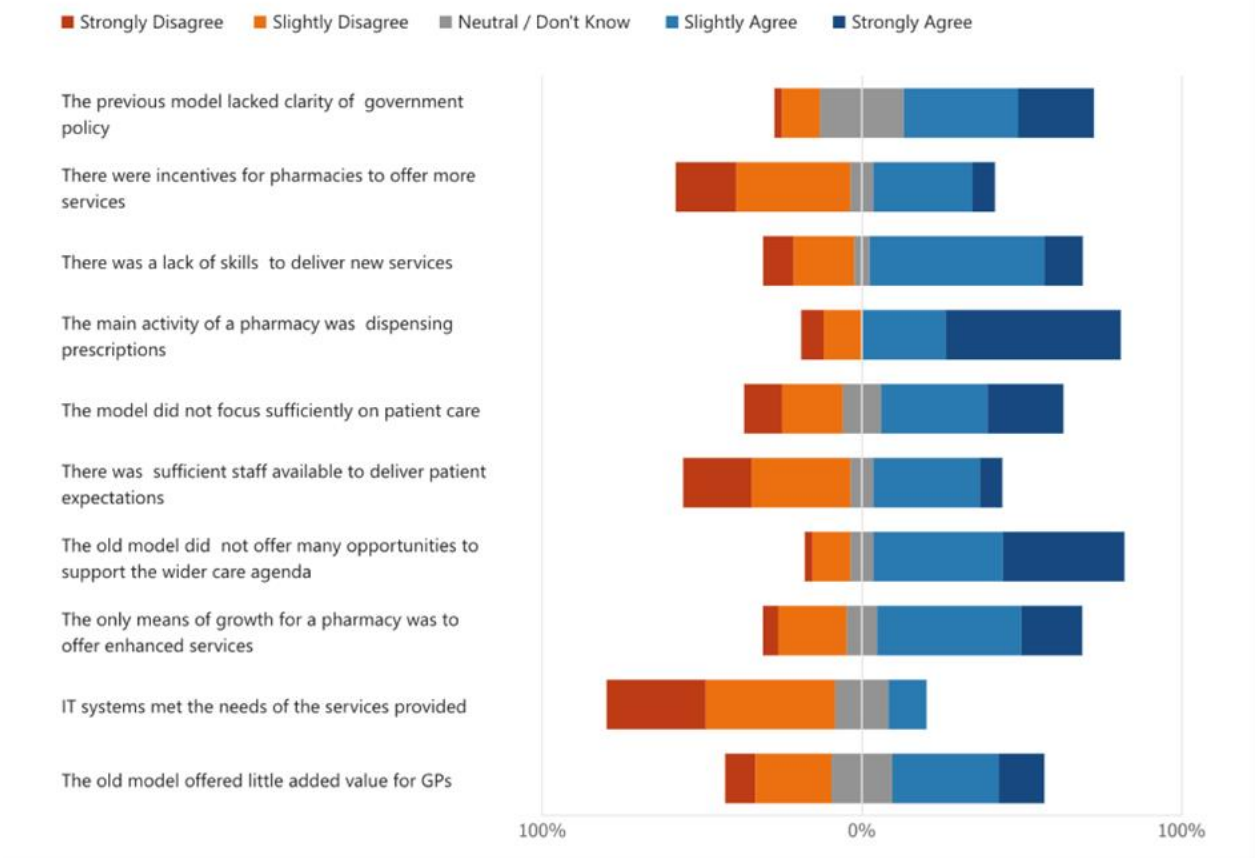


Figure 13. Community Pharmacy Model prior to the introduction of the 'New Prescription'.

Table 8. Themes from the Community Pharmacy Model prior to 'New Prescription'.

Theme	Results	Comment
Operating Model	**81% of respondents slightly or strongly agreed that the main activity in the previous model was dispensing prescriptions.**	Efficiency focused and dispensing as a core duty.
	64.2% slightly agreed or strongly agreed that the only means of growth for a pharmacy was to offer enhanced services	Enhanced services an add on for additional income
Operating Model Goals	59.5% of respondents slightly or strongly agreed the previous model lacked clarity of government policy.	
Patients	57.1% slightly or strongly agreed that the model did not focus sufficiently on patient care.	Low – patient is recipient of medicines.
	54.7% of respondents slightly or strongly disagreed that there were incentives for pharmacies to offer more services.	Low added value beyond dispensing
NHS Stakeholder Engagement	47.6% said that they slightly or strongly agreed that the old model offered little added value for GP practices	No engagement nor benefits for other stakeholders
	78.6% slightly or strongly agreed that the old model did not offer many opportunities to support the wider care agenda.	Limited opportunity to support care delivery in Wales
People	**66.7% of respondents slightly or strongly agreed that there was a lack of skills to deliver new services**	Lack of Skills especially pharmacist which limits the value adding of services.
	52.4% of respondents slightly or strongly disagreed that there was sufficient staff available to deliver patient care.	
IT Infrastructure	**71.6% slightly or strongly disagreed that the IT systems met the needs of the services provided.**	An inhibitor to efficiency and connecting the ecosystem

In overall terms, the previous system of pharmacy provision was found to be predicated on dispensing medicines and an 'efficiency' model which was pharmacy-focussed. The major issue identified by the respondents was a lack of skills to deliver new services. A notable limiting factor was that the IT systems used were perceived to not meet the needs of the services provided which under the previous model were far more limited.

4.2.2 THE NEW AND CURRENT MODEL OF COMMUNITY PHARMACY

39 respondents were aware of the new community pharmacy contract “A New Prescription” that commenced in 2021 (WG, 2021a).

Respondents were asked to rate the statements below when thinking about the following; As a result of the Welsh Government's contractual reform “A New Prescription” in 2021:

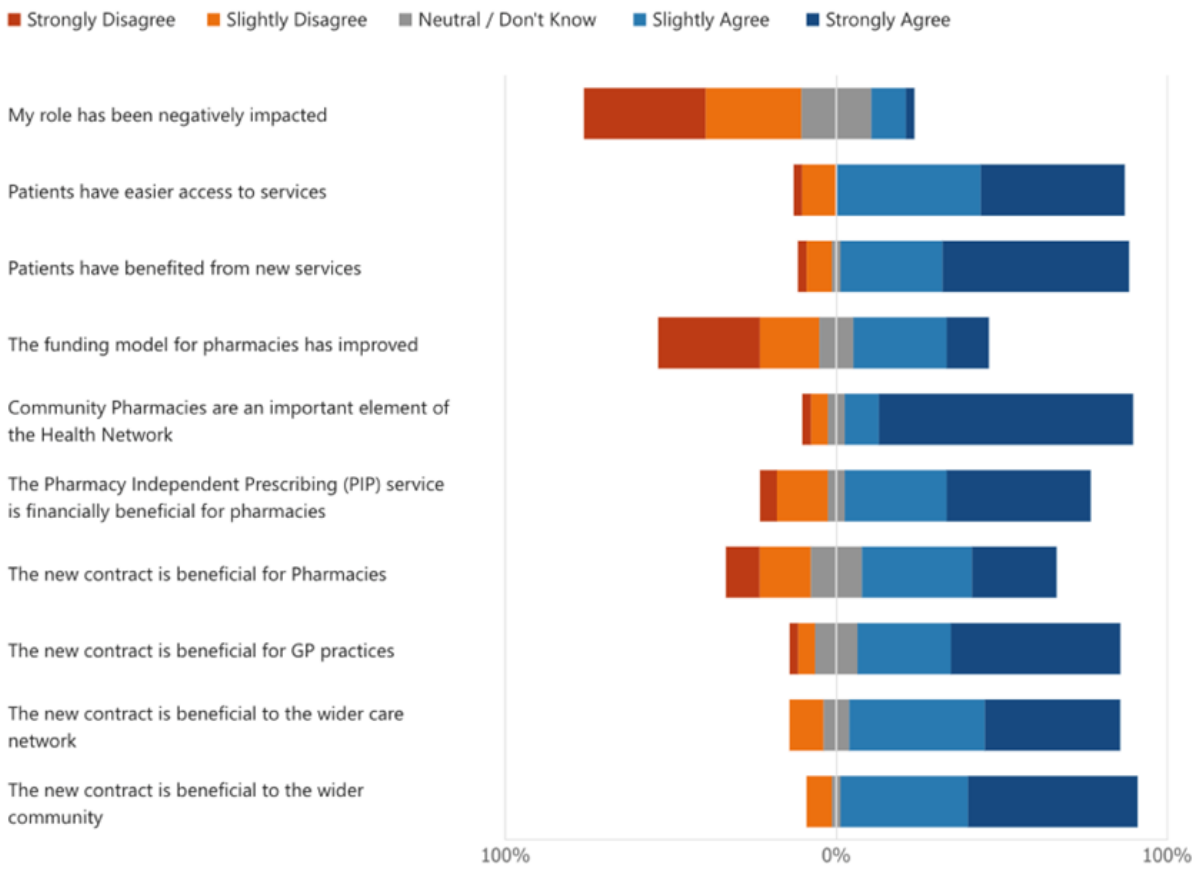


Figure 14. Welsh Government's contractual reform “A New Prescription” in 2021.

Table 9. Themes from the introduction of "A New Prescription".

Theme	Results	Comment
People	**65.7% slightly or strongly disagreed that their role had been negatively impacted**	The new contract has improved the pharmacist role
Funding	48.7% slightly or strongly disagreed and 41% slightly or strongly agreed that the funding model for pharmacies had improved.	There is no consensus on whether the funding model has improved.
	74.4% slightly or strongly agreed that The Pharmacy Independent Prescribing service is financially beneficial for pharmacy	There was agreement that the PIP service is financially beneficial.
Stakeholders	79.5% slightly or strongly agreed that the new contract is beneficial to GPs	There is consensus that there have been stakeholder benefits in implementing the new model
	81% slightly or strongly agreed that the new contract is beneficial to the wider care network	
	87.2% slightly or strongly agreed that CP are in important element of the Health Network	
Patients	**87.2% Slightly or strongly agreed that patients have easier access to services and 86.4% said that patients have benefited from the new services**	There have been significant benefits for the patients and wider community
	89.8% slightly or strongly agreed that the new contract is beneficial to the wider community.	

In summary, the new model presents a wide range of benefits to a wide range of stakeholders in the local community. It is interesting to note the pharmacists felt their role had not been negatively impacted by the change. Most importantly, the respondents declared the patient had benefited from the new services that are offered and the accessibility of those services locally. There was agreement that the PIP service is financially beneficial to the pharmacies but there was no strong consensus about whether the funding model had improved under the new contract.

Figure 15 shows the responses when asked to rate the following statements about the current model of community pharmacy.

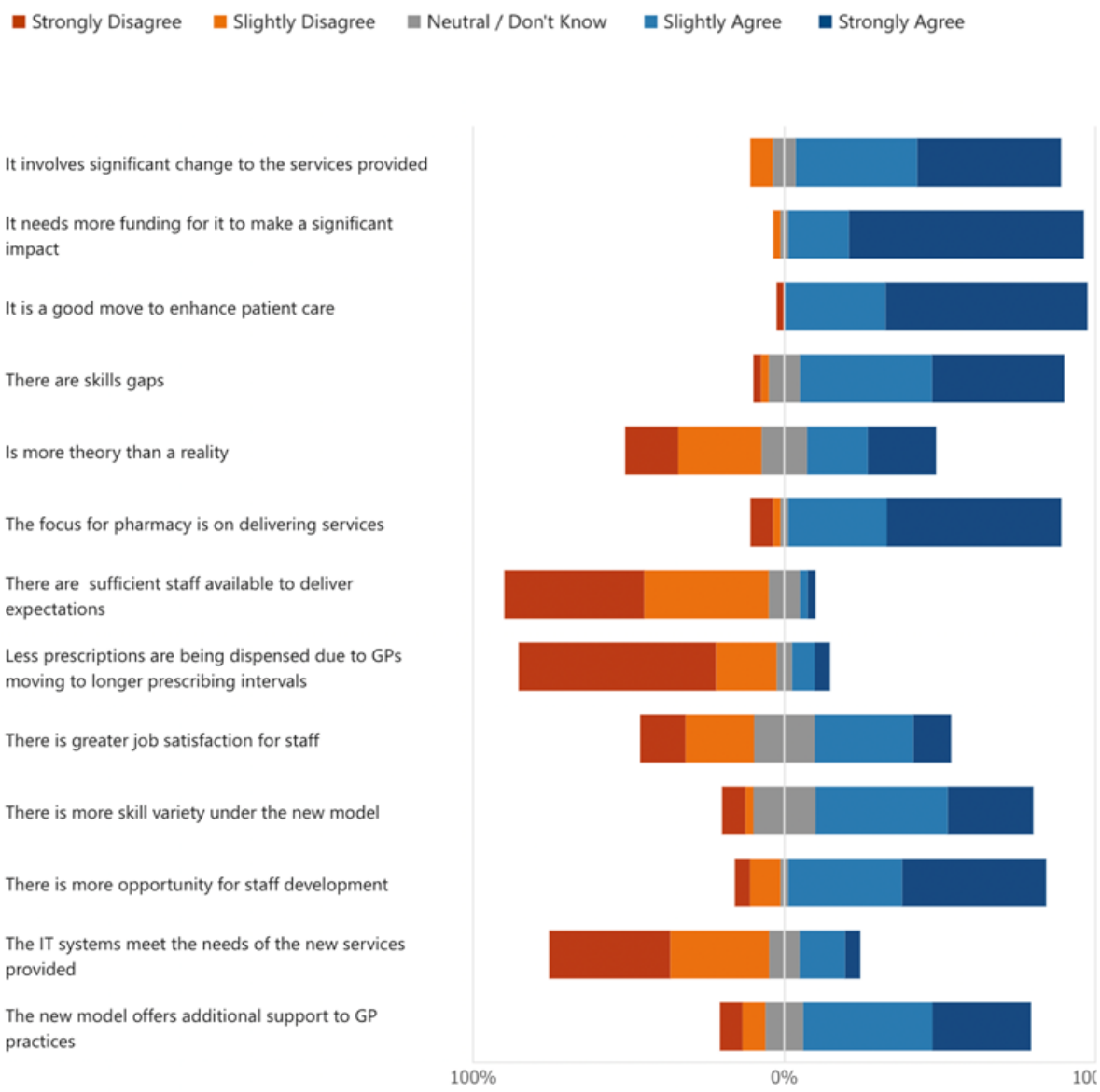


Figure 15. The current model of Community Pharmacy.

Table 10. Themes from the current model.

Theme	Results	Comment
Operating Model	**85% slightly or strongly agreed that the current model involves significant change to the services provided**	Focus changed to services rather than dispensing with an increase in the services provided.
	87.8% slightly or strongly agreed that the focus for pharmacy is on delivering services	
	82.9% slightly or strongly disagreed that less prescriptions are being dispensed due to GPs moving to longer prescribing intervals	Dispensing not reduced to accommodate additional services
Funding	**95.4% slightly or strongly agreed (75.6%) that the current model needs more funding for it to make a significant impact**	Funding not significant enough to impact change
Patients	**97.5% slightly or strongly agreed that the current model is a good move to enhance patient care**	High enhancement of patient care
People	85% slightly or strongly agreed that the are skills gaps with the current model	High skills gaps to deliver the model sufficiently
	70% agreed that there is greater skill mix under the new model and 82.9% agreed that there was more opportunity for staff development.	High skill mix needed but this greater opportunity for staff development
	85% slightly or strongly disagreed that there were sufficient staff available to deliver expectations	High workforce challenges to deliver the model
	There was a split opinion on whether the new model provided greater job satisfaction for staff, 36.6% disagreeing, 43.9% agreeing and 19.5% remaining neutral or didn't know.	
IT Infrastructure	70.7% disagreed that the current IT systems meet the needs of the new services provided	IT is in inhibitor to the new CP model
Stakeholders	73.2% agreed that the new model offers additional support the GP practices	High support to GP practices reducing low level demand

The results show the current model of community pharmacy has significantly changed, offering increased services but a major element of this increase in provision was the reduction in dispensing to create more time for delivery of services but respondents believed this reduction hadn't happened. The respondents identified significant problems with the transition to the current model including inhibitors of gaps in skills and insufficient staff availability to deliver to government expectations. However, the respondents believed

the current model does call for greater skill variety and there are opportunities for staff development. The IT systems were highlighted again as an inhibiting factor for new service development.

4.2.3 PHARMACY DELIVERING A HEALTHIER WALES

37 respondents were aware of the WG Policy, Pharmacy: Delivering a Healthier Wales (WG, 2019b).

When asked to consider 'Pharmacy Delivering a Healthier Wales' and the extent to which they agreed or disagreed to the following statements the following responses were received.

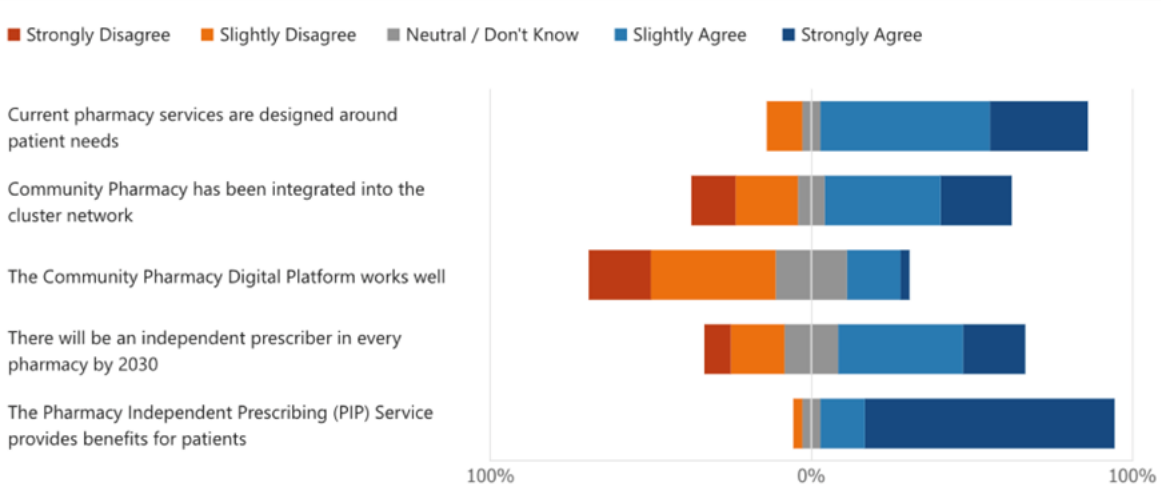


Figure 16. Pharmacy Delivering a Healthier Wales.

Table 11. Themes from Pharmacy Delivering a Healthier Wales.

Theme	Results	Comment
Patient	**91.7% slightly or strongly agreed that the Pharmacist Independent Prescribing service provides benefits for patients.**	High benefits to patient from new service
	83.4% agreed that current services are designed around patient needs.	
Stakeholders	58.3% agreed that CP had been integrated into the cluster network	More focus needed to support integration
IT Infrastructure	58.3% slightly or strongly disagreed that the CP digital platform works well	Inhibitor to offering patient care
Services	58.3% agreed that there will be an independent prescriber in every pharmacy by 2030	More investment needed to achieve this target

This question addressed the alignment of the pharmacy with the government policy for delivering a healthier Wales and finds there is significant support for new services that are beneficial and designed around patient needs. There is skepticism about whether the WGs ambitious target for an IP pharmacist in every pharmacy by 2030 is achievable. There wasn't significant agreement about CP being integrated into the cluster network and therefore this is an area which will need further development along with IT infrastructure which has been a repetitive theme of contention across all the areas of questioning.

4.2.4 COMMUNITY PHARMACY CLINICAL SERVICES

When respondents were asked to think about the current offer of Community Pharmacy Clinical services the following responses were selected:

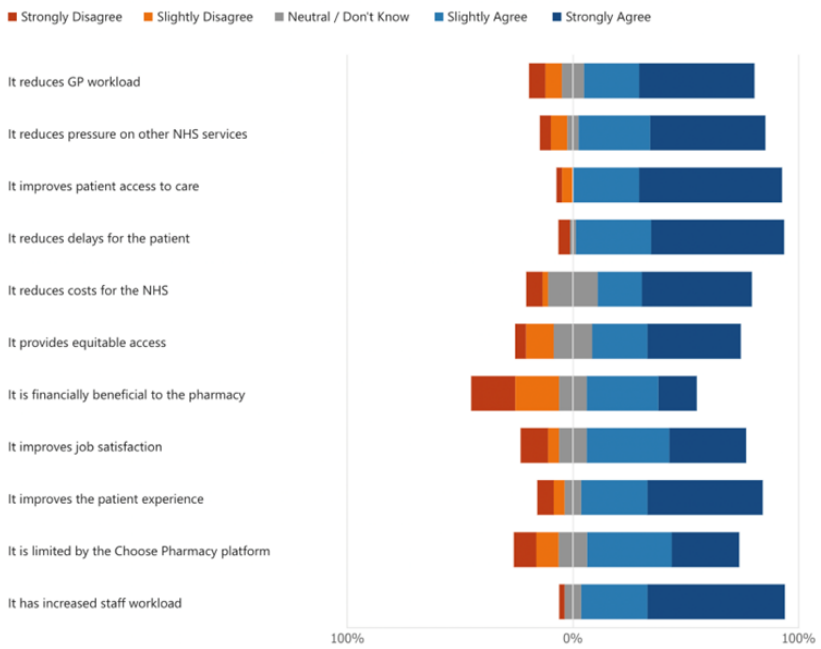


Figure 17. Community Pharmacy Clinical Services.

Table 12. Themes from Community Pharmacy Clinical Services.

Theme	Results	Comment
Stakeholders	75.6% slightly or strongly agreed that it reduces GP workload 82.9% said it reduces pressure on other NHS services	Clinical services offer high benefits for stakeholders
Patients	**92.7% agreed that it improves patient access to care** **92.3% agreed it reduces delays for the patient** **65.9% agreed it provides equitable access and** **80.5% agreed it improves the patient experience**	High patient benefits
Funding	19.5% strongly disagreed and 17.1% strongly agreed that it was financially beneficial to the pharmacy but with an overall 48.8% agreeing	Lack of clarity about the funding model
People	90.3% agreed (61% strongly agreed) that it has increased staff workload but also 70.7% agreed that it had improved job satisfaction	High increase in staff workload but also high increase in job satisfaction
IT Infrastructure	67.5% agreed that clinical services is limited by the Choose Pharmacy platform	Inhibitor to offering clinical services

The current CP Clinical services are perceived to reduce general practitioner workload and reduce pressure on NHS resources, whilst at the same time offering greater access to care, reduce delays and provide more equitable access for patients. In terms of people, there was a strong consensus the current clinical service provision has led to increase staff workload, but almost as a contradiction that it increases job satisfaction for the pharmacist.

This interesting response suggests the pharmacist will work harder, but the variety of services offered provides greater satisfaction than the purely dispensing model. The recurring issue of inadequate IT services was also identified in this series of findings and over 67% of respondents identified the limitations of the choose pharmacy platform as a means of delivering clinical services.

4.2.5 THE IMPACT OF COMMUNITY PHARMACY ON CARE DELIVERY IN WALES

Participants were asked;

> *"Is there anything else you would like to share about the impact of Community Pharmacy on Care delivery in Wales?"*

21 left comments and these were thematically analysed, the following key themes emerged (Figure 18):

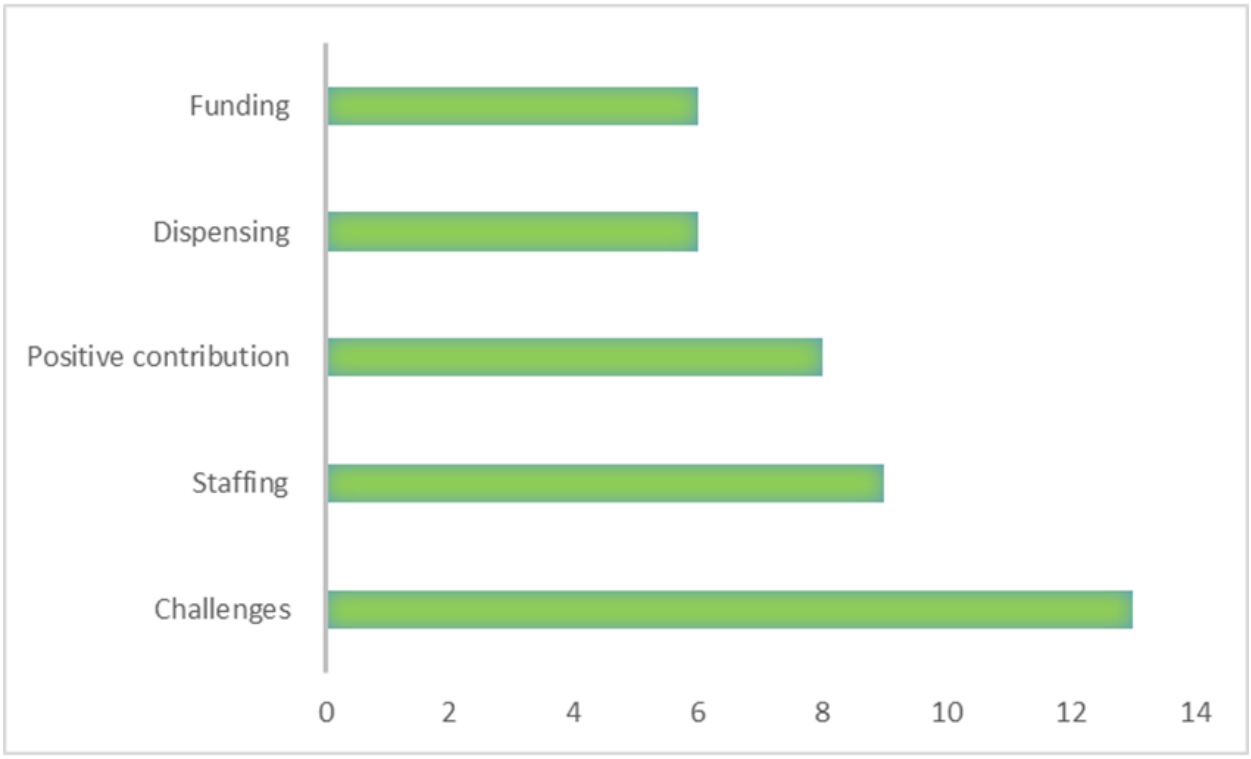


Figure 18. The impact of Community Pharmacy on Care delivery in Wales.

Table 13. Themes around the impact of Community Pharmacy on Care delivery in Wales.

Theme	Comment	Quotation
Challenges	Including services being accessible reduction in waiting times huge contribution and an untapped potential	• *Currently commissioning lots of services in pharmacy as, in theory, they are deliverable; pharmacies often aren't able to deliver everything commissioned so you get patchy availability.* • *Patients still have this concept where they can just walk in and see pharmacist without appointment. This need to change as you can't do this in any other healthcare setting.*
Staffing	Including workforce challenges, recruitment, pressure on staff	• *The new contract has put an enormous strain on the pharmacy team. It fails to recognise there is a huge issue with recruitment - rural areas are finding it increasingly difficult to hire regular pharmacists and locums. As a pharmacy on the border with England we are frustrated we can no longer afford to hire English locums not registered to provide Welsh services.*
Positive Contribution	Including services being accessible reduction in waiting times huge contribution and an untapped potential	• *I believe that community pharmacy has contributed and will contribute massively to care delivery in Wales, particularly with the introduction and rollout of common ailments and the PIPs service. Pharmacies are accessible to everyone without the need for an appointment in most cases. Community pharmacy has allowed patients to access care for things that at one time, could only be treated by a GP. This has allowed greater access for patients and has reduced the burden on the NHS.*
Funding	Needed more funding (including for digital and premises)	• *Another difficulty for contractors trying to optimise clinical service provision is lack of funding specifically for premises improvement - we need better clinical areas. Independent contractors do not have the resources to adequately modify or refit their pharmacies to enable appropriate clinical areas to deliver all these new services - particularly for the PIPs service.* • *Community pharmacy is well placed with well skilled staff throughout communities in Wales. The expectations for pharmacy to deliver an ever growing suite of services needs to be backed up by additional funding from WAG so that these services can be delivered in high enough volumes to benefit local populations.*
Dispensing	Volumes not decreased – remain a significant element of the role.	• *A viable community pharmacy network is essential to the availability of accessible primary care in Wales. As we strive to increase the range of services available from pharmacies, we must ensure that we do not overlook the importance of the medicines supply function, and do not ignore the pressures that pharmacies are managing on a daily basis.*

4.2.6 THE FUTURE DIRECTION OF COMMUNITY PHARMACY IN WALES

Participants were asked;

"How would you describe the future direction of Community Pharmacy?"

31 responded, and the comments were thematically analysed and the predominant themes are detailed in Figure 19.

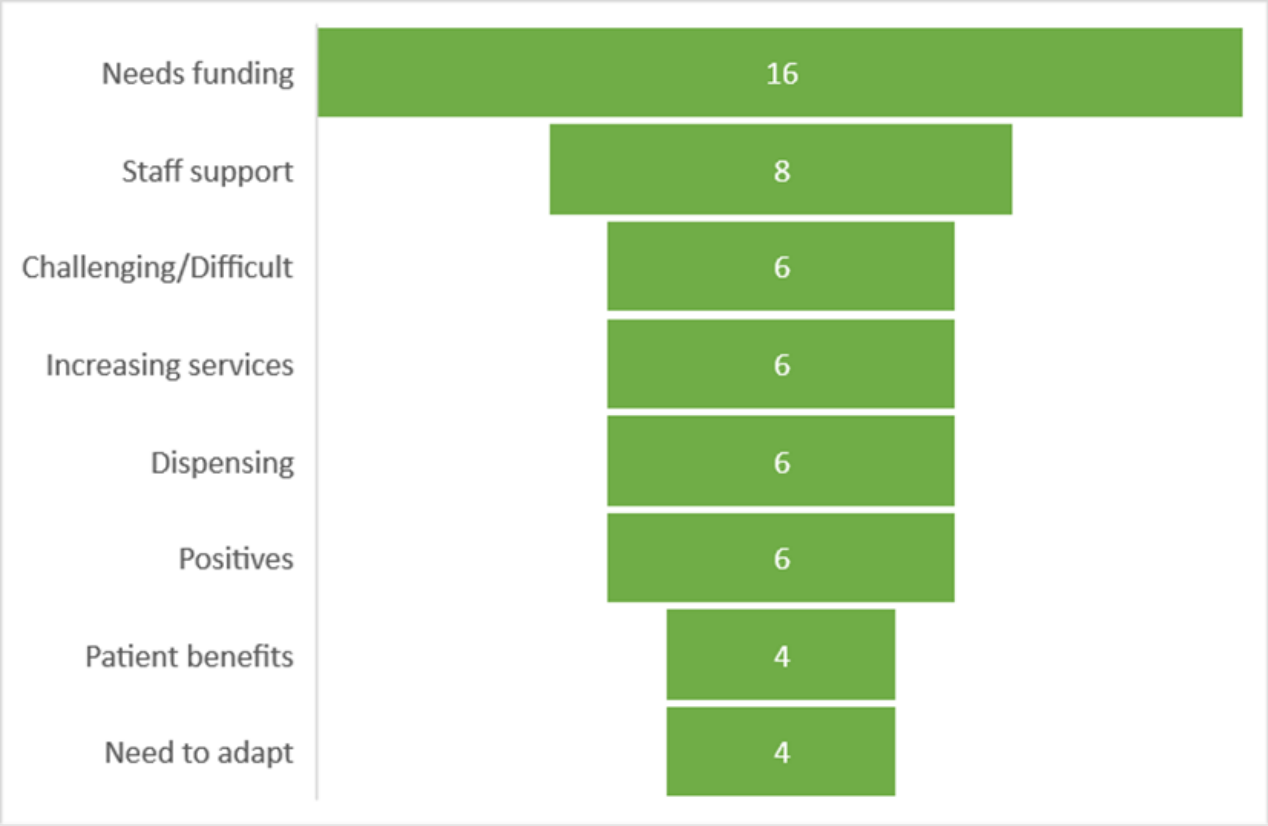


Figure 19. Key Themes describing the future direction of CP.

The concept of the change has been viewed by many as a positive move that is forward thinking and offers opportunities, but this is very much hinged on funding and making the model viable for the future.

Table 14. Key Themes describing the future direction of CP.

Theme	Comment	Quotation
Funding	A consistent theme throughout the surveys	• *Bright, but only if funded properly. Welsh Government have sold us a dream, encouraged investment in people development which has increased costs, and then not supported financially with this years woeful 1% funding increase, a massive slap in the face.* • *The future direction for community pharmacy as set out in "Pharmacy Delivering a Healthier Wales" is , in theory, brilliant and essential for the longevity of the sector and the wellbeing of the people of Wales. However, in order for community pharmacy to fulfil it's full potential, Welsh Government need to direct more funding into the CPCF in the coming years.* • *Gains in income from service delivery haven't kept up with rising costs, inflationary pressures and an increase in the national living wage meaning that some pharmacy businesses are struggling and sometimes closing due to lack of viability.*
Staff support	Reoccurring theme including the need for DPPs (mentors) to support IP	• *Community pharmacy is heading in the right direction. I would like to become an IP however finding a mentor is a significant barrier to achieving this. The move to a service led model has been rewarding personally and our patients have enjoyed easier access to healthcare.* • *Positive. But there needs to be an adequate investment into the workforce. Community pharmacy needs to be an attractive place to work.*
Challenging		• *Terrible Our core business is dispensing and we should not be turning our back on this. Services will not pay to keep stores open* • *Shambles if it carries on without proper direction*

4.3 INTERVIEWS

Semi structured interviews of 10 questions (see Appendix B) and some supplementary questions if additional probing was required was conducted with 18 respondents (duration 15 to 54 minutes).

4.3.1 BACKGROUND AND RELATIONSHIP TO COMMUNITY PHARMACY

All the participants were pharmacists and were asked to describe their role and their relationship with CP. The participants gave the range of roles they had been involved in during their careers and many had undertaken several roles and therefore were able to give a rounded view for these interviews due to their breadth of knowledge.

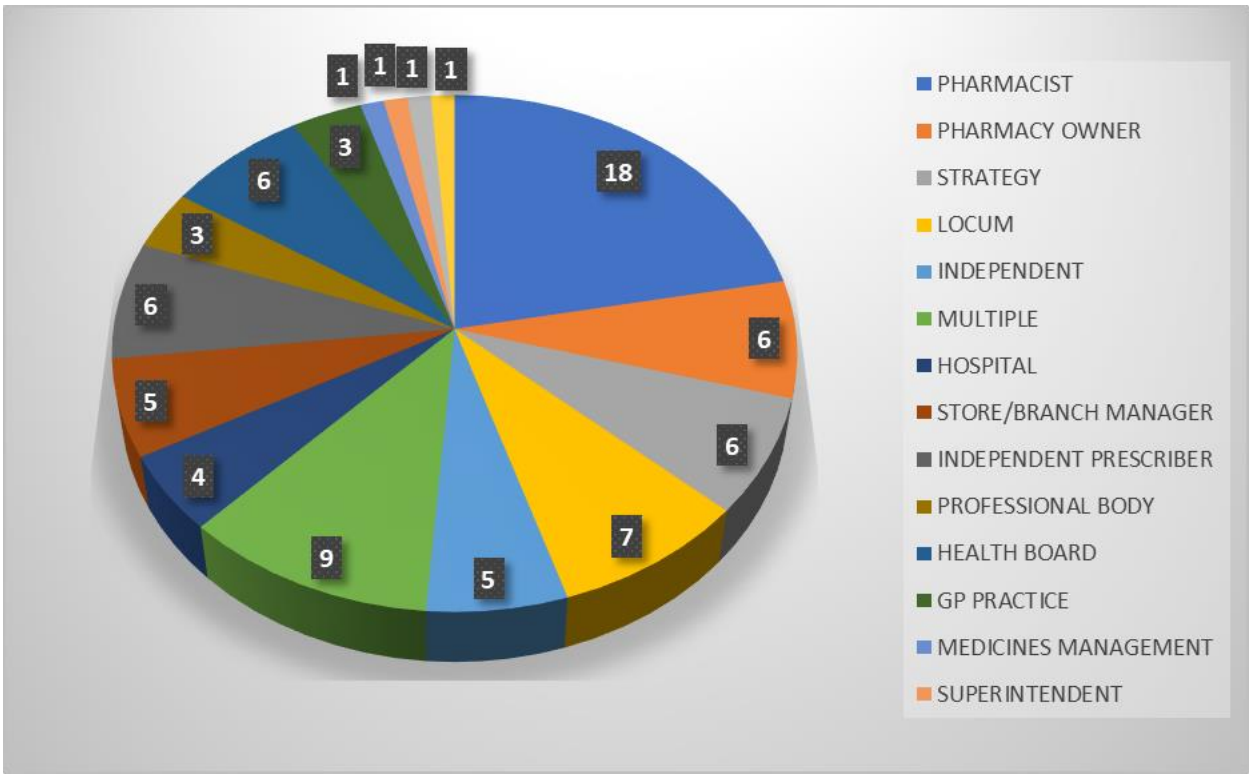


Figure 20. Pharmacist roles in relation to CP.

4.3.2 ESTABLISHING THE CHANGE FROM THE PREVIOUS MODEL OF COMMUNITY PHARMACY TO THE CURRENT MODEL

When asked; 'What do you consider to be the constraints and issues with the current model of Community Pharmacy?' a number of themes emerged, Figure 21 shows those emerged most frequently.

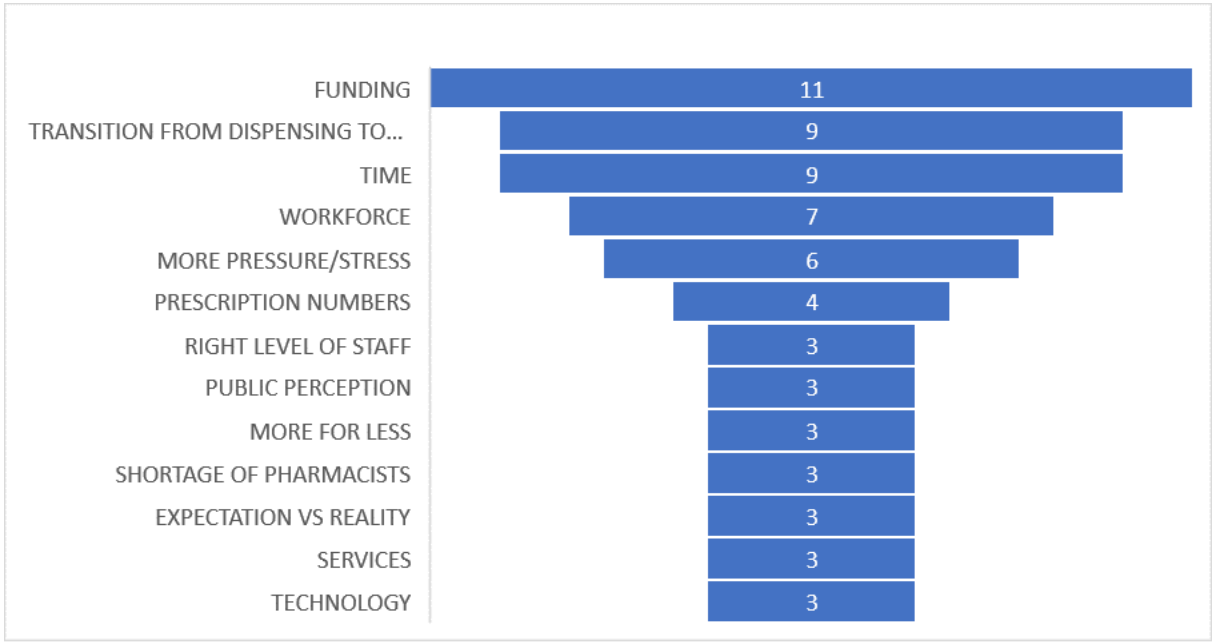


Figure 21. Constraints and issues with the current model of Community Pharmacy.

The top five themes that emerged were funding, the transition from a dispensing to services contract, time, workforce, and more pressure/stress.

11 interviewees described 'funding' as a key challenge, one interviewee stated:

> *"It's what it's always been… I think it's the juxtapose of private business and service and trying to provide a healthcare clinical service within a retail environment has its difficulties because the financial pressures on the retail."*

9 mentioned the 'transition' and one stated:

> *"… we're in a very fragile position where we're going from one work model… to the model we want in pharmacy delivering a healthier Wales in 2030. Along the way. We are losing pharmacies because they're not moving quickly enough… And the transformation itself is disruptive."*

The next question addressed the pharmacist role asking interviewees to describe the implications and the benefits for pharmacists of moving from the old model to the new model. Figure 22 shows the seven themes that were most recurring.

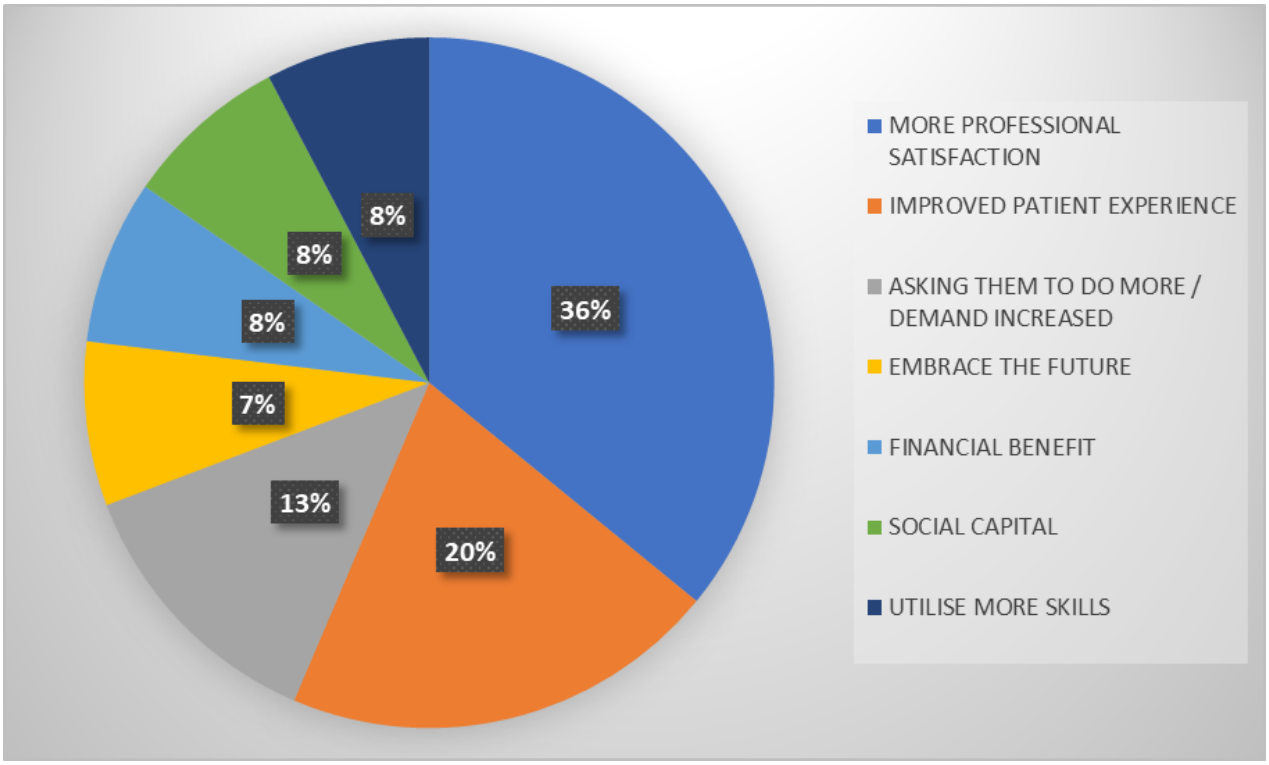


Figure 22. Implications and benefits for the pharmacists moving from the old to the new model.

14 of the 18 people interviewed mentioned it had increased professional satisfaction.

> *"There's a real a real buzz, I suppose, when you have a clinical intervention with the patient and then the patient comes back and says, 'My goodness me, you've changed my life'."*

A number of interviewees mentioned the disappointment after leaving university and realising a lot of the skills that had been learned were not used:

> *"… one of the things that I found… when I graduated … the role in community pharmacy didn't mirror your training and the skills that you learned both clinically and… the therapeutic knowledge that you had. And it was really disappointing."*

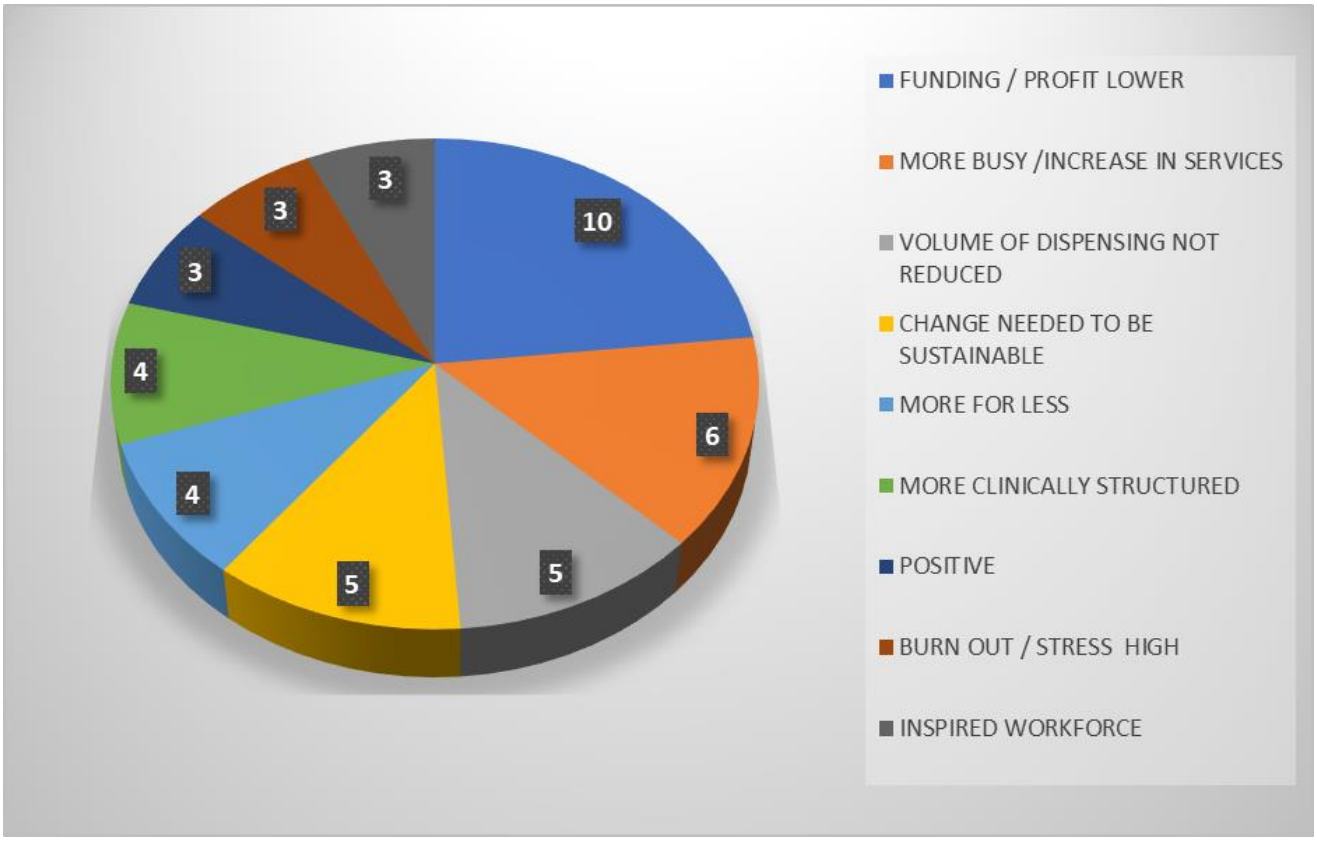


Figure 23. New Pharmacy Contract Impact on CP.

According to those interviewed the most significant change for Community Pharmacy has been the funding:

> *"It's had a huge impact…I speak to contractors who tell me … I can't afford to pay myself this month…And that's obviously because the clinical services side of the business hasn't caught up enough to offset that shift in funding."*

And there's been a significant shift in pharmacies closing or being sold on (Sayburn, 2023) which is a significant sign things are challenging;

> *"Big chains saying we just can't run these financially anymore….We're losing established names on our high streets and our communities. And for me, that needs to be a little bit of a red flag."*

The other significant change has been the increase in demand:

> *"Before the new contract we were doing a bit of common ailment scheme, but almost seven and a half hours of my day would be at the dispensary bench or speaking to patients in the shop.... But now I would say if I don't spend six and a half to 7 hours providing a service of some description, then I'd be surprised."*

And a huge impact on the increase in demand is the volume of dispensing not reduced:

> *"… It probably isn't yet delivering what we wanted it to do. And that's because. We've not done away with the dispensing as being the primary function of a community pharmacy across the board."*

But there's also a recognition this is a positive move which will future proof community pharmacy for the future:

> *"… as we move into a more automated and online arena, I think by…protecting 50% of your contract fee service delivery means that you're still going to get 50% of your business."*

4.3.3 COMMUNITY PHARMACY CLINICAL SERVICES

The interview asked a series of questions to understand what was needed to strengthen the development of pharmacy clinical services and also to understand what the enablers and barriers were to offering more clinical services.

The first question set out to establish what they thought the Enablers were to offering clinic services, Figure 24 shows the most frequent themes.

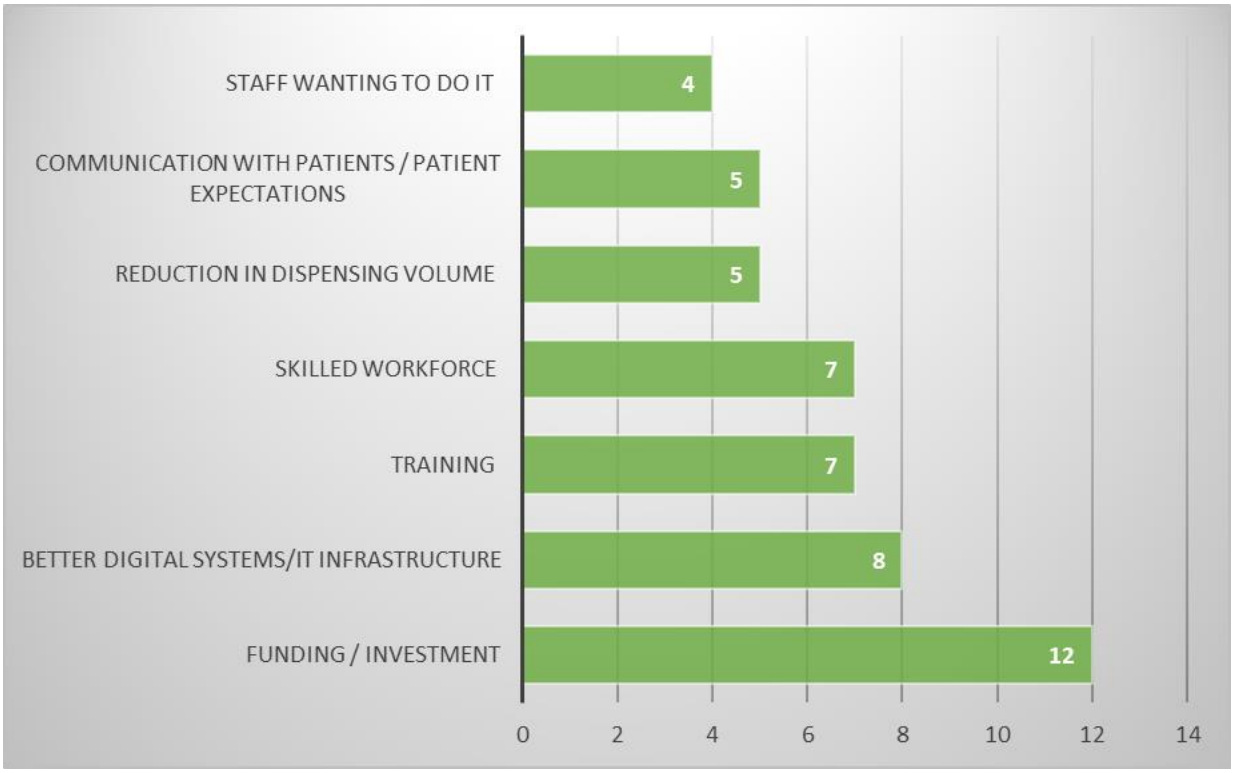


Figure 24. The Enablers for the implementation of clinical services in pharmacy.

Table 15. Themes for the Enablers to Clinical Services.

Theme	Comment	Quotation
Funding and Investment (including in premises)	Identified by twelve of the eighteen as a key enabler, interestingly funding was also sighted by eleven as a barrier (Figure 4.14).	• *The funding isn't necessarily the incentive It's more about the funding needing to be able to create the space to allow <<pharmacists>> to do the job properly and get their own rewards from it.* • *...ensuring appropriate funding for the services and the whole sector to be able to deliver it. A lot of this is more related to that flow of secondary care funding coming into primary care. So that's one out of that because, you know, care in the community or providing more care in the community. So that model had mentioned then the funding should flow into where that is being provided. But equally, the proportion of funding for pharmacy versus other elements of primary care should be, you know, attributed because where the care is being provided is where the funding should follow with it.* • *What we need to do is get the balance of funding right so that they want to invest in their pharmacy infrastructure, their pharmacy team, their pharmacy staff, their workforce. And we're not quite there yet because ideally you want to have a number of consultation rooms a nice clean, open space for patients to want to come in.*
IT Infrastructure	Described as a significant enabler	• <Choose Pharmacy>> *it needs to be delivering you know 10-15 consultations a day, which is, you know, that. But in order to be able to do that, it's the you know, the software at the moment is isn't fit for that. It just takes too long. You know, to log in security. It takes 5 minutes to log into it.* • *So the way we moan about bits and bobs there and then you realise how far we've come to be able to moan about the minutia, being able to search for patients more quickly, always having the GP record show up a vital things which don't always happen at the moment. But they are improving all the time, you know. I mean ...I see what they're working on with the limited budget. So I realise that we're pretty lucky to be where we are with it. And the IP system, apart from what you can't see in terms of the records, it's so generic what you can write.*

The second question asked them was to describe the barriers which in many ways were similar but for the opposite reasons.

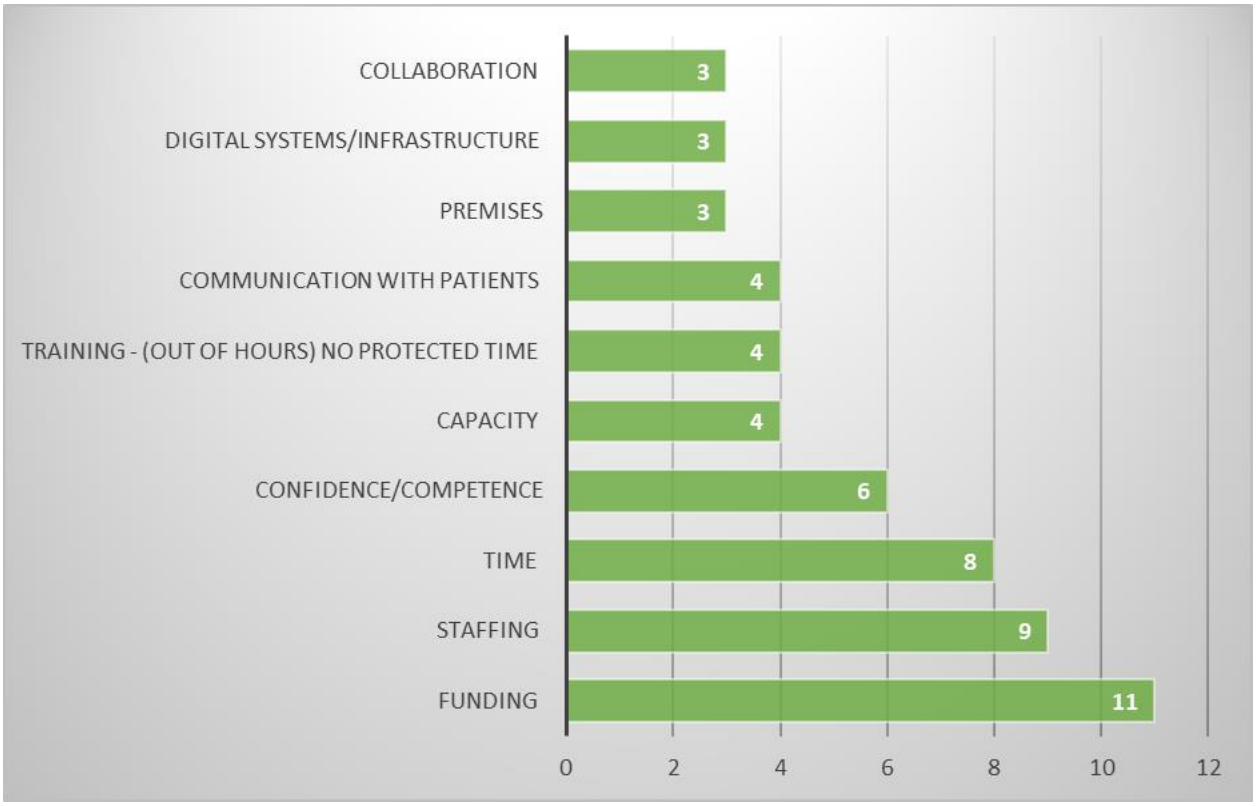


Figure 25. The Barriers to clinical services in Pharmacy.

Funding was also seen to be a significant barrier to providing clinical services as discussed in the enablers section.

Table 16. Themes for the Barriers to Clinical Services.

Theme	Comment	Quotation
Time and staffing	Important for providing safety in the services provided	• *Time and time equates with money, and it's not a case of wanting to make more profit, because I think that, again, is where some people believe that it's just to make more profit. No, as long as you've got as long as you can afford to provide the service safely, then yeah. And I don't think that we can do so.* • *So it's not just time, it's resource. If you can't resource your pharmacy well enough to create the space for people to do the right thing, people won't do the right thing. We've got to make things easy to do. But the new contract is certainly making lots of things very complicated.*

Pharmacists were asked what measures need to be taken in order to strengthen pharmacy clinical services in Wales – Figure 26 shows the top results.

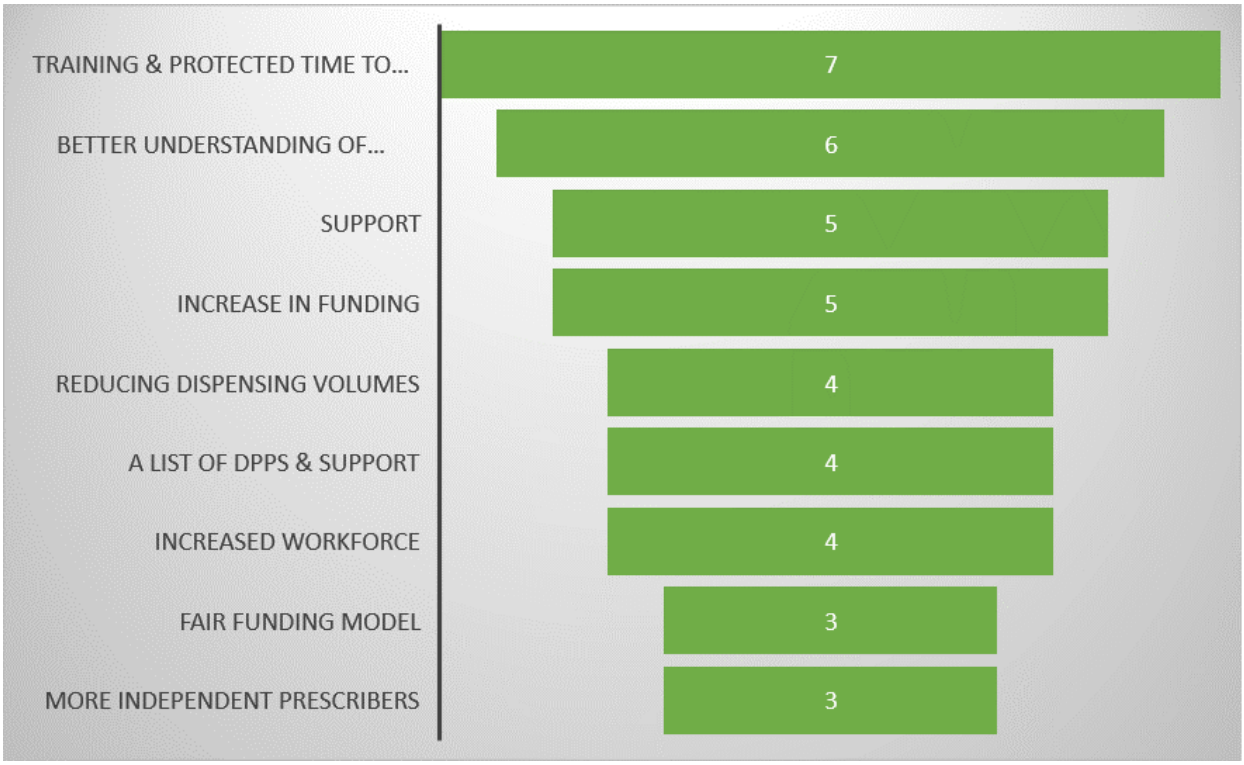


Figure 26. Measures needed to strengthen pharmacy clinical services in Wales.

An emergent theme was pharmacists needing protected time for learning rather than using their evenings and weekends, which was considered a barrier. The second measure is to improve the understanding of services by both other professionals and the public. This is included in 'A New Prescription' (WG, 2021a) as part of the 'connective' element of the six principles. Support was another theme which was highlighted along with an increase in funding. The quote below highlights the current pressure being faced:

> *"I see pharmacy services and dispensing services within pharmacy that they are exceptionally efficient…in their purchasing and efficient in their processes. But there is now no fat at all… People don't have any headspace time now. It's just constant… there's no give in the system at all… which is not supporting the workforce."*

More Independent Prescribers (IPs)/ a list of Designated Prescribing Practitioners (DPPs) and support for DPPs are interlinked because to train to be an IP you need mentorship from a DPP.

> *"We need to ensure the support for DPPs, and we need to try to create a list of people who are willing to be DPPs and the support for them… is vitally important because if they're working as a GP, they might not be then delivering the service themselves so they can't be financially penalised from training to supporting others."*

The next question 'Do you think there are further opportunities to expand what can be offered at Community Pharmacy?' aimed to gauge if they felt there were further opportunities to expand what can be offered in Community Pharmacy, 94% of the respondents said yes there were. The other responses were broken down into what would be needed to offer more clinical services and what other services could be offered.

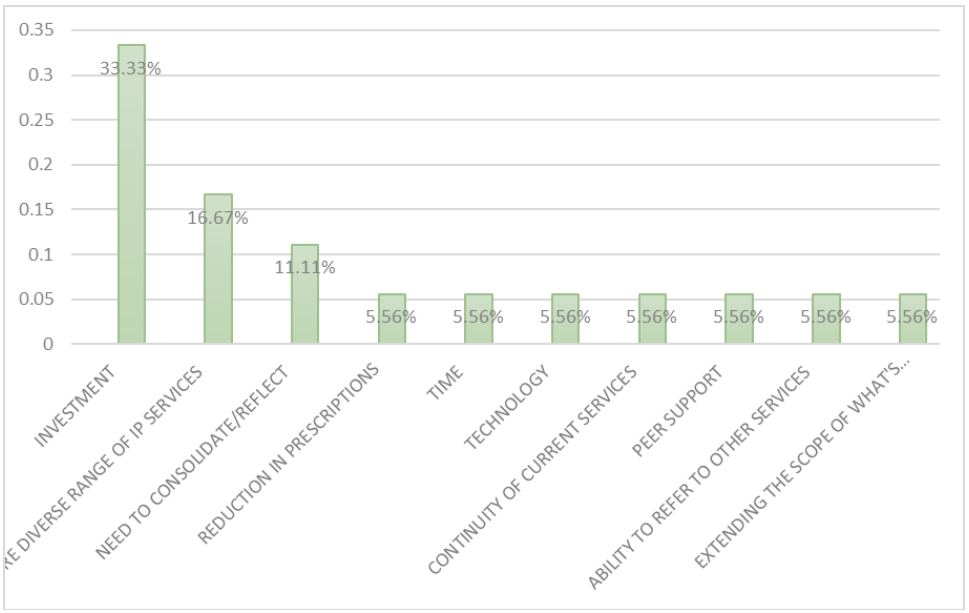


Figure 27. What's needed to expand the CP offer.

The key driver for expanding Community Pharmacy offerings was funding, followed by a more diversified range of IP services (currently the nationally commissioned service only covers acute conditions and contraceptive services) there was also references to needing to consolidate and reflect on the services currently available.

> *"The Welsh government wants the world, but it's not willing to pay for it. Well, you get what you pay for. If you invest £1,000,000, you should get £1,000,000 worth of services, not £2 billion worth of services. And where that is going to seem quite obstructive. I think it's probably fair."*

Figure 28 shows the other services mentioned that could be provided by community pharmacy.

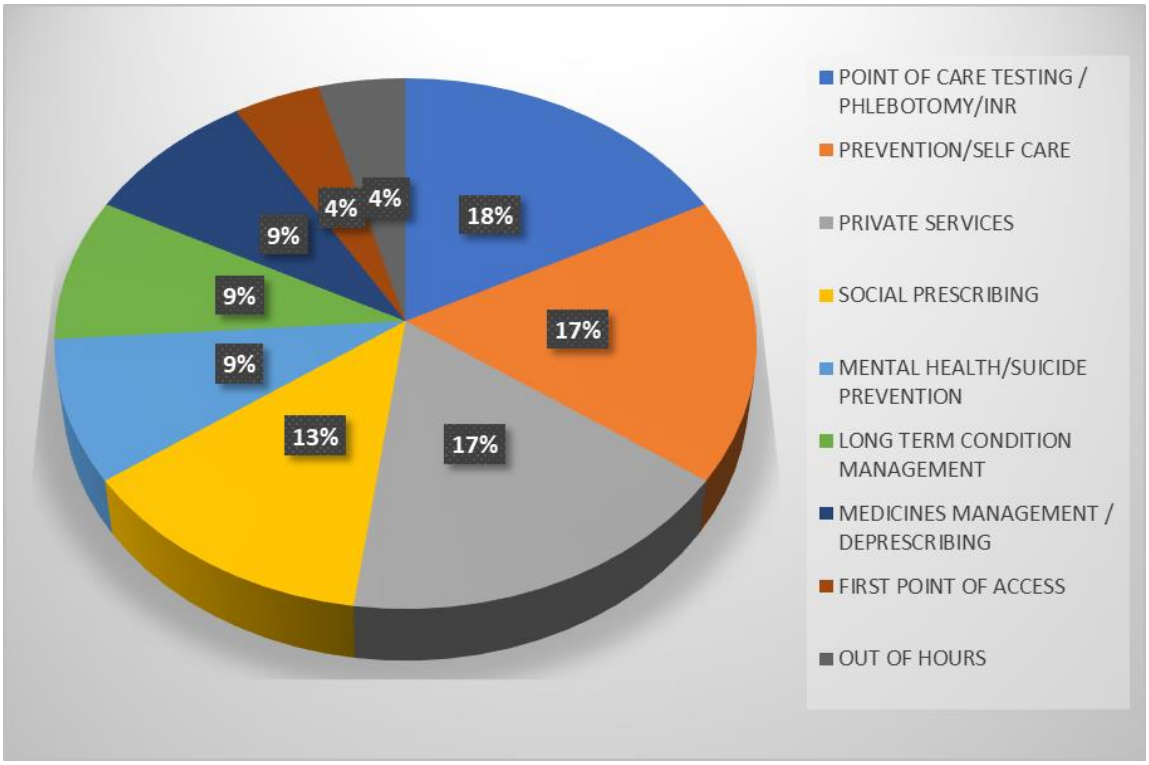


Figure 28. What other services could be provided.

But there is recognition some of the barriers which were mentioned in the previous question would need to be addressed before pharmacy could look at providing anything further:

> *"I think we could do a lot... like deprescribing, and there's lots … we could … offer. ... But I think with those barriers in the way, we just don't have the capacity..."*

4.3.4 COMMUNITY PHARMACY AND THE WIDER CARE LANDSCAPE

Participants were asked whether CP services could support GP sustainability and the wider care agenda in Wales, 67% of those interviewed said yes they could, 17% said they were part of the solution and 6% said no they couldn't. A common theme among respondents was that its more than just GP sustainability it's about a whole system approach:

> *"You don't solve the primary care problem by taking the pressure off one group of professionals and dumping it on another."*

> *"I'm not sure what the role is in sustainability, because my concern is. We need to look at primary care sustainability and community pharmacy sustainability is as much of a big part of the picture and we're now seeing that especially now."*

Another gave a good example of how they had recently supported the wider care agenda:

> *"You just have to look at the figures from December in terms of the Strep outbreak and what pharmacies did to support that.. the big peak in independent prescribing, the big peak in sore throat test and treat at a time where traditionally December services go down because items always increase .. despite… the normal busy dispensing, they actually stepped up and delivered all these services. So pharmacies can and do support."*

Figure 29 shows the eight top themes mentioned.

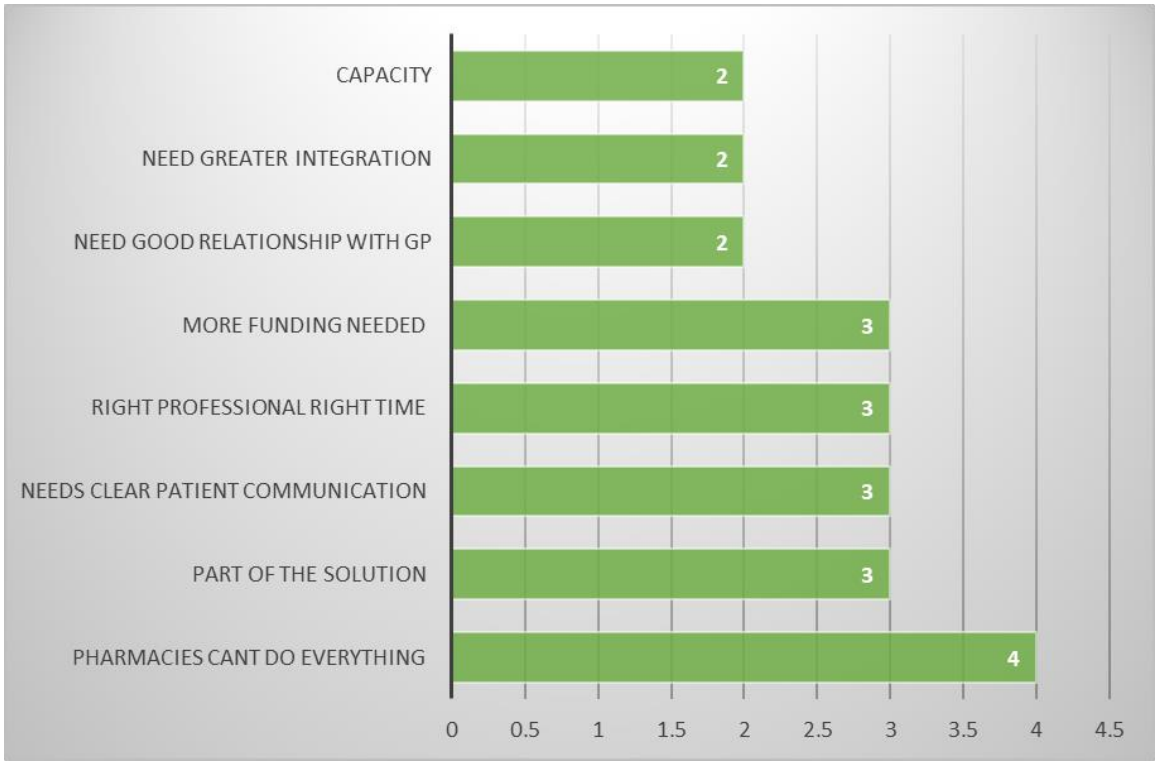


Figure 29. CP services support GP sustainability and the wider care agenda in Wales.

4.3.5 THE FUTURE OF COMMUNITY PHARMACY

Participants were asked to describe the pharmacy of the future; Table 17 shows the top ten themes.

Table 17. The future of Community Pharmacy.

How would you describe the pharmacy of the future?	Total
EXTENDED RANGE OF CLINICAL SERVICES	11
HEALTHCARE HUBS/ACCESSIBLE HEALTH CARE	9
MORE CLINICAL SPACE/ CONSULTATION ROOMS	9
MORE THAN ONE PHARMACIST	7
IP IN EVERY PHARMACY	6
MULTIDISCIPLINARY TEAM	6
TRAINED STAFF TO OFFER CLINICAL SERVICES	5
PHARMACY AS FIRST PORT OF CALL	5
EMBEDDED INTO THE NHS/PRIMARY CARE	5
WORKFORCE AT THE TOP OF THEIR SKILL SET	4

From the responses there is an appetite for increased and more clinical pharmacy offerings . Many pharmacies had transitioned to a more clinical patient offerings, but a small number still focussed on retail and dispensing. If pharmacy is to deliver more then there needs to be investment into the transition and support for pharmacies to make the change.

> *"So, if we if we take it at its most basic level, we've got high quality parameters that would say to healthcare, environment, you know, we've got too many pharmacies that are outdated, poorly maintained. They don't look like health care premises; they don't feel like practices. So, I think we need to address that."*

An interesting point raised by a respondent was the retail offering brings patients to stores and generates a sense of community (Goundrey-Smith, 2018)

> *"… the shop itself brings people to the pharmacy, creates rapport and relationships between the patients and their pharmacy team, and that provides a huge opportunity for prevention work, which I think is a critical part of community pharmacy in the future…"*

4.4 CHAPTER SUMMARY

This chapter has presented the key findings of the study and confirmed common themes and challenges (funding challenges faced, the workforce shortages and significant skills gaps, and the limited scope and functionality of the digital systems). The respondents perceived the change to the pharmacy contract as significantly beneficial to the diversification of workforce roles and skills development opportunities so patients can access a range of holistic services through the CP with easier access. Wider care network benefits of the new offering at Community Pharmacy and diverting low-level work away from GPs. These will be explored in further detail in the discussion chapter.

5 DISCUSSION

The impact of the future of Community Pharmacy on Care Delivery in Wales.

5.1 INTRODUCTION

This chapter will answer the guiding research question and explore the contribution of this study to current academic knowledge in the field of future community pharmacy models in Wales.

5.2 KEY FINDINGS

The key findings are shown below:

Table 18. A Summary of the Key Findings.

- The future community pharmacy model is well received and offers many benefits to multiple stakeholders
- Clinical services are developed around the patient and provide greater access, increased availability and improved care.
- The "new" pharmacist role is well received and provides greater job satisfaction
- There more opportunities for pharmacy workforce to develop and upskill
- It is not currently a viable model due to significant concerns for funding to deliver the model safely
- There are challenges to develop the skills required due to no protected time for learning and a lack of availability of DPPs to support IP training
- Workforce shortages in the short and medium term
- The current IT systems are not integrated into the wider care network and are an inhibitor to providing clinical services

5.3 FINDINGS IN RELATION TO THE LITERATURE REVIEW

Table 19 shows the research findings in relation to the six key concepts highlighted in the literature review.

Table 19. Results in relation to the Literature Review.

Six Principles of a "New Prescription"	Support, Modification or Rejection by the findings of this study
Capacity	The volume of work being delivered in community pharmacy has significantly increased over the last 5 – 10 years (see Section 2.3). Pharmacists are currently in a transition phase where they are continuing to engage with their traditional dispensing role whilst trying to juggle a new service driven model of CP and an increasing demand for services along with a need to develop to meet the needs of the new contract. The findings have shown a strong disagreement that prescription volumes have decreased as per (Welsh Government, 2021) and a strong agreement that staff workload has increased and that there are not sufficient staff available to deliver the expectation.
Capability	The new contract puts significant emphasis on improving the skills of the current workforce and has ambitious targets for developing the current pharmacist workforce to deliver PIPS in every pharmacy. The research found that there were skill gaps with the current model but there was agreement that there was more opportunity for staff development. A major barrier to undertaking training that was highlighted by respondents was that pharmacies don't have protected time for learning like other providers and therefore any additional learning is often undertaken at the end of the day or on weekends. Another recurring theme throughout consistent with that of the learning from (Mantzourani et al., 2023) was the availability of Designated Prescribing Practitioners (DPP) to support pharmacists undertaking the Independent Prescriber (IP) qualification.
Collaboration	The literature showed that collaboration is critical to enhance patient care and provide sustainable service delivery. The research showed that there was strong agreement that CP are an important element of the Health Care Network and that the new model provides significant benefits for GP practices and the wider care network. But only 58% felt that CP had been integrated into the cluster network. The interviews highlighted that collaboration is impacted by the lack of a shared clinical record and an awareness by other professionals of what can be offered in pharmacy.
Continuity	Continuity of Care as described in section 2.6 is hampered in Community Pharmacy by workforce shortages and temporary pharmacy closures. The research found that participants did feel that the new model had improved patients access to care in the community pharmacy. One of the pharmacist interviewed mentioned the need for a system that showed service availability which would improve patient signposting and awareness at a HB level of service availability.

Community	The literature highlighted the significance of CP in a community both for social purposes and to improve care through 'knowing' patients. Some interviewees were concerned that the sensitivity to the community can get obscured under the new system. Although there was strong agreement that the new contract was beneficial to the wider community.
Connectivity	The research found that digital healthcare solutions are often developed in silos which means that integration is challenging. The digital system and its inability to support the expansion of the new community pharmacy model was a reoccurring theme. Some of the challenges included slow connections, sporadic access to vital information for safe prescribing and a significant shortfall in funding available for digital systems. Significant investment is needed to create patient centred, integrated and effective IT systems. Joining up GP and Secondary care systems is fundamental to safe and high quality service provision.

5.4 FINDINGS IN RELATION TO THE OBJECTIVES OF THE RESEARCH

Table 20. Findings in Relation to Objectives.

Objective	Findings
To highlight the challenges faced by CP in achieving the Welsh Governments ambitions set out in 'Pharmacy: Delivering a Healthier Wales'	There is significant strong support for the fact that new services are beneficial to patients. Due to challenges faced in accessing DPPs for IP training and time needed to undertake the training there is some scepticism about whether the PIPS service will be available in every pharmacy by 2030. The research highlighted that further work was needed for CP to achieve integration into the cluster network. A reoccurring theme throughout the research was the challenges with the current digital system and a need for an integrated solution to achieve further development of what pharmacy can offer as part of the wider care network.
To understand the impact of a "Presgripsiwn Newydd: A New Prescription" contract reform on CP	The contract reform has had some positive impacts, these have included greater job satisfaction, improved patient care and access, benefits to the GPs and the wider health network. There was agreement that some elements of the contract reform are financially beneficial (PIPS) but in the main the general consensus was that the change had negatively impacted on the funding available to adequately resource the pharmacies to meet the demand required.
To gain an awareness of the impact of the change from the old dispensing driven model of pharmacy to a more service driven model of pharmacy.	The most significant change in moving from the old dispensing model to one focused on service delivery according to 56% of those interviewed was funding, followed by an increase in demand and dispensing demand not reducing. Participants recognised that there was a need to change for future sustainability and to provide a more clinically structure approach to operational management (See 5.5).

To explore what the future of pharmacy might look like	The interviews showed there was a significant appetite from participants to develop what is currently offered in Community Pharmacy and this included extending the range of clinical services available and creating a Health Care Hub. There was recognition that the current pharmacy estate may need significant development in order to achieve the future trajectory. There was also a strong emphasis on workforce to enable a more clinical focus, including increasing the number of pharmacist with at least one of those being an IP and having an MDT approach to offer a wider skillset. The surveys respondents approached the question slightly differently and the most mentioned themes were funding and staff support. An equal number described the future as both positive and challenging and therefore there is still some disagreement within the sector about what the change will mean for the future.
To understand the current challenges facing CP	The key challenges for Community Pharmacy that have been identified during this study are; • Funding • Workforce • Training • Digital Infrastructure • Premises Investment
To highlight the enablers, barriers and abilities of CP in delivering more services to support care delivery in Wales	The main enabler and barrier to clinical service delivery in Wales was identified as funding. Digital systems training and workforce were highlighted as the key enablers while staffing, time and confidence identified as the key barriers. The measures needed to strengthen clinical services were highlights as protected time for learning, a better understanding of the services by other professionals, support and funding. To enable pharmacies to expand the clinical services offer 33% said that there needed to be more investment but there were a range of services suggested that could expand the current offer in the future.

5.5 CONTRIBUTION TO ACADEMIC DEBATE

The operations management literature uses 4 Vs and has only four forms of service provision:

Table 21. Definition of the 4 Vs in Operations Management.

V Feature	Definition
Volume	Quantity of products that can be produced.
Variety	The more variation in the product the more operations and costs needed.
Visibility	Knowing the needs of the customer.
Variation	Increased demands need increased inputs and decrease in demands needs a reduction in productivity.
(BA Theories, 2023)	

The traditional dispensing model of the community pharmacy (high volume prescriptions) is known as a "mass service" form of health and care service. This is an efficiency driven model with the following features (akin to production line work):

- High volume of repetitive standardised work.
- Low variety of tasks.
- Low visibility of the patient in the process design and service provided.
- Low variation in demand for dispensed items.

The ideal model for a diagnostic led patient service (akin to bespoke service provision) is built around:

- Lower volumes of work – mainly using diagnostic skills to determine the right solutions for patients and their co-morbidities.
- Higher variety of work and skills to absorb the variety of patient conditions (physical and social).
- Higher visibility of the patient in determining their care regimes and routines.
- Higher variation in demand as each patient is treated as a single case.

The current model tries to match the two ideal types which has not ever been advised in the operations management literatures (Slack et al., 2013). In this manner the current models are trying to match:

- High volumes of dispensing which account for significant hours in a week with a high variety of services offered and tailored to patient and local needs.
- High variety of services such that the pharmacist must now be multi-skilled or be able to call upon a wider skillset than traditionally was the case.
- The pharmacies must extract a profit without being able to charge for diagnostic services and must contend with the government reduction in dispensing fees.

This study finds significant challenges with this form of additionality to the pharmacist role in managing high volume dispensing whilst seeing patients to solve their holistic care needs causes interruptions to the day and potentially compromises the principles of the highly reliable organisation (Weick & Sutcliffe, 2007).

5.6 A FORCE FIELD ANALYSIS OF THE COMMUNITY PHARMACY MODEL

The following diagram summarises the enabling and constraining forces to transition the community pharmacy into the pivotal organisation needed to meet the governments strategic intentions.

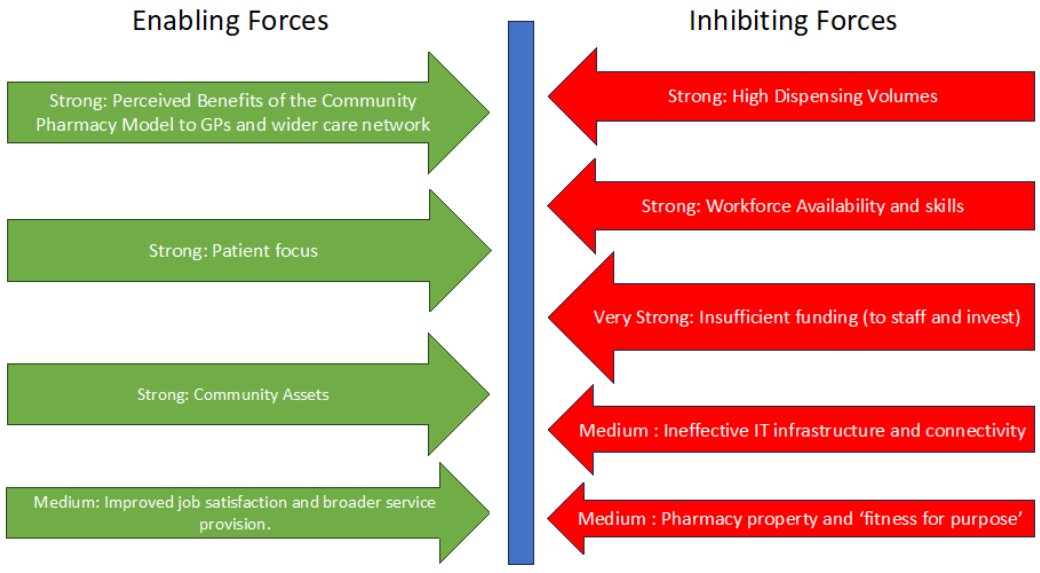


Figure 30. Force Field Analysis.

Figure 30 highlights there are greater inhibiting factors than enabling factors in transitioning to the new model of CP.

5.7 DISCUSSION CONCLUSION

This chapter has highlighted how the study findings extend academic thinking in terms of government-led contract reform on Community Pharmacy. It has demonstrated some of the key benefits and significant challenges that have been encountered in the move from the old operations management structure to the new and how this can pose significant challenges. A simple answer to the research question is skills development and other benefits are perceived advantages of the new system which is currently constrained by issues concerning funding, training, and IT systems integration.

6 CONCLUSIONS & RECOMMENDATIONS

6.1 THE PURPOSE OF THIS CHAPTER

The concluding chapter will bring together the findings and contribution of this study and provide a final answer to the study questions.

6.2 KEY FINDINGS

The key findings of the study are:

- The contract reform and Welsh government policies which have shifted the direction of community pharmacy have been a positive opportunity for the role of community pharmacist allowing the utilisation of the skills developed during their training.
- The services provided have increased accessibility for the public and offered more support to GP practices and wider care network.
- Funding is a significant constricting factor in developing the future model of pharmacy, not only in providing safe quality services but also the need for funding to improve the pharmacy estate to make it fit for purpose for the expanding role of community pharmacy in the future.
- There are significant challenges with regards to training and around the development of independent prescribers due to the significant lack of DPPs to support and also not having protected time for learning.
- There needs to be significant investment in the digital systems to improve the safety of clinical services in the future and to allow integration into the greater health network.
- Work needs to be done to improve collaboration and to ensure pharmacists as a profession are integrated into the cluster network and have opportunities to support initiatives that seek to improve population health on a cluster level.

6.3 REFLECTIONS

Any professional researcher will reflect upon their journey and what they could have done differently or better. This study is no different and the following reflections are offered:

- Gaining access to respondents was easier than expected and the project generated a lot of data. This data, whilst highly valuable, necessitated a lot of hours of review and analysis but the point of saturation was established at the 75% of all interviews conducted. The study could have been closed earlier without compromising the quality of the results.
- I underestimated the time needed to analyse the interviews.

6.4 FUTURE RESEARCH

It is expected any research study would offer new avenues for academic research. The following are offered by the researcher as vital next stages in this process:

- A research study is conducted in another country of similar type to Wales (such as England or Scotland) to see if the model and study can be generalised to other countries and nations. This will overcome the acknowledged methodological limitation of studying only Wales in this study.

- A longitudinal research study should be undertaken to see how successful and less successful pharmacies, pharmacists and patients engage with the new CP model and what has enabled or inhibited a successful implementation through the process.
- A study of pharmacist job satisfaction should be undertaken to see if the pharmacist is more productive, happier at work and feels their esteem/value in the local community has risen.

6.5 CONCLUSION

The national case study has demonstrated there is significant belief in the benefits of the new model (job satisfaction, access, service provision and patient centeredness) although concerns exist about the economic viability of the model (funding), adequate staffing to offer safe quality service provision and also for other areas such as premises development. Pharmacies are facing significant funding issues (contract reform and supply chain medication shortages) which are increasing costs without reimbursement. This study has found significant concerns associated with staffing, skills and changing roles and transitioning from mass servicing/dispensing to one a diagnostic led professional service despite widespread support for the transition. In the diagnostic model, the pharmacist would spend more time with the patient providing services and diagnosing patient conditions however this study shows an inability to relinquish their previous role of dispensing is happening and demand is increasing. The pharmacist role therefore sits uncomfortably and implies the future model will simply add on to their existing dispensing duties and pharmacies will endure lower incomes. Significant efforts will be needed to assure the quality and safety of the future pharmacy model and its economic sustainability for patients in Wales.

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8 Appendix A: Ethical Approval

Swansea University
Prifysgol Abertawe

Approval Date: 18/05/2023

Research Ethics Approval Number: 1 2023 6677 5675

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	Are community pharmacy clinical services the answer to GP sustainability in Wales?
Applicant name	DR Daniel Rees
Submitted by	DR Daniel Rees /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/Project/Index/8394

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair

Swansea University.

If you have any query regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

9 Appendix B: Interview Questions

The impact of the future Community Pharmacy on Care Delivery in Wales

Community Pharmacy Interview Schedule

Stage 1 – General Questions

1. Tell me about your background and your relationship to community pharmacy? Commissioner/Community Pharmacist (Independent/Owner/Employee), GP (Partner/Salaried/Locum), Governing Body.
2. What do you consider to be the constraints and issues with the current model of Community Pharmacy?
    a. Revenue/Skills/IT.
3. How would you describe the pharmacy of the future?
4. What are the major implications and benefits for the pharmacist role in moving from the old model to the new model?
5. In your opinion, what do you think are the ENABLERS for the implementation of clinical services in pharmacy?
6. What do you think are the BARRIERS?
7. In your opinion what measures need to be taken in order to strengthen pharmacy clinical services in Wales? What kind of support does this require? (e.g., CPW, Welsh Government, LHB).
8. Do you think there are further opportunities to expand what can be offered at Community Pharmacy?
    a. Yes/No. – what makes you say this?
9. Do you think Community Pharmacy services can support GP sustainability and the wider care agenda in Wales? Why do you think this/how do/can CP services support sustainability? Who are they key beneficiaries?
10. The new community Pharmacy Contract aims to shift the funding model from purely dispensing medicines to a model which incorporates providing clinical services – in your opinion how has this change impacted on community pharmacies?

10 Appendix C: Perceptual Survey

The impact of the future of Community Pharmacy on Care Delivery in Wales.

We are conducting research to understand the impact of the future of Community Pharmacy on care delivery in Wales. The study is part of an MSc in Advanced Health & Care Management for Innovation and Transformation. The data will be collected by Kelly White, MSc Student at Swansea University's School of Management. Kelly can be contacted at 2132650@swansea.ac.uk. The research has been approved by the School of Management Research Ethics Committee. By completing this questionnaire, you are consenting to be included in this study. All data will be anonymised.

1. What is your role?

   [Enter your answer]

2. When thinking about the community pharmacy model prior to the introduction of 'a new prescription' in 2021, to what extent do you agree or disagree to the following statements.

	Strongly Disagree	Slightly Disagree	Neutral / Don't Know	Slightly Agree	Strongly Agree
The previous model lacked clarity of government policy					
There were incentives for pharmacies to offer more services					
There was a lack of skills to deliver new services					
The main activity of a pharmacy was dispensing prescriptions					
The model did not focus sufficiently on patient care					
There was sufficient staff available to deliver patient expectations					
The old model did not offer many opportunities to support the wider care agenda					
The only means of growth for a pharmacy was to offer enhanced services					
IT systems met the needs of the services provided					
The old model offered little added value for GPs					

3. Are you aware of the new community pharmacy contract “A New Prescription” that commenced in 2021?

   https://www.gov.wales/sites/default/files/publications/2021-12/a-new-prescription-the-future-of-community-pharmacy-in-wales.pdf

   Yes/No

4. As a result of the Welsh Government's contractual reform “A New Prescription” in 2021, to what extent do you agree or disagree to the following statements?

	Strongly Disagree	Slightly Disagree	Neutral / Don't Know	Slightly Agree	Strongly Agree
My role has been negatively impacted					
Patients have easier access to services					
Patients have benefited from new services					

The funding model for pharmacies has improved					
Community Pharmacies are an important element of the Health Network					
The Pharmacy Independent Prescribing (PIP) service is financially beneficial for pharmacies					
The new contract is beneficial for Pharmacies					
The new contract is beneficial for GP practices					
The new contract is beneficial to the wider care network					
The new contract is beneficial to the wider community					

5. To what extent do you agree or disagree to the following statements, when thinking about the current Community Pharmacy model?

	Strongly Disagree	**Slightly Disagree**	**Neutral / Don't Know**	**Slightly Agree**	**Strongly Agree**
It involves significant change to the services provided					
It needs more funding for it to make a significant impact					
It is a good move to enhance patient care					
There are skills gaps					
Is more theory than a reality					
The focus for pharmacy is on delivering services					
There are sufficient staff available to deliver expectations					
Less prescriptions are being dispensed due to GPs moving to longer prescribing intervals					
There is greater job satisfaction for staff					
There is more skill variety under the new model					
There is more opportunity for staff development					
The IT systems meet the needs of the new services provided					
The new model offers additional support to GP practices					

6. Are you aware of the 'Pharmacy Delivering a Healthier Wales' strategy for pharmacy up to 2030?
   https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Wales/Pharmacy%20Delivering%20A%20Healthier%20Wales%20Summary%20Guide.pdf?ver=iavNxXa-P_IL3d1KpbznTQ%3d%3d
   Yes/No
7. When thinking about 'Pharmacy Delivering a healthier Wales' to what extent do you agree or disagree to the following statements?

	Strongly Disagree	Slightly Disagree	Neutral / Don't Know	Slightly Agree	Strongly Agree
Current pharmacy services are designed around patient needs					
Community Pharmacy has been integrated into the cluster network					
The Community Pharmacy Digital Platform works well					
There will be an independent prescriber in every pharmacy by 2030					
The Pharmacy Independent Prescribing (PIP) Service provides benefits for patients					

8. When thinking about what the current Community Pharmacy Clinical services offer, to what extent do you agree or disagree to the following statements?

	Strongly Disagree	Slightly Disagree	Neutral / Don't Know	Slightly Agree	Strongly Agree
It reduces GP workload					
It reduces pressure on other NHS services					
It improves patient access to care					
It reduces delays for the patient					
It reduces costs for the NHS					
It provides equitable access					
It is financially beneficial to the pharmacy					
It improves job satisfaction					
It improves the patient experience					
It is limited by the Choose Pharmacy platform					
It has increased staff workload					

9. Is there anything else you would like to share about the impact of Community Pharmacy on Care delivery in Wales?

   [Enter your answer]

10. How would you describe the future direction of Community Pharmacy?

    [Enter your answer]

Value-based HealthCare: An analysis of Paediatric Blood Tests: improving patient flow

Susan Kotrzuba
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Abstract:

Background: This report investigates the factors contributing to long waiting times for blood tests for Children & Young People in Southwest Wales and proposes mechanisms to improve patient flow. Amidst the pandemic, waiting lists have grown, and individuals are experiencing prolonged waiting times for healthcare services. Notably, paediatric blood test requests have seen an unexpected surge in both demand and waiting times, with waiting times extending up to five weeks. This study aims to identify the reasons behind the increased referrals from Primary Care and understand the implications for patient care and outcomes.

Methodology: Primary research methods, including surveys and retrospective data analysis, were employed to analyse referral sources, identify trends, and provide recommendations to enhance patient flow and value. The study examines the efficacy of blood tests by applying the value-based healthcare principle of achieving better outcomes at equal or lesser costs. However, action research and mixed-method approaches were discounted due to time constraints and ethical considerations. Through comprehensive research and literature review, this study employs a case-study methodology to gain insights into paediatric blood tests, laboratory testing, and value-based healthcare principles. The primary research conducted involved surveys targeting healthcare professionals from various disciplines. Despite lower-than-expected response rates, the study reveals a significant increase in GP referrals for paediatric blood tests.

Findings: The report highlights challenges in managing the increased demand and proposes strategies to improve patient flow and value in paediatric phlebotomy. Recommendations include increasing testing capacity, enhancing collaboration between primary and secondary care, and developing evidence-based programmes to guide test requests. Additionally, establishing a live data repository to capture per-patient costings could influence clinician behaviours' and improve resource allocation. Further research is recommended to explore the drivers behind increased diagnostic testing and develop age-specific Patient-Reported Outcome Measures (PROMs) for children and young people.

Conclusion this study underscores the importance of measuring outcomes in healthcare interactions and promoting the ethos of value-based healthcare. By implementing strategies to improve patient flow and value, healthcare organizations can address challenges and enhance patient care effectively.

Keywords: Paediatric Blood Tests, Patient Flow, Value-Based Healthcare, Resource Allocation, Primary Care Referrals, Healthcare Efficiency.

Table of Contents

1 Introduction

The purpose of this report is to investigate factors contributing to the long waiting time for blood tests for Children & Young People in Southwest Wales and mechanisms to improve patient flow. The report will explore whether primary care referrals for blood tests for Children and Young People has increased, and the value of the blood tests and any resultant contribution to health outcome.

Children and young people's first interaction with healthcare is often associated with invasive procedures involving a needle, such as childhood immunisations (Aydin & Sahiner, 2017). Blood testing is amongst the most frequently requested diagnostic tests, it can be a source of discomfort and distress both for the child and carer (Sonne et al., 2017; World Health Organization, 2010). Recently, there appeared to have been an increase in the demand for blood tests for children and young people.

This research aims to review and validate the efficacy of the requests. How many instances the results were clear and how many instances the blood requests were marked as urgent. The research will aim to pinpoint trends in the number of paediatric blood tests requested by GP practice.

2 Identification of the Project Requirements

For this report, the label Children & Young People refers to individuals who are aged between 0 and 16 years.

Following the pandemic, waiting lists have grown, with individuals now waiting longer to be seen than ever before. The focus of the NHS is to maximise efficiency, clearing the backlog whilst new referrals are still being received.

One area which has seen an unexpected increase in both demand and waiting times is paediatric blood test requests. At the time of writing this report, the waiting time for a paediatric blood test in one Health Board is five weeks. This length of wait applies to blood requests whether they are defined, by the referrer, as urgent or routine and is the same for primary care referrals and blood test requests for patients already under the care of Paediatrics in a secondary care outpatient setting.

This report seeks to identify if there has been an increase in referrals received from Primary Care as is conjectured. If this is proven to be the case, to understand the reasons behind the increase, proposing solutions to improve patient flow, with the aim of improving value for Children & Young People awaiting a blood test.

Primary research methods will be used to analyse referral sources, identify trends, and provide recommendations to improve the patient flow and value. Furthermore, this report will analyse the efficacy of the blood tests by applying the value-based healthcare principle of better or improved outcome for lesser or equal cost.

According to Mughal et al. (2016) demand for phlebotomy testing is predicted to have an annual increase of approximately 9%. In the case study, the assumption being made is the increased waiting time for paediatric blood tests is due to a reduction in phlebotomy sessions following the pandemic, however, this research will explore whether this is the case as well as identifying other contributory factors.

Furthermore, in the context of value-based healthcare, the research will seek to identify the costs of the blood tests to the Health Board, applying the time-driven activity-based costing model (TDABC), the added value to the patient based on the outcome of the blood test linking this with the responses from primary research.

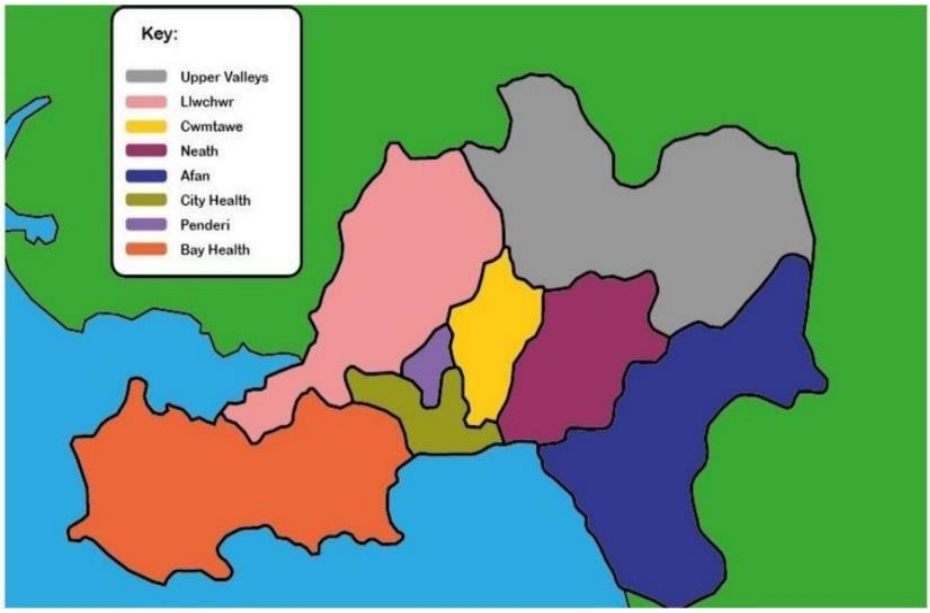

Figure 1. Swansea Bay and GP clusters (Source: Swansea Bay University Health Board, n.d.)

There are eight General Practitioner (GP) clusters (Figure 1), incorporating 51 GP practices (Table 1), within the Swansea Bay University Health Board boundary. Paediatric blood tests for all eight GP clusters are booked via Swansea Bay University Health Board, and undertaken within a child-friendly, paediatric outpatient setting.

There are eight paediatric phlebotomy sessions provided in Singleton Hospital, two paediatric sessions in Morriston Hospital and one phlebotomy session in Neath Port Talbot Hospital per week. Each session has 12 patient appointment slots; therefore, the current weekly paediatric phlebotomy capacity is 132 appointment slots. Paediatric phlebotomy clinics will be operational for at least 48 weeks per year; therefore, the current annual capacity is approximately 6500 appointment slots, slightly adjusted for bank holidays.

Table 1. Number of GP Practices and Patients per Cluster (Recreated by Editor)

Cluster	No of GP Practices	No of Patients
Bay Health	8	73997
Neath	8	56500
Afan	8	50845
City Health	8	50684
Llwchwr	6	47500
Cwmtawe	3	44000
Penderi	6	38122
Upper Valleys	4	31088

In the last eighteen months the waiting times for paediatric blood tests have increased dramatically, with demand rapidly outstripping capacity. In March 2023 a patient could be waiting around eight weeks for a blood test. Clearly this fell below the standard of service the Health Board would wish to provide and is unacceptable in a paediatric setting.

The cause of the capacity issues requires urgent investigation as the limited appointment slots and the fact there is little control on the acceptance of referrals was making it challenging to run a specialist secondary service as well as compromising timely diagnostic and therapeutic decision making for children within the Health Board.

In a bid to optimise the paediatric phlebotomy service, a GP to Consultant Paediatrician telephone triage initiative for urgent blood requests was introduced whereby any phlebotomy requests defined as urgent by the GP would first be discussed with the Consultant Paediatrician who would offer specialist advice to the GP following dialogue around the patient's symptoms. The results varied depending on the presentation of the child, in some instances alternative treatment was suggested, in others the referral was downgraded to routine and in others the child was admitted to the paediatric assessment unit for physical examination (Appendix A).

Data analysis shows the overall number of blood test referrals received from Primary Care colleagues has not only increased substantially but the number of urgent paediatric blood test requests versus routine requests has increased exponentially.

In Figure 2 you will note data illustrating the total number of primary care paediatric blood referrals received between 1st April 2018 and 31st March 2023 per financial year. For fiscal year 2018/19 the number of urgent referrals received was 92, by fiscal year 2022/23 the number of urgent referrals had increased by over 3500.

Whilst the overall number of paediatric phlebotomy referrals had increased as can be seen in Figure 2, the ratio of urgent versus routine referrals had almost doubled in the last two years. It was evident increased capacity was required, however, there was still a requirement to determine why the sudden spike in the number of referrals, understand the increased blood testing contribution to patient care and/or value as well as exploring methods to improve the situation.

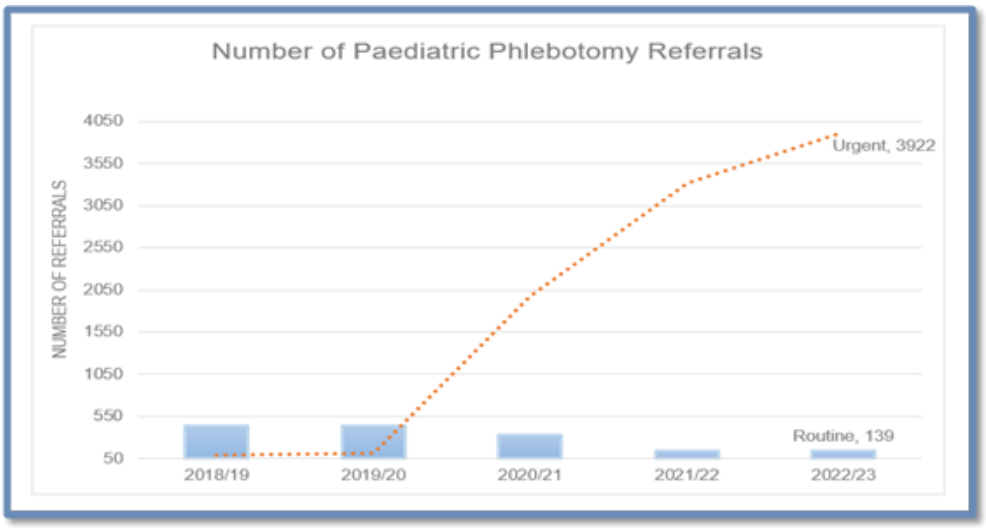

Figure 2. Chart showing increase in Primary Care Blood Test Referrals

The waiting times for paediatric blood tests have increased significantly in recent years. Blood tests are recognised as an invasive procedure, and a cause of anxiety amongst patients of all ages and as such should be requested only when deemed necessary (Del Castillo et al., 2019; Sonne et al., 2017; Smakman et al., 2021). When children and young people are diagnosed with a chronic condition or lifelong illness, blood tests are one of the methods of measuring the progression of the condition and/or the efficacy of the mechanisms in place to manage the patient's symptoms. Despite this, secondary care clinicians have raised concerns there is currently insufficient capacity within the paediatric phlebotomy clinics for patients who are attending outpatient clinic for a secondary care consultation to have their blood tests undertaken at the same time as their consultation.

Participants were also asked if, in their opinion, the demand for Primary Care paediatric blood tests had increased over time. Over half of the participants responded yes (Figure 3).

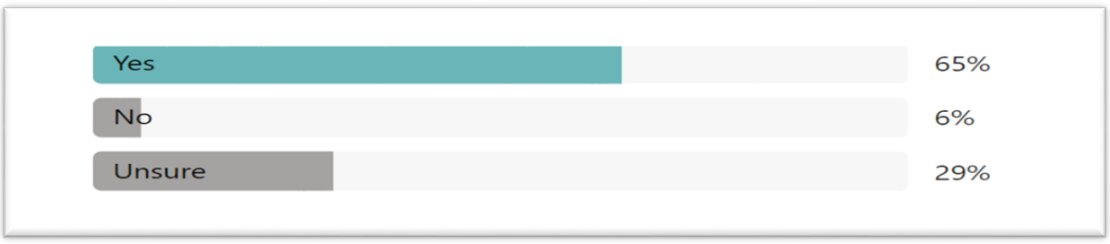

Figure 3. Survey results: Have Primary Care blood test requests increased?

2.1 Research Questions

This report will attempt to establish whether there has been an increase in phlebotomy referrals received from primary care in the first instance; secondly, it will scrutinise GP admission rates for the same period to assess any correlation. Thirdly, of the blood tests undertaken how many results were clear/negative and thus did they add value to the patient's treatment and finally, identify whether there has been a drastic increase in the number of children & young people registered with each GP cluster since 2018.

3 Literature review

3.1 Overuse, Over-diagnosis and over-testing.

Overuse, over-diagnosis and over-testing may appear to mean the same thing at first, however, they are three very distinct areas.

Over-diagnosis is an area whereby a condition is diagnosed and treated however, the diagnosis adds little or no value to the patient's lifestyle and health and would have caused the patient no harm if undetected (Coon et al., 2014; European Commission, 2019). Overuse, also referred to as over-treatment, and is described by Coon et al. (2014) as a situation where patients are prescribed unwarranted amounts of treatment whether that be procedural or pharmaceuticals (Størdal et al., 2019; Coon et al., 2014; Addis et al., 2019).

In the same way, over-testing according to Størdal et al. (2019) occurs when diagnostic tests are conducted that identify health conditions that would not cause harm to the patient if left undiagnosed or untreated.

3.2 Value-based Healthcare (VBHC)

The theory that underpins value-based healthcare is increased value for patients by way of better outcomes for decreased or equal cost (Porter, 2007), moreover measuring the outcomes against the amount of money spent. This original concept by Porter (2007) was focused quite heavily on costs, if you were unable to reduce costs then there had to be an increase in value. Patient pathways, and the interventions along those pathways, can be complex, nuanced and involve many disciplines. To be able to accurately measure value per patient using Porter's formula would require the availability of patient outcomes, costings for each activity undertaken within the NHS, pay and non-pay related as well as estate costs such as utilities and rent. However, value-based healthcare has evolved since its inception, focusing more on measuring patient outcomes, and focusing more on co-production between Clinician and patient, often referred to as patient-centred care (Wackers et al., 2021; Zelmer, 2020).

As part of the Primary research, participants were asked if they had any awareness of value-based healthcare, over half of respondents indicated they were aware of value-based healthcare (Figure 4).

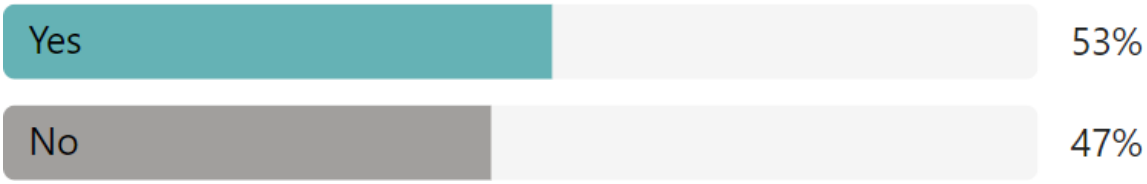

Figure 4. Awareness of Value-based Healthcare

However, when the same cohort of participants were asked if they were aware the Organisation offered a value-based healthcare eLearning package the results were less favourable, with 100% of respondents indicating they were not aware (Figure 5).

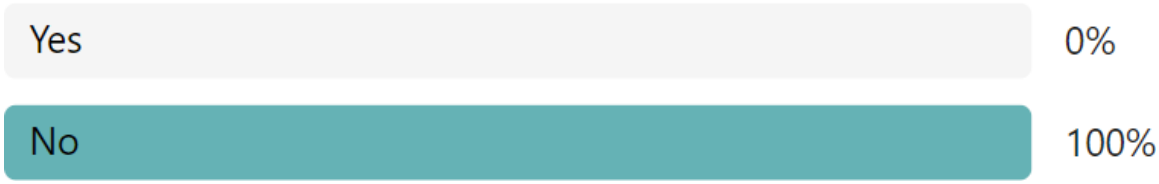

Figure 5. Awareness of Value-based Healthcare eLearning Package

3.3 Prudent Healthcare

In a report published in 2013, Aylward et al., listed the aims for Prudent Healthcare in Wales as being health interventions that meet the requirements of the individual, dispenses of interventions that are of no benefit, utilises available resources wisely, cessation of processes and procedures that cause waste and potentially cause harm to the patient. Addis et al. (2019) argues that almost a fifth of health processes undertaken by the NHS had little or no influence on patient's outcomes and goes on to suggest that one tenth of all health-related procedures are direct causes of harm to the patient.

One recommendation made by the Aylward et al. (2013) is to assess processes for effectiveness and cease doing those that are proven to be less effective, in other words, only undertake procedures and/or interventions that provide any value to the patient.

Demands on the NHS are increasing, with technological advances, healthier lifestyles, patients are living longer and requiring more healthcare interventions. Prevention is one clear area of focus to reduce the demand for the health service. Managing the throughput into health based solely on prevention is challenging. Therefore, a multifaceted approach is required, prudent healthcare enables Clinicians and patients to be involved in their journey with health and work toward an agreed outcome. Health becomes less prescriptive and less transactional in nature with more collaboration.

Patient choice is an important consideration which would likely cause increased variation between practices which is in direct contradiction with one of the prudent healthcare aims as well as Lord Carter's report (Carter, 2016). How do we measure value in health? For years, Trusts and Health Boards have been measured by performance targets, whilst these are undoubtedly important there have been few mechanisms to formally capture and report patient outcomes and what matters to the patient.

The European Commission (2019) states any intervention or treatment that does not have a positive impact on a patient's outcome could result in actual harm, over-diagnoses, and waste. The report specifically highlights the increase in diagnostic tests with the UK, making the important distinction the resources associated with the increased testing are limited therefore it is critical the diagnostics are undertaken only where they add the utmost value for patients.

In 2006 Lord Carter undertook a review of pathology services within NHS England, in the resultant report it was remarked how little data was available for pathology services relating to "financial, operational, workforce or performance" that gave any real insight, and this was true on a national level. A further report was published in 2016 citing unnecessary inconsistencies that existed across the NHS in all areas such as workforce, diagnostics, and procurement. The report provides an estimate of the cost of pathology services to NHS England at more than £2.5 billion. The 2016 report written ten years following its predecessor, still states obtaining data around costings to be a challenge. Part of the recommendations made are that variance is reduced and this will allow for improvements and efficiencies, stating performance measures should not only be centred on cost and productivity but also patient outcomes.

3.4 Choosing Wisely

Choosing wisely was originally launched in America in 2012 by the American Board of Internal Medicine (ABIM) Foundation (Levinson et al., 2015). In 2016, the Academy of Medical Royal Colleges introduced the Choosing Wisely UK initiative as a method of distinguishing diagnostics and the management of health conditions whose value to the patients' health were debatable. One of the main objectives of Choosing Wisely at its inception was the reduction in excessive testing and/or treatment (Addis et al., 2019; Vuorela, 2017).

As part of this campaign a patient information leaflet was launched (Appendix B) which encouraged open dialogue between patient and Clinician, ensuring decisions were reached and agreed together by prompting certain questions during the Consultant those being: "What are the Benefits? What are the Risks? What are the Alternatives? What if I do nothing?" (Choosing Wisely UK, 2020).

A report by O'Sullivan (2019) indicates an increase in the number of tests requests received by GP Practices as shown in Figure 6 below. As illustrated in Figure 6, the number of laboratory-based tests has tripled between the years 2000 and 2015.

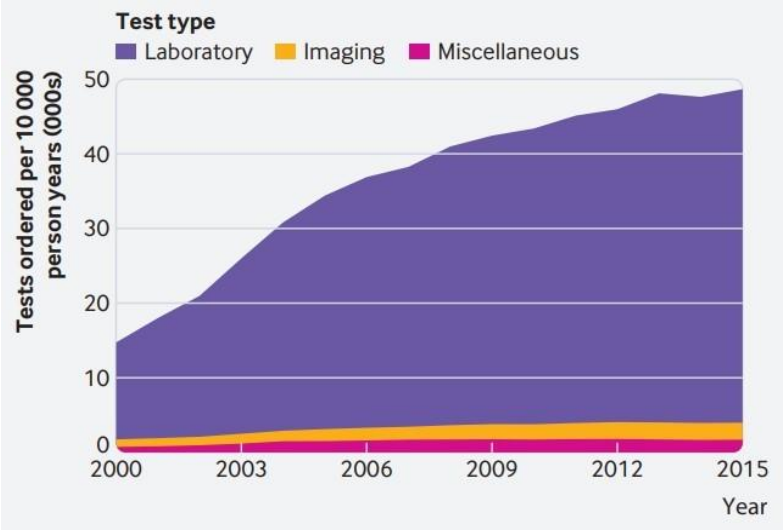

Figure 6. The Rise in GP Test Requests (Source: O'Sullivan, 2019, p.4)

According to the European Commission (2019), there are three categories employed by the UK and Italy to classify value in healthcare, collectively referred to as the "Triple Value Model" (European Commission, 2019, p. 27). However, they propose a fourth henceforth referred to as the four pillars of value-based healthcare as shown in Table 2.

Table 2. The four pillars of value-based healthcare

Personal value is used to describe where the treatment is agreed in collaboration between the Clinician and the patient, taking into consideration the patient's preferred outcome of the healthcare interventions proposed
Allocative value is used to measure how fairly health interventions are distributed across all patient groups regardless of health condition or demographics.
Technical value is concerned with achieving the best possible outcome for patients using the all-available resources efficiently.
Societal value is related to factors linked to the socioeconomics characteristics of the wider community.

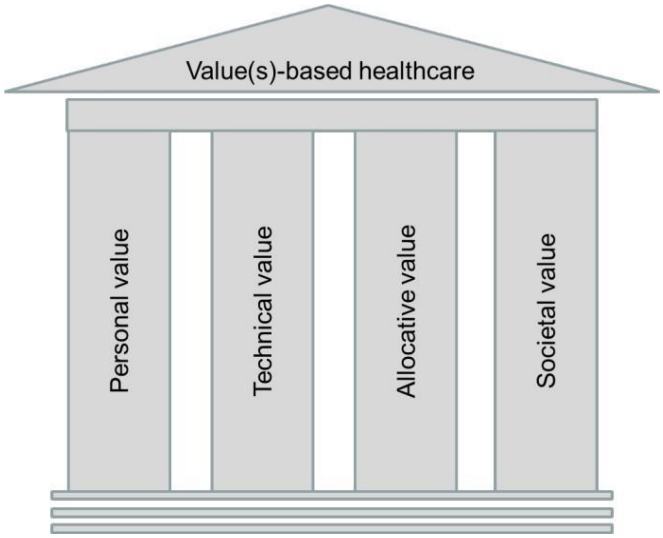

Figure 7. The Four Pillars of Value-based Healthcare Source: (European Commission, 2019, p. 69)

According to the report published by the European Commission (2019) the meaning of value is open to much debate. They caution that whilst the formula proposed for value-based healthcare by Porter is based on monetary measures for some patients' value may be related to their interaction with health, their experience, how quickly they received treatment following diagnosis and whether they were involved within the decision-making process (European Commission, 2019). The report states "good patient experience is of central importance to the 21st century patient" (European Commission, 2019, p. 53).

3.5 Value-based Paediatric Care (VBPC)

The principle of value-based healthcare is important to patients irrespective of age, however, applying this to paediatric healthcare is more complex. More thought is required around who should be completing the patient reported outcomes (PROMS) for children and young people, as the views of the families are also important. It has also been suggested there are different PROMs for different age groups, experience and the environment are of equal importance for Children and Young People as the health outcome (Nóbrega, 2020; Zwicker, 2020; Devlin et al., 2021). Similarly, Algurén et al. (2021) stipulate measuring every factor that is important to children and young people and their families is imperative.

Similarly, in a report published by Lamb et al. (2021) it was noted that where some reported quality outcome measures existed for some age groups of children and young people, very little existed for children of less than school age. Some organisations advised the design used for capturing the outcome data was not compatible for use with Children and young people and any separate form of data capture would be difficult to incorporate.

Whereas Flanagan et al. (2019) believe the value measure for children and young people should incorporate lifelong value as any successful health interactions implemented when young will have a lifelong impact on health, well into adulthood (Engel, 1981). Flanagan et al. (2019) specifically state the focus of value-based healthcare in Children and Young People should be on education, preventative medicine, socioeconomic influences, and family support mechanisms, suggesting an analysis of familial health is undertaken.

3.6 Methodology

The roots of action research are ingrained within education, it is a method first employed in the classroom to improve teaching methods. Action research method is where analysis is based upon observing the task where the issue lies, the observer (researcher) cogitates the outcome, identifies points of learning based on their observations and revises the task based upon their findings. The method has the benefit of being practical, immersive as well as encompassing those directly experiencing the identified issues. There are clear advantages of using action research in the healthcare setting such as peer and patient involvement, however the action research method was discounted for this task due to time constraints associated with this project, the complications of obtaining ethical approval as well as obtaining consent due to the patients participating being minors (McDonnell et al., 2016; Dustman et al., 2014; Saunders et al., 2019).

Mixed method research employs both quantitative and qualitative research was discounted due to time constraints associated with the project. Whilst improving the experience of children and young people undergoing a blood test is of paramount importance, it was concluded there was insufficient time to review and test the different methods to improve experience available such as diversion, the administration of sucrose suspension, virtual reality, Bibliotherapy, therapeutic clowns and play therapy which each have their own virtues however, less than six months would not have been adequate time to put all of these techniques to the test for the purpose of this report. (Naina et al., 2023; Chen et al., 2019; Modanloo et al., 2022; Sridharan & Sivaramakrishnan, 2016; Koukourikos et al., 2015; Gold et al., 2005; Semerci & Kostak, 2020; Erdogan & Ozdemir, 2021).

Having considered the different methods of research available, the method selected is a case-study based on comprehensive research on the topic of paediatric blood tests, laboratory testing in the wider health context, as well as a literature review around value-based healthcare, value-based paediatric care and factors that influence practitioners' laboratory test-requesting behaviours. The case study will incorporate multi-method quantitative primary research conducted by a survey alongside retrospective research using organisational and secondary data, using findings to undertake exploratory research to ensure a broad understanding of the topic, trends to clearly identify any contributory factors and trends related to the increased phlebotomy demand. The primary research will be utilised to identify trends and opportunities where improvements could be made to increase the value and patient flow within paediatric phlebotomy specifically (Saunders et al., 2019).

Due to the range of research methods available the research onion, as developed by Saunders et al. (2019), (Figure 8) was consulted to identify the best research methods for this project. The research onion was found to be a useful tool which provided a helpful pictorial snapshot of the research methods, how they link, overlap, and evolve.

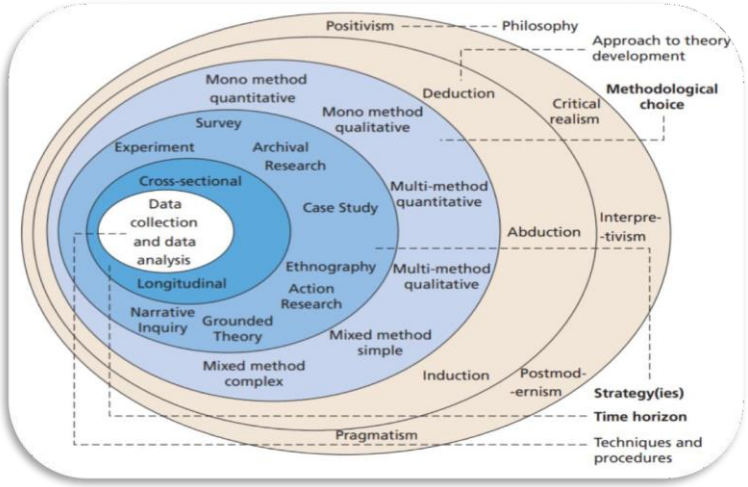

Figure 8. The Research Onion (Source: Saunders et al., 2019, p. 174).

3.7 Primary Research

Primary research was conducted using an online, anonymised survey which was shared with staff from several disciplines namely Consultant Paediatricians, Community Paediatricians, Paediatric Nurse Specialists and Paediatric outpatient administrators. Regrettably, response rates were lower than hoped for possibly due to the timing of the survey being during the summer months when this project was undertaken as dictated by the module commencement, ethical approval process and deadline.

3.8 Participant Selection

Participants were selected using the Barends et al. (2018) tool shown in Figure 9. Participants were categorised using their influence and interest. According to Barends et al. (2018) in simple terms the more significant the potentials gains or losses are to an individual or group the higher their interest is likely to be. Barends et al. (2018) goes on to suggest the influence of an individual or group is measured either by their standing and/or authority or their ability to sway the opinion of others.

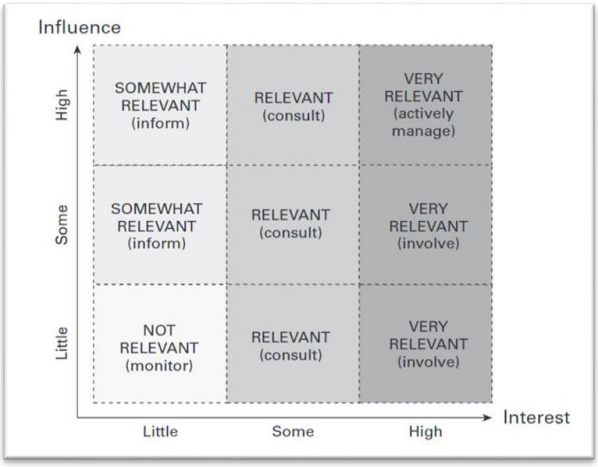

Figure 9. Barends: Influence and Interest (Source: Barends et al., 2018, p. 231)

Participants were asked whether they felt the demand for secondary care blood requests had increased in recent years, 65% of respondents felt the demand had increased as shown in Figure iii.

Participants were also asked what, in their opinion, could be the cause for increased blood test requests. Figure x illustrates some of the responses, 50% of respondents indicated an increased number of patients/referrals.

Figure 10. Possible reasons for increased referrals

3.9 Time-Driven Activity-Based Costing (TDABC)

Time-driven activity-based costing (TDABC) was created by Kaplan and Anderson in 2003. Outcomes are not the only mechanism to measure value for the patient. The Value- based healthcare equation is better outcome for equal or lesser cost. Therefore, it is essential to have a full understanding of all the costs associated with every interaction the patient has with Health as well as methods to measure the outcome for the patient.

Patient pathways can be complicated and involve multiple specialties across several patient treatment pathways. TDABC enables different elements of the patient's interaction with health to be costed based on time – for example the child or young person may spend 45 minutes at an outpatient clinic with a Consultant (Leung & Merode, 2019; Stoutjesdijk, 2015; Upon arrival at clinic, they would have reported to the clerk on reception, following this the patient may have been seen by a nurse who took their height and weight measurements prior to seeing the Consultant. At the end of the Consultation, the patient would approach the receptionist to provide a copy of the appointment outcome form discussed with and completed by the Consultant, advising of the next stage of their treatment – discharged or follow-up review in six months for example.

The interaction with all three individuals described in this example – the Consultant, the clerk and the nurse would all have different durations attached to each task and varying costs. There are also overheads to incorporate – rent, utilities as well as consumables used during their time in clinic. For the purposes of phlebotomy, the TDABC could enable us to capture the costs to the Organisation attached to the tasks outlined in Table 3.

As you can see by Table 3 the costing of paediatric blood tests alone has many elements, however, almost all of the different components associated with each phlebotomy test do not vary much from patient to patient therefore, this activity should be straightforward if staff costs are based on an average of mid-point of pay scale – the only variable are the laboratory costs relating to the blood analysis as this varies depending on the type of blood test requested. Unfortunately, Phlebotomy was unable to provide the cost to the Organisation for each individual blood test type.

For this model to be operationally viable it is important each component is costed individually as outlined above, but with a tariff for each staffing element for example a newly qualified band 5 nurse would be on a lower point of the pay scale than a more experienced qualified band 5 nurse. This would need to be adjusted for each phlebotomy session to ensure costings are as accurate as possible (Vuorela, 2017).

Phlebotomy costs published by NHS England (n.d.) indicate the average unit cost for phlebotomy as being £4.70 in 2020/21, however, it is unclear what the cost relates to and whether it includes all resources involved in blood testing phlebotomists and laboratory staff for example, the materials required such as needles, tourniquets, or the utilities.

Table 3. Time-Driven Activity-Based Costings

Activity	Duration	Resources	Cost £
Booking of appointment	10 minutes		

Noting attendance at appointment	5 minutes	Outpatient Clerk	£2.91
Drawing of blood sample	15 minutes	Band 5 Qualified Nurse	£9.91
Drawing of blood sample	15 minutes	Band Phlebotomist 3	
Drawing of blood sample	15 minutes	Band 4 therapist Play	
Blood sample transport	unknown		
Packaging for transport			
Laboratory analysis (cost of tests varies by type of test undertaken)	Unknown (Costing based on 30 minutes)	Band Biomedical Scientist 5	£7.38
Utilities	15 minutes	Utilities – electricity/heat	Unknown
Equipment & Consumables		Ethyl chloride spray; PPE – gloves, apron; Winged steel needles (butterfly)/safety blood collection set; Tourniquet; Sharps container; Post-procedure dressings	£1.92
GP Referral time		10 minutes	Unknown
Total estimated costs based on those available		**£22.12 per blood test**	

The TDABC model allows a review of all the stages within the patient pathway, assessing what value they add and provides an opportunity to explore alternatives and whether some of the components can be removed completely with no change to the outcome.

Constraints associated with the TDABC model could be the resources required to keep the costings up to date, for example, the Health Board could change its supplier for one of the consumables or pieces of equipment, the cost of utilities would potentially increase over time, allocation of staff pay awards on an annual basis, technological advances in laboratory testing could provide cost-saving efficiencies relating to blood analyses. With this in mind, it would be important to have a robust, quality assurance process in place to ensure the costings are checked and updated frequently.

It is also important to consider this mechanism to measure the costs associated with phlebotomy may only be one small element in the patient pathway. The costs should not be examined in isolation, the data is only meaningful when it is considered as part of the bigger picture. That is to say a blood test will provide different levels of value to each patient based on their health condition(s).

3.10 Patient reported outcome measures (PROMs) and Patient reported experience measures (PREMs)

In a report published by the European Commission (2019) it is acknowledged capturing patient reported outcomes is an important method for evaluating value-based healthcare furthermore, the future measure for value-based healthcare should be “patient defined outcomes” (European Commission, 2019, p. 41).

In the same way Algurén et al. (2021) caution value-based paediatric care requires health outcomes to encapsulate factors that are of importance to Children, young people and their parents/carers, highlighting there is an apparent absence of globally recognised PROM that take into consideration “biopsychosocial” perspectives of health and wellbeing (Arsiwala et al., 2021; Algurén et al., 2021; Simkiss, 2018). Engel (1981) claims biopsychosocial approach to health is an all-encompassing, holistic model ensuring not only the physical aspects of an illness but also psychological and social factors and the impact they can have on an individual’s health and wellbeing.

3.11 Applying value-based healthcare, value-based paediatric care, Time-driven activity-based costing theories to paediatric phlebotomy test request

A key aspect to measuring value-based healthcare is the capability to capture and interrogate data, however, the data captured must be accurate, timely, and meaningful and also, in the case of a Patient reported outcome (PROM), be in relation to the correct condition/procedure. Similarly, Hurst et al. (2019) stated Aneurin Bevan University Health Board had noted an increase in certain medications linked to respiratory conditions, with prescribing rates much higher than national levels when benchmarked with other Healthcare Organisations. Whilst Aneurin Bevan successfully reduced the percentage of prescribing and associated costs in this area following their assessment, it was acknowledged the accessibility of data required to evidence and validate the project objectives was lacking. Specifically, the team highlighted there was an issue separating PROM responses where patients had more than one ailment and/or were on more than one pathway.

In the same way, Debruyn (2022) emphasises the importance of data collection about value-based healthcare; stating the importance toward shared learning, improving value but also the data should be immediately available to be able to support and inform discussions and agreed decisions regarding treatment between the professional and the patient.

Arshoff et al. (2021) identified diagnostic tests made a valuable contribution to a patient's pathway, their outcomes and increased value by ensuring patients received the correct diagnosis and treatment is quickly as possible. Porter (2010) wrote costs associated with healthcare should be centered on the patient and not the procedure itself, however, obtaining the costs for even one diagnostic element of the patient pathway has proved challenging. The relationship between each stage of the patient pathway, the related costs and the outcome are all foundational elements of value-based healthcare and yet, whilst data was available providing an overview of blood test request by type i.e. full blood count (FBC), whether urgent or routine and in which GP Practice the referral originated, the outcome (results) of the blood tests to explore their potential value are not readily available. For instance, clear negatives or normal results can be difficult to define and complex if many tests are requested for one patient. Laboratory medicine does not have available resources to be able to search through all the results individually to highlight abnormal results due to the high volume of data. For that reason, the only method of completing an analysis of the blood test results would be to manually cross-reference the results data held on patient administration systems which is a considerable undertaking for the volume of blood tests requested.

4 Survey Results

4.1 Secondary care phlebotomy test requirements

Participants were asked to rate how adequately the current phlebotomy capacity met the requirements of their secondary care patients. Most respondents indicated the capacity was adequate, with a few ratings the provision less favourably as shown in Figure 11.

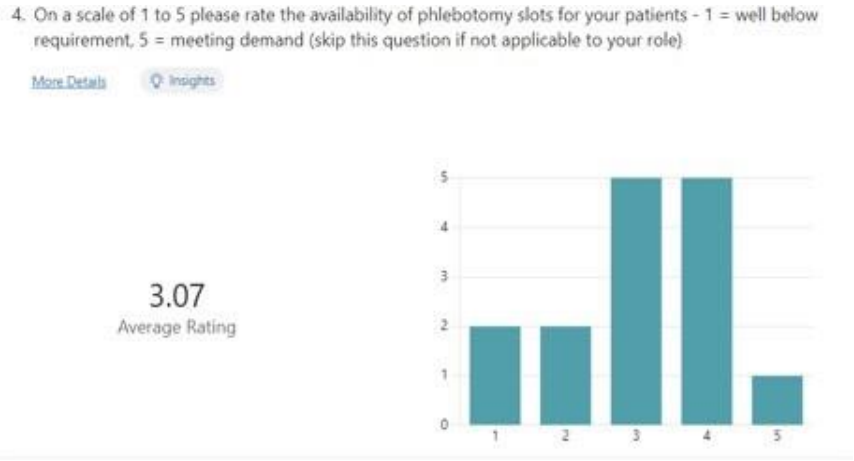

Figure 11. Adequacy of phlebotomy provision for secondary care patients.

In a bid to increase demand to accommodate those patients already attending hospital in an outpatient setting, the survey then asked participants to outline the clinics they undertake, identifying which site, where a high percentage of the patients attending are likely to require a blood test as part of their ongoing management. Survey results will be used to shape future phlebotomy service provision to ensure it meets the needs for both primary and secondary care patients.

4.2 Number of outpatient GP referrals

As part of the research, survey participants were asked how they felt phlebotomy contributed value to a patient's care. They were asked to rate eight statements as outlined in Figure xii on a scale of no value to significant value. A summary of the responses is illustrated in Figure xii and Table 4.

Establishing a diagnosis and selecting the right treatment were rated highest, followed closely by avoiding delays in treatment and early detection. Conversely, admission avoidance and improving patient outcomes were given the lowest value rating by participants.

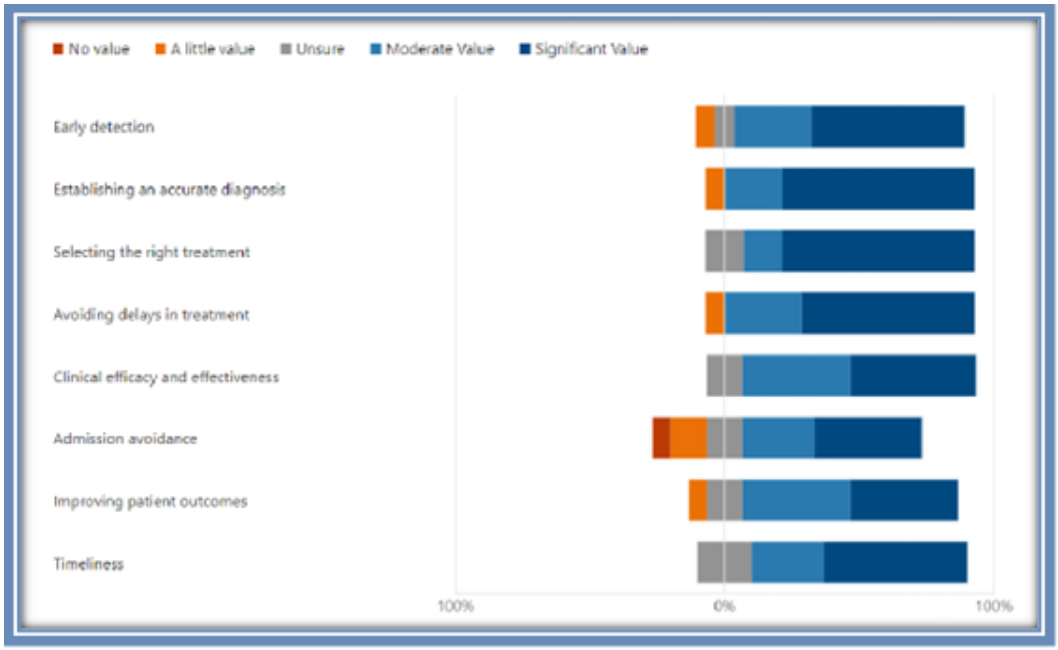

Figure 12. Are the blood tests likely to add value to the patient's pathway?

Based on the findings of Lam et al. (2020) it can be argued on occasion diagnostic tests, such as blood tests, are requested by General Practitioners in fear of negligence or legal action (Addis et al., 2019). Similarly, Morgan et al. (2016) states the views of those who attended a workshop range from 80% feeling diagnostic testing could lead to patient harm and over testing was an issue. Approximately 70% of workshop attendees felt tests were requested based on patient expectations with over half of attendees indicating there was less likelihood of a prosecution if diagnostic tests were arranged (Addis et al., 2019).

There are two sides to the question posed in the survey, does blood testing increase value for patients and if that is the case, is this by establishing an accurate diagnosis enabling the correct treatment to be established thus avoiding referral to Secondary care or for inpatient admission. For that reason, there is an expectation to see a correlation between the increased number of blood test requests and a reduction in the number of referrals for outpatient and inpatient episodes over the same period.

4.3 Analysis of Paediatric Blood Test Requests, Outpatient Referrals, and Inpatient Admissions

There is limited evidence to support the supposition that the increase in paediatric blood tests is contributing to a reduction in hospital admission for patients or avoiding the need for a referral to be seen in secondary care. After examining the data presented in Figure 13 and Figure 14, which outline the number of General Practice referrals received for three different elements of secondary care: inpatient admission, outpatient referral and paediatric blood test request, it is apparent the phlebotomy diagnostic testing does not result in a reduction of referrals to secondary care for outpatient or inpatient episodes.

Table 4. Breakdown by percentage

	Significant Value	Moderate Value	Unsure	A little Value	No Value
Early detection	57.1%	28.7%	7.1%	7.1%	0.0%
Establishing an accurate diagnosis	71.4%	21.5%	0.0%	7.1%	0.0%
Selecting the right treatment	71.4%	14.3%	14.3%	0.0%	0.0%
Avoiding delays in treatment	64.3%	28.6%	0.0%	7.1%	0.0%
Clinical efficacy and effectiveness	46.7%	40.0%	13.3%	0.0%	0.0%
Admission avoidance	40.0%	26.7%	13.3%	13.3%	6.7%
Improving patient outcomes	40.0%	40.0%	13.3%	6.7%	0.0%
Timeliness	53.3%	26.7%	20.0%	0.0%	0.0%

Studying the data in Figures 13 and 14 it can be seen activity takes a small dip in the summer months which supports known referral characteristics largely due to this being the holiday season with families spending time away from the home and school children not being exposed to infection as they would be during term time in school with their peers (Mossong et al., 2008; Hens et al,. 2009). Historically, siblings attending school cause a spread of infection to a younger sibling when there is a prevalence of Respiratory Syncytial Virus (RSV) during the autumn and winter months which are typical of the seasonal characteristics of RSV and/or Bronchiolitis in those aged under 5 years who are hospitalised however there are known to be a high percentage of re-infection rates associated with RSV not only in adolescents but throughout adult life (Coultas et al., 2019; Walsh & Hall, 2015).

Both the analysis of the referral data (15 and 17) and the participant viewpoints in the survey results support this view.

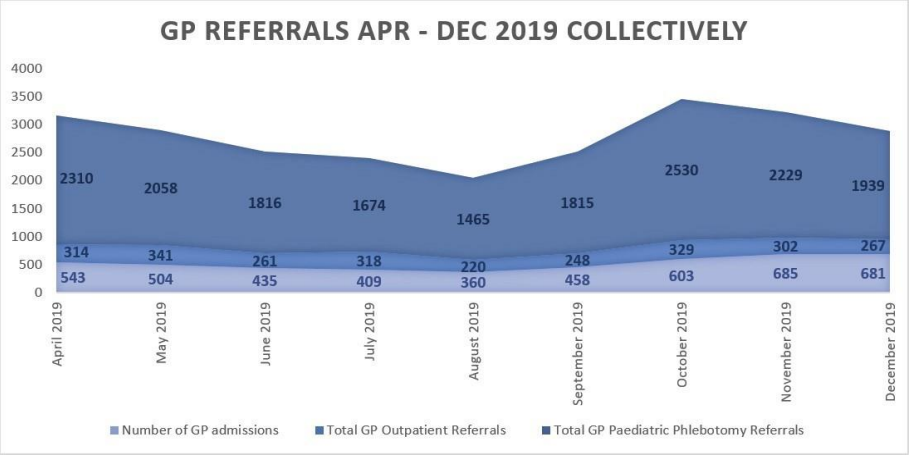

Figure 13. Overview of GP Referrals 2019

Complementary to this is the overview of General Practitioner inpatient admission trends as shown in Appendix C. Another essential point to note when studying the inpatient admission data presented within Figures 13 and 14 is the drastic reduction of admissions during the autumn/winter months of 2020. To elaborate, contributing factors to the reduction in admissions were school closures leading to a reduction in infection spread amongst siblings as well as Health Board colleagues working in collaboration with primary care colleagues to reduce avoid admission to Hospital for the young during the pandemic. To achieve this, secondary care procured SATS monitors for each GP cluster with appropriately sized probes as it was recognised adult sized probes gave false SATS readings and could result in an inappropriate admission.

Historically the referrals for paediatric blood requests undergo no clinical triage, unlike other referrals received from primary care into secondary care, however, in early 2023 an additional step was added into the referral process for urgent blood requests (Appendix A).

Another essential point is the impact this may have on the family/carer of the patient. For instance, Fryer et al. (2013) encourages the reader to consider the opinions of patients and their carers. There is often fear associated with blood tests, potentially beginning what could be a lifelong needle-phobia for the patient, whereas if this invasive procedure were closely managed and only used where absolutely necessary and added value to the patient's outcome it would undoubtedly improve the relationship of the patient and

healthcare in adulthood (Motz, 2017; Diaconescu et al., 2015; Noel et al., 2012). These factors coupled with the potential burden of travel and possibly childcare costs to the family/carer of the patient should also be taken into consideration when referring the individual for a blood test.

4.4 Number of patients aged 0 – 14 registered with each GP Cluster

Data published by the Welsh Government (2023) confirmed the number of patients registered within each GP cluster (Figure 15) aged under the age of 14 has remained relatively static in the period between 2018 and January 2023. Only two GP clusters show a small increase during that time, City Health and Llwchwr but this increase has been gradual and across a number of years.

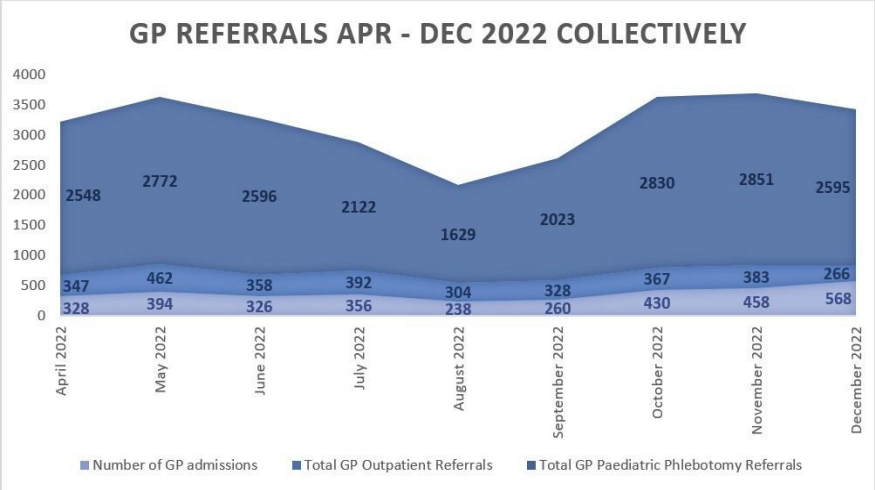

Figure 14. Overview of GP Referrals 2022

Please refer to appendices G & H for the breakdown of patients per capita. It should also be noted the data was only available in age bands, namely 0 – 4 years, 5 – 9 years and 10 – 14 years, with the next age band being 15 – 19 years thus data for fifteen and sixteen years olds has been excluded from the GP cluster patient registration analysis however it is disputed this would change the overall trend illustrated in Figure 15.

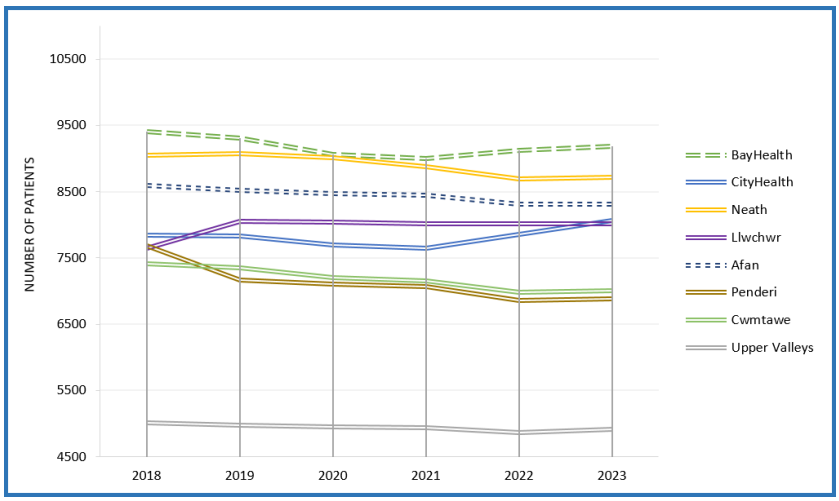

Figure 15. Patients aged 0 - 14 years registered with each GP cluster (Source: Adapted from Welsh Government, 2023)

5 Conclusion

In conclusion the research conducted demonstrates there has been a clear increase in the number of GP referrals received for children and young people to undergo a blood test, due to the lack of availability of

data it is difficult to identify why there is a sudden increase, estimate the costs associated with this diagnostic test and thus apply and evaluate the value- based healthcare equation to this element of patient care. The report clearly identifies the gap in availability of test result data, patient outcomes and costs associated with specific healthcare interventions. Targets and measures with NHS Wales are largely top-down driven focussing on referral to treatment (RTT) targets, which are of course of great importance in their own right.

The value-based healthcare model exemplifies elements that are important to patient and professional in equal measure: prudent, patient-centred, collaborative, and based on what matters most to the patient. However, if the focus for reforming the NHS is building care around the patient, what is important to them whilst reducing costs, harm and unnecessary variation, future research could be to create and evaluate an infrastructure that provides costings for every patient for each component of their pathway alongside their desired and achieved outcome.

Based on the time-driven activity-based costing model used and on the estimated costings available within the timeframe of this research project, Table 5 shows the annual increased cost to the Health Board in 2023 when compared with 2018. It is important to note the costs used are those outlined in this paper although it is acknowledged the cost of consumables and staff costs would have differed in 2018.

Table 5. Cost burden to the Health Board (estimated)

	Number of Primary care paediatric blood tests	**Annual cost £ (based on £22.12 per test)**
2018/19	534	£11, 812.08
2022/23	4061	£89, 829.32
An increase of £78, 017.24 per year		

6 Key Recommendations

The key aspects explored have been the reasons behind the increase in demand in blood test referrals, the inability to manage the inward flow of those referrals and the question of what value these invasive, diagnostic tests have regarding patient outcomes specifically when measured against the cost of the tests. This has proved challenging on several levels.

Considering the available capacity for paediatric blood testing and increasing it is as much as possible to reduce the anxiety associated with the long waiting times should be the first factor examined. Working in collaboration with laboratory medicine colleagues to further increase the capacity in this area specifically focusing on initiatives that can meet the needs of secondary care patients attending outpatient clinic, based on the feedback received from survey participants (Appendix E, p. 55), as well as meeting the demand of primary care referrals.

The relationship between the referrer and the provider could be further developed, with strong links established leading to mutual understanding and joint learning between primary and secondary care colleagues. Based on the findings of the report published by Timmins and Ham (2013) around the work undertaken in New Zealand) the Organisation could consider working alongside primary care colleagues to develop and implementing an evidence-based programme, providing guidance around when paediatric blood tests should be requested using real-life examples of where the diagnostic tests could have been avoided. Ideally this programme would be delivered by primary care colleagues.

A live, interactive data repository capable of capturing per patient, per visit costings could influence Clinician behaviours. For example, a recent examination of prescribing practices within one sub-specialty highlighted where one Clinicians preferred choice of medication to treat a condition created undesirable side-effects for their patients. The outcome was the same or equal to other patients treated for the same condition by other Clinicians however, the cost and one could argue the harm due to the side-effects was greater due to the secondary prescribing required to treat the side effects. This was only discovered following close financial scrutiny. Had patient-related data been readily available at an earlier conjuncture unnecessary variation, potential harm and increased costs could have been avoided. The situation described is in keeping with ethos and principles outlined within this paper such as value-based healthcare and the four pillars as cited by the European commission alongside prudent healthcare.

Limitations of this research has been the unavailability and accessibility of the blood test results and whether the results added value to the patient outcome by identification of suitable treatment resulting in timely intervention and/or admission avoidance. This is an area where considerable work is required, this can only

be achieved by implementing a fully integrated patient health record that encompasses the details of care episodes across, primary, secondary, community healthcare settings including diagnostics (Kings Fund, 2013). It is equally important to note the timing of the study, which was over the summer months, which possibly reduced the availability of participants for the survey.

This case study was unable to establish a clear reason for the increased demand in paediatric blood tests; data demonstrates there has been no downward trend in hospital admission rates to hypothesise admission avoidance being the reason. Likewise, the number of children and young people have not seen any dramatic rise per GP practice causing the increased demand. Whilst some conjecture for possible reasons for increased diagnostic testing exists within literature, such as fear of litigation, patient or in this case possibly parental expectation for example, it is recommended further research concentrates on the drivers in this area.

A foundational element enabling the convergence of the key points that underpin all of theories and initiatives outlined within this paper is the ability to be able to measure the outcome of every interaction with health (technical value), ensuring these outcomes meet the

needs and desires of patients (personal value) balanced with the need to ensure equitable access and treatment for all (allocative value).

It can be argued that the development of age-specific PROMS for children and young people is an essential requirement to be able to measure underachievement in these areas; of equal importance is the need to promote the ethos of value-based healthcare. The Organisation is uniquely placed to be able to make great ground in this area with the launch of the value-based healthcare eLearning package. Primary research has shown whilst many participants understood value-based healthcare, none of those participants were aware of the eLearning package. It is recommended that the profile of the eLearning package is raised by the Health Board to promote the consideration of value across all four pillars of value-based healthcare with the aim it becomes second nature for every patient interaction with health.

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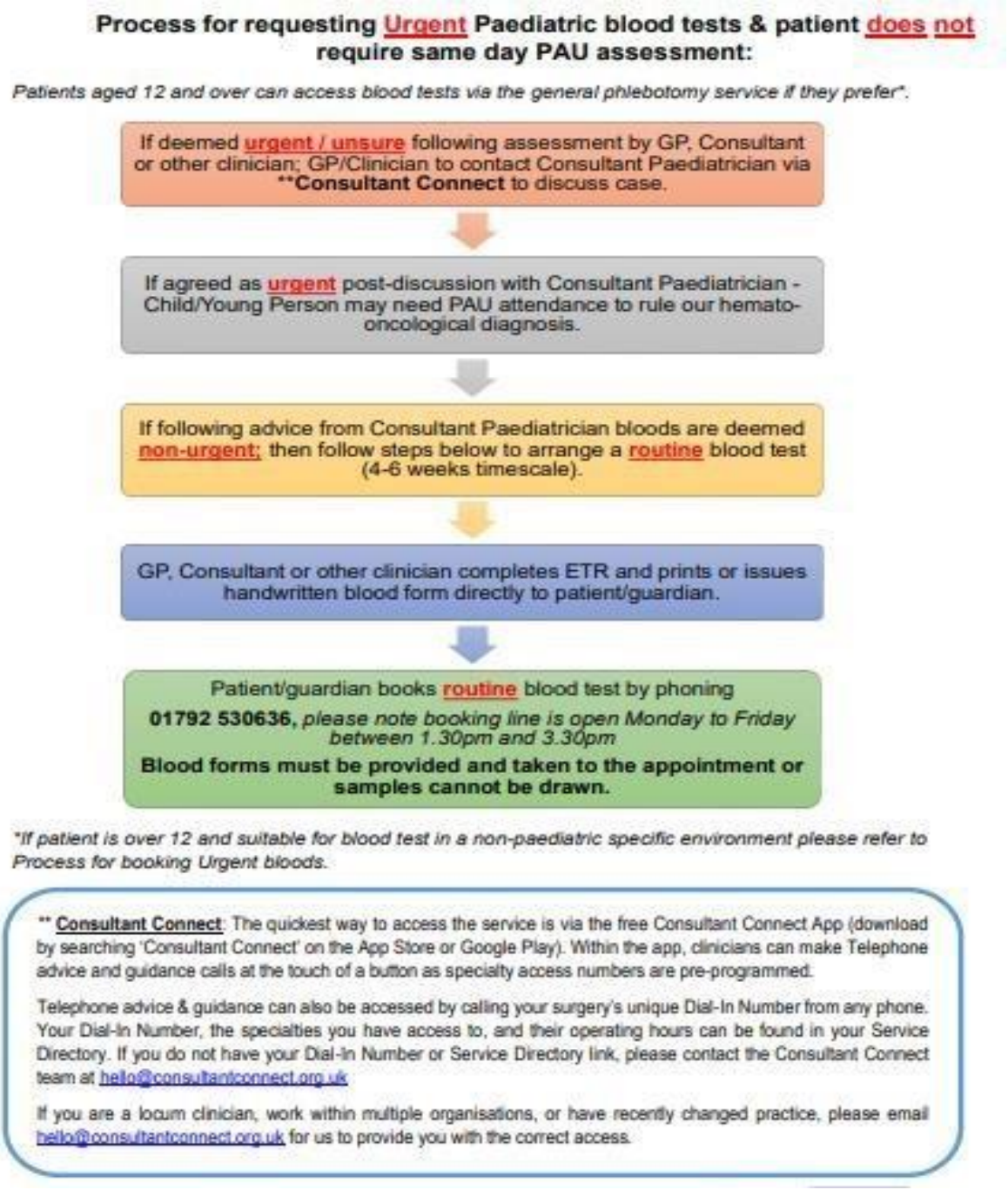
8 Appendix A: Triage Process for Urgent Paediatric Phlebotomy Referrals



9 Appendix B: Choosing Wisely Patient Leaflet

It can be daunting having an appointment, but this leaflet will help you to get the most out of yours.

Sometimes there is more than one treatment available.

Here are four questions you might want to think about at your appointment.

What are the Benefits?
What are the Risks?
What are the Alternatives?
What if I do Nothing?

If you choose not to have treatment now, it does not mean you cannot change your mind at a later stage. We know circumstances and conditions change.

You can talk with your healthcare professional about how to seek support later if you decide to do nothing now.

You may want to talk over all your options with family or friends. It's also helpful to think about what affect these options will have on you and your lifestyle.

If there is anything you are unsure about, please ask.

Please use this as a reminder to ask questions about treatment.

Make the most of your appointment using the BRAN questions:

What are the Benefits?
What are the Risks?
What are the Alternatives?
What if I do Nothing?

ChoosingWisely UK

NHS

Make the most of your appointment

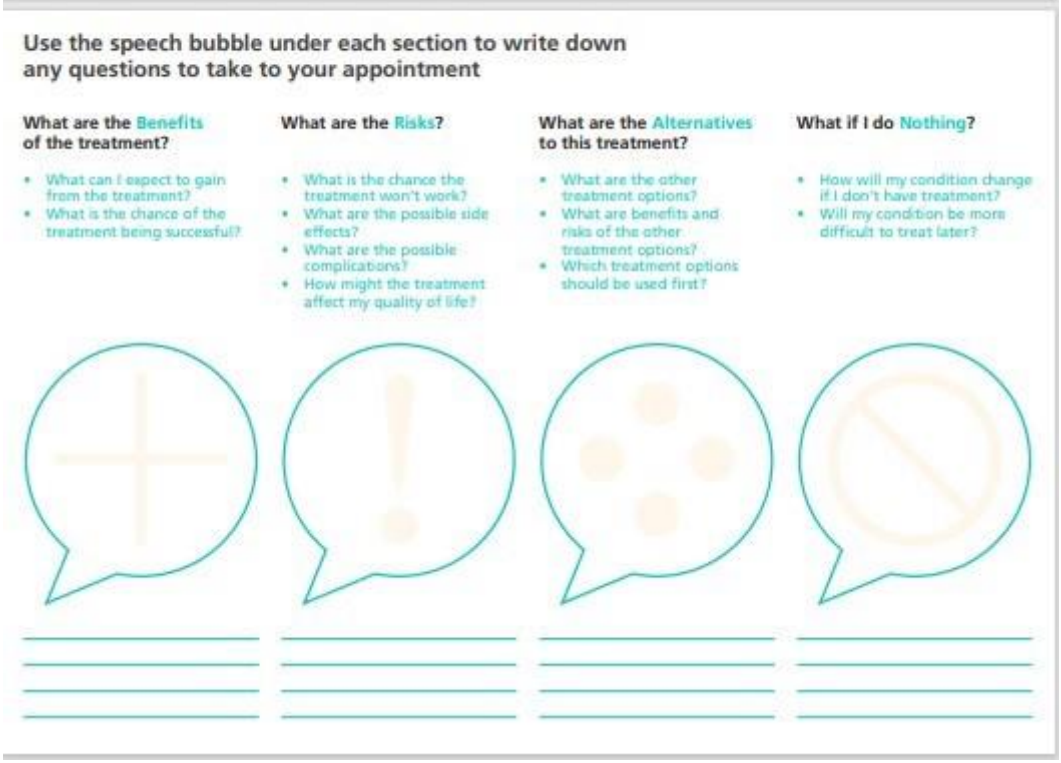
Helping you make the right choice using BRAN.

Benefits

Risks

Alternatives

Nothing



Use the speech bubble under each section to write down any questions to take to your appointment

What are the Benefits of the treatment?

- What can I expect to gain from the treatment?
- What is the chance of the treatment being successful?

What are the Risks?

- What is the chance the treatment won't work?
- What are the possible side effects?
- What are the possible complications?
- How might the treatment affect my quality of life?

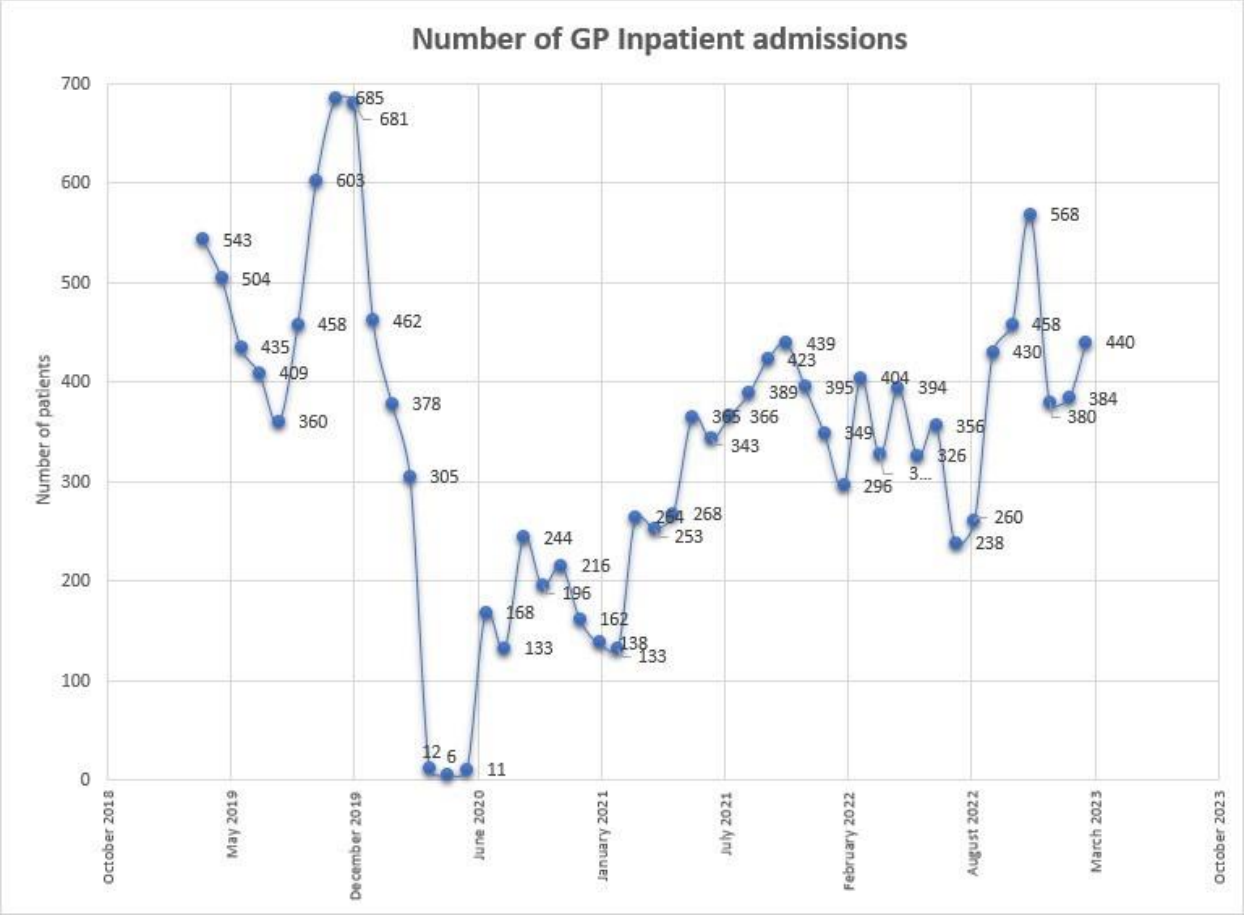
What are the Alternatives to this treatment?

- What are the other treatment options?
- What are benefits and risks of the other treatment options?
- Which treatment options should be used first?

What if I do Nothing?

- How will my condition change if I don't have treatment?
- Will my condition be more difficult to treat later?

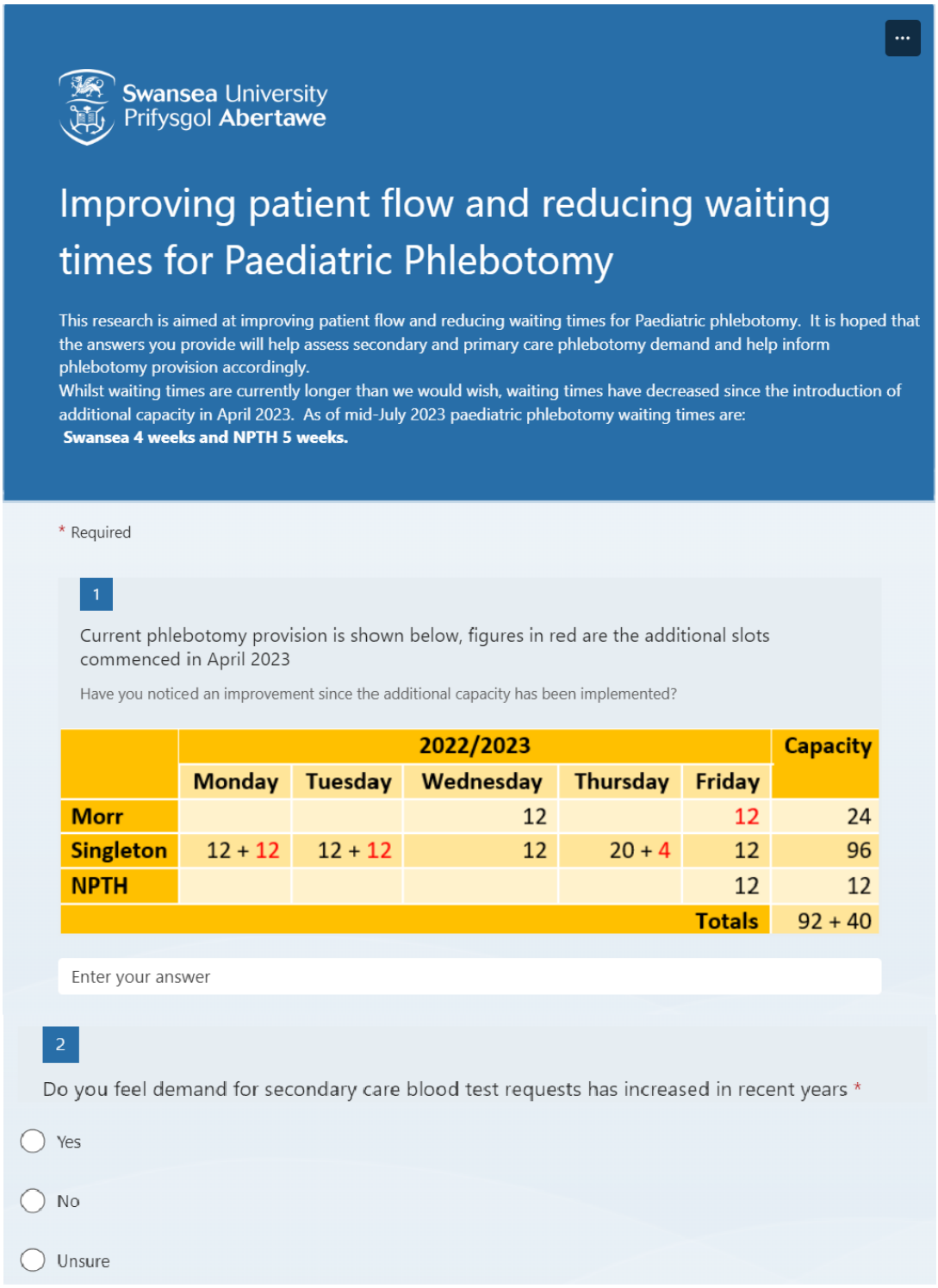
10 Appendix C: GP Inpatient Admissions April 2019 – March 2023



11 Appendix D: Breakdown of patients registered with GP Clusters aged 0 – 14 years.

	2018	2019	2020	2021	2022	2023
BayHealth	9409	9305	9060	8999	9119	9186
CityHealth	7845	7828	7691	7651	7852	8059
Neath	9049	9070	9011	8882	8694	8722
Llwchwr	7652	8054	8046	8016	8015	8011
Afan	8590	8518	8473	8445	8306	8316
Penderi	7679	7165	7104	7067	6855	6879
Cwmtawe	7416	7353	7206	7150	6985	7000
Upper Valleys	5010	4978	4954	4933	4866	4910

12 Appendix E: Primary research survey blank



Swansea University
Prifysgol Abertawe

Improving patient flow and reducing waiting times for Paediatric Phlebotomy

This research is aimed at improving patient flow and reducing waiting times for Paediatric phlebotomy. It is hoped that the answers you provide will help assess secondary and primary care phlebotomy demand and help inform phlebotomy provision accordingly.
Whilst waiting times are currently longer than we would wish, waiting times have decreased since the introduction of additional capacity in April 2023. As of mid-July 2023 paediatric phlebotomy waiting times are:
Swansea 4 weeks and NPTH 5 weeks.

* Required

1

Current phlebotomy provision is shown below, figures in red are the additional slots commenced in April 2023

Have you noticed an improvement since the additional capacity has been implemented?

	2022/2023					Capacity
	Monday	Tuesday	Wednesday	Thursday	Friday	
Morr			12		12	24
Singleton	12 + 12	12 + 12	12	20 + 4	12	96
NPTH					12	12
					Totals	92 + 40

Enter your answer

2

Do you feel demand for secondary care blood test requests has increased in recent years *

- Yes
- No
- Unsure

3

If you answered yes, what in your opinion could be the cause for the increased number of blood test requests?

Enter your answer

4

On a scale of 1 to 5 please rate the availability of phlebotomy slots for your patients - 1 = well below requirement, 5 = meeting demand (skip this question if not applicable to your role)

1	2	3	4	5

5

Do you think the introduction of an online electronic booking system for secondary care patients would be beneficial

- Yes
- No

6

How likely do you feel having designated primary care only phlebotomy clinics would improve the availability for secondary care blood requests

0	1	2	3	4	5	6	7	8	9	10

Not at all likely — Extremely likely

7

Please identify one outpatient clinic where a high percentage of patients you see in clinic are likely to require a blood test (please select all that apply) *please skip this question if not relevant to your role*

	Monday	Tuesday	Wednesday	Thursday	Friday
Singleton OPD	○	○	○	○	○
Neath Port Talbot OPD	○	○	○	○	○
Morriston OPD	○	○	○	○	○
SA1	○	○	○	○	○
Hafan Y Mor Childrens Centre	○	○	○	○	○

8

Please identify a second outpatient clinic where a high percentage of patients you see in clinic are likely to require a blood test (please select all that apply) *please skip this question if not relevant to your role*

	Monday	Tuesday	Wednesday	Thursday	Friday
Singleton OPD	○	○	○	○	○
Neath Port Talbot OPD	○	○	○	○	○
Morriston OPD	○	○	○	○	○
SA1	○	○	○	○	○
Hafan Y Mor Childrens Centre	○	○	○	○	○
Neath Port Talbot Childrens Centre	○	○	○	○	○

9

Please provide your profession/job title

Enter your answer

Value Based Healthcare

10

Have you heard of Value Based Health Care (VBHC)

- Yes
- No

11

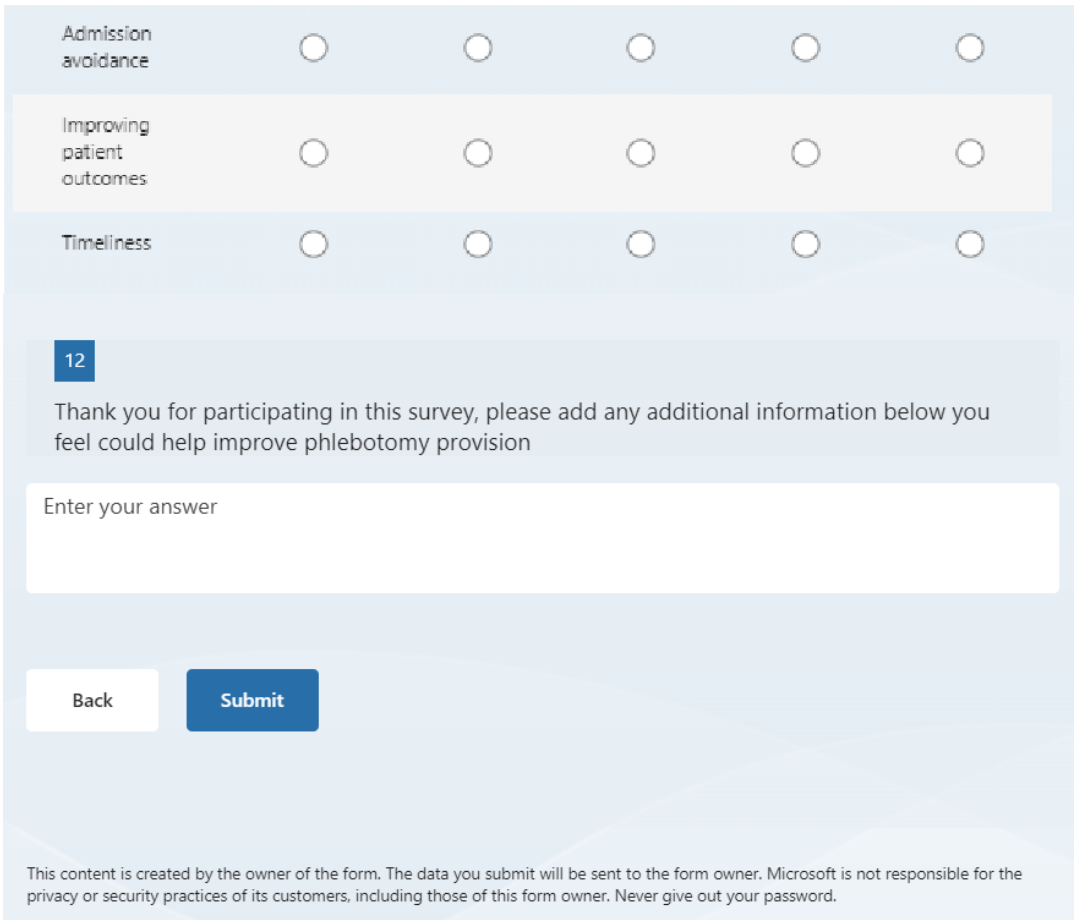
Are you aware that Swansea Bay UHB have a Value Based Health Care eLearning package?

- Yes
- No

11

In your opinion how could an improved patient flow for paediatric phlebotomy add value to a patient's care

	No value	A little value	Unsure	Moderate Value	Significant Value
Early detection					
Establishing an accurate diagnosis					
Selecting the right treatment					
Avoiding delays in treatment					
Clinical efficacy and effectiveness					


Admission avoidance
Improving patient outcomes
Timeliness
12
Thank you for participating in this survey, please add any additional information below you feel could help improve phlebotomy provision
Enter your answer
Back
Submit
This content is created by the owner of the form. The data you submit will be sent to the form owner. Microsoft is not responsible for the privacy or security practices of its customers, including those of this form owner. Never give out your password.

13 Appendix F: Primary research survey responses

1. Current phlebotomy provision is shown below, figures in red are the additional slots commenced in April 2023

More Details Insights

15
Responses

Latest Responses
"yes"
"yes"

5 respondents (**33**%) answered **yes** for this question.

2. Do you feel demand for secondary care blood test requests has increased in recent years

More Details

Yes	11
No	1
Unsure	5

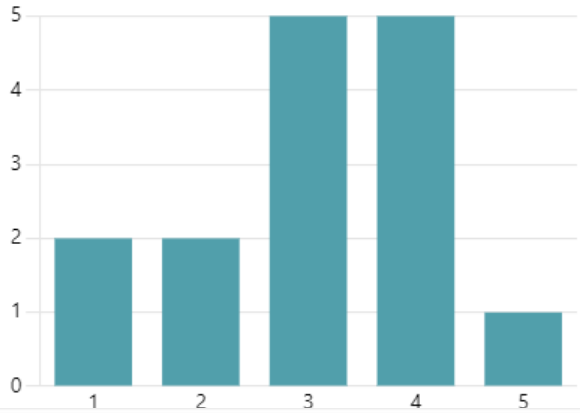
3. If you answered yes, what in your opinion could be the cause for the increased number of blood test requests?

5 respondents (**50**%) answered **patients** for this question.

4. On a scale of 1 to 5 please rate the availability of phlebotomy slots for your patients - 1 = well below requirement, 5 = meeting demand (skip this question if not applicable to your role)

More Details Insights

3.07
Average Rating



5. Do you think the introduction of an online electronic booking system for secondary care patients would be beneficial

More Details

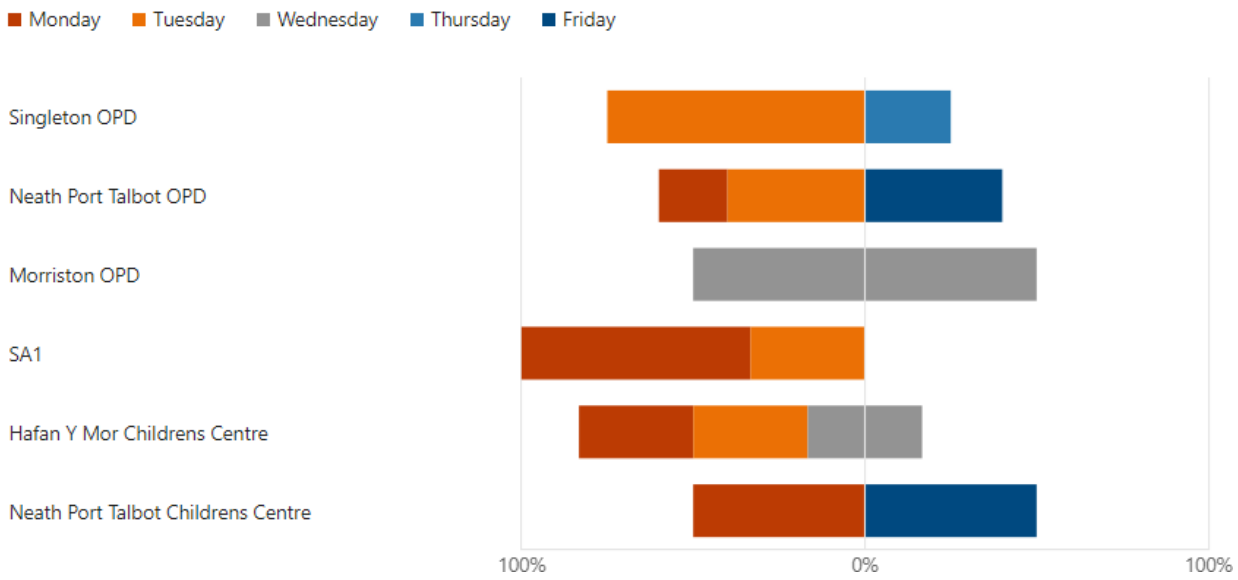
6. How likely do you feel having designated primary care only phlebotomy clinics would improve the availability for secondary care blood requests

More Details

Promoters	4
Passives	5
Detractors	8

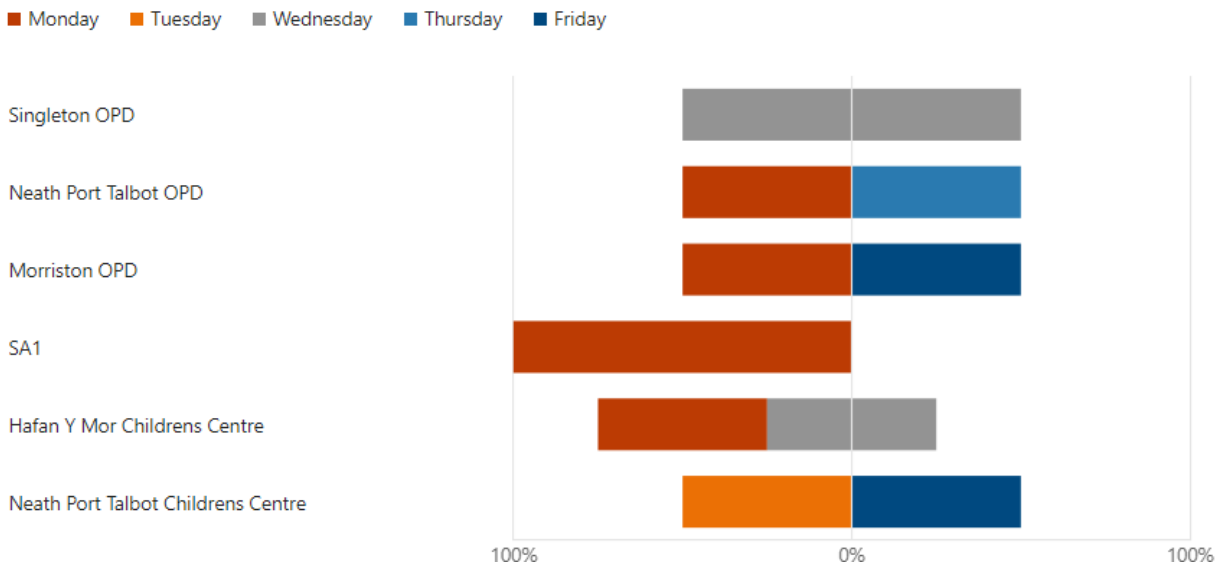
7. Please identify one outpatient clinic where a high percentage of patients you see in clinic are likely to require a blood test (please select all that apply) *please skip this question if not relevant to your role*

More Details



8. Please identify a second outpatient clinic where a high percentage of patients you see in clinic are likely to require a blood test (please select all that apply) *please skip this question if not relevant to your role*

More Details



9. Please provide your profession/job title

More Details Insights

17
Responses

Latest Responses
"Consultant Paediatrician"
"paediatric consultant"
"Speciality doctor community paediatrics"

3 respondents (**18**%) answered **Community** for this question.

10. Have you heard of Value Based Health Care (VBHC)

More Details

Yes	9
No	8

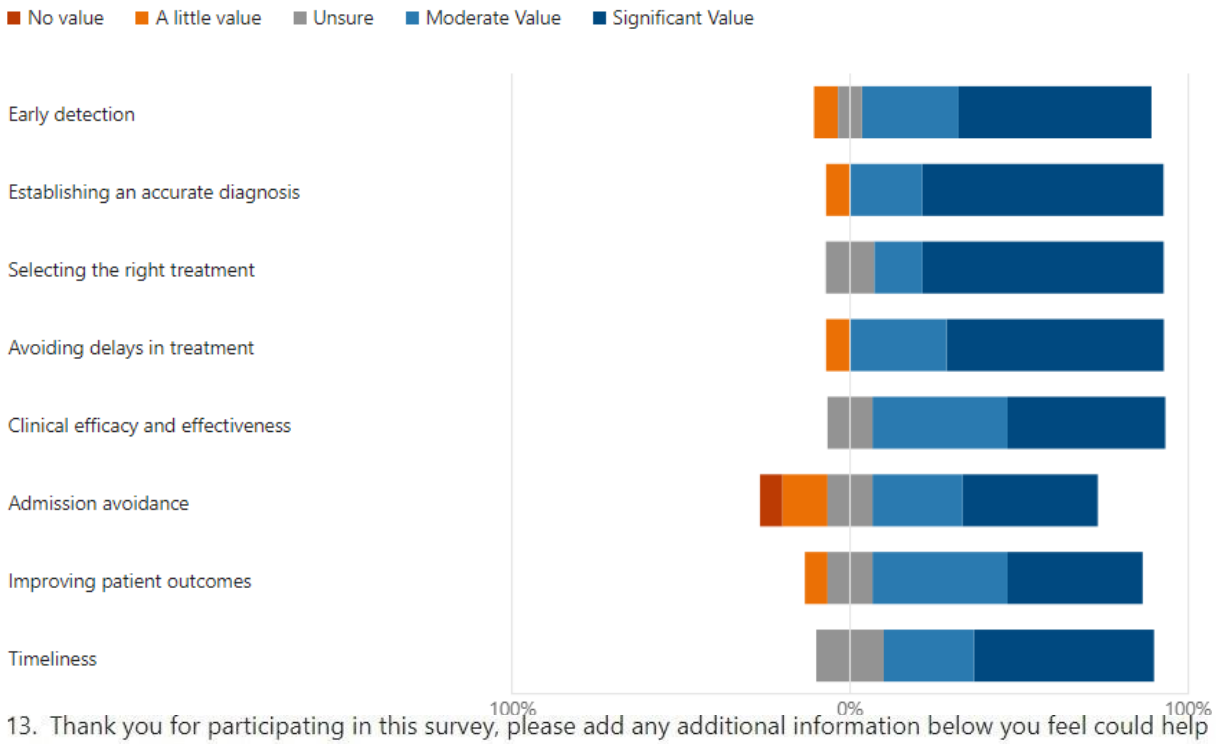
11. Are you aware that Swansea Bay UHB have a Value Based Health Care eLearning package?

More Details Insights

Yes	0
No	8

12. In your opinion how could an improved patient flow for paediatric phlebotomy add value to a patient's care

More Details



13. Thank you for participating in this survey, please add any additional information below you feel could help improve phlebotomy provision

More Details Insights

6
Responses

Latest Responses

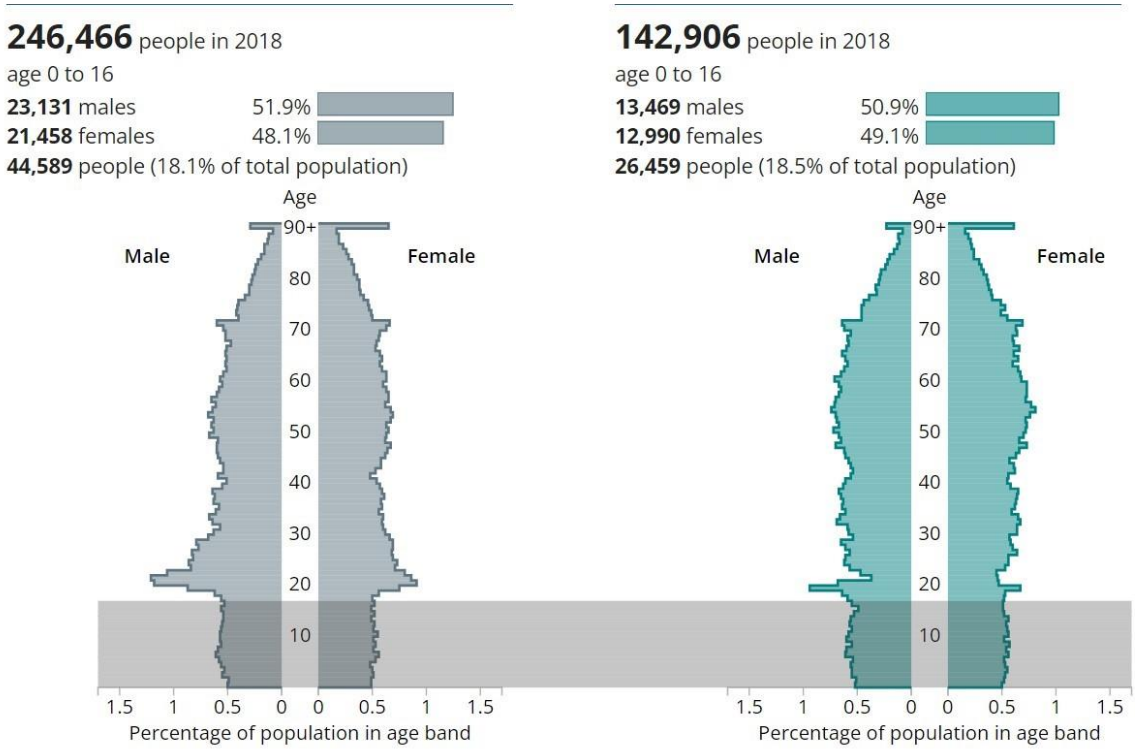
"online blood forms to avoid having to print and store in folder in hafan y m...

...

2 respondents (**33**%) answered **clinics** for this question.

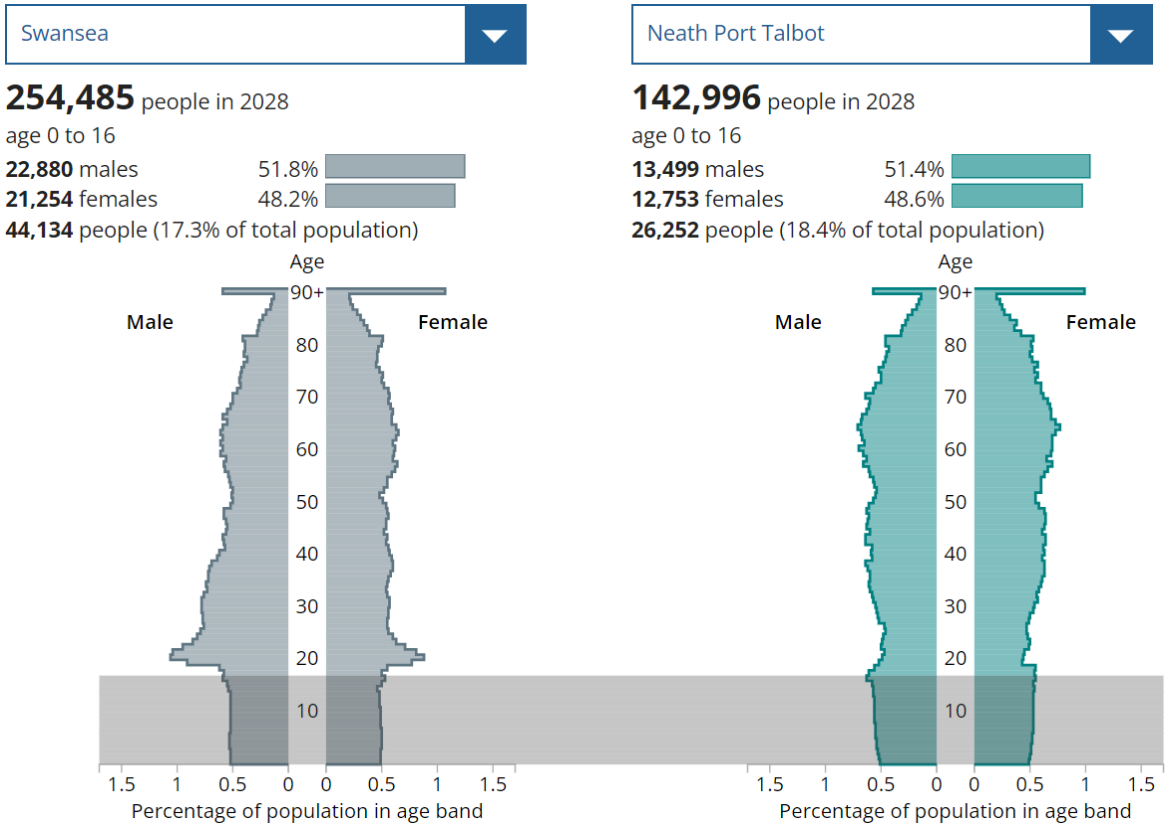
14 Appendix G: UK Population Pyramid – 2018

Source: (Office for National Statistics, n.d.)



15 Appendix H: UK Population Pyramid – 2028

Source: (Office for National Statistics, n.d.)



16 Appendix I:

Privacy Notice

Approval Date: 03/08/2023

Swansea University
Prifysgol Abertawe

Research Ethics Approval Number: 1 2023 6906 6348

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Review of the volume and results of Paediatric blood test requests, methods to increase their value and improve patient experience during Paediatric blood tests.

Applicant name	MISS SUE KOTRZUBA
Submitted by	MISS SUE KOTRZUBA /

Full application form: https://swansea.forms.ethicalreviewmanager.com/Project/Index/8631

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies, and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.
4. Specific conditions in respect of this application:

   The application has been classified as Low Risk to the University.

   No additional conditions.

16.1 Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

Humanities and Social Sciences Research and Ethics Chair Swansea University.

If you have any queries regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

17 Appendix J: Participant Information Sheet

PARTICIPANT INFORMATION SHEET

To increase value, sustainability and patient flow within paediatric phlebotomy provision

You are being invited to take part in some research. Before you decide whether or not to participate, it is important for you to understand why the research is being conducted and what it will involve. Please read the following information carefully.

17.1 What is the purpose of the research?

We are conducting research to explore how we can improve the patient flow for paediatric phlebotomy within outpatient departments for patients attending secondary care outpatient appointments and meet the demand for primary care paediatric phlebotomy requests thus increasing the value and sustainability of the provision. The study is part of an MSc in Advanced Health & Care Management for Value Based HealthCare (VBHC). The research will include undertaking Qualitative Research with Consultant Paediatricians, Service Managers and Nursing colleagues from Swansea Bay UHB testing a Hypothesis generated from extant literature. Sue Kotrzuba will collate the questionnaire results and conduct the evaluation. The results will be published to support further development in this important field. Your participation in this study will take approximately ***15 minutes***.

17.2 Who is carrying out the research?

The data will be collected by Sue Kotrzuba, MSc Student at Swansea Universities School of Management. Sue can be contacted at [redacted]swansea.ac.uk. The research has been approved by the School of Management Research Ethics Committee.

17.3 What happens if I agree to take part?

By agreeing to take part you will be asked a series question from a validated qualitative questionnaire to understand how an improvement to patient flow for both secondary and primary phlebotomy can be implemented to ensure increased value and service sustainability. The approach will seek to gain insight into the challenges and the barriers facing Swansea Bay UHB in delivering the paediatric phlebotomy service provision.

17.4 Are there any risks associated with taking part?

The research has been approved by the Swansea University School of Management Research Ethics Committee. There are no significant risks associated with participation.

17.5 Data Protection and Confidentiality

Your data will be processed in accordance with the Data Protection Act 2018 and the General Data Protection Regulation (GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher/research team.

All electronic data will be stored on a password-protected computer file on a laptop. All paper records will be stored in a locked filing cabinet at the School of Management.

Your consent information will be kept separate from your responses to minimise risk in the event of a data breach.

Please note the data we will collect for our study using a voice recording device and will be made anonymous, following a 24hr settling period. Thus, it will not be possible to identify and remove your data later, should you decide to withdraw from the study. Therefore, if at the end of this research you decide to have your data withdrawn, please let us know before you leave, or within 24hr of conducting the research questionnaire.

Should you wish for your data to be destroyed prior to anonymisation during the 24hr settling period- please contact the researcher by email at 2135174@swansea.ac.uk.

17.6 What will happen to the information I provide?

An analysis of the information will form part of our report at the end of the study and may be presented to interested parties and published in scientific journals and related media. *Note that all information presented in any reports or publications will be anonymous and unidentifiable*.

17.7 Is participation voluntary and what if I wish to later withdraw?

Your participation is entirely voluntary – you do not have to participate if you do not want to. If you decide to participate, but later wish to withdraw from the study, then you are free to withdraw at any time, without giving a reason and without penalty.

17.8 Data Protection Privacy Notice

The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data and can be contacted at the Vice Chancellors Office.

Your personal data will be processed for the purposes outlined in this information sheet.

Standard ethical procedures will involve you providing your consent to participate in this study by completing the consent form that has been provided to you.

The legal basis that we will rely on to process your personal data will be processing is necessary for the performance of a task carried out in the public interest. This public interest justification is approved by the College of Human and Health Sciences Research Ethics Committee, Swansea University.

The legal basis that we will rely on to process special categories of data will be processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.

17.9 How long will your information be held?

We will hold any personal data and special categories of data for no longer than is necessary for the purposes stated above.

17.10 Automated decision making and profiling [only required if applicable]

No automated decision making, or profiling will be used for this study.

17.11 What are your rights?

You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights.

Any requests or objections should be made in writing to the University Data Protection Officer:

University Compliance Officer (FOI/DP) Vice-Chancellor's Office

Swansea University Singleton Park Swansea

SA2 8PP

Email: dataprotection@swansea.ac.uk

17.12 How to make a complaint

If you are unhappy with the way in which your personal data has been processed, you may in the first instance contact the University Data Protection Officer using the contact details above.

If you remain dissatisfied, then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at:

Information Commissioner's Office,

Wycliffe House,

Water Lane,

Wilmslow,

Cheshire, SK9 5AF

www.ico.org.uk

17.13 What if I have other questions?

If you have further questions about this study, please do not hesitate to contact us:

Sue Kotrzuba
School of Management
Swansea University
2135174@swansea.ac.uk

Alan Willson
School of Management
Swansea University
a.r.willson@Swansea.ac.uk

Can Accelerated Cluster Development Drive Primary Care collaboration? A Local Health Authority Perspective.

Laura Lloyd Davies
Cluster Development Manager
Hywel Dda University Health Board, UK
Email: laura.lloyddavies@wales.nhs.uk

Abstract:

Background: This research examines the impact of Accelerated Cluster Development (ACD) in Hywel Dda University Health Board (HDUHB) since its implementation in 2022. ACD, spearheaded by the Strategic Programme for Primary Care Team, aims to foster collaboratives focusing on population health needs assessment. This study employs qualitative research methods, including an anonymous questionnaire sent to various professional leads in HDUHB's primary care sector. The objectives are to assess the effects of ACD on collaboration among professional leads, evaluate their engagement with ACD, and explore its role in driving collaboration and cluster outcomes.

Findings: Findings indicate positive changes in collaboration dynamics among professional leads, with increased engagement and alignment with ACD objectives. However, there are variations across different healthcare professions, with optometry and dental leads reporting enhanced communication and networking opportunities, while some general practitioner leads express concerns about decreased influence. Despite overall support for collaboration, challenges such as resource constraints and differing levels of engagement persist. Reviewing key findings against existing literature reveals the importance of stakeholder management, organizational purpose, and collaboration mechanisms in driving successful outcomes. Stakeholder engagement remains crucial, with diverse interests and levels of engagement requiring careful navigation. Organizational support and clear communication are essential for successful implementation of collaborative initiatives like ACD.

Conclusions: Challenges identified in the literature, such as poor communication and lack of synergy, mirror barriers to collaboration highlighted in the study data. Recommendations include enhancing support for ACD implementation, addressing resource constraints, and widening participation in future research to include all primary care professionals and stakeholders. Moreover, comparisons across different health boards in Wales and longitudinal studies following the full implementation of new contracts are suggested to provide a comprehensive understanding of ACD's impact and inform future policy decisions. While ACD shows promise in driving collaboration and transforming cluster development, ongoing support and further research are needed to address challenges and ensure its successful integration into primary care systems in Wales.

Keywords: Cluster Development, Primary Care, Collaboration, Local Health Authority. Accelerated Cluster Development, Stakeholder Management, Qualitative Research, Implementation

Table of Contents

1 Introduction

This study will look at the impact following the implementation of Accelerated Cluster Development in Hywel Dda University Health Board (HDUHB) in 2022.

Accelerated Cluster Development has been led by the Strategic Programme for Primary Care Team and links to Regional Partnership Boards. It aims to create collaboratives to have a focus on a population health needs assessment.

Accelerated Cluster Development supports the formation of professional collaborative networks which will:

- Identify the specific needs of the population presented to them.
- Respond to National strategic intent which is profession specific.
- Identify and measure a range of quality indicators (based on outcomes).
- Work collaboratively with other professional groups to improve services.
- Respond to uni-professional funding agreements.

This includes undertaking Qualitative Research with the Professional Collaborative Leads and Cluster Leads in HDUHB's Primary Care. An anonymous qualitative questionnaire was electronically sent to the seven Cluster Leads, five Community Pharmacy Leads, five Optom Leads, seven GP Leads and the one Dental Lead.

The aim will be to ascertain the impact Accelerated Cluster Development has had on the Professional Collaborative and Cluster Leads' priorities and engagement with peers and Cluster members.

The studies objectives are:

- To assess the effects of Accelerated Cluster Development on Professional Collaborative and Cluster Leads collaboration with agreed Cluster priorities.
- To evaluate Collaborative and Cluster Leads' engagement with Accelerated Cluster Development.
- To explore if Accelerated Cluster Development has been a vehicle of change for Professional collaboration and Cluster outcomes.

The report will provide the background to Cluster development in Wales and document a timeline establishing the Government policy which has driven the Primary Care Model that has resulted in the introduction of ACD. A literature review will explore the connections with the themes, namely organisational change processes and collaboration mechanisms in organisations and with professional peers and in Primary Care. Chapter three will contain the main body of evidence and analysis of the data collected and will attempt to answer the main research question and ensure the three objectives listed above are assessed. To conclude, this report will end with recommendations to support with future Cluster developments and progression in Wales.

2 Identification of Project Requirements

2.1 Cluster Development

The current contractual arrangement and working arrangements for Primary Care contractors and Cluster working in Wales is very much designed and delivered by Welsh Government. The Welsh Government launched a strategic delivery programme in February 2010 specifically for Community and Primary Care Services. The strategy, called 'Setting the Direction' provided a guide to new ways of locality working and was the first time all Local Health Boards (LHBs) in Wales were required to work collaboratively with numerous stakeholders. At this time the newly formed clusters were very much a GP network and by summer 2011 the new Quality and Outcome Framework (QOF) ensured that engagement was a contractual obligation with significant financial and business implications for General Practice.

In 2018, the emerging model was adopted by the Strategic Programme for Primary Care (SPPC) as the Primary Care Model for Wales (PCMW). SPPC's purpose is to respond to *A Healthier Wales* via six key work streams; Prevention and Wellbeing, 24/7 Model, Data and Digital Technology, Workforce and

Organisational Development, Communication and Engagement and Transformation and the Vision for the Clusters (see Appendix A – What is the Strategic Programme for Primary Care (SPPC)?).

The *A Healthier Wales* introduction plan outlines, "We will need broader and deeper partnerships, new skills and ways of working and we will need people to take more responsibility for their own health and wellbeing" (A Healthier Wales: our Plan for Health and Social Care).

PCMW describes how care will be delivered in Wales, locally and both now and in the future, while delivering *A Healthier Wales.* The thirteen outcomes are directly linked to ACD and the role of Clusters and act as a system to establish Cluster maturity. The thirteen outcomes are presented below in Figure 1.

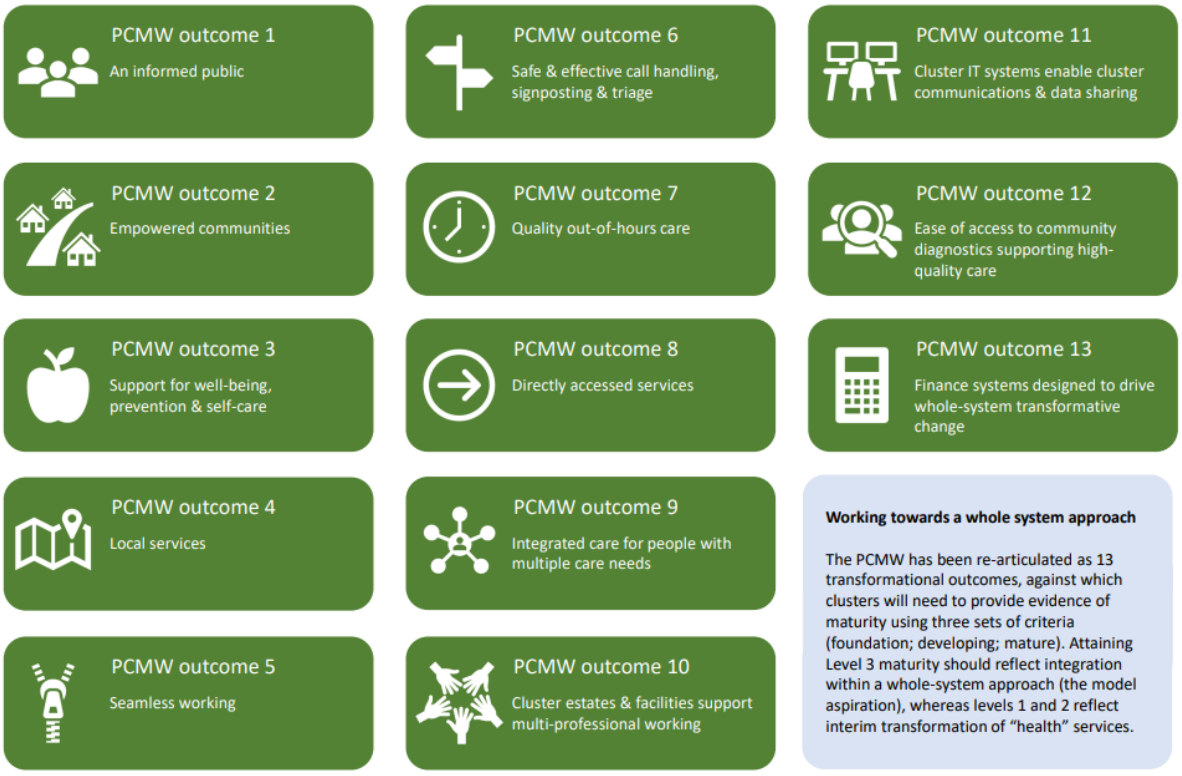


Figure 1. Primary Care Model for Wales Thirteen Transformational Outcomes (Source: Primary Care Model for Wales Thirteen Transformational Outcomes)

Following a series of delays, including the COVID-19 pandemic, the ACD approach was agreed in September 2021 with the overarching aim to meet local population health needs (Monitoring and evaluation plan: overview; SPPC). To progress, there are seven reported outcomes identified for ACD:

1. Enhanced integrated planning between clusters, health boards and local authorities.
2. Wider range of services delivered across a cluster, meeting population priorities and need, closer to home.
3. More effective leaders across the primary care system, collaboratives, and clusters.

4. Improved equity of cluster care service provision based upon local need.
5. Improved multi-professional and multi-agency services delivered.
6. Effective, efficient, and long-term sustainable cluster workforce and services.
7. Empowered clusters with increased autonomy, flexibility, and vision.

ACD was adopted by all seven Health Boards in Wales in Spring 2022 and work commenced locally to introduce the required changes. Adoption and implementation were different in each Health Board, dependent on their current position and engagement but all worked with SPPC colleagues, mapping progress against the SPPC Accelerated Cluster Development Readiness Checklist Self-Assessment (please see Appendix B).

2.2 Where we are now

The introduction of ACD in Primary Care and Health Boards throughout Wales witnessed a shift in engagement and collaboration at Cluster. At the strategic level ACD aims to provide a clear line of sight from the Regional Partnership Boards (RPBs) to the Professional Collaboratives. RPBs, established as part of the Social Services and Wellbeing Act (Social Services and Well-being (Wales) Act 2014 [SSWWA]) lead and plan strategically while developing partnership working. The intention is for the RPBs to sit over the Clusters and Professional Collaboratives and filter down the priorities and local population health needs (Accelerated Cluster Development: The role of Professional Collaboratives, SPPC).

The below image (Figure 2) demonstrates the proposed flow of interaction and communication:

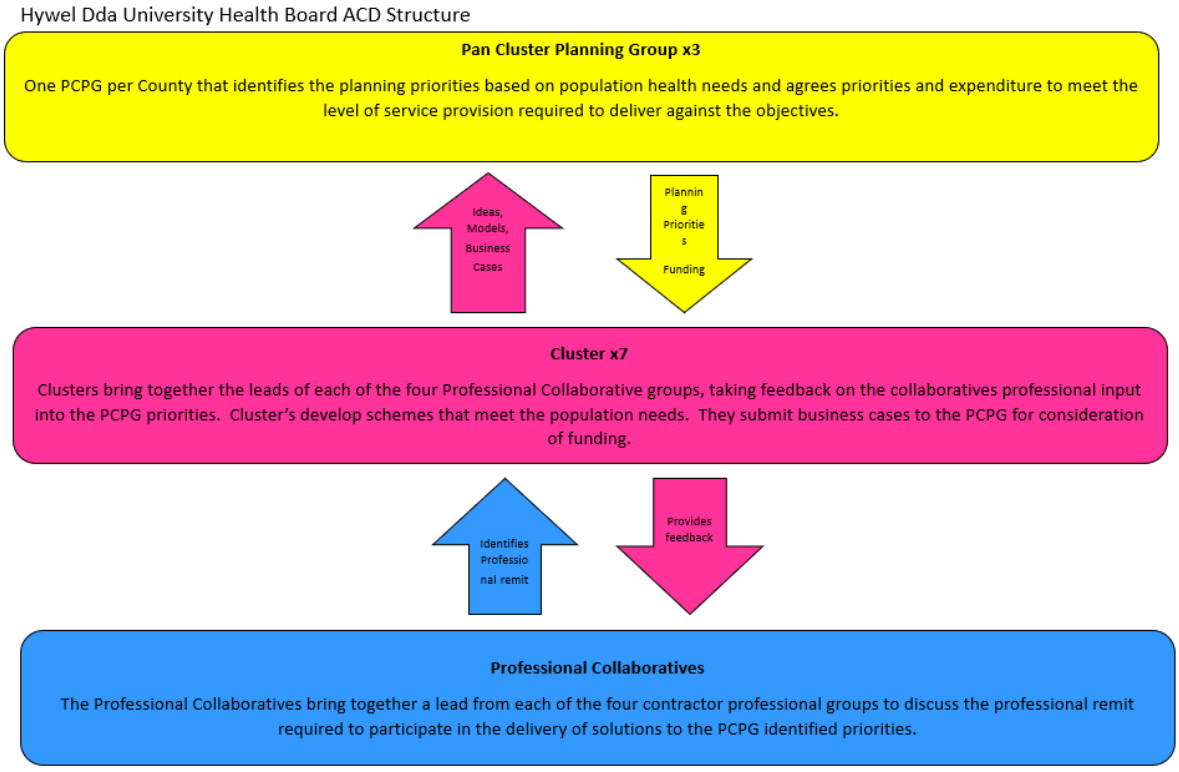


Figure 2. ACD Structure in Hywel Dda University Health Board (Source: Author's Own)

Professional Collaboratives are in the process of being established and these now include a GMS Professional Collaborative, Pharmacy Professional Collaborative, Optometry Professional Collaborative and Dental Professional Collaborative. Each Professional Collaborative will have a Lead and these individuals will now form the core membership of the Cluster. For the first time, engagement in these Collaboratives and therefore Cluster is part of the Primary Care professional contractual agreement. Further Professional Collaboratives can include Mental Health, Social Care, Nursing, Allied Healthcare, Therapies and Health Sciences. The aim is that Professional Collaboratives engage with their peers and utilise their local and expert knowledge for the population health, to develop new services and identify gaps, to

encourage local workforce to support with development and sustainability and to improve quality and safety for both the health care professionals and the patient.

HDUHB has seven mature Clusters and Table 1 below documents the status of each locality, including the Cluster and the associated Professional Collaborative:

Table 1. Hywel Dda University Health Board ACD Membership (Source: Author's Own)

Cluster	GMS Professional Collaborative	Pharmacy Professional Collaborative	Optometry Professional Collaborative	Dental Professional Collaborative
Amman Gwendraeth Cluster **Cluster Lead in place**	Established Lead in place (also current Cluster Lead)	Established Lead in place	Established Lead in place	Not established No Lead appointed
Llanelli Cluster **Cluster Lead in place**	Established Lead in place	Established Lead in place	Established Lead in place	Not established No Lead appointed
Tywi/Taf Cluster **Cluster Lead in place**	Established Lead in place (also current Cluster Lead)	Established Lead in place	Established No lead appointed	Not established No Lead appointed
South Pembrokeshire Cluster **Cluster Lead in place**	Established Lead in place (also current Cluster Lead)	Established Lead in place	Established Lead in place	In progress Lead in place
North Pembrokeshire Cluster **Cluster Lead in place**	Established Lead in place (also current Cluster Lead)	Established No lead appointed	Established Lead in place	In progress Lead in place
South Ceredigion Cluster **Cluster Lead in place**	Established Lead in place (also current Cluster Lead)	Established Lead in place	Established Lead in place	Not established No Lead appointed
North Ceredigion Cluster **Cluster Lead in place**	Established Lead in place (also current Cluster Lead)	Established Lead in place	Established Lead in place	Not established No Lead appointed

3 Main Analysis

3.1 Introduction

This research sets out to examine collaboration and engagement in the Collaborations and Clusters in HDUHB. This chapter will discuss the process of analysis in 3.1, report the main findings in section 3.2, followed by a review of the evidence against the literature in section 3.3. Section 3.4 will contain an evaluation of the limitations, followed by a conclusion in section 3.5.

3.2 Process of Analysis

Section 3.1 will present the research design and research methods that were used to address the research questions set out above in Chapter 1. The details of the case study approach, ethical considerations and the limitations of the research methods used will also be considered and explained.

Utilising the 'research onion' developed by Saunders *et al* in 2007, the research methodology for this study can be clearly defined in the following six stages; research philosophy, research approach, research strategy, choices, time horizon and techniques and procedures (please see Figure 5 below). The research philosophy is interpretive as this will enable the socio and cultural factors at play to be considered and will allow people's thoughts and opinions to be taken into consideration. In this study the Leads' background, profession, time spent in the role will have an impact on the answers provided. The research approach therefore will be inductive to allow the theory to develop and mature from the research and collected with qualitative data. The research study will be a case study, looking especially at one group of healthcare professionals. There will be one type of data collected, qualitative data, making the choice the mono method and will be cross-sectional time horizon. The data will be collected via an online survey from the HDUHB Cluster and Collaborative Leads and data analysed.

Following Saunders' 'research onion' in this way has ensured that all layers are aligned, and that the methodology utilised in this study is the most suitable for the research question.

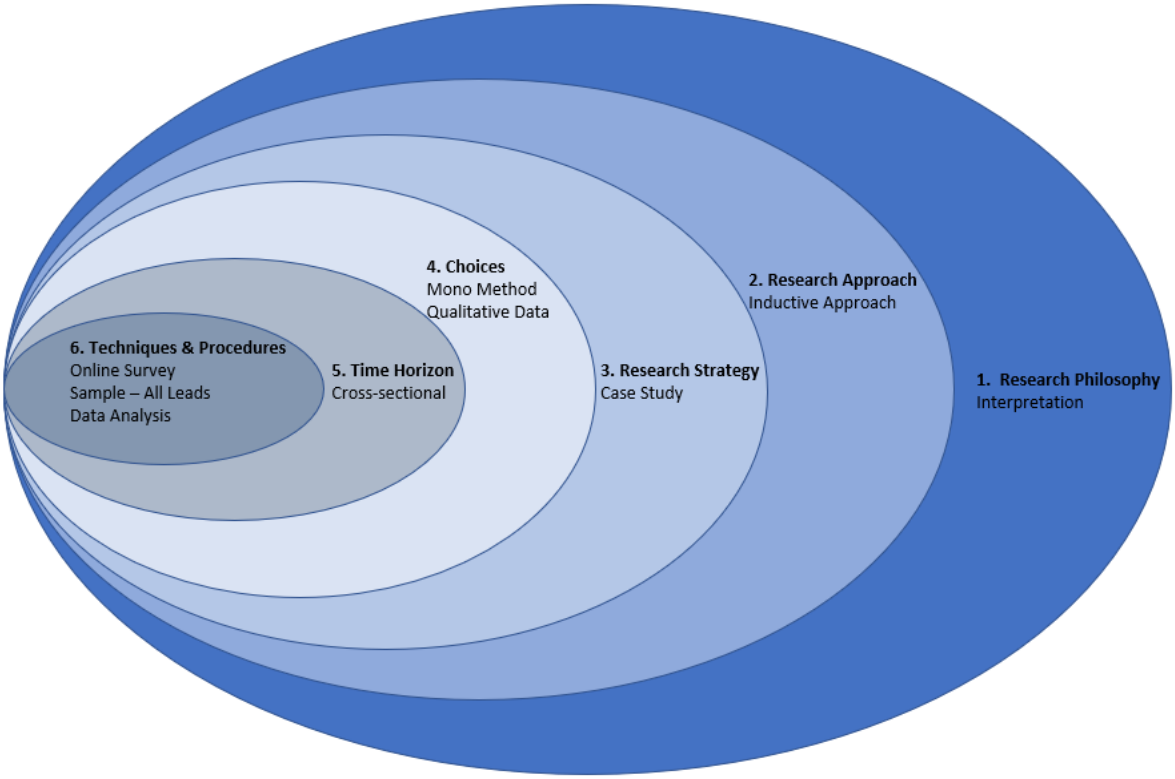


Figure 5. Saunders et al. 'Research Onion' (Source: Saunders et al., 2007 & Author's Own)

3.3 Research Design

The aim of the survey was to seek opinion on the current ACD structure in HDUHB. A Participant Information Sheet was emailed to all twenty Cluster and Professional Collaborate Leads in HDUHB. Embedded in the email was the Microsoft Forms URL link which enabled participants direct access to complete online or via a mobile device. To ensure the survey was carried out ethically, the respondents were provided with information about the contents of the survey, the aims of the study and were asked if they consented to these terms (please see Appendix C and D).

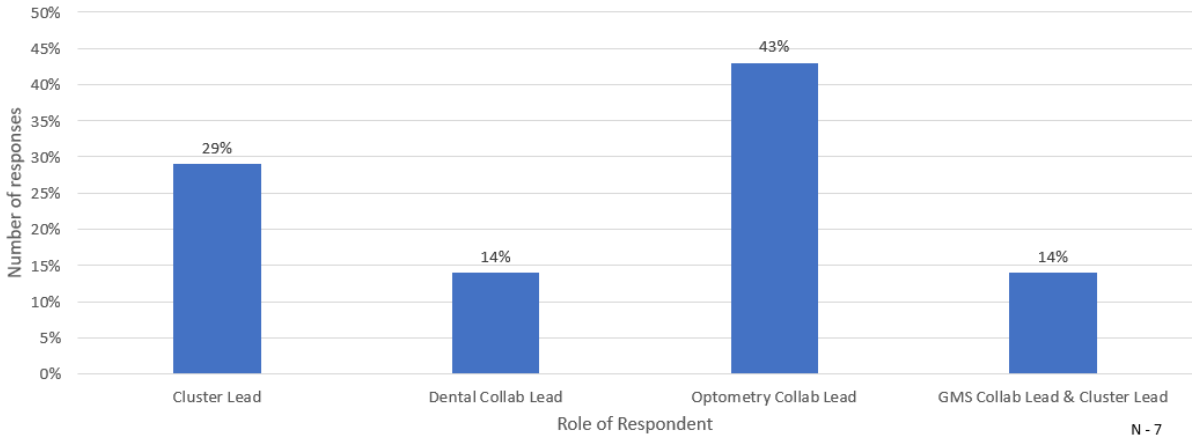
4 Key Findings

4.1 Participant Engagement

As stated, twenty Cluster and Professional Collaborative Leads were contacted via email with a request to complete the online Microsoft Forms survey. The Leads were provided with a Participant Information Sheet, URL Microsoft Forms link and contact details with instructions to contact with any further questions or queries. A reminder email was sent two weeks later.

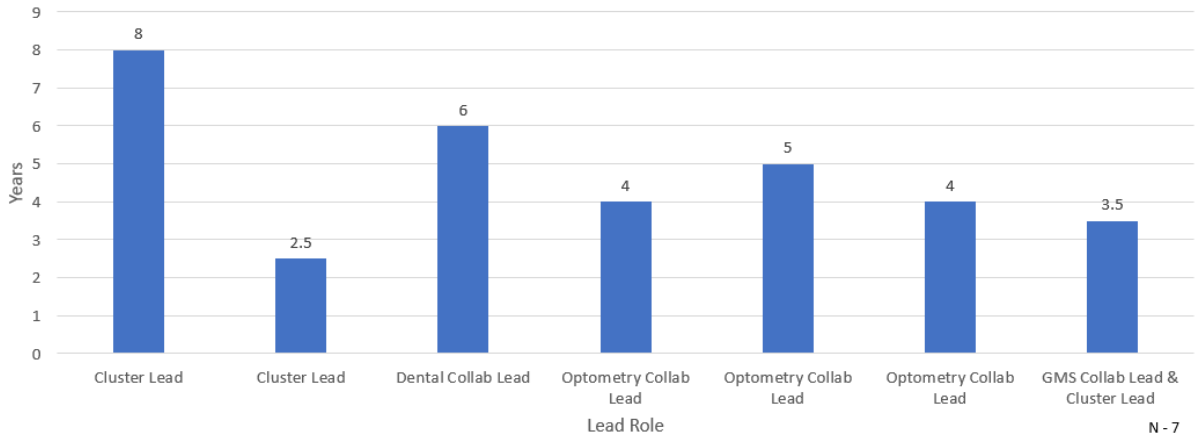
In total seven surveys were completed and submitted online giving a return rate of 35% (please see Table 2 below). Average online survey response rates are typically 40% (Wu *et al*, 2022 & Van Selm, 2006) therefore the decision was made, with the short time frame available, to close the survey after four weeks. On average, the participants took thirty-three minutes to complete the survey. The survey was sent to Cluster Leads, the GMS Collaborative Lead, Community Pharmacy Collaborative Leads, Optometry Collaborative Leads, and the Dental Lead. Currently there is only one GMS and Dental Collaborative Lead in HDUHB, and six of the seven Cluster Leads are also the GMS Collaborative Lead. There are six Community Pharmacy Collaborative Leads and there was no response from this professional group.

Table 2. Thematic Analysis Response Role and Rate, current role in Cluster and Collaboratives



The average time spent in the Cluster and/or Collaborative Lead role is 4.7 years (please see Table 3 below). All the participating Leads were in place before the introduction of ACD and would therefore be able to provide an opinion on how ACD has impacted their role, Cluster working, and collaboration compared to a Lead who had only ever known the structure since the introduction of ACD in 2022. All seven Leads have been in their professional roles for a significantly longer time period with most having served more than twenty years and more in the NHS and in their chosen Primary Care profession.

Table 3 Thematic Analysis Time Spent in the Role



4.2 Question 3: Can you tell me what you understand ACD to be?

All seven respondents responded to this question and following analysis of the answers six themes have been identified (please see Table 4 below).

Table 4. Thematic Analysis Question 3 - Can you tell me what you understand ACD to be.

Question 3

Theme	Number of times mentioned in a survey response
Multi Professional / Professional Collaboratives	7
Local priorities / Population	4
To improve wellbeing and health outcomes	4
Budget	3
Project implementation	3
Shift away from traditional GP forum	2

> "It's trying to get the primary care work force to work together in a collaborative way for the good of the local population. It involved the management of a budget and the submission of projects for the greater good. These projects may be specifically aimed at certain specialities but may also involve trying innovative ways of working within and across usual practice boundaries. It has taken the overly GP heavy clusters which tolerated a few observers into a more democratic zone that gives a much more equitable voice to other stakeholders."

Figure 6. Quote response from Question 3 data (Recreated by Editor)

SPPC states that "The Accelerated Cluster Development Programme is the Primary Care component of Place Based Care, delivered through Professional Collaboratives and Clusters. Collaboratives bring together General Medical, Dental and Optometric Practitioners, Pharmacists, Nurses, Allied Health Professionals (AHPs) and Social Care professionals, within their professional groups, to assess population needs and service improvement priorities. Solutions are developed within Collaboratives and through multi-disciplinary Cluster working." (Accelerated Cluster Development Glossary of Terms, 2022). All seven acknowledged the collaborative working element and that it was to address priorities and population needs and to improve a healthy outcome.

As evident in Table 4 above, all provided more than one response to the question, alluding to the fact that ACD is not just one thing but many. None of the responses provided could be recorded as technically incorrect and can be a measure of where their profession is in the history of Cluster rather than ACD. This is evident in the two responses from the Optom Professional Collaborative Lead's noting it as a 'shift away

from the tradition GP forum' with one Lead stating "It has taken the overly GP heavy clusters which tolerated a few observers into a more democratic zone that gives a much more equitable voice to other stakeholders". The history of Cluster Development in Wales is evident in these responses.

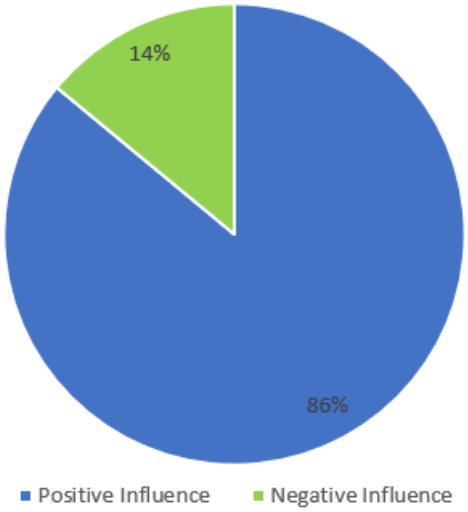
4.3 Question 4: How has ACD influenced your engagement with your professional peers?

Thematic analysis of the answers provided has been categorised into a positive or negative response (please see Table 5 below). One Lead, Cluster and GMS Collaborative Lead, noted a disconnect with their GP peers and the Cluster projects, whereas six noted improved collaboration with their peers.

> "ACD has created a disconnect between GPs and the projects (largely) run by them. It has moved decision-making from them and diluted their knowledge and experience into one influence among several voices with far less experience, coherence and authority. It has worsened the perception of Clusters amongst GP peers as a vehicle for change and for resourcing improvements in patient community services."

Figure 7. Quote response from Question 4 data.

Table 5. Thematic Analysis Question 4 - How has ACD influenced your engagement with your professional peers?

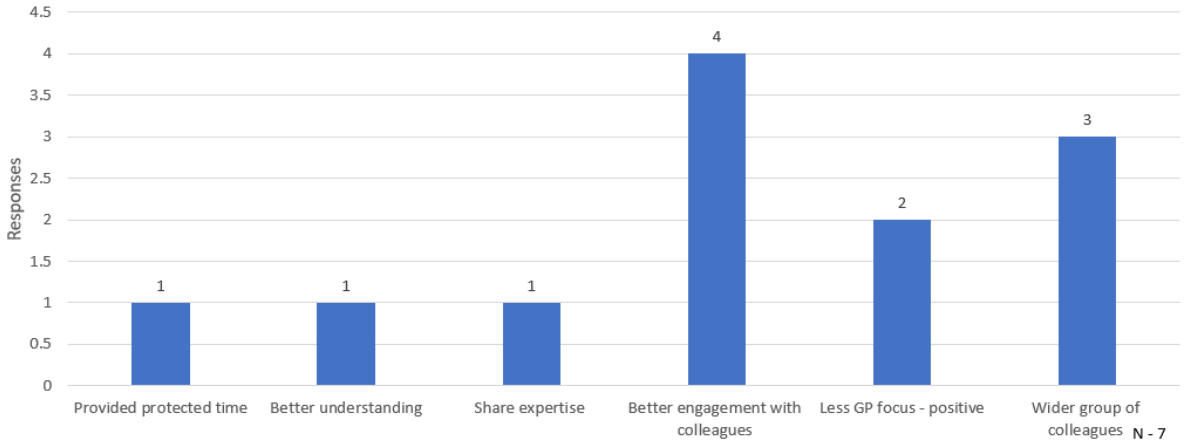


The responses to this question indicate that 100% Optometry and Dental Leads have seen improved engagement with their peers. Of the three GPs participating, two note a positive response with one Cluster Lead, who is also the GMS Collaborative Lead, answering "As Cluster Lead, I have much better engagement with non-GP primary care colleagues and as I have retained the GP collaborative lead role I have maintained my relationship with my GP peers."

4.4 Question 5: How has ACD influenced your engagement with your Cluster colleagues?

Similarly, to the previous question, six out of the seven responses were positive. Table 6 below provides a summary of the positive themes. The one negative response documented a negative influence on all four of the Professional Collaboratives.

Table 6. Thematic Analysis Question 5 - How has ACD influenced your engagement with your Cluster Colleagues?



Five of the responses discuss how the meetings and contact at cluster is now with a wider spectrum of professional colleagues, and not just GPs. The Clusters and Cluster Meetings are not new to ACD and unlike the Professional Collaborates, already had networks and existing relationships. ACD requested that instead of representatives from every GP Practice in the locality that one GP attend, the GMS Collaborate Lead. Two of the responses comment that less GP focus in this forum is positive. The one negative comment, like the previous question, reported that the reduced GP focus was negative and detrimental to Cluster progress.

4.5 Question 6: Can you tell me about how you are identifying the local population health need?

Question 6 data differs between the Cluster Leads and the Optometry and Dental Collaborative Leads. Table 7 below documents that the three Cluster Lead responses all stated local population health needs assessment as a scoping exercise whereas the four Collaborative Leads stated contact with peers and patients. From this we can infer a difference in understanding and role as Lead. At the collaborative level the population need is often guided by what is happening on the ground, whereas at the Cluster level, the guidance traditionally comes from Public Health and needs assessment data.

Table 7. Thematic Analysis Question 6 - Can you tell me about how you are identifying the local population health need?

Theme	Identifying the local population health need
Scoping exercise. Local population health needs assessment	3
Contact with peers/ feedback	4
Contact with patients	1

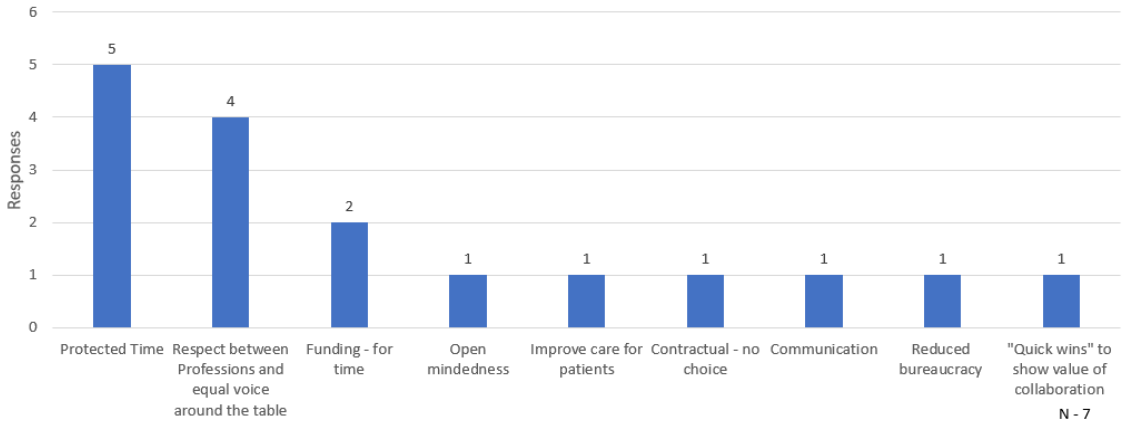
4.6 Question 7: Do you think the four Primary Care professions are working more collaboratively since ACD?

Six of the seven Leads answered yes to this question with four further elaborating by stating “yes but not dental”. One Lead stated no but explained that this is because in their opinion the four professions were collaborating prior to ACD anyway. Essentially all Leads therefore consider that the three Primary Care professions work collaboratively, with the majority citing that is due to the implementation of ACD last year. Six of the seven Clusters have no engagement from Dental. They had no Dental Collaboratives and no Lead represented at Cluster therefore the four professional groups were always going to be at varying levels of engagement. This situation with Dental colleagues will remain until the Dental Contract is finalised and implemented in 2023/34.

4.7 Question 8: In your opinion what do you think are the enablers for collaboration?

Thematic analysis of this question was more complex since more themes were documented and was therefore slightly more difficult to group. Table 8 below shows nine themes identified:

Table 8. Thematic Analysis Question 8 – In your opinion what do you think are the enablers for collaboration?



However, there are two clear themes in this data question that are key for successful collaboration; protected time, including funding to support and enable time, and respect between the professions.

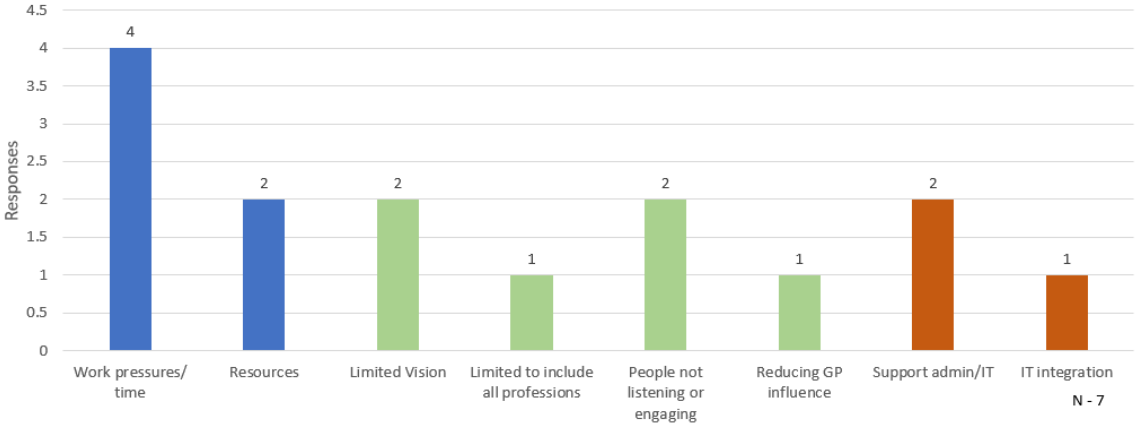
> "Funded and protected time for meetings. A paid and supported lead. Quick wins that demonstrate the value of collaboration."

Figure 8. Quote response from Question 8 data.

Protected time and further funding for the Leads can only be authorised by the Health Board or by contractual agreement. All other areas mentioned that they consider to be enablers for collaboration are actions that need to be driven by the Leads themselves and by the individuals chosen to represent in the Collaborative and at the Cluster level.

4.8 Question 9: Likewise in your opinion what do you think are the barriers to collaboration?

Table 9. Thematic Analysis Question 9 – What do you think are the barriers to collaboration?



> "Dentistry as a profession is reluctant to have involvement in cluster development and therefore limits dental initiatives that can be utilised by ACD ".

Figure 9. Quote response from Question 9 data

Question 9 received similarly a more varied response from the Leads. In this instance it has been able to further group into three sub themes; time and resources (marked blue on Table 9 above), limited vision and engagement (marked green on Table 9 above) and administrative/IT support (marked orange on Table 9 above). Resourcing time and additional funding along with an increase in project/administrative support are operational requirements. These are requests that could be addressed with contractual change and SPPC and HDUHB intervention and support. Addressing engagement and vision, however, is a far more complex barrier that is difficult to quantify and will be subjective to everyone.

4.9 Question 10: In your opinion what can be done to strengthen ACD in HDUHB?

The final question in the survey asks for solutions. The responses were typically shorter than the other questions and are all options that would be an operational intervention. None of the suggestions and comments provided any insight into how to encourage engagement, inclusion and relationships between the professions or acknowledged what needs to be driven by Leadership.

Table 10. Thematic Analysis Question 10 – What can be done to strengthen ACD in HDUHB?

Question 10

Theme	Number of times mentioned in a survey response
More admin/ project management support	4
More funding for Leads	2
Ability to mainstream projects	2
Limit projects that favour GPs and the GMS contract	1
IT integration	1

Table 10 above displays three of the responses, ability to mainstream projects and to limit GP projects and the GMS contract, as themes that until the final question had not been mentioned previously. The request for more resources, financial and administrative, suggests that the participants themselves require additional support to deliver and strengthen ACD in HDUHB.

5 Review of Key Findings

The responses analysed were captured from three Optometrists, one Dentist and three GPs. There was no input from pharmacists. The Optom Leads all reported positive response to there being less GP influence at Cluster and all three cited it as a barrier to collaboration. With only one Dental Lead in HDUHB there was never going to be a great representation from this professional group. Four of the Leads commented on the lack of Dentistry and noted that it limits how well the four Primary Care contractors are engaging with each other. It is worth noting here that at present the Dental Contract has not been finalised and therefore Dental engagement with Cluster and their Professional Collaboratives is not mandatory.

With six Pharmacy Professional Collaborative Leads in post in HDUHB it is surprising that not one responded and completed the survey. This act itself could be interpreted as evidence of their engagement with ACD but also needs to reflect the work pressures currently felt in the profession. It is also interesting to note at this point that four of the Pharmacy Professional Collaborative Leads are relatively new to the post and have only been involved at that level since the introduction of ACD.

The Leads, regardless of Profession, asked for less Health Board scrutiny, bureaucracy and meetings, and more time, funding, project management and administrative support. Six reported better relationships with their peers and Primary Care colleagues and improved communication. Three Leads, on several occasions, reported less GP influence as a positive, whereas one Cluster Lead, (notably a GP) reported the reduced GP presence and influence as a negative impact from ACD. All seven Leads understood and were able to articulate what ACD is and all seven were in post before the inception of ACD.

Overall, each participant responded honestly and in detail. It is evident from the data that one Lead is not supportive of the changes introduced by ACD and this is evident in the answers provided throughout the survey. They argue that ACD has not achieved what it said it would and has instead added to the workload, constraints, and limitations of Cluster. They explain that collaboration and engagement with other Primary Care colleagues was already taking place before 2022 and states that “ACD is a failure”.

5.1 Review of key findings against the extant literature

A literature search was conducted with the following key terms; Primary Care, Collaboration, Cluster Development, ACD, Primary Care Network, Organisational Purpose, and Primary Care Professionals. The search criteria were put through Google Scholar, Research Rabbit, and I-find.

Welsh Government policy has been the enabling force resulting in the introduction of ACD during 2021/2022. In order to answer the research question posed, 'Can Accelerated Cluster Development drive Primary Care collaboration?', it is necessary to undertake a critical analysis of the literature. The literature review must establish what drives collaboration and likewise what elements restrict and block positive networking opportunities, relationship building and professional collaboration. Academic validity on this topic will support the evidence gathered and add insight onto the themes gathered during the data gathering process.

5.1.1 Who's Who – Stakeholder Management

Stakeholder management is central to collaboration and success occurs when fully understanding the players involved. For successful outcomes in this area, the stakeholders must be able to identify, negotiate and achieve the objectives identified by active participation (Brammer & Millington, 2004). Freeman identifies a stakeholder as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984). In this instance the stakeholders include the Primary Care professionals, GMS, Pharmacy, Optometry and Dental Cluster and Collaborative Leads.

With ACDs objectives articulated by SPPC the stakeholders engaged will be diverse and challenging. There will be differing levels of knowledge, engagement, competing interests and areas of concern. ACD has been guided by specific Primary Care Contracts and locally delivered by the seven Health Boards in Wales.

The research data collected highlights how currently there is an imbalance between the Collaborative and Cluster stakeholders. There remains a historical power with GP professionals that does not exist elsewhere due to the way Clusters developed over the last decade. The responses gathered showcase this on several occasions where a GP Lead reports a negative response to a decrease in GP engagement and the Optom Leads reported it as a positive impact enabling voices, other than GP, to be heard. Even though there remains progress to be made with the stakeholder's status and position, the evidence clearly shows that all participants know and are working towards the objectives of ACD.

5.1.2 Organisational Purpose and Culture

Brown cites five criteria that must be observed in order to deliver organisational purpose successfully: 1) senior leadership must be united in driving excellence, 2) the organisation must be committed and engaged, 3) the organisation strategy must be clear, outlined and communicated, 4) the organisation must have method improvement in progress activities in conjunction with self-assessment, and 5) the employment of knowledge and data analysis should be a daily observation of the organisation (Brown, 2013 & El Khatib *et al*, 2022).

The evidence suggests that ACD's strategy has been articulated to the Cluster and Collaborative Leads, yet all seven responded with a requirement for more time, resources, and support from their organisation in order to deliver successfully.

5.1.3 Collaboration

The Cambridge Dictionary defines collaboration as "the situation of two or more people working together to create or achieve the same thing" (https://dictionary.cambridge.org/dictionary/english/collaboration). Greville and Hughes provide further definition in their paper *Collaborative Working and Joint Working: A toolkit for industry and NHS Wales* by stating "Collaborative working, which either enhances patient care or is for the benefit of patients or alternatively benefits the NHS and, as a minimum maintains patient care" (Greville et al, 2021). They further declare "It must have, and be able to demonstrate, the pooling of skills, experience and / or resources from all the parties involved. There must be a shared commitment to successful delivery from everyone involved and each organisation must make a significant contribution" (Greville et al, 2021). SPPC states "Professional Collaboratives (PCs) are networks of professionals, with shared expertise, working together to use their unique skills to assess the population needs of the population where they work" (Accelerated Cluster Development Toolkit).

Interpretation of the research data shows us that all participants understood local population need yet provided different answers regarding how they are identifying it. The Cluster Leads looked to the Public Health Wales produced local population health needs assessment whereas the Collaborative Leads conferred with their peers only. Not one response claimed to work with their Primary Care colleagues or with the Cluster members as stipulated by SPPC.

In 2022 El Khatib and colleagues carried out a study; *How Can Collaborative Work and Collaborative Systems Drive Operational Excellence in Project Management?* This study looks at how the COVID-19 pandemic impacted collaboration and organisation performance and investigates "the applicability of collaborative environments and how organizations establish their regulatory policies to ensure effective adoption of the tool and generate operational excellence and stakeholder satisfaction" (El Khatib *et al*, 2002). The study used both quantitative and qualitative data, through both a questionnaire and interviews, and approached individuals from the following institutions: Government, Logistics, Banking, Art and culture, and Health care.

The results from El Khatib's study showed that all participants saw value in collaboration. Areas linked to failure of collaboration included poor communication, lack of synergy between departments, competency within teams, lack of initiatives with other organisations, lack of environmental systems, and lack of flexibility. The study concluded that there are numerous advantages to collaboration in an organisation and that this was accelerated in many organisations during COVID-19. It also identifies challenges and acknowledges that collaborating is not always simple or the solution to improved systems.

Question 9 asked about the barriers to collaboration in HDUHB's ACD and in the main were in line with the failures specified by El Khatib and colleagues. Resources and people not sharing the vision and communicating are a repeated theme in the literature and study data.

While conducting a literature review for collaborative working in Primary Care, the articles reviewed mainly concerned themselves with collaborating over patient care and in particular healthcare professionals sited in the same building or within proximity to best manage a particular chronic condition, such as diabetes. Cecilia Saint-Pierre *et al*'s systematic review examined one hundred and nine articles from eighteen Countries and even with the inference of what "collaboration" means in this instance there are still several points of significance gleaned. They concluded that there is a significant difference in the ability to collaborate when there is a clearly identified lead or manager. This is a similar repeating theme in the ACD research data. All the responses indicated requiring administrative, project management and IT support and guidance. This person can be responsible for co-ordinating priorities, timeframes, scheduling meetings, and administrative duties when required. The Cecilia Saint-Pierre's review also identified that some healthcare professionals collaborate better, stating "the literature proposes that nurses tend to collaborate more closely with their teammates, either through meetings or face-to-face, whereas physicians tend to work in a more isolated way, collaborating indirectly" (Saint-Pierre, 2018). The evidence from HDUHB does indicate that certain professions and individuals are keener to collaborate than others. This is due to several reasons though, including past experiences and the length of time involved in Clusters, the professional contract position and the current sustainability and workload in a particular profession. In conclusion, their literature review found that collaboration in Primary Care was either a neutral or positive experience and never reported as negative. This is evidence in the ACD study data also.

Laura Bronstein's *A Model for Interdisciplinary Collaboration* is a valuable piece of work that looks at interdisciplinary collaboration and creates a two-part model. It is worth noting that this work and model specifically looks at the interdisciplinary collaboration between social workers and other disciplines which they regularly work with, such as schools, clinics and hospitals and healthcare professionals, yet is worth exploring as a model that is relevant to other primary care healthcare professionals. Part one of the model is the five elements that constitute successful collaboration and part two of the model consists of the four elements that influence successful collaboration.

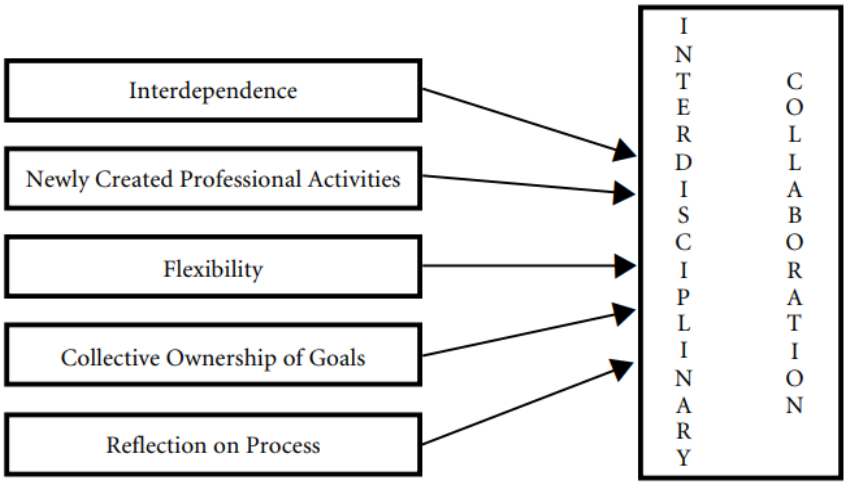


Figure 4. Part One – Components of an Interdisciplinary Collaboration Model (Source: Bronstein, 2003)

The interdependence component of the model acknowledges that there must be on occasion times when healthcare professionals must depend on each other to ensure that the end goal is achievable. The core of Cluster working is to innovate and create new systems and ways of working to fulfil the need. Melaville and Blank emphasized this point by describing collaborative initiatives as "creating fundamental changes in the way services are designed and delivered" (Melaville & Blank, 1992). At the core of ACD is the newly created working relationship between Primary Care professionals. Flexibility, in this instance, refers to the need for individuals involved to unfocus their professional roles and to work for the patient/ end goal. Members of the collaborative therefore must be able to prioritise the collaborative mission over their professional input. This naturally lends them to the next element of the model, the collective ownership of goals. It could be argued that this is the most important element of this model. There will be little or no success if the collaborative goals are not shared by all. Finally, reflection on process ensures that there is a system in place to monitor feedback and ultimately improve the collaboration and the process of working together.

If this model was implemented for ACD in HDUHB then the data collected in this study would indicate that some of the required components would be in place. It is clear though that the Cluster and Collaborative Leads that have participated in the study are not "flexible" in that there is no evidence that they are able to remove themselves from their professional role and if anything, the responses showed that there is quite strong allegiance to their professions with, at times, definite antagonism between them. There is also no evidence reported on a process of feedback or reflection at this time.

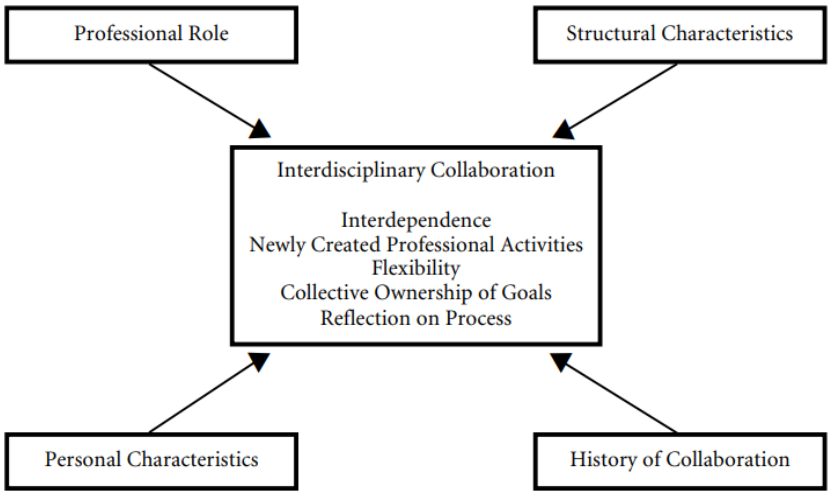


Figure 5. Part Two – Influences on Interdisciplinary Collaboration Model (Source: Bronstein, 2003)

Part two of the model, influences on interdisciplinary collaboration, lists four elements that if present support and assist with collaboration and likewise when absent are presented as a barrier to collaboration. The first element, professional role, is vital in this consideration as it may be as much as a driving element as a destructive one if not balanced well. The members of a collaboration will all have professional integrity, strengths, priorities and to be a successful partner must be able to engage outside of their professional role at times. Structural characteristics relate to the necessary time, funding, administrative support required for meaningful collaboration. Mattessich and Monsey's work showed how important it is to have support from the Leads and when it is financially supported (Mattessich & Monsey, 1992). They also placed personal characteristics as often the most significant influence on collaborative success. There must be a level of knowledge, respect and trust between the individual members and the differing professions present. The final influence mentioned in this part two model is a history of collaboration. It is argued that successful engagement in the past will be a positive component for future collaboration. There will likewise be potential therefore for a negative influence if there has been negative experience in the past or no history of collaboration at all.

Bronstein's two-part model cleverly and clearly identifies the areas of strength in HDUHB and the areas that require attention and development. Figure 6 below attempts to summarise the current position from the data in relation to this model and could be the start of an improvement process for ACD in HDUHB.

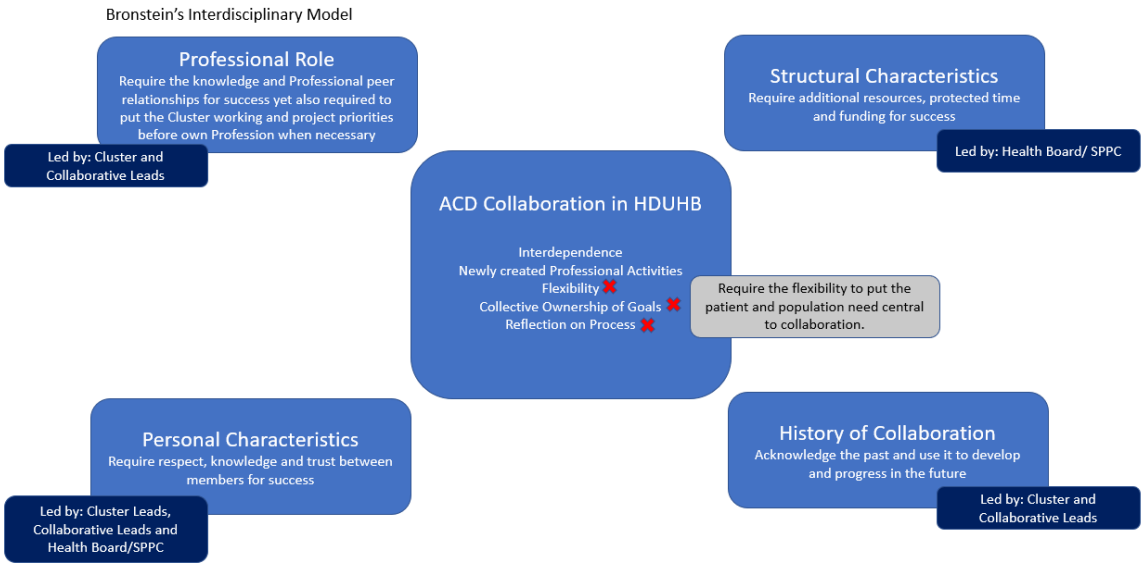


Figure 6. Bronstein's Interdisciplinary Model ACD Collaboration in HDUHB (Source: Authors Own)

5.1.4 Conclusion of Key Findings

Seaburn and colleagues noted "a culture of collaboration does not just happen. It must be formed and fashioned by many hands" (Seaburn et al, 1996). The literature reviewed indicates that collaboration is acknowledged as a positive step in innovation, patient care and progressing healthcare delivery. There is little or no work specifically detailing collaboration and ACD and the work that has been reviewed is typically Primary Care healthcare professionals collaborating for a specific patient or service delivery. Even with the limited opportunity to further explore at this time, due to the time and word limit, there is no doubt that there are processes to evaluate collaboration, to make an assessment as to whether it is successful or not, and models in place that can be utilised to pursue an answer to the question posed in this research piece.

5.1.5 Limitations of the research

While considering and designing the research proposal for this piece of work, due consideration to the feasibility of the question presented and the risk associated with the project was given. An examination of the feasibility was conducted at the start of the process and resulted in an evolution of the purpose and eventual question posed. To support the process, several papers were scrutinised which aided this part of the project cycle (Reynolds et al, 2007; Shamoo & Resnik, 2002).

During this process it was clear that there would not be sufficient time to consider approaching all the Cluster and Professional Collaborative Leads in Wales and the best approach for this study would be to concentrate on the seven Clusters in HDUHB. Due to personal and professional relationships between the Leads in HDUHB and the researcher it was decided that an electronic survey would be favourable over face-to-face interviews. One of the risks identified was the fact that the researcher actively works alongside the current Leads and is responsible for the role out and delivery of ACD in HDUHB. To minimise the risk associated with interview bias and lack of engagement due to professional accountability, a survey was created and shared electronically.

Therefore, the research is limited by the time allocated, the approach taken to source the information and the participants approached.

5.2 Chapter Summary - Critical evaluation of the evidence

In summary, the evidence collected during this process has been adequate to reach conclusions and attempt the research question posed. The evidence was provided anonymously yet there were so few responses it is not impossible to identify the individual which may have impacted response rates and honesty. The qualitative nature of the questions has provided a lot of relevant and quality information. However, without the opportunity to further question and request clarification, like what would be possible during an interview, some validity and understanding may have been compromised. There is the possibility that some participants took this as an opportunity to make a request as such, for example, for additional administrative support or protected time yet the fact that 100% of the responses at some point mentioned it must be interpretated as a significant concern and barrier for them.

6 Conclusion

The aim of this chapter is to summarise the main findings of the study with reference to the research question and the three research objectives.

The research question set out to ascertain the impact Accelerated Cluster Development has had on the Professional Collaborative and Cluster Leads' priorities and engagement with peers and Cluster members and the evidence collected and analysed has enabled us to reach an understanding of the position in HDUHB. The data shows that the Professional Collaborative Leads and Cluster Leads have all changed the way they carry out the role since the introduction of ACD and this has in turn changed the priorities to one that is more aligned with engaging and collaborating with their professional peers. Can ACD drive Primary Care Collaboration? Yes, it can. The evidence suggests this has been more positive with the Optometry and Dental Primary Care Professions and less so with GPs. Optometry and Dental reported an increase in communication, networking opportunities and an increased presence around the table at Cluster. Whereas the GP profession has taken a step away from Cluster and this is seen as a negative by the GMS Collaborative Leads. Not all the Primary Care professional groups started the ACD process in the same place and this needs to be considered and taken into consideration when summarising the current position. Optometry and Dental have had the least Cluster engagement history, and the responses indicate that the members are pleased to be included.

The research data showed a majority positive response to collaboration and ACD and contains evidence that the Collaborative and Cluster Leads are engaging with and will continue to engage with ACD. ACD has undoubtedly been a vehicle of change for Cluster development throughout Wales and in HDUHB and has been the reason for ensuring the opportunities to bring all the Primary Care professions together, to allow the networks between peers to grow and strengthen and to guarantee that the collaborations contribute equally to local population health needs directly impacting patient care.

7 Key Recommendations

ACD is both innovative and transformative. It has transformed the structure of Cluster that has been established in Wales for over a decade. The membership, leadership, accountability, purpose, and scope have been transformed in the last year. It also introduced an innovative new structure which now includes Professional Collaboratives, a PCPG and direct engagement to the RPBs. The changes have added value to cluster development and sourcing Primary Care expertise when looking at the local population health need and providing the most appropriate patient care in line with Wales's Prudent Healthcare and the overarching policy that is *A Healthier Wales*.

However, even though this study has been developed with a small number of responses, and in only one of the Health Board's in Wales, it does also show that the process has had an impact but that there are still areas that require further support and that to have ACD fully embedded will take time and not happen straight away. The responses from this study articulate several factors that will support the continuation of ACD including protected time, additional resources such as administrative time and funding for Leadership, but also that transformation is not complete or fully embedded in the system. The implementation of ACD into HDUHB will be a developing process and will need to be managed and flexible to support the many individuals and collaborations who will be in different parts of the journey.

This report has answered the question posed; can ACD drive collaboration, but at the same time it has also created an opportunity to ask more questions. There would be opportunity and scope to continue this research and to carry out more studies that would strengthen the data already gathered. The literature review indicated a lack of research in the field of Primary Care Collaboration at Cluster level in Wales, and as ACD is still a relatively new introduction, this is something that will become more possible and supported in the future. With more time, evidence will only strengthen the position and provide a more accurate and meaningful picture.

ACD strives to encourage and embed collaboration between professional peers in Primary Care and to further examine whether this is successful would be to include Professional Collaboration and Cluster members as well as the Leads for their views. This study recommends widening the participants to include all members of Primary Care that engage with ACD and Health Board Primary Care team who are central to the delivery and co-ordination of this process. This process, if replicated in all seven Local Health Boards in Wales, would increase the potential participants significantly but would also add regional trends. It would also be beneficial to engage with and include SPPC staff who are central to the introduction and implementation of ACD. SPPC are the driving force behind ACD and is the direct link to Welsh Government and the seven Health Boards in Wales.

The study has been conducted via an online survey only and future progression of this research would need to include both a survey and more in-depth interviews to fully maximise the potential for a complete picture. This study's results propose a more quantitative survey to all members identified in Wales with an invitation for face-to-face interviews to delve deeper and gain more detailed information. By just utilising anonymous surveys there has been no opportunity to ask for clarification, to seek more detail or to pursue certain lines of enquiry.

At this time the new Dental Contract is not finalised and as such has not been issued to the profession in Wales. Further research would benefit from waiting until all four Primary Care professions have their new contracts in place and embedded to ensure a true and complete picture. The contract is due to be agreed and implemented by the end of 2023 so it would need to wait at least a further eighteen months from this point in time.

As a starting point, this study is recommending three key areas of future research which would add further validity to the information obtained during this research task. Firstly, while this study was conducted in Hywel Dda University Health Board, it would be interesting to compare with other all seven Health Boards in Wales. This would provide a more complete picture in Wales and could identify key factors that contribute to successful implementation of ACD and collaboration between Primary Care Professionals. Secondly, adapting the research methodology to both qualitative and quantitative methods and increasing the list of individuals invited to partake in the study. Online surveys and interviews would be utilised to provide both more analytical data and interpretive data. The final recommendation would be to include individuals other than just the current Professional Collaborative and Cluster Leads. In the future it would be beneficial to have data from peers and cluster members, Health Board Primary Care Team staff and SPPC staff who have been central to implementing the initiative from the start.

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9 Appendix A: What is the Strategic Programme for Primary Care (SPPC)?

10 Appendix B: Strategic Programme for Primary Care Accelerated Cluster Development Readiness Checklist Self-Assessment

#	Timescale	Action	Lead / Owner	Status	Status May 2022	Status October 2022	Status March 2023	Health Board / Partner Comments
1	April	**2022/2023 Cluster Annual Plans** published on Health Board websites (*option to hyperlink from PCOne*); Health Boards support delivery of the Cluster Plans over the next 12m as required	DPCCs and HB teams	Must do				
2	April	**2022/2023 Cluster Funding** proposals / initiatives commence; local monitoring in place	DPCCs, PC Teams, Clusters	Must do				
3	April	Confirm the geographical boundary to inform the development of the **map of Pan Cluster Planning Groups** (PCPG) and associated Clusters for the Health Board / Regional Partnership Board region	DPCC, DoP with RPB Partners	***Must do**				
4	April	Agree the **governance route** within the health board for the **Pan Cluster Planning Group**	DPCC with DoPs and BS	***Must do**				
5	April *(through Q1)*	Health Boards and their Local Authority partners establish **Pan Cluster Planning Groups, Terms of Reference** are adapted / adopted (*added to but not downgraded)* and PCPG governance is embedded into the local architecture	DPCC, DoP, DSS and RPBs	***Must do**				
6	April-June	PCPG Assurance is part of the Health Boards existing Board Governance structure	BS, DPCC, DoP	Must do				

#	Timescale	Action	Lead / Owner	Status	Status May 2022	Status October 2022	Status March 2023	Health Board / Partner Comments
7	April	Set out a **project plan** to begin establishing the **Professional Collaboratives** for the contractor professions: GMS, Optometric, Pharmacy, Dental	DPCC, DWOD, Prof Advisors	***Must do**				
8	May	Set out a **project plan** to begin establishing the comparable arrangements for **establishing Professional Collaboratives for other professions such as nursing, allied health professionals,** and potentially social services	DPCC, DWOD with DoN, DoTh and DSS	***Must do**				
9	April-June	Any **changes** that are needed to the Health Board **Scheme of Delegation / SFIs to allow PCPGs to have delegated authority to act** are actioned	BS, DPCC, DoP, DoF	Must do				
10	April-June	Progress delivery of and appointments to any posts funded from the **Strategic Programme for Primary Care Fund 2022 (SPPC Fund) ACD investment plans**	DPCCs / HOPC	***Must do**				
11	April-June	Consider the **current Cluster arrangements,** membership and governance to ensure it aligns with the **model Cluster Terms of Reference** for the ACD programme. Review transition year **Cluster Lead / Chair** arrangements / future **Professional Collaborative leads**	DPCCs, PCPG, and Cluster partners	To Consider				

#	Timescale	Action	Lead / Owner	Status	Status May 2022	Status October 2022	Status March 2023	Health Board / Partner Comments
		representation on the PCPG						
12	May-June	Consider **leadership and professional development** needs of the **various Professional Collaborative Leads and Cluster Leads**	DWOD with DPCC, DoN, DoTh and DSS	To Consider				
13	May-June	Consider the **Organisational Development** needs to optimise **Pan Cluster Planning Group working**	DWOD, DoP, DPCC, RPBs and PCPGs	To Consider				
14	May-June	Engage with the SPPC commissioned PCC **Leadership engagement exploratory workshops** for Professional Collaboratives, Pharmacy, Dental, Optometry, Nursing and AHPs	Primary Care Teams including Nursing and Therapy Leads	To Consider				
15	June onwards	Engage with the Strategic Programme for Primary Care on the **leadership and OD programmes** for Cluster Leads, Professional Collaboratives & Leads PCPG members	DWOD, DoP, DPCC, RPBs and PCPGs, Cluster / Colab Leads	***Must Do**				
16	June	Confirm and prepare **one Cluster footprint per Health Board** to be part of the **Cluster peer review** process being drawn up for 2022-2023	DPCCs / DoPs / RPBs	***Must Do**				
17	April-Sept (March '23)	Supported by Health Boards, **individual Professional Collaboratives are established** in each Cluster footprint for **General Practice,**	DPCC, DoPs, WoD, DoTHs, DoNs, and PCPGs, Cluster / Collaborative Leads	***Must Do**				

#	Timescale	Action	Lead / Owner	Status	Status May 2022	Status October 2022	Status March 2023	Health Board / Partner Comments
		Pharmacy, Optometry, Nursing, Allied Health Professionals (AHPs) and potentially social services and these are represented on the Cluster / PCPG Subject to contract reform, **Dental Professional Collaboratives** are expected to be established by March 2023						
18	April-Sept	Update skills and knowledge on the **'Once for Wales'** contract for PCPGs to use with **Community Interest Companies (CiCs)** if formed	RPBs, PCPGs, HB Exec Teams	***Must Do**				
19	April-Sept	Develop proposals to ensure that there is **good and effective stakeholder, public and patient engagement in Clusters and PCPGs**	RPBs, PCPGs, HB Exec Teams	To Consider				
20	July-Sept	**Professional Collaboratives** (where established) begin to **respond to published population needs assessments** (such as RPNAs published in April 2022) and **identify their service gaps and developments** in response to Welsh Government planning guidance	Professional Collaboratives	***Must Do**				
21	Aug-Dec	Identified Cluster, with Health Board and RPB partners **participates in the PCMW / ACD Peer Review** pilot	DPCC, DoP, RPB, Cluster	Must Do				
22	Sept - Nov	**Clusters** begin to use the Professional	Clusters	***Must Do**				

#	Timescale	Action	Lead / Owner	Status	Status May 2022	Status October 2022	Status March 2023	Health Board / Partner Comments
		Collaboratives' (where established) responses to **update the Cluster Plan to address identified needs assessments and service gaps**						
23	December	**Pan Cluster Planning Groups** use the Cluster responses to **produce a prioritised county wide response to the RPNA and a 3-year plan for 2023-26**. These plans also identify those services which are most effectively delivered on a Cluster footprint	PCPGs	***Must Do**				
24	Jan 2023	Health Boards **use Pan Cluster Planning Group response to Regional Population Needs Assessments [RPNAs] & 3-year plans** to **inform their 2023-26 IMTPs**	DoPs	***Must Do**				
25	Jan - March	**RPBs** use **Pan Cluster Planning Group responses to the RPNAs and 3-year plans** to inform their next **Area Plans assessments & plans**	RPBs	***Must Do**				
26	Jan – March 2023	**2023/2024+ Cluster Funding investment plans** are agreed with stakeholders and endorsed by the PCPG	PCPGs, Cluster / Collaborative Leads	Must Do				
27	April 2023	**RPBs publish their 5-year Joint Area** Plan which should be informed by pan Cluster responses	RPBs	***Must Do**				

#	Timescale	Action	Lead / Owner	Status	Status May 2022	Status October 2022	Status March 2023	Health Board / Partner Comments
28	2022/2024	As PCPG plans **identify those services which are best delivered for the Cluster population footprint**, Clusters will respond by **establishing a range of Cluster delivery vehicles**	PCPGs, Clusters and Contractors	To Consider				
29	2022/2024	Health, Social Care, and wider partnership funding opportunities (eg Regional Investment Fund RIF) considered to support implementation of Cluster plans	PCPGs, Clusters, HB Execs, DSS	To Consider				
30	April 2023	ACD Programme transition year ends; ACD programme closes and PCPG / Cluster / Professional Collaborative working **mainstreamed** across health and social care planning and delivery landscape	All Partners	Must Do				

11 Appendix C: Participant Information Sheet

PARTICIPANT INFORMATION SHEET

Can Accelerated Cluster Development drive Primary Care collaboration? A Local Health Authority Perspective.

You are being invited to take part in some research. Before you decide whether or not to participate, it is important for you to understand why the research is being conducted and what it will involve. Please read the following information carefully.

What is the purpose of the research?

We are conducting research exploring the impact Accelerated Cluster Development had on Primary Care Collaboration and Cluster outcomes since its introduction in 2022.

This includes undertaking Qualitative Research with Primary Care Professional Leads from across Hywel Dda University Health Board. PI (Laura Lloyd Davies) will undertake the questionnaires and evaluation. The results will be submitted to Swansea University School of Management as part of Laura Lloyd Davies' MSc.

Your participation in this study will take approximately ***60 minutes***.

Who is carrying out the research?

The data is being collected by Laura Lloyd Davies, Cluster Development Manager in Hywel Dda University Health Board and can be contacted by emailing at laura.lloyddavies@wales.nhs.uk. The research has been approved by the School of Management Research Ethics Committee.

What happens if I agree to take part?

By agreeing to take part you will be asked a series of questions from a validated qualitative question set to understand the impact Accelerated Cluster Development has had on your Professional Lead role, collaboration with colleagues and Cluster, and perceived value added to Cluster and population health outcomes. The approach will seek to gain insight into examples of successful collaborations and the characteristics, together with understanding the barriers.

Are there any risks associated with taking part?

The research has been approved by the Swansea University School of Management Research Ethics Committee. There are no significant risks associated with participation.

Data Protection and Confidentiality

Your data will be processed in accordance with the Data Protection Act 2018 and the General Data Protection Regulation (GDPR). All information collected about you will be kept strictly confidential. Your data will only be viewed by the researcher/research team.

All electronic data will be stored on a password-protected computer file on a laptop. All paper records will be stored in a locked filing cabinet at the School of Management. Your consent information will be kept separate from your responses to minimise risk in the event of a data breach.

Please note that the data will be collected for the study by questionnaire on Microsoft Forms and will be made anonymous. Thus, it will not be possible to identify and remove your data later, should you decide to withdraw from the study.

What will happen to the information I provide?

An analysis of the information will form part of the report at the end of the study and may be presented to interested parties and published in scientific journals and related media. *Note that all information presented in any reports or publications will be anonymous and unidentifiable*.

Is participation voluntary and what if I wish to later withdraw?

Your participation is entirely voluntary – you do not have to participate if you do not want to. If you decide to participate, but later wish to withdraw from the study, then you are free to withdraw at any time, without giving a reason and without penalty.

Data Protection Privacy Notice

The data controller for this project will be Swansea University. The University Data Protection Officer provides oversight of university activities involving the processing of personal data and can be contacted at the Vice Chancellors Office.

Your personal data will be processed for the purposes outlined in this information sheet.

Standard ethical procedures will involve you providing your consent to participate in this study by completing the consent form that has been provided to you.

The legal basis that will be relied on to process your personal data will be processing is necessary for the performance of a task carried out in the public interest. This public interest justification is approved by the College of Human and Health Sciences Research Ethics Committee, Swansea University.

The legal basis that we will rely on to process special categories of data will be processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes.

How long will your information be held?

We will hold any personal data and special categories of data for no longer than is necessary for the purposes stated above.

Automated decision making and profiling [only required if applicable]

No automated decision making, or profiling will be used for this study.

What are your rights?

You have a right to access your personal information, to object to the processing of your personal information, to rectify, to erase, to restrict and to port your personal information. Please visit the University Data Protection webpages for further information in relation to your rights.

Any requests or objections should be made in writing to the University Data Protection Officer: -

University Compliance Officer (FOI/DP)

Vice-Chancellor's Office

Swansea University

Singleton Park

Swansea

SA2 8PP

Email: dataprotection@swansea.ac.uk

How to make a complaint

If you are unhappy with the way in which your personal data has been processed, you may in the first instance contact the University Data Protection Officer using the contact details above.

If you remain dissatisfied, then you have the right to apply directly to the Information Commissioner for a decision. The Information Commissioner can be contacted at: -

Information Commissioner's Office,

Wycliffe House,

Water Lane,

Wilmslow,

Cheshire,

SK9 5AF

www.ico.org.uk

What is required to support proven healthcare innovation projects appropriately spread pan Wales?

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Abstract:

The adoption of innovative healthcare practices and technology is pivotal in advancing the quality of healthcare delivery. Innovations in healthcare face challenges relating to resistance to change, resource constraints, and variation in adoption rates amongst health and social care providers. This project looks at the diffusion of innovation within the context of the National Health Service in Wales. The research method looks at the latest literature, by searching on the key words 'diffusion', 'innovation', 'policy', 'health', 'change', 'scale and spread' within the context of the NHS, 'issues concerning spread', 'barriers to innovation' and 'what enables good spread'. Saunders research onion has been used as the approach (Saunders et al., 2007). The first stage being the literature review which examines diffusion and the spread of innovation in a Wales healthcare context. This is followed by primary data collection with 78 relevant stakeholders, firstly through an engagement session to identify factors supporting and limiting innovation adoption and secondly through an online survey with relevant stakeholders to explore themes identified from the literature. Research has been conducted using qualitative methods. Furthermore, it examines the key factors that enables good spread of innovation within the NHS. Factors such as communication, leadership, culture, skills, incentivising adoption, and evidence-based practices play a key role in facilitating the diffusion of innovation. There are passionate innovators working within health and social care, who see innovation as being pivotal to the success of the NHS in Wales. They are going the extra mile, trying to network and build connections, not as part of their job description, but because they want to make a difference. The feedback is that they don't feel as though they have the leadership support, time, headspace, resources, or funding to be truly innovative alongside conflicting priorities. Highlighting the barriers around the spread of innovation, leads this project to the provision of a comprehensive framework based on Coopers Stage Gate model (Cooper, 1990) thus addressing what is required to support proven healthcare innovation projects appropriately spread pan Wales.

Keywords: Innovation, Healthcare, Wales.

Tables and Contents

1 Introduction

The term 'Innovation' is defined in the Innovation Strategy for Wales as "the creation and application of new knowledge to improve the world" this could encapsulate medical devices, new ways of working or new therapies. (Welsh Government, 2023). Innovation in healthcare has accelerated in the last twenty years, improving patient care, and increasing cost efficiencies (Arora, Wright, Cheng, Khwaja, & Seah, 2021). According to Rogers, it does not matter if the innovation is new, "if an idea seems new to the individual it is an innovation" (Rogers E. M., Diffusions of Innovations, 5th Edition, 2003). Innovation in Wales is delivered through several public bodies, each successfully delivering projects within different specialities. All seeking to have a positive impact on patient care, health outcomes and service improvement. Life Sciences hub, an arm's length body of Welsh Government has been established since 2014 to collaborate between industry, health, social care, and academia. The Tritech institute was established in September 2020, by Hywel Dda University Health Board to support and deliver innovative healthcare solutions. Every year, the Bevan Commission's Exemplar Programme supports health and care professionals to deliver innovative projects with the aim of applying prudent principles and improving patient outcomes. Ideas are translated into practice and delivered by these organisations, however, many of these projects remain in silos within health boards and trusts which can be seen as inequitable (Bate, Robert, & Bevan, 2004) and in contravention of the concept of Prudent and Value-Based healthcare (Welsh Value in Health Centre, 2023).

The four principles of prudent health care (Welsh Government, 2016):

1. Achieve health and well-being with the public, patients, and professionals as equal partners through co-production.
2. Care for those with the greatest health need first.
3. Do only what is needed and do no harm.
4. Reduce inappropriate variation using evidence-based practices consistently and transparently.

Innovations can be diffused and there have been efforts in Wales historically to do this specifically within health and care. There has been a body of work and an interest within Wales demonstrated by Welsh Government funded projects including the Spread and Scale Academy ran by the Dragons Heart Institute (Health and Care Research Wales, 2023) and the Bevan Commission who developed and led the National adopt and spread programme funded by Welsh Government from 2019 to 2021 (Chilvers, Rich, & Howson, 2022). There are, however, still many barriers. This project will look at what is required to support proven healthcare innovation projects appropriately spread pan Wales. The enablers to diffuse innovation are Welsh Government policy documents from 2014 to present, see table 1.

Table 1. Welsh Government Policy Documents.

Title	Year	Publisher	Main Recommendations
The Wellbeing of future generations (Wales) Act	2015	Welsh Government	Integrate future focused thinking into decision making processes. Factoring in the potential effects on future generations. Supporting innovation that addresses the needs of future generations and ensuring policies contribute positively to their well-being.
Social Services and Wellbeing Act	2014	Welsh Government	Establish collaborative platforms that encourage the sharing of best practices and innovative solutions amongst different stakeholders. This can foster a culture of learning and adaptability, and continuous improvement, leading to the effective implementation and spread of innovative approaches.
Parliamentary Review of Health and Social Care in Wales	2018	Welsh Government	Ten recommendations including creating one seamless system for Wales, putting people in control, harnessing innovation, and accelerating technology.
A Healthier Wales: Long term plan for health and social care	2018	Welsh Government	The value of coordinating and harnessing innovation to meet the needs of the population and promote prosperity in Wales.

2 Identification of Project Requirements

2.1 Personal Motivation of the Researcher

The researcher is a highly experienced Project Manager within Hywel Dda University Health Board, undertaking a twelve-month secondment role as a Programme Manager within the innovation ecosystem. Working alongside Tritech, ARCH and the Bevan Commission, the role supports the Innovation Leads within Local Health Boards and Trusts across Wales, providing oversight, co-ordination, and collaboration to deliver innovation efficiently. This stimulated the interest of the researcher, specifically in how best to support the development of a framework to aid the spread of proven healthcare innovation projects.

2.2 Research Design

The researcher is a pragmatic deductive researcher in an applied field. Action research (Stringer, 2008) has been selected as their chosen research methodology due to their role within an organisation seeking innovation diffusion.

The selected research method includes looking at the latest literature, by searching on the key words ‘diffusion’, ‘innovation’, ‘policy’, ‘health’, ‘change’, ‘scale and spread’ within the context of the NHS, ‘issues concerning spread’, ‘barriers to innovation’ and ‘what enables good spread’.

Saunders research onion has been used as the approach (Saunders et al., 2007). The first stage being the literature review which examines diffusion and the spread of innovation in a Wales health context. This is followed by primary data collection with relevant stakeholders, firstly through an engagement session to identify factors supporting and limiting innovation adoption and secondly through an online survey with relevant stakeholders to explore themes identified from the literature. Research has been conducted using qualitative methods.

78 individuals have participated in this research including NHS Wales Innovation Leads who represent each of the Local Health Boards and Trusts across Wales. In addition to Bevan Commission Exemplars and Spread and Scale Academy graduates, to achieve a cross sectional view and to avoid any bias. The researcher has used mixed methods including a workshop, questionnaire, and keeping a diary. The survey continued until there was theoretical saturation. A thematic analysis was undertaken at each stage. There are no ethical considerations for this project. Research ethics are provided by the School of Management, with the standard arrangements for confidentiality and the right for participants to withdraw at any point.

This work looks at the latest publications from the Institute for Healthcare Improvement (Massoud, et al., 2006), The Health Foundation, Benchmarking Innovation: A Short Report (Radnor & Robinson, March 2000) Further papers by Zoe Radnor, Trish Greenhalgh, Rogers Adoption and Diffusion model and Coopers Stage Gate model.

2.3 Research Question

Wales is a relatively small country with seven local health boards covering 20,779km2 with a population of 3,107.500 (Welsh Government, 2022). Despite this advantage, we are unaware of what innovations are being undertaken in our own or neighboring health boards. Research and development projects are recorded and benchmarked throughout Wales, yet there is no record of innovation, it is a dark art, one that is talked of, but not routinely recorded and shared.

The subsequent sections will consider what is required to support proven healthcare innovation projects appropriately spread pan Wales.

2.4 Aim

The aim of the project is to provide a standardised way to innovate and enable spread pan Wales, thus ensuring that good ideas and projects are developed holistically, and implementation is improved for practitioners. It is the intention of the researcher to interrogate current literature and work with the Innovation Leads based in health boards across Wales to identify an innovation process, to enable the best use of existing resources already within the innovation ecosystem for Wales. This addresses the inequalities currently experienced by patients, who could be benefiting from knowledge of improved ideas and practices that often remain within silos. It will yield benefits for stakeholders, but only when well designed. The

research work is theory-building and has major implications for the way in which innovation is delivered equitably within Wales.

2.5 Diffusion

The delivery at scale of a proven pilot project is often referred to by the term ‘diffusion’ or ‘spread’. (Nelson et al., 2002) This can be defined as ‘replicating an initiative somewhere else’ and scale up can be defined as ‘tackling the infrastructural problem (across organisation, locality, or health system) that arises during full scale implementation’.

The subject area is well researched worldwide including the United Kingdom, Iran, Africa, and the United States of America (Barker, Reid, & Schall, 2016; Cesar, Black, Boerma, & Bryce, 2011; Nolan, Schall, Erb, & Nolan, 2005; Mohammadi, Poursaberi, & Salahshoor, 2018) with extensive advice and guidance. However, none of this relates specifically in the context of Wales which has a unique set of conditions as publicised in A Healthier Wales (AHW), launched in June 2018, the Welsh Government’s strategic plan to deliver a whole system approach to health and social care (Government, 2018).

In the current financial climate and as the NHS reaches 75 years since founding, the spread of innovation is essential to ensure sustainability for future generations and to address the health inequalities presented when good practice or new technology has not diffused (Public Health Wales, 2023; Honeyman, Maguire, Evans, & Davies, 2020).

2.6 Rogers

There is a wealth of literature relating to diffusion and adoption of innovation, built on the work of Everett Rogers, a sociologist and professor of communication studies. His famous diffusion of innovation theory, initially published in 1962, is widely used (Rogers E. M., Diffusion of Innovations, 1962) (Rogers E. M., Diffusion of innovation, 1983).

Applying social science research, a coherent set of concepts and models can be applied to any type of innovation, to project perceived diffusion. Rogers call it “a kind of universal micro process of social change” (Rogers E. M., Diffusion of Innovations, 1962)

Rogers stated that there are five types of adopters that he illustrates in a ‘s curve’ as seen in Fig 1, ranging from 1) Innovators 2) ‘Early adopters 3) Early majority 4) Late majority 5) Laggards. The five stages are helpful in explaining what needs to be done during the implementation of a process, change or software when trying to convince the majority that this is a good thing to do. In effect, we are trying to build social pressure within an organisation by promoting ‘salespeople’ to convince the early majority.

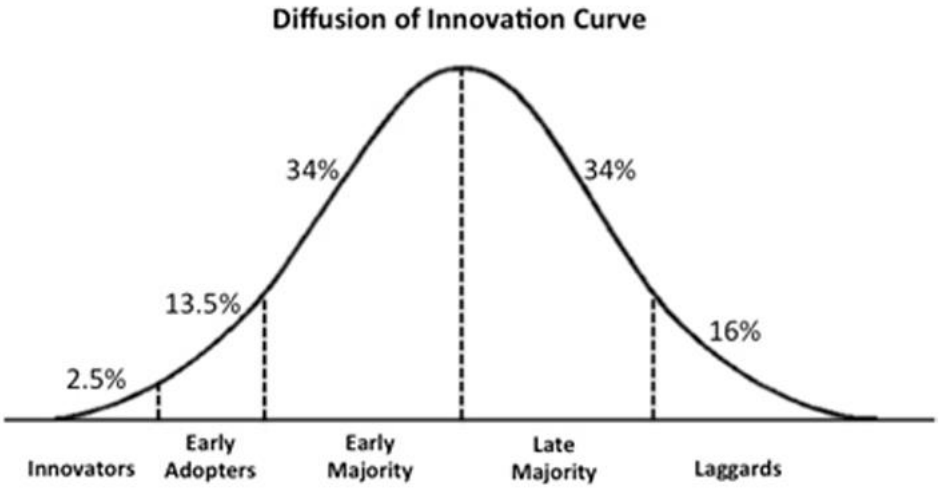

Figure 1. (Rogers E. M., Diffusion of Innovations, 1962)

A further five factors of Roger’s diffusion model are the attributes that may impact or influence adoption. 1) Relative advantage 2) Compatibility 3) Complexity. 4) Trialability 5) Observability. Ideally, we would have a

low level of complexity and a high level of relative advantage, trialability, compatibility and observability to speed up adoption.

Rogers provided the perspective that the rate of adoption is slow until it reaches critical mass. That the diffusion of innovation is a social process, involving the communication of an innovation and the response by members of a social system over time, thereafter the spread of innovation is self-sustaining.

There are criticisms of Roger's theory (Dearing, 2009; Moore & Mc Kenna, 1999) including Rogers himself (Rogers E. M., Diffusions of Innovations, 5th Edition, 2003). The steps are portrayed as linear; however, innovation is disruptive, unstructured and sequiturs. The term 'Laggard' seems to be quite harsh, if you consider that you may be deemed 'laggard' for one innovation, but an 'innovator' or 'early adopter' for another, based on social and contextual factors that influence adoption decisions. Real world adoption of innovation can be influenced by unforeseen events such as the recent COVID-19 pandemic, societal change, or other unpredictable events. Although there are criticisms, the theory hasn't been disproven and underpins thinking in this area. The criticisms do not affect the application of this model to this area of study.

3 Main Analysis

3.1 Considering Existing Frameworks

To develop an innovation process Arora et al., 2021 suggests invention and implementation stages, with an intervening development stage. It is in the implementation pathway that innovation pathways may offer the greatest assistance to innovators. The focus being on forming networks with different stakeholders, simplifying aspects of the innovation pipeline. (Arora, Wright, Cheng, Khwaja, & Seah, 2021)

3.2 Evidence Based Practice (EBP)

EBP (Mohammadi, Poursaberi, & Salahshoor, 2018) is a framework for decision making that can be used in healthcare. EBP involves integrating the best available research evidence with clinical expertise and patient value to guide decision making and improve outcomes. Among the attributes studied in this research, Roger's theory of relative advantage, simplicity, observability, and trialability had a significant positive correlation with EBP adoption. The positive correlation between relative advantage and EBP adoption indicates that EBP adoption increases with increasing perception of advantages such as the cost-effectiveness, potential benefits, and effects of EBP on the promotion of clinical care. It also highlighted the need for emphasis on the benefits of EBP in training interventions. In designing a training program for the improvement of EBP adoption, part of the program should be allocated to training regarding the advantages of the practice.

3.3 Non adoption, abandonment, scale up, spread, sustainability (NASSS) Framework

Greenhalgh et al 2017 provided the NASSS framework, a structured approach to understand and analyse the stages and factors involved in the adoption and implementation of health interventions. It is useful for those seeking to plan, implement and evaluate technology-supported healthcare programmes. It helps to identify and deal with potential problems early in the implementation process and to evaluate why some initiatives succeed while others fail. The following stages provide a lens through which to examine and facilitate barriers.

1. The illness/condition and whether patients are appropriate for the use of this.
2. The technology
3. The value proposition – the value of the innovation and for whom it generates value. Improved quality of life for patients as the true value proposition.
4. The adopter system – staff engagement and whether they had concerns about threats to their professional role/job loss, scope of practice or identity is reported as the key barrier for adoption.
5. The organisations – capability and readiness for innovation.
6. The wider context and the interaction between them - current policy strategies and funding models at local, regional, and national levels were simultaneously promoting and impeding the adoption and spread of the innovations.
7. The interaction between the domains – how much scope there is for adapting and co-evolving the technology and the service over time.

Although this framework is a starting point, the NASSS framework oversimplifies what is a complex process. A process which is not linear but may overlap or occur in a different order. The framework does not account for local context, cultural variations, equity, access, and social determinants of health, such as digital literacy that can significantly impact outcomes.

3.4 Lessons from Africa

Barker et al 2016 undertook an extensive review of existing sequential scale up approaches and quality improvement-based approaches developed over the past 20 years by Associates in Process Improvement (API) and the Institute for Healthcare Improvement (IHI) and concludes that a four-step sequential phased approach is required. 1) Set up 2) Early testing 3) Test the intervention in various settings 4) Full Scale. This again oversimplifies a complex process, however how we create evidence and prove value is vital and will need to be a key stage.

3.5 Coopers Stage gate

Innovation is a process, it is not a linear process, but nevertheless requires a framework to provide steer. A stage gate model with decision making and prioritisation built in, where the outcome is either go or kill is critical to the proper allocation of project resources. Good evaluations prevent 'loser' from proceeding too far, with the resulting misallocation of scare resources. A project cannot pass into the next phase or stage until the evaluation is done and the gate is opened (Cooper, 1990). Reflecting upon the literature, a model is not provided that follows the innovation process all the way through, there is no equivalent in Wales for health innovation. The Coopers Stage gate model is missing from Wales.

4 Barriers to Innovation

The following section considers the barriers to innovation as presented in the literature.

4.1 Communication

Planned communication is needed amongst staff to ensure organisational readiness and to understand what is needed within the current infrastructure to enable adoption and to sense check the proposed spread plan. This will identify any issues that need to be addressed such as training. (Massoud, et al., 2006)

4.2 Culture

Just because an innovation works well in one setting does not mean that it will work well in another. Lanham suggests 'designers should expect their designs to be modified' and 'implementation teams should encourage participants to ask questions, admit ignorance, explore paradoxes, exchange different viewpoints, and reflect collectively' (Lanham, et al., 1982). There are numerous factors that can impact spread such as the will for change and a receptive environment. (Barker, Reid, & Schall, 2016). A positive attitude is needed to build on creative ideas irrespective of the source. (Radnor & Robinson, March 2000) Greenhalgh et al., 2019 acknowledges the difficulty in spreading innovation across an entire health system, shifting cultural or professional norms. (Greenhalgh et al., 2019)

4.3 Competition

Greenhalgh et al 2017 recognises that supporting the process of adoption is labour intensive and there needs to be an element of competition. We need to establish whether this new idea is better than anything else that has been done before as there may be better solutions out there. There are politics (buy in required to the process); capacity; bureaucracy. Knowledge within a network is worth more than knowledge within a system. (Greenhalgh et al., 2017)

4.4 Evidence

Innovations rarely achieve widespread uptake even when there is robust evidence of their benefits (and especially when such evidence is absent or contested). (Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004). It is never too early to plan for spread, this means understanding the problem we are trying to solve, the target population and the benefit to future adopters. It is therefore imperative to plan how to obtain the evidence that will be needed to demonstrate that the idea resulted in the desired outcome. Massoud et al., 2006, suggests an agreed set of measures are needed to demonstrate the spread of the recommended changes and the outcome of the changes implemented. An interoperable system will be

required to capture such measures and share lessons learned during adoption (Massoud, et al., 2006). Cesar et al.,2011 expands on this point suggesting evaluation design is based on continuous monitoring of specific indicators and data analysis needs to be gathered before, during and after the implementation period. (Cesar, Black, Boerma, & Bryce, 2011)

4.5 Skills

Horton et al (2018) state there should be three spread programmes to allow for adaptations to allow for the right skills, behaviour, and cultures to be in place. Project management is key with funding required to support the upfront costs of implementation. Assistance is required for data analytics and evaluation to monitor the impact of the change, to measure, understand and improve the quality of care. Ensuring adopters gave sufficient time to support. This requires investment in staff skills to continuously improve and leadership skills to create a learning culture. (Horton, Illingworth, & Warburton, 2018). Success depends on the skills of a team including investment appraisal, marketing, change management, service improvement and evaluation. (Collins, 2018)

4.6 Incentives

Horton et al., (2018) suggests rewards for adopters instead of innovators is suggested. (Horton, Illingworth, & Warburton, 2018). Radnor et al., 2000 suggested rewards for innovative behaviour and ideas (Radnor & Robinson, March 2000).

4.7 Funding

Collins 2018 states innovators and adopters in the NHS need to be able to access small amounts of funding quickly and easily to support rapid adoption and spread of effective innovations. Collins explains “interviewees described spending years ‘in the wilderness, attempting to keep their innovations alive alongside their day jobs without support from within their organisations or external bodies. Others described leapfrogging from one small pot of funding to another, often with substantial delays. These challenges explain directly why some simple and effective innovations in our case studies took a decade or more to be adopted and spread at any scale within the NHS” (Collins, 2018)

4.8 Resource

Transferring even simple innovations from one NHS organisation to another is a complex process requiring adaptation, testing and re-evaluation. Collins 2018 states resource and time is required in preference to toolkits and conferences, senior clinicians convincing colleagues of the benefits and experienced project teams to support the adoption of innovation. Lack of adequate resources is seen as a major barrier to adopting and spreading (Collins, 2018). Conversely, it is interesting to note that Barker et al., (2016) concludes that if an implementation does not require a major addition of resources, it is more likely to succeed in spreading (Barker, Reid, & Schall, 2016).

4.9 Risk

Greenhalgh et al. 2019 acknowledges reasons why it is difficult to spread innovation across an entire health system, it requires taking risks. (Greenhalgh & Papoutsi, 2019) The healthcare system is inherently risk adverse.

4.10 Leadership

Purposeful leadership is key to spread (NHS England, 2023). Currie et al., 2019 states leaders, clinical, managerial, and perhaps most importantly hybrid leaders who bridge both these roles create the preconditions in which staff will feel confident to innovate and improve (for example, by setting a climate of risk taking and collaborative learning rather than one of playing safe and covering one’s back) (Currie & Spyridonidis, 2019). There are opportunities to accelerate the spread of innovation by removing regulatory barriers and transferring decision-making on the adoption of innovation closer to the front line. The attitudes of local leaders who actively champion innovation have a significant impact on the speed of innovation and spread. Service and geographical silos mean there can be few formal mechanisms for transmitting learning across sites, systems need to be in place to support implementation (Collins, 2018). Radnor suggest top management support and involvement in the process (Radnor & Robinson, March 2000)

4.11 National Priorities

Nolan et al., 2005 provides a framework used to reduce waiting times for patients, this was successful without the large-scale addition of resources. This was undertaken as a strategic objective and therefore improvement on specific areas at a national level supported the spread initiative. (Nolan, Schall, Erb, & Nolan, 2005). Massoud et al, suggested acknowledging that the project is a key strategic initiative of the organisation and supporting a spread plan through the assigning of an actively involved executive sponsor. (Massoud, et al., 2006)

4.12 Infrastructure

Support is needed for peer networks to capture and share lessons learned amongst adopters. (Horton, Illingworth, & Warburton, 2018). The existing literature leads us to consider twelve factors relating to the barriers of innovation adoption and spread presented in Figure 1.3 and discussed in this section.

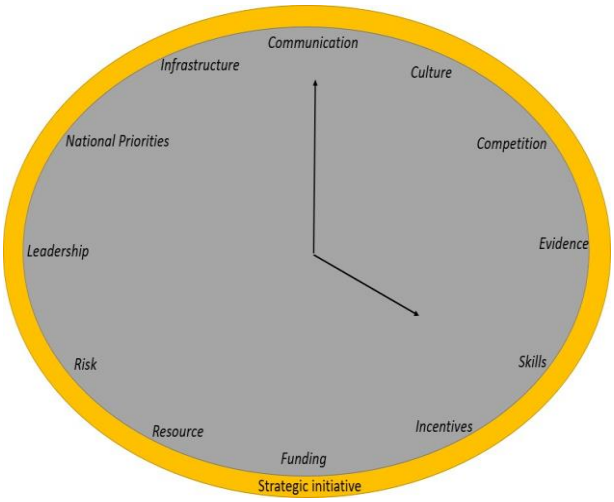

Figure 2. The Innovation Factors Clock Highlights Factors that Need to be Considered as Part of the Cooper's Stage Model (Cooper, 1990) for Wales.

Table 2. Literature References to Figure 2.

Communication	(Massoud, et al., 2006)
Competition	(Greenhalgh, et al., 2017)
Culture	(Lanham, et al., 1982) (Barker, Reid, & Schall, 2016) (Radnor & Robinson, March 2000) (Greenhalgh & Papoutsi, 2019)
Evidence	(Greenhalgh, Robert, MacFarlane, Bate, & Kyriakidou, 2004) (Massoud, et al., 2006) (Cesar, Black, Boerma, & Bryce, 2011)
Funding	(Collins, 2018)
Incentives	(Horton, Illingworth, & Warburton, 2018) (Radnor & Robinson, March 2000)
Infrastructure	(Horton, Illingworth, & Warburton, 2018)
Leadership	(NHS England, 2023) (Currie & Spyridonidis, 2019)
National Priorities	(Nolan, Schall, Erb, & Nolan, 2005) (Massoud, et al., 2006)
Resource	(Collins, 2018) (Barker, Reid, & Schall, 2016)
Risk	(Greenhalgh & Papoutsi, 2019)
Skills	(Horton, Illingworth, & Warburton, 2018) (Collins, 2018)

5 Survey Results

The literature identified key themes that provided a basis for discussion within the Welsh ecosystem to understand the locally perceived barriers and enablers.

5.1 Survey 1 (see Appendix 1)

The Powys Academic, Industry, and Eco-system Collaborative hosted an event to improve engagement with key partners, to help identify and find solutions for challenges faced by Powys which could be utilised nationally. 40 representatives attended from across key partnerships in Wales, including Welsh innovation leads and organisations such as MediWales, Cwmpas, The Bevan Commission and University of South Wales. Four questions were asked detailed in Appendix 1.

Figure 3. Participants were Encouraged to Provide Feedback on White Boards.

Table 1.3. below Provides Feedback Themed into Topics based on the Innovation Factors Clock.

Table 1.3	How do we create a culture of collaborative innovation?
Communication	Define the problem, be visible, do it and then shout about success. Wales can be a 'sandbox' for innovation
Competition	Agile approach, failing fast
Culture	Enable and facilitate change; Trust; Relationship building; Foster interorganisational relationships; Make innovation part of PADR; Can't compete and collaborate at the same time; Shared recognition; No blame when it doesn't work; be proud trying; Networks; Admit that Wales is a small nation
Evidence	Benefits realisation; Job Planning 4 Pillars of Practice; Double Diamond Approach' Design – Iterate – Fail – Succeed
Funding	Inspire others to bring solutions 'Challenge funds; Investment with clear benefits
Incentives	Recognise it – provide time, reward, recognition for staff
Infrastructure	Multidisciplinary teams; Buy in' at ALL levels including community and 3rd Sector
Leadership	Clear leadership set tone for collaborative culture; Distributed Leadership; Purpose People Process Technology; Give permission to leaders and management at lower levels
National Priorities	Strategic Partnerships; Common plan – Common vision
Resource	Case studies/visibility/champions – at all levels/stages
Risk	Encourage bravery; taking risks within reason; Give permission; Shared risk; Embrace (Managed) Risk;
Skills	Job Planning 4 Pillars of Practice; Staff training

5.2 Survey 2 (see Appendix 2)

Based on the results collated from Powys and the themes identified from the literature, a survey was developed and disseminated across all health board sites. 38 participants from across Wales partook in the following survey.

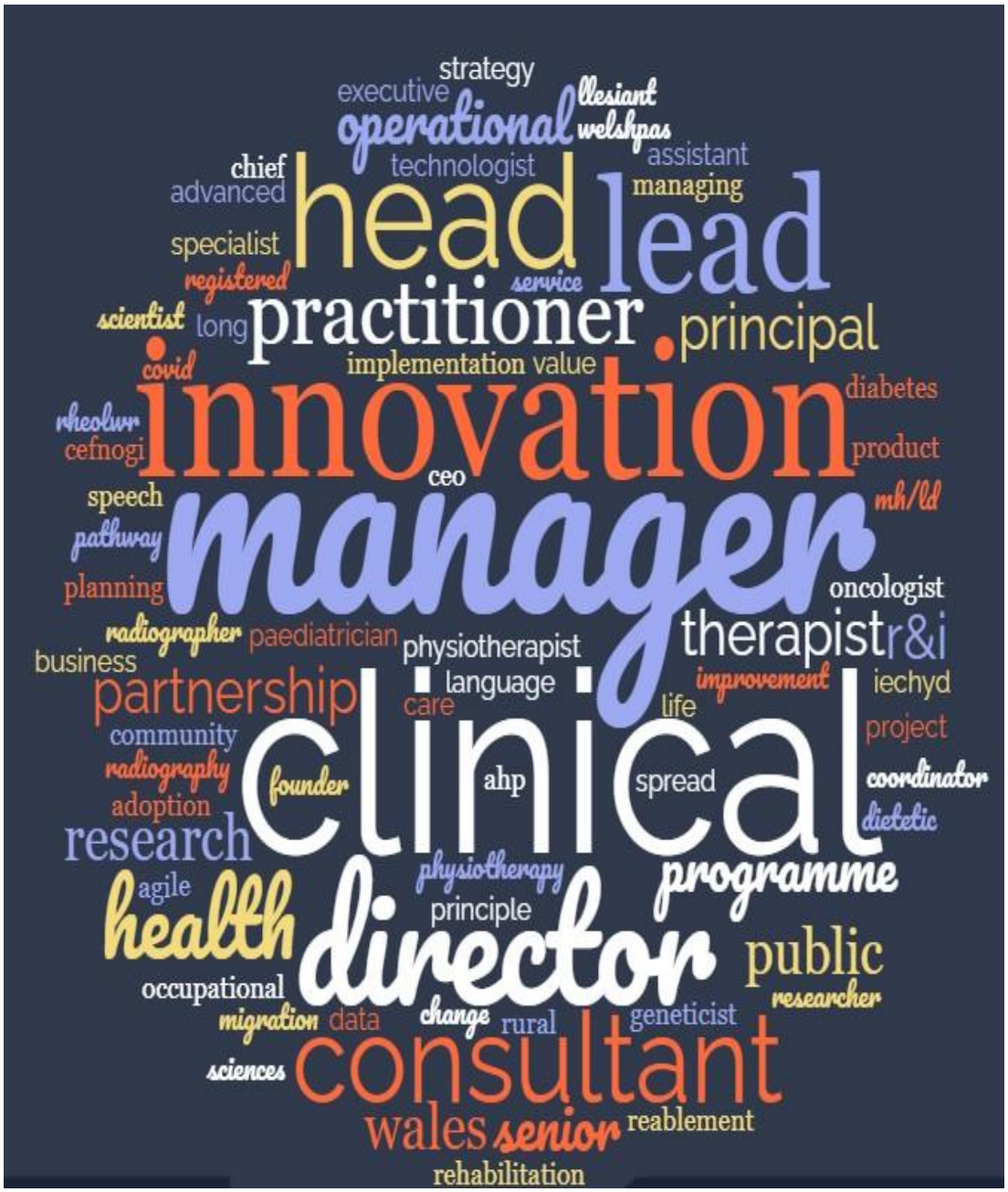

Figure 4. Word Cloud

The level of respondents is provided in the word cloud above. Nine participants had 'innovation' within their job title. Two 'Chief Executive Officers', one 'Managing Director' and 'Assistant Director'. Five had the title 'Head of', six included 'Manager' within the title, four Consultants, two Radiography Practitioners, two Clinical Leads, a Clinical Scientist, Dietetic lead, General Practitioner, Senior Public Health Practitioner, Physiotherapist, Public Health Practitioner, Registered Reablement Manager and Speech and Language Therapist.

5.2.1 Q1 Adoption Pathway

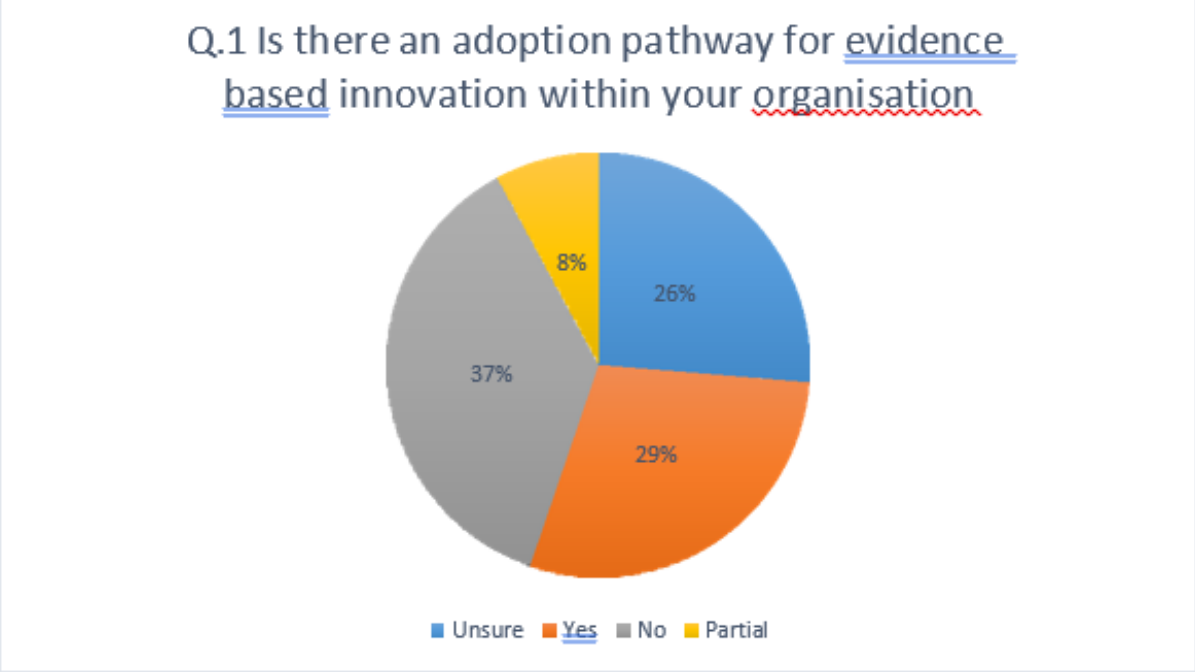

Figure 5. Distribution of Adoption Pathway.

37% of the people surveyed were unsure if there was an adoption pathway within their organisation. 29% said yes there was.

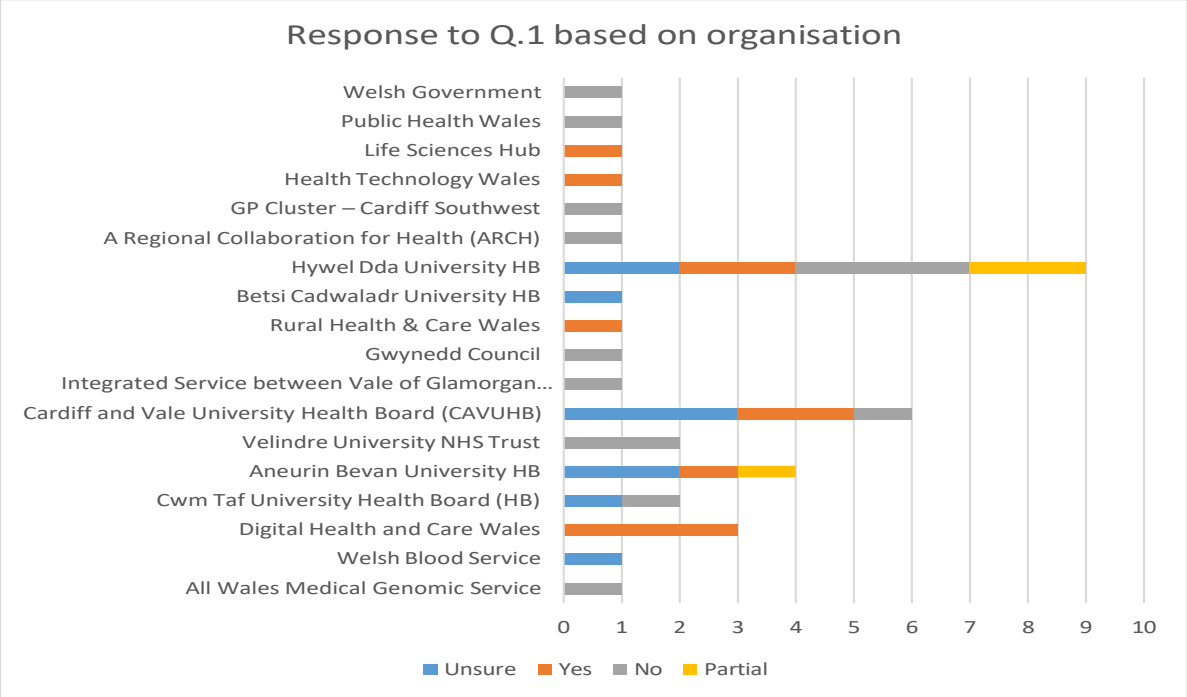

Figure 6. Responses based on Organisation.

Different responses within the same organisations show a lack of clarity.

5.2.1.1 Q.2 What role do you play in the adoption and sharing of innovation in your organisation?

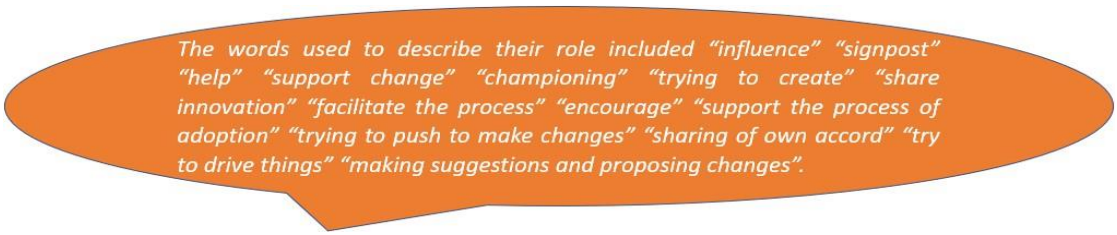

Figure 6. Description of Roles (a).

Those who saw their role as being focused on the development of innovative ideas, did not see adoption as being part of this role. In juxtaposition, the majority of those playing a role in the adoption and sharing of innovation within their organisation did not have this as a formal role. They had taken this role upon themselves or had taken up the gauntlet as a 'Bevan Exemplar'. An 'Innovation Adoption Director' identified as being a key role in the adoption and sharing of innovation within their organisation.

Figure 7. Description of Roles (b).

Rural Health and Care pilot innovative ways of delivering health and care services in rural areas (plus doing research/evaluation on these and on any perceived inequalities) they then disseminate results and examples of best practice at their annual 2-day Conference, via their Webinars and Podcasts. Projects they have piloted have been adopted as mainstream interventions.

DHCW stated that they have a research and innovation group and a business change team that are responsible for the adoption of national digital products for NHS Wales.

Allied Health Professional Clinical and Operational Lead for Cardiff and Vale commented that they had "Participated in Spread and Scale, they were part of the implementation and development group for the Rehabilitation Model, developing as a service against this and measuring its success and learning points through Clinical Outcome Assessment (PROM/PREM, OBsRO, KPI) and wider stakeholder feedback. Benchmarking service against national standards."

5.2.2 What works well in your organisation for the adopting and sharing of innovation?

Comments were made about how easier it is to innovate when there is a major crisis such as COVID. Suggestions included working alongside a project manager, having processes and systems in place to facilitate adoption such as IShare or **s**haring innovation practice via an internal communication form, online tools, executive panels, innovation champions, intranet, staff newsletters, social media, networking, local workshops/conferences. Clear staff expectations and clinical buy-in. Innovation training and showcase events where new innovations can be shared with colleagues such as world café style interprofessional meetings.

Time given to adopt is a recurring theme, 'Some front loading and protected resources as without, given the pressures of waiting lists, there is very little time for clinicians to consider and trial ideas."

"Psychological safety is key in terms of learning from errors or reflecting in teams".

One employee stated, “We see ourselves as a nationally established service provider for digital innovation for NHS Wales.” Another stated “We engage throughout the product cycle, organically transitioning our customers from their current ways of working to a new, mostly digital way of working. The user centred approach is critical to ensure it is fit for purpose, buy- in and best use of product.”

A consultant states they have ‘built connections with the innovation leads in which include good conversations and relationship building.’

The Spread & Scale Academy based in Cardiff and Vale offers significant expertise in this area through fellows and facilitators, utilised in areas beyond the Academy. For example, running workshops on problem statements, aims, turkey sandwich and 90-day plans etc. They also have a lot of teams who have now been through the Academy with significant spread achievements.

A Clinical Lead stated, “On an individual departmental level, we are encouraged to share best practice and innovation based on evidence gathered.”

One employee stated, “Communication, sharing best practice and promoting / raising the profile of successful / innovative ways of delivering health and care services, especially those pertinent to rural areas.”

Another states, “Committed, energised, capable and resourced teams. The testing and adoption of innovations requires 'heavy lifting.” Without supporting operational teams locally with this, we are less likely to see rapid advances with the adoption and sharing of innovation.” ‘We have a very active base of staff looking to develop innovation projects.

HTW share and promote the guidance they produce on technologies and innovations. They have an inhouse comms team that targets the right audience for each piece of guidance produced.’

A Consultant remarked, “Initially discussion at senior staff/team meetings, then engagement with wider teams, dissemination via departmental Teams channels and newsletters.”

“Board/Executive encouragement for innovation across the organisation also very important to build an innovation culture.”

5.2.3 What are the enablers to adoption within your organisation?

Figure 8. Chances of Adoption.

Although this question was specifically around current enablers, there also appears to be a wish list of what should be provided to support organisations to adopt. The key themes are presented below in no specific order of importance:

- Off the shelf adoption ready proposals, with the emphasis being on the adoption of practices that reduce cost.
- Inclusion within workplans.
- Open Mindedness and a willingness to be innovative and embrace change.
- Having the time to network with colleagues, make introductions and to share best practice. Promoting successful innovative ways of delivering health and care services, through events, seminars, workshops. Teams need time and space to listen and learn from each other.
- This needs to be supported from management level as it is hard to prioritise learning from treating patients.
- Permission and support from senior staff and managers including executive, board level and VBHC, demonstrating their buy in.
- Support from other innovators.
- Intranet.

- Engagement with external partners including Industry/Universities/Charities.
- Asking for new ideas.
- Find the 'Influencers' including motivated clinical colleagues with passion, energy and willingness to put in the time and effort, if they have enough influence over other colleagues, it is easier to adapt'.
- Finance (to help evidence business case for investment).
- A place to find examples along with training and awareness.
- Technology and interoperability.
- Dedicated resource to drive innovation.
- Evidence base demonstrating effectiveness and cost effectiveness and VBHC.
- Horizon Scanning Innovation Assessment.
- Clear and robust processes for testing innovations.
- Established governance for guiding innovation.
- Clarity around processes, pathways, approvals required.

5.2.4 Q5. Key Stakeholders

Figure 9. Key Stakeholders influencing Adoption Pathway.

Please note reference to Board includes CEO's, Directors, e.g., Finance, Strategic Planning, Operational delivery, Leaders who can listen and decide on whether to invest.

5.2.5 Q6. Barriers within Wales

Quotation bank detailing the barriers to delivering innovation within Wales:

Figure 10. Barriers in delivering innovation.

With reference to the literature, there was no mention of competition or incentives. All other key themes were mentioned in addition to there being no clear adoption processes, lack of awareness, time, or headspace to deliver innovation along with feelings of exhaustion. Bureaucracy and permission to innovate has been themed as 'leadership'. Practical issues such as the DPIA process, although a once for Wales approach, each health board has its own process and normally a small team. Response is therefore slow and what may be acceptable in one health board may be risk averse in another.

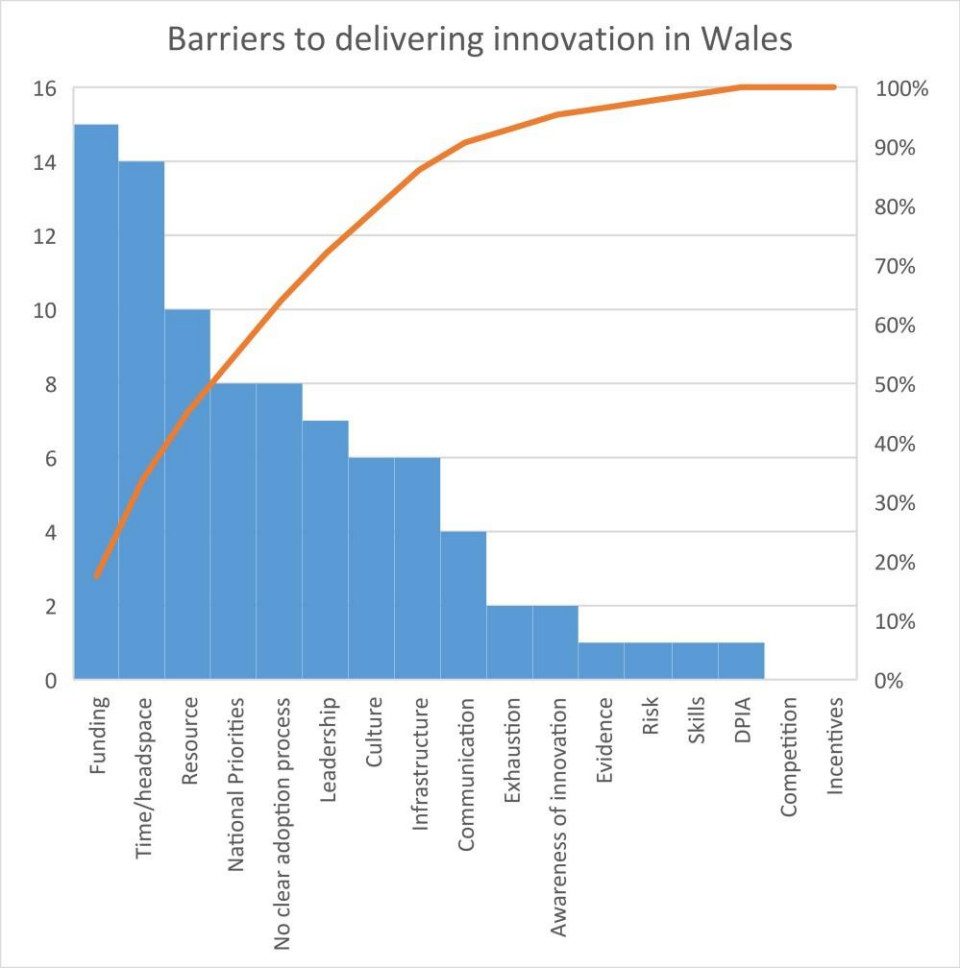

Figure 11. Barriers in delivering innovation – different categories.

This pareto chart shows the distribution of the data in descending order of frequency, with a cumulative line on the secondary axis as a percentage of the total. The chart demonstrates the following:

- Culture includes positive attitude and engagement or resistance of staff, poor behavioural change, change fatigue, lack of clinical staff by in and silo working.
- Resources include workload and lack of staff.
- Infrastructure includes digital architecture, technical challenge, and IT systems.
- National priorities include conflicting priorities including clinical work, waiting lists, operational pressures, and prioritisation of needs.

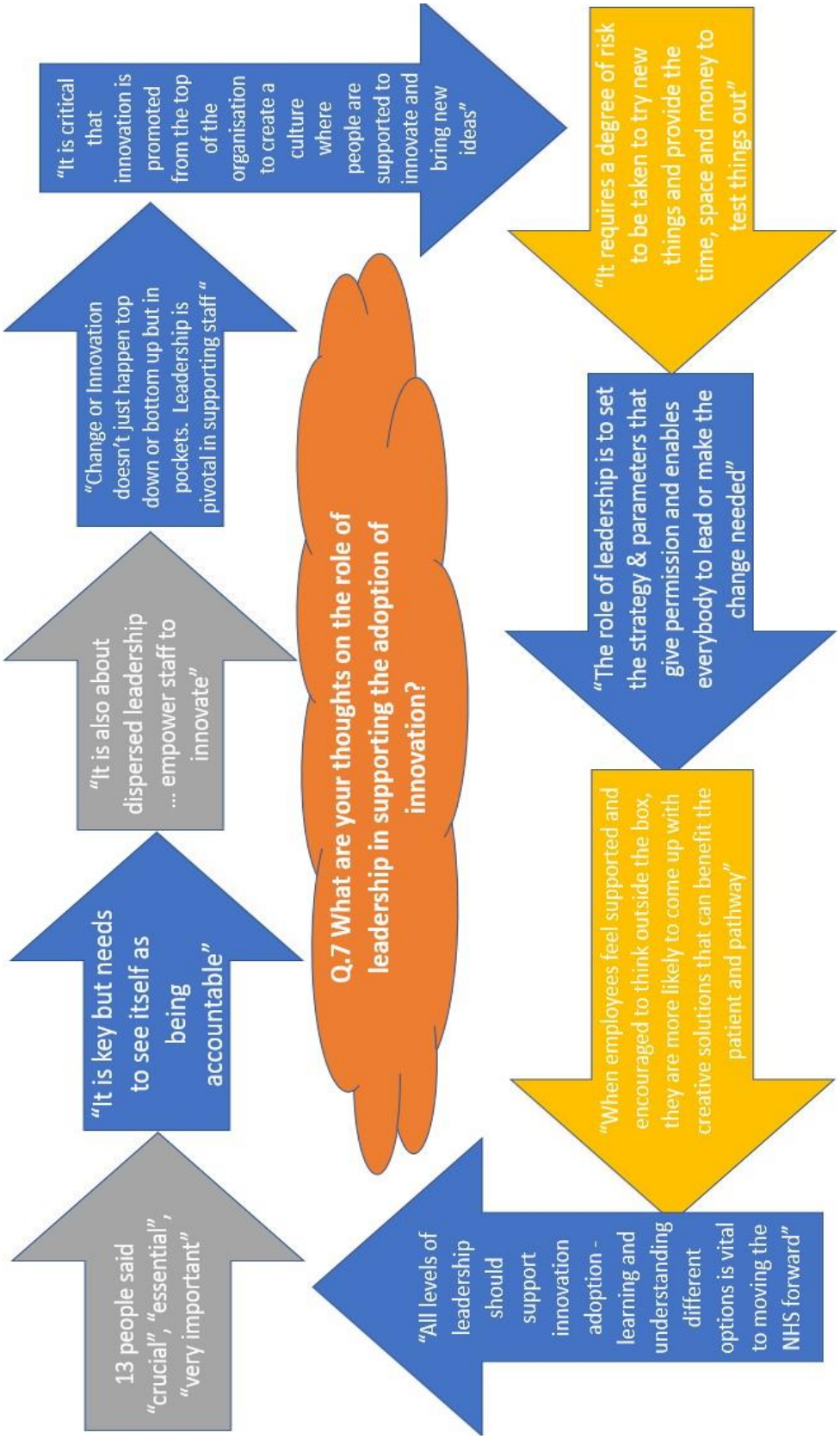

Figure 12. Role of leadership in supporting innovation.

5.2.6 Q.8 Is there an issue with coherency in the adoption and sharing of innovation in Wales?

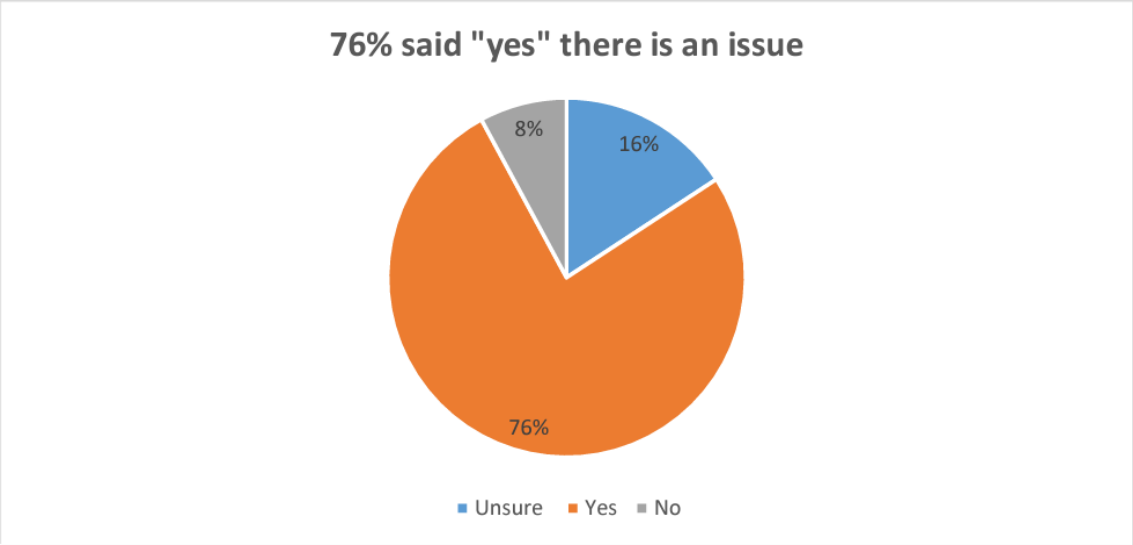

Figure 11. Is coherency an issue with adoption?

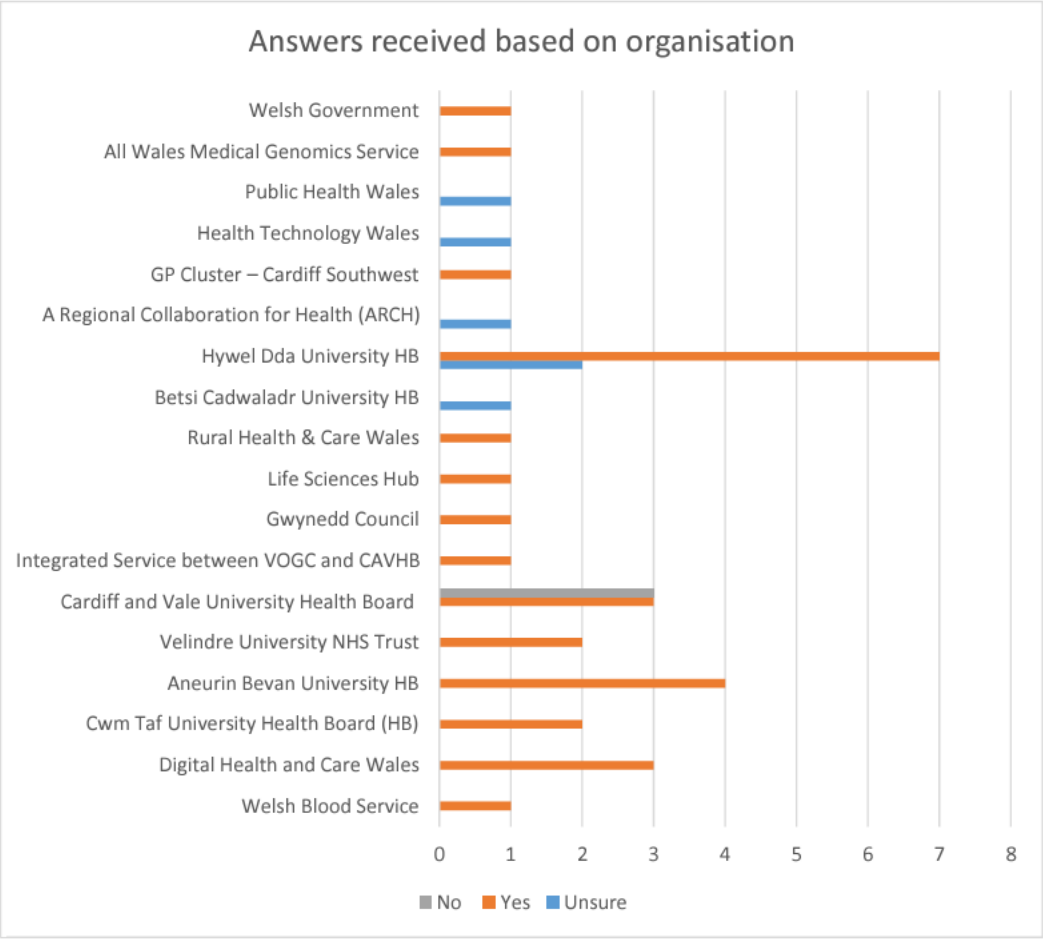

Figure 13. Responses based on organisations.

5.2.7 Q9. What could be done to improve the infrastructure for delivering innovation adoption across Wales?

The key themes are presented below in no specific order of importance:

1. Procurement: A fast-track procurement process.
2. Integrated Medium Term plans: When proven innovations can evidence significant delivery, they are built into the planning process.
3. Understanding of the current Innovation Ecosystem: Ensuring clear alignment and understanding of organisations. Improved utilisation of resources such as LSH, HTW, HEIW, Improvement Cymru, Health Hub and the Bevan Commission. This would reduce duplication around innovation which slows down change and wastes resources.
4. Communication & Collaboration: Not looking for something 'new' but building on what is already working well. A health board wide innovation conference aimed at frontline staff sharing good pieces of work happening. More opportunities to showcase the impact of innovations between Local Authorities and Health Boards. Implementation support from people who have already adopted would be useful to share lessons learnt.
5. A typology of innovation: A library of one-page summaries of projects, what was learnt, what worked and what didn't and a contact number having a system such as this in place where learning can be shared. This could be sorted by project areas, types and then people can learn quickly what has happened elsewhere and get in touch for more info if relevant.
6. Prudent innovation: This could be a good concept, the greatest need first, reducing waste, doing no harm includes to staff, innovation creates additional demands on clinical staff and unnecessary variation.
7. National Innovation Programme: Dedicated roles, team, individuals who visit organisations, HB, Teams to spread innovation to have an impact across the whole system, with explicit links to finance colleagues, planning and strategy. One national innovation programme potentially links up current innovation strands, the work of Bevan Commission and the funding streams with an ongoing academy or alumni of innovators across Wales. Available leaders with access to managers and directors, plus with staff on the ground making things work.
8. Evidence/Evaluation: Supporting innovators to demonstrate the benefits of their innovation through the collection of appropriate evidence, to convince decision makers that the practice is good and to determine whether to spread or cut their losses.
9. One Adoption pathway/process: A clear pathway with decision making and responsibilities. Sensible and common performance metrics. Process innovation is very different to technology innovation, and workforce innovation is very different again. Clarity around a single pathway would be desirable. Somewhere to access information and guidance as a one-stop portal.
10. Funding: A clearer route to dedicated funding A spend to save model that commits to funding successful new models and innovative solutions.
11. Information Governance support: Although there is a pan IG policy, it is difficult to spread pan Wales when each HB has its own tolerance to risk.
12. Positive risk taking encouraging less 'process' within the NHS.

5.2.8 Q10. How should the impact of innovation adoption be evaluated?

- Benefit capturing: At the start of the project within a project plan.
- Staff buy in: Take up from staff on the ground.
- Innovation objectives: Individual services with innovation objectives no matter how small
- Reduced: hospital admissions, treatment time or resource
- Scale and adoption: How many times it has been adopted elsewhere.
- Staff experience and wellbeing: Is the adoption improving.
- Social Care QALY's: A measure within Social Care that was like QALY's in health.
- Mixed methods: This would depend on the project and/or service, no one size fits all.
- Outcomes/Social Values Framework: Health and Wellbeing outcomes/ Value Based Healthcare outcomes all need to be in line with key metrics for the organisations reporting. Using a standardised VBHC approach across Wales would simplify evaluation and enable comparison of interventions. Mainstreaming social return on investment and demonstrating benefits to the

wider system from an intervention would be helpful in decision making for commissioners. For example, reduction in GP appointments, ED attendances, mental health referrals, crime and antisocial behaviour, increased learning and employment, improved tenancies, and ability to live independently in addition to an improvement in health and well-being. Having a unified Welsh system to capture and demonstrate this would be powerful.

1. Has it improved care for the patient?
2. Where is the evidence (PREMS).
3. Has it improved the outcome for the patient? (PROMS)
4. Has it delivered better value/more efficient use of resources?
5. Is it safe and evidence based?

- Health Economic review: If you have an innovation which would help reduce the number of people being added to a waitlist then it should show clear numbers for how it will do that and how many people it will help.
- Patient stories and experience: Coproduction, and the ability to engage and converse with the patient receiving support (qualitative information underpinned by robust quantitative data) value to the patient, not necessarily cost and should have a long-term focus, not concentrating on short term gains.
- Cost effectiveness - Cost versus input and ability for people to continue to self- manage after intervention, the effectiveness and cost effectiveness of interventions should be fully considered. This requires consideration of comparative effectiveness and the opportunity cost. For example, any benefits from an innovation should be considered in comparison to standard care.

5.2.9 Q11. Do you know of an innovation that has been successfully adopted throughout Wales?

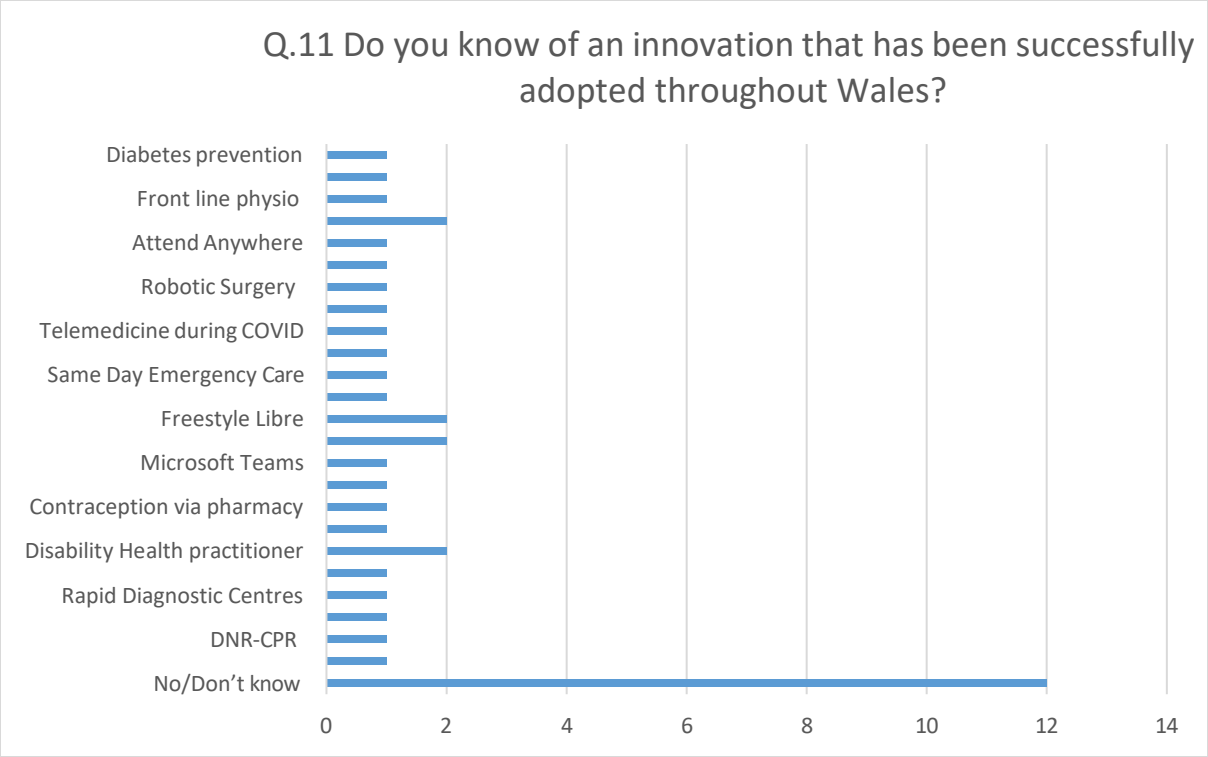

Figure 14. Successful innovative measures across Wales.

5.2.10 Q12a Thinking about your last answer, why do think it worked?

Figure 15. Factors behind successful innovative measures across Wales.

5.2.11 Q.12b Are there any lessons learned that you would like to share?

Figure 16. The need for innovation during testing times.

Skills - The Bevan Commission and the Spread and Scale academy support to provide not only skills, but a repository of innovation case studies and how to spread good practice.
Resources – The equipment was provided to do it at the same time, national funding to get this moving forward. The individual did not have a clinical caseload as part of their role. Innovation was in fact an essential part of job development. The right person to manage and co-ordinating. Support from experts to get it off the ground. Clinicians driving innovation with leadership support. Additional support from Respiratory help Implementation Group (RHIG) and Diabetes Implementation Group (DIG). People willing to talk to each other, sharing ideas, being open and honest about where things are working and where they are not, scrutinising their own services, understanding services and provision from a person-centred perspective (rather than focusing on saving cash and delivering a service that's convenient for the administrators) and being willing to take calculated risks. Welsh government backed.
Evidence - Proven system of work fulfilled a need and provided value. Innovation shouldn't be adopted for the sake of adoption. Having positive guidance from an independent and objective assessment body such as Health Technology Wales or NICE helps to reassure decision makers that technologies are safe, effective, and cost effective. Therefore, they tend to be more likely to adopt technologies with such guidance. Clear benefits for staff and patients. Universally beneficial
Simplicity - Relatively simple concept to adopt.
Incentive - A strong driver for change, we had to do it because of COVID/Legislation enforcing change. It seemed like the bureaucracy was removed during the pandemic and decisions could be made much more quickly than usual. I think there is a lot to learn from that as it feels like we have reverted to wading through the red tape again!
Culture - User Centred approach and therefore user buy in, built with the clinicians, and endorsed by them.
Communication/Networking/Partnership - Developed with team and people across Wales, nationally. Methods of communication can include regular social media, newsletters, email communication built on trust.

6 Conclusion

There are passionate innovators working within health and social care, who see innovation as being pivotal to the success of the NHS in Wales. They are going the extra mile, trying to network and build connections, not as part of their job description, but because they want to make a difference. The feedback is that they don't feel as though they have the leadership support, time, headspace, resources, or funding to be truly innovative alongside conflicting priorities.

The Integrated Medium-Term Plan (IMTP) is a three-year plan that health boards complete and submit to the Welsh Government. The IMTP sets out the organisation's key aims and ambitions for how services are delivered, innovation is not a requirement within this plan. Could the lack of leadership support felt by staff reflect the priority innovation is given within the strategic plan?

It is recognised that due to the nature of the health service being a public body, spending public money, transparency is needed. However, during COVID we were able to operate more innovatively with reduced bureaucracy. Innovators must wade through bureaucracy to spread their innovation between different health boards, even when there is a one for Wales Information Governance policy, each health board has its own stance to risk.

Each Allied Health Professional, Nurse or Doctor has a registration with a professional body and therefore their registration depends on their actions. Despite this fact, we don't give permission for staff to be innovative, we are risk averse. Staff are exhausted, yet they welcome support to innovate, and we need to provide an innovation framework hosting the resources needed, with guidance on ways of evaluating innovation working with the value in health team.

There is a need for a repository of innovation projects; not just from other health boards, but a view of what is on the horizon. We need to incentivise staff for their efforts as 'adopters' instead of just innovators. To be able to adopt innovation we must be able to share and communicate in a central location, to network, celebrate success and share learning.

"Not knowing who to go to, not knowing enough about the innovation happening and who is doing what" is the quotation from a survey participant that sums up the conclusion and leads to recommendations.

7 Key recommendations

Recognising that diffusion can take months or years (Rogers, 2003). The following recommendations are on the basis that there is no quick fix, it is acknowledged that we need resources, this includes equipment, funding, time, the right people, and clinical buy in. However, we need to work towards a seamless Wales where we are not duplicating or needlessly wasting time trying to reinvent the wheel when there are evidence-based innovations ready to adopt. Adoption is resource intensive and requires whole system layering, concentrating not on shop and adopt, but transcend and include. Stretching and adapting to share good ideas and practice as a national approach not simply operating within silos. As Henry Ford said, "if everyone is moving forward together, then success takes care of itself". The recommendations are based on literature and survey responses from participants in the Welsh health and care system.

7.1 Innovation framework

An Innovation Framework based on Coopers stage gate model (Cooper, 1990) will provide a clear framework for innovators to navigate the eco-system and provide structure to the stages of innovation. With reference to the criticisms of Roger's (Rogers E. M., Diffusion of Innovations, 1962) and the NASS framework (Greenhalgh, et al., 2017). This is not a flow or a linear process, innovation can come in at any stage. Its purpose is to support NHS organisations across Wales, to inform and influence their innovation activity.

The framework collates activities into an order, thus providing guidance about how the NHS organisation might approach their clinical and non-clinical innovation activities, working cohesively with their Integrated Medium-Term Plan. Therefore, providing a structure for NHS organisations to build their own processes and activities.

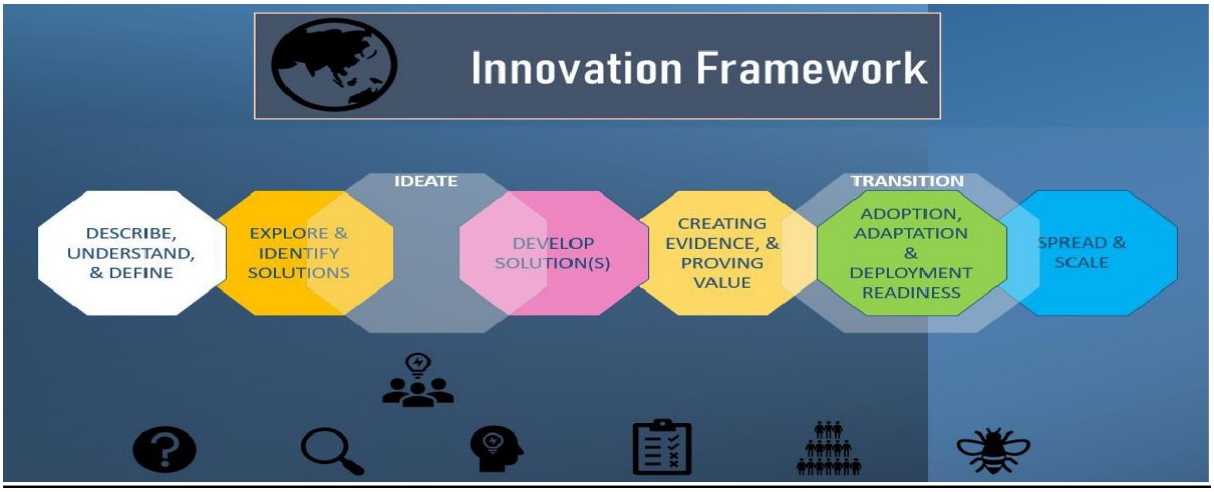

Figure 17. Innovative Framework.

It is intended that the framework makes innovation mainstream. The framework therefore provides flexibility, guides, and reminders to understand what tools and resources are available. It is a supply chain model, based on technology readiness levels (Heder, 2017), design thinking (Brown, 2008) and design councils double diamond design model (Design Council, 2023). In each section, it is purported that there are the actions that health boards could take, along with who can help within each step and what they can do.

In addition, the framework is a tool for engaging with industry, providing a clear message to businesses that Wales is the place to bring their clinical and non-clinical innovations. The framework will encourage considering adoption at an earlier stage of project development, to ensure that the data required to inform adoption is available when needed.

7.2 Innovation Training

Training on the Innovation framework will form part of the future Intensive Learning Academy (ILA) modules which will look at the advantages of applying the framework and link to areas such as VBHC. This will support an innovation language and will support how we obtain evidence that will be needed to demonstrate that the ideas result in the desired outcomes.

7.3 Innovation Ideas Portal

Health Boards and key partners to have a central ideas bank. If the idea is accepted and developed, innovation activity is mapped throughout Wales and categorise utilising NIHR categories. Not always looking for something 'new' but building on what is already working well. A library of one-page summaries of projects carried out, what was learnt, what worked, what didn't and a contact number. Categorised by project areas/ types and then people can learn quickly what has happened elsewhere and get in touch for more info if relevant. This would show what was happening within a locality and within a speciality. This would facilitate a network of innovation champions based on specialty to capture and share lessons learned amongst adopters (Horton, Illingworth, & Warburton, 2018)

7.4 Innovation Platform

If we don't know what is happening, how can we share it? How can we adopt it? For this reason, we need to establish a collaborative platform such as Future NHS Collaboration (NHS England, 2023). This platform will encourage the sharing of best practices and innovative solutions amongst different stakeholders. Incorporating the processes and systems Life Sciences Hub has in place to facilitate adoption. Linked to the Bevan Commission exemplar case studies. providing evidence of innovation where it has been initially implemented and with support from the Spread and Scale Academy. This can foster a culture of learning, adaptability, and continuous improvement, leading to the effective implementation and spread of innovative approaches.

7.5 Innovation Conference

A Welsh innovation conference aimed at frontline staff detailing good pieces of work happening, how can we know adopt if these are not shared? Increased opportunities to showcase the impact of innovations between Local Authorities and health boards.

7.6 Incentivising Adoption

Approaching organisations such as Medi Wales to look at how we can offer awards for adopters instead of innovators, celebrating the success of a spread rather than a pilot. (Horton, Illingworth, & Warburton, 2018) and rewards for innovative behaviour and ideas (Radnor & Robinson, March 2000).

7.7 Information Governance

An all-Wales Information Governance Board that takes into consideration any concerns raised by individual health boards but looks to quickly achieve a once for Wales approach to enable spread pan Wales.

7.8 IMTP

Include innovation as a requirement within the IMTP. The Innovation framework provides a clear reporting structure. NHS organisations can report on the number of innovations and at what stage of the framework, thus providing an overview of innovation activity within Wales.

7.9 Innovation Time

Encourage more idea generation by giving staff and teams dedicated innovation time to think and submit ideas. This may be simply giving permission to have an innovation day or two half days a year that could be built into a team-building exercise. It may be focused on a problem or time to learn about other innovations.

7.10 Encourage Risk

Encourage informed, appropriate research and development risk, to counter the risk-averse culture.

7.11 Welsh Government

As suggested within the survey, “the ability to carry over budgets from one financial year to the next.” For the specific purpose of moving any money accrued to an innovation budget to support the implementation of spread and scale.

7.12 National Team

The framework will support formal processes locally and nationally. However there needs to be a national team to connect the dots, to established governance for guiding innovation. To provide clarity around processes, pathways and approvals required. To provide the platforms that we have mentioned, to build innovation champions based on specialities, to share innovation, to join people together, to connect learning and share lessons. This cannot be undertaken as part of the day job, we have heard from the local teams, they need help.

In addition, we require an understanding of our target population and the support of the Welsh Government. An executive sponsor will need to be allocated to ensure the backing and recognition from the organisation adopting. Suggestions also include ‘having a champion for that project’.

7.13 Utilising Existing Resource

We have one Innovation Lead within each health board and an Innovation Adoption Director within Life Sciences Hub. We have Value-Based health care teams, transformation teams, shaping change teams, and Regional Innovation Coordination (RIC) hubs. Can we be innovative and utilise our existing resources to form a national team? Anyone who plays a part in the pathway can have an influence, but a clear message on the value and importance of innovation within the NHS from leaders is critical.

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9 Appendices

9.1 Appendix 1 Powys Academic, Industry and Eco System Workshop

1) How do we create a culture of collaborative innovation?

The table below details all responses to this question.

Encourage bravery (taking risks within reason)
Enable and facilitate "change"
Relationship building
Trust
Benefits realisation
Foster interorganisational relationships
Job Planning 4 Pillars of Practice
Clear leadership set tone for collaborative culture - Distributed Leadership
Make innovation everybody's business - Part of PDR
Strategic Partnerships
Common plan – Common vision
Can't compete and collaborate at the same time ✓
Agile approach, failing fast
Give permission
Shared recognition
Define the problem
Case studies/visibility/champions – at all levels/stages
No blame when it doesn't work, be proud trying
Define the problem
Multidisciplinary teams
What does collaboration actually mean
Inspire others to bring solutions 'Challenge funds'
Networks
Shout about success
Investment with clear benefits
Admit that Wales is a small nation – more collaboration
Buy in' at ALL levels incl community and 3rd Sector ✓
Staff training
Visibility
Purpose People Process Technology
Wales can be a 'sandbox' for innovation
Shared risk
Embrace (Managed) Risk
Recognise it – provide time, reward, recognition for staff
Give permission to leaders & managers at lower levels
'Double Diamond Approach' Design – Iterate – Fail – Succeed
Actually do it ✓

2) How do we overcome and perceived barriers to collaboration?

The table below details all responses to this question.

Communication
Building up the trust
Effective networks
Ownership
Project and Programme governance
Whole system approach
Facility for sharing information
Joint – clear objectives/purpose/vision
Health Boards and Universities collaborative strategies
Time to network
Creating a collaborative network that people join based on interest/specialities
Proper funding
Relationships – cross sector
Communication (regular/clear) and networking = build trust
Common language and literacy to support interdisciplinary collaboration
Create the culture/environment

3) What are the challenges around scaling existing innovations across Wales?

The table below details all responses to this question.

Silo working in organisations + across organisations Include 3rd Sector
Lack of understanding of collaboration
Ownership of implementation
Governance + Risk – too complex
Lack of facilitation of innovation
Evaluation strategy
Communications
Efficient procurement pathways
Time + Resource
Complicated + disjointed innovation ecosystem
Digital Incompatibility ✓✓ ✓✓
Funding ✓✓
Lack of Project Management ✓✓
Information Governance – ability to navigate in each HB ✓✓ ✓
Pilots given funding ✓
Adopt and spread of evidence-based projects not funded ✓✓ ✓
So much innovation – where do we concentrate? ✓
That everything can be scaled and adopted
Silo
Budget/resources
Time
Increase understanding of what ‘innovation’ is - Its breadth - Not all about tech
Skills & Capability

4) How do we scale and spread existing 'push' and 'pull' innovation activities across Powys and beyond?

The table below details all responses to this question.

Create an opportunity to fail and take risk – yes, let people fail and learn from mistakes
Funding
Change in culture
Behaviour change
Evaluation
Leadership
Procurement Shared
Information Governance (IG) agreed
Communicate ✓
Agile approaches (incremental etc)
Delegate/give permission
Use tech for remote care/collaboration
Incentivise
Aligning priorities
Get rid of the silly rules ✓
Ownership
Get together
Less talking – more action. 'Just do' and then evaluate – Yes, post implementation review ✓
Supporting trailblazers and early adopters
Ensure governance enables
Equitability between organisations to 'powers that be'
Pick right priorities – can't do everything – Who is setting these?
Time and Space
Provide opportunities to share experiences/best practice
Investment in System Approach – ILAs Innovation Hub
Join up the dots with other organisations save time and resources
Designated Resources "To Do"
Story telling positive case studies
Attend & present your innovation success at the RHCW conference!
Replicate success models and approaches
Be seen to solve common problems - Talk to other rural HBs e.g. Hywel Dda
Supporting trailblazers & early adopters
Ensure governance enables

9.2 Appendix 2

This section provides detailed answers received as part of the responses to the questions asked. .

Q.4 What are the enablers to adoption within your organisation?

Suggested enablers to adoption	Number	Organisation
Open Mindedness and a willingness to be innovative and embrace change	☑☑	Welsh Blood Service All Wales Medical Genomics Service
Inclusion in workplans, the planning process	☑☑	Public Health Wales A Regional Collaboration for Health (ARCH)
Networking, Intranet, colleague introductions, engagement with staff, sharing best practice and promoting / raising the profile of successful / innovative ways of delivering health and care services	☑☑☑ ☑☑	CTUHB Rural Health & Care Wales Integrated service between VOGC and CAVUHB Hywel Dda UHB Cwm Taf Morgannwg UHB Aneurin Bevan
Engagement with external partners e.g., Industry/Universities/Charities	☑☑	Life Sciences Hub Hywel Dda UHB
Own determination	☑	CTMUHB
Executive and Board Leadership Management buy in, including the lead for VBHC; permission from Senior Staff, Managers that listen; senior buy in and support; putting you/us in touch; asking for new ideas/innovation.	☑☑☑ ☑☑☑ ☑	Aneurin Bevan UHB Gwynedd Council GP Cluster – Cardiff Southwest Cardiff and Vale UHB Public Health Wales All Wales Medical Genomics Service Cwm Taf Morgannwg UHB
Time to hear about the good practice and work going on. Events, seminars, workshops, and support from innovators and organisational support	☑	Aneurin Bevan University HB
Find the 'Influencers' including motivated clinical colleagues with passion, energy, willingness to put time/effort in, patient focus. 'If you have a person who is passionate about innovation, and they have enough influence over other colleagues, it is easier to adopt'	☑☑☑	Velindre University NHS Trust Hywel Dda University Health Board Cardiff and Vale UHB
Finance (to help evidence business case for investment)	☑☑	Velindre University NHS Trust Hywel Dda UHB Cwm Taf Morgannwg
Unsure	☑	Betsi Cadwaladr UHB
Protected time for staff. Teams need time and space to listen and learn from each other. This needs to be supported from management level as it is hard to prioritise learning from treating patients.	☑☑	Hywel Dda University HB Aneurin Bevan University HB
A place to find examples along with training and awareness	☑	Hywel Dda University HB
Technology/Interoperability	☑☑	Hywel Dda University HB
Dedicated resource to drive innovation /Staff who want to do the best for the patient/Project Management Support/ The business change team/ Spread & Scale Academy. Bevan Commission/ A Capable and motivated ringfenced (albeit cost recovery) support team	☑☑☑ ☑☑☑ ☑☑☑	Integrated Service between VOGC and CAVHB Life Sciences Hub DHCW Cardiff and Vale UHB Hywel Dda University HB AWMGS Velindre University NHS Trust Cwm Taf Morgannwg
Evidence base demonstrating effectiveness and cost effectiveness and VBHC	☑ ☑	Health Technology Wales Digital Health and Care Wales Cardiff and Vale UHB
Horizon Scanning	☑	Life Sciences Hub
Innovation Assessment; Clear and robust processes for testing innovations. Established governance for guiding innovation. Clarity around processes, pathways, approvals required.	☑☑	Life Sciences Hub Hywel Dda University HB
Adoption Ready Proposals	☑	Life Sciences Hub

The NHS is under considerable pressure, adoption of practices that reduce cost	☑	Hywel Dda University HB

Q.7 What are your thoughts on the role of leadership in supporting the adoption of innovation?

- Thirteen people used the words “crucial”, “essential”, “very important” “It is key but needs to see itself as being accountable”.
- “it's also about dispersed leadership - we shouldn't necessarily need to go to leaders in the health board for us to try new things - if we all were empowered to do this, then we'd be innovating all along the pathway, from edge of care right through to facilities and those that support the entire workforce.”
- “Leadership should be seen at every level. Change or innovation doesn't just happen top down or bottom up, but often in pockets- leadership in pivotal in supporting staff and self being happy in change.”
- It is critical that innovation is promoted from the top of the organisation to create a culture where people are supported to innovate and bring new ideas into their role.“from the Board level through to the direct clinical leadership for an innovation”
- “Key to identifying needs and to prioritise and drive forward. To highlight the opportunity and needs for transformative innovation which will deliver transition to an integrated, prevention based, care closer to home system requiring focus on e.g. digital and precision medicine. Focus on adoption of higher TRL rather than lower TRL commercialisation - greater investment required for spectrum of innovation.”
- “All levels of leadership should support innovation adoption - learning and understanding different options is vital to moving the NHS forward”.
- “Opportunity to lead by example by also championing innovation” “It's important within the NHS as everyone looks to leadership for vision and decision making, so you need leadership on-board to
- adopt” “It is critical that innovation is promoted from the top of the organisation to create a culture where people are supported to innovate and bring new ideas into their role.”
- “Leadership is critical but goes beyond just giving consent or signing a document. It requires strategic plans to ensure innovation can be designed, developed, tested, and delivered.”
- “Essential - often lacking. needs clear and strong clinical voices, supported, and enable to enact clinically lead innovation that actually improves care/working lives.”
- “The role of leadership is to set the strategy and parameters that give permission and enables everybody to lead or make the change needed.”
- “When employees feel supported and encouraged to think outside the box, they are more likely to come up with creative solutions that can benefit the patient and pathway.”
- “Leaders need to support project managers to have the breathing space to do that very early horizon scanning before initiating. This can result in less wastage in a project because you avoid duplicating or making the same errors as previous attempts.”
- “Leaders should get out of the way and let people get on with it. OR They can support the adoption of innovation through personal commitment and recognition that it takes time, effort, skill, experience, and resourcing to deliver change.”
- “Leadership is clearly important for supporting innovation. It requires a degree of risk to be taken to try new things and provide the time, space, and money to test things out.” “Leadership is important however my experience is that there needs to be more involvement and a platform for developing front line and grass roots leaders who understand the issues and challenges firsthand and so often have a good understanding of potential innovative solutions.”

Q.8 Is there an issue with coherency in the adoption and sharing of innovation in Wales?

- "Yes, a national framework is needed around adoption as well as a structured framework around the roles the different organisations involved in innovation play e.g. RIC Hubs, Life Science Hub Wales, Bevan Commission, SBRI, Health Technology Wales etc."
- "When compared with something like doing research, which has clear pathways and approvals in place, innovation is less clear and standardised."
- "We are not yet good enough at adopting proven innovations across Wales with a 'not invented here' mindset hindering the spread of existing proven innovations."
- "Yes, it's done again in silos of University Health Boards and within professional groups" "I think there is, no one Wales wide clear framework and push."
- "I think until you are connected to possible avenues of innovation then yes there is an issue. Until you are directed to something like spread and scale you may be unaware of support. Funding is certainly an issue for next step evidence/initial spread."
- "Yes - lack of transparency and visibility. Further resources are required to deliver as above, but focus is on small area leading to duplication. System barriers need to be removed and realignment of focus - not rationalisation, but investment."
- "Very locally sensitive at present and needs a more systematic process to properly achieve this."
- "This is a tough one to answer. I have lots of thoughts. Coherency can be good, particularly in respect of technical and technology innovation, where the 'Welsh NHS' is competing with other healthcare systems for collaboration with industry. Coherent processes and arrangements in this case can help ensure there is a consistently smooth innovation process. However, a search for coherency can also have a downside. It can mean that we move at the pace of the slowest organisation, or that we fail to understand the local or regional factors that will influence whether an innovation is adopted. The dynamics at a Health Boards will differ and what might work for one might not work for another."

Q9. What could be done to improve the infrastructure for delivering innovation adoption across Wales?

Suggestions	Participants Agreed
Unsure	☑☑☑
Procurement - Fast track procurement process	☑
Understanding of the current Innovation Ecosystem - Clear alignment and understanding of organisations. Improved utilisation of resources such as LSH, HTW, HEIW, Improvement Cymru, Health Hub and BC Reduce duplication around innovation slows down change, wastes resources	☑☑☑☑
Communication & Collaboration – Not always looking for something "new" built on what is already working well. A library of one-page summaries of projects carried out, what was learnt, what worked, what didn't and a contact number. Sort this by project areas/ types and then people can learn quickly what has happened elsewhere and get in touch for more info if relevant. A health board wide innovation conference aimed at frontline staff. Good pieces of work happening, how can we know if these are not shared? Possibly having a system in place where learning can be shared. More opportunities to show case the impact of innovations between local authorities and health boards.	☑☑☑☑☑☑☑☑
'Prudent innovation' could be a good concept – greatest need first, reducing waste, harm (including to staff: innovation creates additional demands on clinical staff) and unnecessary variation.	☑

National Innovation Programme - Dedicated roles/ team/individuals who visit organisations/HB/Teams to spread innovation to have an impact across the whole system to spread innovation, with explicit links to finance colleagues/planning/strategy so where proven innovations can evidence significant delivery, they are built into the planning process. Implementation support from people who have already adopted would be useful to share lessons learnt. One national innovation programme potentially linking up current innovation strands, the work of Bevan Commission and the funding streams with an ongoing academy or alumni of innovators across wales. Available leaders with access to managers and directors, plus with staff on the ground making things work	☑☑☑☑☑☑☑☑☑☑
Evidence/Evaluation - Supporting innovators demonstrate the benefits of their innovation through the collection of appropriate evidence/ evaluation to convince decision makers that the practice is good to determine whether to spread or cut our losses	☑☑☑☑
An adoption pathway/process, clear pathway with decision making and responsibilities evident/ Sensible and common performance metrics. A typology of innovation. Process innovation is very different to technology innovation, and workforce innovation is very different again. One adoption process. Clarity around a single pathway would be desirable. Somewhere to access information and guidance as a one- stop portal.	☑☑☑☑☑☑
Positive risk taking - Encouraging less "process" within the NHS	☑
Funding - Commitment to funding successful new models/innovative solutions. A clearer route to funding. Dedicated funding. Additional resource/funding to develop innovation alongside operational developments.	☑☑☑☑
Information Governance support	☑

Q.10 How should the impact of innovation adoption be evaluated?

Suggestions	Participants mentioned
Unsure	☑☑
Outcomes/Key performance Indicators/Social Values Framework/ Impact Framework - to measure against policy, outcomes, experience, finance/ one set format that can be followed by all. Once central academy/think tank to oversee this area. outputs, outcomes, and impact with focus on system, people and economic benefits measured in a social value framework. Does this Innovation work and does this improve current services/ does it increase value. Health and Wellbeing outcome/ Value Based Healthcare outcomes all needs to be in line with key metrics for the organisations reporting. Using a standardised Value-Based health care approach across Wales would simplify evaluation and enable comparison of interventions. Mainstreaming social return on investment and demonstrating benefits to the wider system from an intervention would be helpful in decision making for commissioners. For example, reduction in GP appointments, Ed attendances, mental health referrals, crime and antisocial behaviour, increased learning and employment, improved tenancies, and ability to live independently in addition to an improvement in health and well-being. Having a unified Welsh system to capture and demonstrate this would be powerful. 1) Has it improved care for the patient? 2) Where is the evidence (PREMS) 3) Has it improved the outcome for the patient? (PROMS) 4) Has it delivered better value/more efficient use of resources? 5) Is it safe and evidence based?	☑☑☑☑☑☑☑☑☑☑☑☑
Health Economic review e.g., if you have an innovation which would help reduce people being added to a waitlist then it should show clear number for how it will do that and how many people it will help.	☑
Mixed methods – depends on the project/service, no one size fits all.	☑☑
Patient stories/experience – Coproduction/ability to engage/converse with the patient receiving support (qualitative information underpinned by robust quantitative data) value	☑☑☑☑☑☑☑☑☑☑☑☑

to the patient, not necessarily cost and should have a long-term focus not concentrate on short term gains. Clinical outcome measures that are shares across UHB's and professional groups. PROMS (patient reported outcome measures) PREMS (patient reported experience measures) NHS Trust service improvement teams' methodology with IQT awards - silver/gold. Shift to focus more on qualitative data through narrative methodologies as well as a focus on prudent health care to capture the benefits of discontinuing interventions that do not best serve the individual or that are ineffective e.g., deprescribing mental health medication, in patient detox.	
Cost effectiveness - Cost versus input and ability for people to continue to self-manage after intervention/he effectiveness and cost effectiveness of interventions should be fully considered. This requires consideration of comparative effectiveness and the opportunity cost. For example, any benefits from an innovation should be considered in comparison to standard care.	☑☑☑☑
Take up from staff on the ground	☑☑
Innovation objectives - Individual services with innovation objectives no matter how small	☑
Reducing - hospital admissions/ treatment time/resource	☑☑☑
Scale and adoption elsewhere	☑
Staff experience and wellbeing (staff and patients are EQUAL partners: but it feels that staff are sometimes forgotten in this)	☑☑☑☑☑
QALY's For social care it would be really helpful to have a measure that was similar to QALY's in health	☑
Project plan Take it a step earlier and look at how project plan to evaluate and realise benefits. At the moment I would say the issue is that benefit capturing doesn't happen until project is underway and so benefits are ad-hoc.	☑

Q.11 Do you know of an innovation that has been successfully adopted throughout Wales?

Suggestions	Participants Mentioned
No/Don't know	☑☑☑☑☑☑☑☑☑☑☑☑
Rapid Access Palliative Radiotherapy Service (BC Exemplar) is offered in 3 cancer centres	☑
DNR-CPR - Bevan exemplar project/a number of BC projects	☑
Family Resilience Assessment Instrument and Tool (FRAIT) Questionnaire for use by health visitors to identify and measure family resilience. All health visitors in Wales have been trained to use FRAIT by October 2017. Welsh Government are collecting the FRAIT data from January 2018 as part of their Healthy Child Wales Programme policy (WG, 2016).	☑
Rapid Diagnostic Centres (RDC's)	☑
Virtual Speech and Language Therapy (SALT) Appointments	☑
Disability Health practitioner roles in every health board.	☑☑
Virtual adoption for consultations	☑
Access to contraception via pharmacy without seeing GP	☑
Direct payments have been adopted all over Wales with varying degrees of success.	☑
Use of Microsoft Teams by Health Boards and Local Authorities	☑
Wales Nursing Care Record (WNCR)	☑☑
Freestyle Libre – flash glucose monitoring has been adopted but its use is still not widespread	☑☑
Viral medicine delivery	☑

Same Day Emergency Care (SDEC)	☑
Foodwise, leading to the foodwise app	☑
Telemedicine during COVID	☑
New Imaging techniques	☑
Robotic Surgery	☑
Building bridges between housing and health; Phase 2 adoption in other HB's	☑
Attend Anywhere	☑
AI for prostate and breast cancer	☑☑
Front line physio	☑
Heart monitoring project	☑
All Wales diabetes prevention programme	☑

Q.12 Thinking about your last answer, why do you think it worked? Are there any lessons learned that you would like to share?

Suggestions	Participants Mentioned
Time - The individual did not have a clinical caseload as part of their role. The innovation was in fact an essential part of the job development	☑
Procurement - barriers removed	☑
Evidence base - Proven system of work/fulfilled a need and provided value. Innovation shouldn't be adopted for the sake of adoption. Having positive guidance from an independent and objective assessment body such as HTW or NICE helps to reassure decision makers that technologies are safe, effective, and cost effective. Therefore, they tend to be more likely to adopt technologies with such guidance. Clear benefits for staff and patients. Universally beneficial.	☑☑☑☑☑☑☑☑
Right People/Team/Clinical buy in - The right person managing and co-ordinating/support from experts to get it off the ground. Clinicians driving innovation with leadership support. Additional support from Respiratory help Implementation Group (RHIG) and Diabetes Implementation Group (DIG). People willing to talk to each other, sharing ideas, being open and honest about where things are working and where they are not, scrutinising their own services, understanding services and provision from a person-centred perspective (rather than focusing on saving cash and delivering a service that's convenient for the administrators) and being willing to take calculated risks. Welsh government backed.	☑☑☑☑☑☑☑☑☑
User Centred approach/user buy in - built with the clinicians and endorsed by them	☑☑
Simplicity – relatively simple concept to adopt	☑☑
Communication/Networking/Partnership - with team, developed with people across Wales, nationally. IT: regular social media, newsletters, email comms, trust	☑☑☑
Strong driver for change/need - We had to do it because of COVID/Legislation enforcing change. It seemed like the bureaucracy was removed during the pandemic and decisions could be made much more quickly than usual. I think there is a lot to learn from that as it feels like we have reverted to wading through the red tape again!	☑☑☑☑
Resources/Funding - The equipment was provided to do it at the same time, national funding to get this moving forward	☑☑☑☑☑☑
Spread and Scale Academy Methodology - Clear, outcome-based problem they were trying to solve, a clear aim, they analysed their system and found the key points of leverage, they packaged their innovation according to diffusion of innovation science, utilised appropriate spread methods and looked after themselves in the process.	☑
Bevan Commission - Exemplar Case Studies provide evidence of innovation where it has been initially implemented within a smaller sample and once proven, scaled nationality.	☑
None	☑

What enables and inhibits the adoption of value-based digital systems in Secondary Care settings across NHS Wales.

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Abstract:

Digital health and care services and the provision of healthcare is a complex and confused ecosystem, consisting of multiple stakeholders. The prevailing view throughout literature is that current processes for implementation and the adoption of digital systems within the NHS, do not work.

This study addresses this issue in the context of NHS Wales, using a Welsh Government established organisation (that forms part of the NHS) to "transform health and social care delivery in Wales which includes delivering new digital solutions, supporting frontline staff with modern systems, and improving approaches to using, sharing and storing data" (Senedd Cymru, 2022). The key research theme is "How a multi stakeholder approach to digital system design and the future of digital systems is enacted" specifically the research question, 'What enables and inhibits the adoption of value based digital systems in Secondary Care settings across NHS Wales?'

The aims and objectives of the study were, to ascertain and examine core themes that influence the success of the implementation and adoption of value based digital systems in Secondary Care settings, in NHS Wales and provide a set of suggested enhancements for future digital healthcare projects and programmes.

The study was based on a methodology of virtual interviews and a perceptual multiple-choice questionnaire, which was deployed by issuing an anonymous link via a personalised email. Combined, the approaches resulted in receiving feedback from over 60 respondents with varying professional backgrounds relative to the research. The findings indicate there are significant inhibitors to digital system adoption in the form of legacy systems (creating unsuitable IT infrastructure), limited user input to design and develop systems, constraining procurement processes, restricting bureaucratic structures and historic governance legislative regulations. The results also found many more enablers such as a passion for patient care, the desire to improve current processes, methods and systems, a willingness to exploit shared learning and collaboration and an educational enthusiasm of the workforce to develop personal skills. However, these beneficial attributes are underutilised by the NHS and Welsh Government to achieve a successfully digitised health and care landscape.

A new framework called the DAFFS (Digital Adoption Framework for Secondary care services) model has arisen as an outcome of the research, which is the first holistic model of health and care, that can be generalised to other countries, sectors, and services.

Recommendations for the continuous expansion of research in this area of study are to complete more in-depth investigations into those themes that have limited supporting academic literature, outlined in the findings and the framework. This would enable further understanding of their direct influence on the introduction of new digital systems within healthcare. For example, the procurement processes, methods, surrounding frameworks, and regulations.

Keywords: Value-based, Digital Systems, Secondary Care, NHS Wales.

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Acronyms, Tables, and Figures

List of Acronyms used

Acronym	Definition
CDPS	Centre for Digital Public Services
DAFFS	Digital Adoption Framework for Secondary care settings
DEST	Digitally Enabled Service Transformation
DHCW	Digital Health and Care Wales
DMTP	Digital Medicines Transformation Portfolio
DPIF	Digital Priority Investment Fund
ePMA	Electronic Prescribing and Medicines Administration
ETR	Electronic Test Request
GS	Google Scholar
HEIW	Health Education and Improvement Wales
IT	Information Technology
KPIs	Key Performance Indicators
MSc	Master of Sciences
NHS	National Health Service
NWIS	NHS Wales Informatics Service
ONS	Office for National Statistics
Q(Number)	Question
PC	Primary Care
SB UHB	Swansea Bay University Health Board
SC	Secondary Care
SHA	Special Health Authority
SU	Swansea university
UCD	User Centred Design
UK	United Kingdom
V(Number)	Version
VBHC	Value Based Health Care
WCP	Welsh Clinical Portal
WG	Welsh Government
WNCR	Welsh Nursing Care Record

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1 Introduction

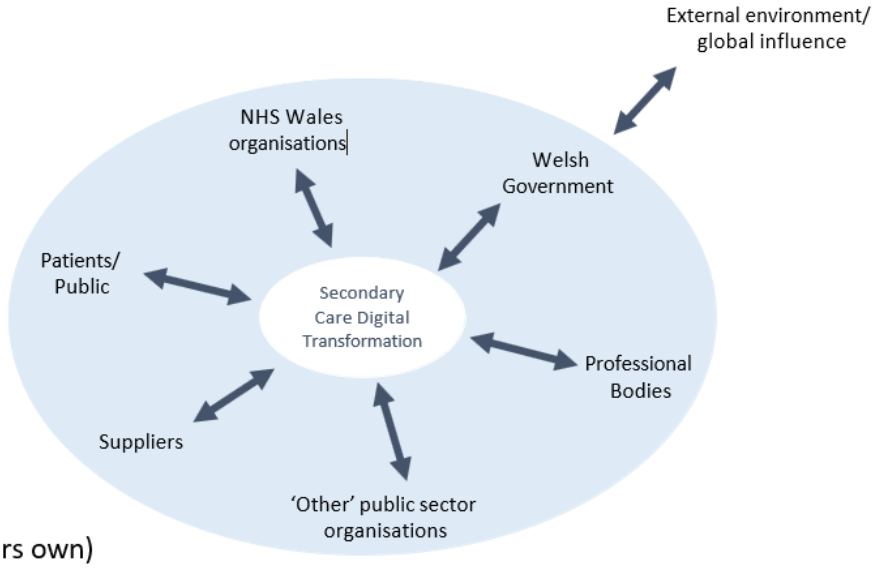
1.1 Background and Context

The reformation of healthcare delivery to a patient centred approach (Porter & Lee, 2013) has been identified globally through Value Based Health Care (VBHC). Value for patients is the core principle for improving the provision of health care systems in VBHC and is defined “as the outcomes that matter to patients and the costs to achieve those outcomes”. (Para 8, Michael Porter, 2013) A crucial component of VBHC is information technology (IT), which refers to digital systems that are designed to support personalised care, the measurement of patient outcomes and costs, improved services and efficiencies and the integration of systems.

Secondary Care (SC) is a complex environment (inpatient and outpatient services), that provides medical, surgical, and emergency care to patients. Processes in NHS Wales SC settings are partially digitised and are striving to achieving VBHC. Although, the landscape currently relies heavily on paper driven processes, in a time where digital technologies are evolving at an ever-quickening pace and are at the forefront of transforming the delivery of health care (Welsh Government, 2015).

1.2 The Importance of implementing value based digital systems in Secondary Care settings across NHS Wales

Improving access to patient data and the quality of data obtained within the NHS would deliver benefits to several stakeholders across Wales (see Figure 1.1.) and enable SC staff (e.g., clinicians, pharmacists, and nurses) to access patient data that is, accurate and timely. Thus, improving the effectiveness and efficiencies of decision making and patient safety by ensuring the five rights of medication use, “the right patient, the right drug, the right time, the right dose, and the right route” (para 1, Grissinger, 2010) are adhered to.



Source: (Authors own)

Figure 1.1. Stakeholders: NHS Wales Secondary Care digital systems.

The strategic importance of such digital transformations is reflected in many Government reports, strategies, and policies (See Appendix A).

There is limited published academic literature and studies regarding the barriers and inhibiters to adopting digital transformation in NHS Wales SC settings. Hence, the requirement of new research to understand this subject area, its significant pragmatic issues relating to the implementation of value based digital systems and the perceptions of those involved in developing, implementing, and using the digital systems.

1.3 Research Question, Aims and Objectives

1.3.1 Research question

What enables and inhibits the adoption of value based digital systems in Secondary Care settings across NHS Wales.

1.3.2 Aim

To identify and investigate the key contributing factors that impact the successful implementation of value based digital systems in SC settings in NHS Wales.

1.3.3 Objectives

- To establish a framework of fundamental themes that encapsulate the core enabling and inhibiting factors that affect the implementation of digital systems.
- To assess the enabling and inhibiting factors and the impact they have on the implementation of digital systems.
- To develop a set of core recommendations for future implementations of digital systems in SC settings.

1.4 Motivation of the Researcher

The researcher is a qualified Project Manager, responsible for supporting the procurement, development and implementation of national digital solutions and systems. Her experiences within the NHS have inspired and motivated her interest, in understanding and highlighting the core themes relating to the challenges and opportunities of implementing digital systems in SC settings. The researcher aims to provide a set of generalised, yet adaptable set of recommendations for future implementations. This theory-building research could have major implications on how digital systems and solutions are adopted and delivered in the future.

1.5 Conclusion and Structure of the Thesis

This chapter briefly introduces the background and context to the research topic, highlights the importance of understanding the barriers and enablers of implementing digital systems and discusses the motivation behind the research.

Chapter 2 will include a review of the existing literature related to this subject area, before progressing onto Chapter 3 which will present the chosen methodologies and research design. The case study of DHCW will be outlined in chapter 4, chapter 5 will illustrate the research findings, chapter 6 will discuss the findings and the final chapter (7) will conclude the report and provide recommendations for future digital implementations in SC settings based upon the research conducted.

2 Literature Review

2.1 Purpose of Chapter

The purpose of the academic literature review is to analyse the existing body of subject knowledge relating to digital services and systems within SC settings in healthcare and to introduce the current complexities of those services within the NHS.

2.2 Literature Review Process

The research tools utilised when completing the literature searches included Research Rabbit, Google Scholar (GS), and Swansea University (SU) iFind. The approach to searching for relevant literature began by inputting the search terms (outlined in table 2.1) into Research Rabbit and building a group of possible suitable papers, based upon their title.

Table 2.1. Literature search terms Source: (Authors own).

Search Terms

Adoption enablers digital systems in healthcare
Digital adoption enablers in NHS
Challenges of adopting digital solutions in NHS
Enablers of digital implementation in NHS
Digital services NHS Wales
Digital transformation NHS Wales
Definition of digital services in healthcare
Definition of digital healthcare

The initial accumulation of literature gathered on Research Rabbit, resulted in a collection of 60 worldwide papers that spanned over Primary and SC settings. The preliminary findings presented more papers relating to digital systems in Primary Care (PC) compared to SC settings, this could be due to the advancement of PC in digitising processes compared with SC (Asthana et al, 2019). Papers that were inaccessible through Research Rabbit were retrieved either via GS or iFind. Irrelevant literature (based on the search criteria) was removed by reviewing the abstracts and introductions, reducing the total number of relevant papers to 24. The criteria for this deduction are presented below:

Table 2.2. Research Criteria Source: (Authors own).

Papers that were published from 2016 to the present day which coincides with Welsh Governments publications (outlined in Table 1.1) for digitizing health and care services.
Papers relating to secondary care settings and where digital systems have been implemented within secondary care.
Papers concentrated on the UK NHS (as the provision, management, and funding of public sector healthcare differs to that of health care worldwide).

The relevant literature was collated (see appendix B) and key findings and topics were identified to generate generalisable themes that will support the development of my conceptual framework.

2.3 Defining digital services and systems in healthcare

Digitising healthcare is at the forefront of transforming the provision of services globally. However, it has been difficult to obtain definitions for the terms digital services and digital systems in healthcare from the literature investigated. The Cambridge dictionary meaning for these separate terms are presented in the table below.

Table 2.3. Cambridge Dictionary definitions of digital, service and system. Source: (Authors own).

Search Term	Cambridge Dictionary Result
Digital	Digital Data: recording or storing information as a series of the numbers 1 and 0, to show that a signal is present or absent.
	Using or relating to computers and the internet.
	Showing information in the form of an electronic image.
Service	A government system or private organization that is responsible for a particular type of activity, or for providing a particular thing that people need.
System	A set of connected things or devices that operate together.
	A set of computer equipment and programs used together for a particular purpose.
	A way of doing things.
	A particular method of counting, measuring, or weighing things.
	The intentional and organized use of a system.

The phrases and descriptions outlined in table 2.3 relate closely to alternative terminology obtained from and discussed throughout academic literature. This includes language such as, ‘digital health’, ‘electronic health’, ‘eHealth’ (p1, Asthana et al,2019), ‘digital medicines’, ‘digital healthcare transformation’, ‘mobile health/mHealth’, and ‘digital technologies’. Adjekum et al (2018), suggests digital technology in healthcare is used “to refine and individualise medicine.” (para 2)

Asthana et al (2019), expand on the definition of eHealth explaining that the expression captures a broader range of terms related to electronic healthcare such as, “telemedicine and telecare, public health surveillance, personalised medicine/patient engagement, health and medical platforms, self-tracking (the quantified self), wireless health and sensors, medical imaging, healthcare information systems, mobile connectivity, social networking, sensors and wearables, gamification, electronic health records, big data, health information technology, health analytics, digitised health systems, digital devices, robotics, and active assistive living” (p4).

Other academics such as Meskó et al (2017) present digital health as “the cultural transformation of how disruptive technologies that provide digital and objective data accessible to both caregivers and patients leads to an equal level doctor-patient relationship with shared decision-making and the democratisation of care” (para 1).

The digital strategy for Wales (2021) identifies the meaning of digital as being wider than just “computers, tools and technologies” (p1, WG). Since WG publicised the “Informed health and Care: A Digital health and social care strategy for Wales” in 2015, review publications, policies and strategies define digital as a key enabler to transforming the delivery of health and social care services (WG, 2022), to create a fully interoperable landscape across PC, SC, and other care settings (WG, 2018). The definition encapsulates electronic devices, instruments and infrastructures that provide the ability to develop IT which captures and shares patient data seamlessly through open architecture and interoperability. Thus, improving quality of care, enhancing safety measures, assisting in delivering patient centred, equitable care and enabling patients to actively participate in their own health. All of which are a vital element of VBHC (Michael Porter, 2013) and for “driving improvements to services” (Para 6, WG, 2022).

The Healthier Wales (2018) strategy outlines the plan in achieving the vision of health and care across Wales, and conceptually highlights two aspects or dimensions to digitally transforming services. One is the physical outcomes and outputs to be delivered such as VBHC, enhanced safety measures, improved new approaches, digital solutions, devices, and technology such as artificial intelligence, electronic prescribing, and data repositories (WG, 2018 & 2021). The other is the process of implementing said technologies, through the publication of data standards, procurement and/or development of digital solutions, culture change and preparing the workforce for a digital future through skill development.

2.4 Digitisation in the NHS

The NHS is a complex environment (Phiri et al, 2023), even though all part of the United Kingdom (UK), health boards across NHS England, Northern Ireland, Wales, and Scotland operate differently, and variations to services exist (Asthana et al, 2019).

NHS Wales is separated into seven health boards and three trusts (WG, 2023) that cover 22 unitary authorities, comprising of eight county borough’s and 14 county’s (ONS, 2023). These host home to 87 hospitals (DHCW, 2023), “389 active GP surgery’s” (WG, 2022) and “712 community pharmacies” (WG, 2021) providing care for its 3,107,500 citizens (ONS, 2022).

Patients commonly transition between care services and settings and subsequently medicines information relating to their care is required to transfer with the patient throughout their journey (Tolley et al, 2023). Existing historic paper-based processes (Iacobucci, 2020) can unintendedly cause miscommunication, inaccuracies, and mistakes (Tolley et al, 2023).

Medicines management (which includes medicines prescribing and administration) is a major contributor to the health care spend in Wales, yet “up to 50 per cent of hospital admissions may involve a prescribing error” (p33, public accounts committee, 2018). This is due to limited patient data, access to patient data, time to care, lack of “real time clinical decision support” (p11) and often the illegibility of medication charts (Marc Thomas, 2022).

Currently in the UK, there are several digital systems implemented and continue to be introduced across health care services. In Wales, the ambition set out by WG is to digitise services and develop an integrated health and social care system, a “£50 million Digital Priorities Investment Fund” (DPIF) (para 4, Gething, 2019) has been allocated to accomplish this vision. This aspiration has resulted in the initiation of organisations such as DHCW, the Centre for Digital Public Services (CDPS) and Health Education and Improvement Wales (HEIW), to drive digital transformation, at scale and pace (WG, 2018), collaboratively in partnership with health boards and trusts. NHS Wales have various digital transformation initiatives underway and have already executed many into health care, for example the Welsh Clinical Portal (WCP),

the Welsh Nursing Care Record (WNCR) and Electronic Test Requesting (ETR) (DHCW, 2023). Others are at early stages of commencement such as the Digital Medicines Transformation Portfolio (DMTP) which includes four workstreams these are outlined in the image below.

Figure 2.2. DMTP workstreams (Source: (DHCW, 2023)).

The adoption of such systems could offer benefits and add value to a range of stakeholders (see Figure 1.1) by increasing efficiencies, improving patient safety through enhanced patient outcomes and experiences, decreasing medicines related harm, improving the quality of data collected and how it is accessed and introducing new methods of clinical service delivery (WG, 2018).

The academic literature related to the digitisation of services and systems in SC settings across the NHS, various enablers and inhibiters impacting implementation of digital transformation have been identified. These have been summarised into key themes or dimensions (Cresswell et al, 2020) in the table below, with the caveat that most of these factors are interconnected and can positively or negatively impact and influence each other. These core themes which could be associated with Asthana et al, (2019) "Macro, meso and micro factors" (p5) are illustrated in the table below and will be further discussed within the subsequent subsections of this chapter.

Table 2.4. Summarisation of the enablers and inhibiters to digital implementation in the NHS. (Source: Authors own).

Common Themes	Enabler, Inhibiter, or both.	Sub-themes	Related Literature
Bureaucratic structures	Inhibiter	Individual organisastions. Health Care Landscape - led by Welsh. Time constraints set by Welsh Government.	Hamilton (2019), Tolley et al (2023), Asthana et al (2019), Omar & Elhaddadeh (2016), Wilson & Davies (2020), Phiri et al (2023), Iacobucci (2020)

Complexity of landscape	Inhibiter	Cross border care. Difference in digital maturity levels. Competing incentives - with organisations and between health boards. Infrastructure - readiness of health boards to adopt. Internal and external politics (in organisations) Risk appetite. IT infrastructure	Hamilton (2019), Benjamin & Potts (2018), Tolley et al (2023), Asthana et al (2019), Iacobucci (2020), Omar & Elhaddadeh (2016), Wilson & Davies (2020), Phiri et al (2023), Cresswell et al (2020), Addis et al (2018)
Leadership	Both	Project Managerment approaches. Change Management approaches. Agile/Waterfall management methodologies. Adopting previous lessons learned. Implementation approach	Acharya et al (2022), Janssen et al (2021), Benjamin & Potts (2018), Burgin et al (2023), Wilson and Davies (2020), Mantzourani et al (2022), Omar & Elhaddadeh (2016), Wilson & Davies (2020), Farrell & Sood (2020), Iacobucci (2020)
Influence of Stakeholders	Both	Resources and recruitment challenges - competing/limited/competition with private sector. Digital skills and capabilities. Multidisciplinary teams. Specialist skills. Culture - resistance or supportive of change Interpersonal connections/influences Support networks, influencers of change & exemplars. Collaboration Preconceived perceptions - Gap in UK research.	Omar & Elhaddadeh (2016), Howson (2020), Phiri et al (2023), Cresswell et al (2020), Acharya et al (2022), Cripps & Scarbrough (2022), Janssen et al (2021), Burgin et al (2023), Howson (2020), Asthana et al (2019), Wilson & Davies (2020), O'Malley (2021), Papanagnou & Shchavelava (2018), Addis et al (2018), Benjamin & Potts (2018), Farrell & Sood (2020), Iacobucci (2020)
Governance	Inhibiter	Policies. Strategies. Legislation. Data Standards. Safety and Quality standards. Key Performance Indicators (KPIs) Procurement processes - assessment frameworks, time of process (too lengthy for a rapidly evolving digital era), agility of processes.	Phiri et al (2023), Benjamin & Potts (2018), Mantzourani et al (2022), Asthana et al (2019), Omar & Elhaddadeh (2016), Iacobucci (2020), Asthana et al (2019), O'Malley (2021), Cripps & Scarbrough (2022)
Funding	Inhibiter	DPIF (Digital Priority Investment funding) process. Financial situation of NHS. Limited investment -not enough for digital projects	Iacobucci (2020), Papanagnou & Shchavelava (2018), Benjamin & Potts (2018), Asthana et al (2019), Cresswell et al (2020)
Comms & engagement	Both	Transparency of projects/programmes. Engagement of/with stakeholders.	Hamilton (2019), Asthana et al (2019), Mantzourani et al (2022), Janssen et al (2021), Howson (2020), Omar & Elhaddedeh (2018), Iacobucci (2020)
Suitability of digital solution	Both	User centered design. Co-designed.	Shemtob & Littlewood (2019), Mantzourani et al (2022), Howson (2020), Omar & Elhaddedeh (2018), Cripps & Scarbrough (2022)

2.5 Enablers for successful digital transformation in the NHS

The success of NHS digital transformation results from various enabling factors. Phiri et al, (2023) state "it is imperative to stabilise the growing demand for IT infrastructure with an established governance framework underpinned by legislative measures that align with the national standard" (p5) and that there are three fundamentally equal parts (infrastructure, people, and processes), which need attention and devotion. In addition to this Benjamin & Potts (2018) suggest standards are key to interoperating large digital transformational programmes.

The influence of stakeholders and the workforce, a reoccurring theme throughout the literature, can play a "significant role in facilitating or impeding transformations" (Para 1, Omar & Elhaddadeh, 2016). Interpersonal connections, regional links, support networks and communities internal to organisations and across the NHS (Howson, 2020) equipped with a "willingness and capability of end users to adopt and adapt

to the change" (p4, Phiri et al, 2023), enable the creation of a culture that is supportive of change, shares knowledge (Cresswell et al, 2020), expertise, best practice and lessons learned (Acharya et al, 2022). Influencers of change and qualified digital exemplars/leaders embedded within organisations are fundamental to building a “digitally prepared workforce” (para 2, Acharya et al, 2022). A workforce and leadership with the right skills (Cripps & Scarbrough, 2022) ensure the avoidance of repeating previous errors, provide encouragement to the workforce, implementation support, guidance, motivation, help improve the level of awareness and understanding of the technology being implemented (Janssen et al, 2021) and observe potential upcoming opportunities (Acharya et al, 2022). Introducing agile multidisciplinary teams unites the workforce from “disparate parts of an organisation” (para 20, Benjamin & Potts, 2018), it ensures the skills required to digitise processes, services and implement systems are formed in one team and encourages cross-organisational teams to work together to achieve a common goal. Thus, reducing competing priorities of the workforce with other programmes and projects. Partnerships and collaboration within the NHS both internally to local organisations and across the healthcare landscape, from the inception of digitally transforming services and systems, is fundamental to ensuring clinical and technical specialists work in parallel, the intricacies of clinical care are correctly captured (Janssen et al, 2021), the user needs and requirements are met and it provides an opportunity for solutions to be tested in clinical settings prior to rapid roll out (Shemtob & Littlewood, 2019).

“Proficient leadership” (Para 2, Acharya et al, 2022), management teams, clear strategies (Mantzourani et al, 2022) and the methodologies and management approaches used within an organisation for programme and project management, business change and implementation, also influence digital implementation. Benjamin & Potts (2018) are of the opinion that “successful digital transformation means bringing radically different ways of working into established organisations" (para 20). An iterative implementation change method is recommended by Burgin et al (2023), which encompasses change techniques and processes that differ to those used presently. They believe “this may improve staff adaptability, system use, digital skill development, innovation and realisation of health technology benefits” (para 6). Wilson and Davies (2020) consider the enabling effects of leadership duties and state that it “is to create a learning culture” which is “achieved through behaviour, systems and symbols” (p297), and that a “top down, target driven behaviour must be replaced with a real focus on improvement, championing those who have the knowledge to deliver it” (p295). This relates to Mantzourani et al (2022), notion that continuous evaluation phased in conjunction with development and implementation stages will enable the redesign of service delivery for improvement purposes and place users at the centre of the transformation. Part of the role of leadership is ensuring the adoption of the appropriate management methodology whether that be the traditional Prince 2 waterfall approach, an agile approach (the most recently influential in technology development) (Benjamin & Potts, 2018) or a combination of both and tailoring to suit the project/programme. This is important as each digital transformation is unique and will ensure services and systems are user orientated, resources are utilised more efficiently, the correct governance processes are formed and a clear direction of travel for the project or programme is set.

Successful digital transformation is one which continuously involves users and stakeholders throughout the process to understand their needs and requirements, and provides a reconceptualisation of end-to-end service design, rather than implementing digital systems that replace current processes. This is achieved through the regular use of clear communication and engagement methods via various platforms, to create transparency, a culture of ‘working in the open’, improve development, productivity, generates an openness to change and a higher rate of adoption (Benjamin & Potts, 2018).

Thus, ensuring digital systems, solutions and services are suitably designed and continuously improved for its core users (Hamilton, 2019). Asthana et al (2019), state that an important mechanism to the effective adoption of digital services and systems is “intersectoral engagement of stakeholders, led by the health ministry” (para 3). Mantzourani et al (2022), take a different view, which is for the digital transformation team to engage with all stakeholders using “media, such as videos and infographics, to tell the story of the project and transformation” (para 15). Janssen et al (2021) perceive that engagement early within the process creates enthusiasm, optimism, and an eagerness to adopting new digital systems, which will deliver service improvements. Vigorous communication and engagement also provides the means for organisations to co-design, co-create and co-develop digital systems and services “with service-users (patient and staff)” (para 48, Mantzourani et al, 2022) by “empowering and engaging the passion and ideas of people – those who use the system and those who work in it - and giving them permission to act to deliver innovative approaches based upon their own experiences and expertise” (para 8, Howson, 2020).

Table 2.5. Summary of Enablers. Source: (Authors own).

Enablers	
Governance	Including legislation, standards, clear structures.
Stakeholders/Workforce/Users	Digital skills, specialist expertise, adaptability.
Collaboration	Internal and external to organisation.
Culture	Encourage change, share knowledge, connections, support networks, learning, innovative.
Leadership	Digital skills, motivation workforce, looking to the future.
Communication	Create awareness and understanding of new technology and potential benefits, creates transparency.
Engagement	Using mixed-approach (Ex – videos, infographics) with users to capture clinical and technical needs, improves development and productivity.
Methodology	Agile, Prince 2, mixed method, multidisciplinary teams, continuous evaluation, redesign of whole service.
Training & Education	Leadership, Digital skills, various methodologies for project management, business change, implementation.
User centered design	Users at heart of transformation (patients and staff), involve from beginning of process, co-design, co-develop, co-create.
Suitability of technical solution	Suitable if include users from beginning increases adoption.
Minimal Viable Product (MVP)	Enable solution to be implemented more quickly future iterations can follow.

2.6 Inhibiters impacting digital transformation in the NHS

Hamilton (2019) describes the NHS “as not just one organisation, but lots of separate organisations; all slightly different, offering different services and commissioned in different ways” (Para 3), and states that due to this complexity, a unified approach to delivering national transformations doesn’t work. This not only produces internal and external competing incentives and politics (Benjamin & Potts, 2018), but also creates an additional challenge, to utilise interoperability to replicate the outcome of a national programme (Hamilton, 2019). The separation of health boards and trusts in the NHS also pose other inhibiters to the adoption of digital services and systems. Differences in local practices (Tolley et al, 2023) and digital health systems used between health boards (Asthana et al, 2019) that provide cross border care, result in isolated clusters and local isolation rollouts. Consequently, successful localised innovations are often not widely adopted and spread (Asthana et al, 2019). "Fragmentation of the NHS" (p4, Asthana et al, 2019) has also caused a significant “variation in the levels of digital maturity” (para 10, Iacobucci, 2020), generating geographical differences and a divide in the “digital readiness, infrastructure and competencies regarding procurement” (p4, Asthana et al, 2019).

The contrast in IT infrastructures, software, and hardware across the NHS is diverse. “In one organisation you can find areas that are making use of modern technology, such as robotics for dispensing medicines. In the same organisation there can be legacy systems, such as older patient administration systems, that can’t or struggle to meet the current interoperability standards" (para 3, Hamilton, 2019). NHS organisations are often reserved when it comes to risk taking and there is a reluctancy to invest in new technologies without assurance, endorsement, or accreditation from national bodies (Asthana et al, 2019).

The intricacies, bureaucratic and highly regulated public service (Asthana et al, 2019) structures, governance, responsibilities, and administration practices, regularly inhibit change and have historically caused the “derailment of several large-scale Digitally Enabled Service Transformation (DEST) projects” (Para 2, Omar & Elhaddadeh, 2016). A review into NHS digital transformation identified a deficiency in effective budgets, efficient governance structures and comprehensively achievable strategies (Iacobucci, 2020). This could be due to the immaturity of the digital health environment and the political influences it currently faces (Benjamin & Potts, 2018).

"Wales has very centralised governance arrangements for the NHS" (p295, Wilson & Davies, 2020) however, the decision-making controls regarding the re-design or improvements to services are often locally directed and usually not centrally organised (Phiri et al, 2023). As previously mentioned, NHS Wales consists of several organisations, each with their own hierarchical structures, influencing culture, varying

levels of financial investment and differing accountability positions (Wilson & Davies, 2020). Resulting in numerous authoritative boards that are potentially making decisions “not necessarily aligned with the national digital strategy for health care" (p2, Phiri et al, 2023). The public services performance targets and measurements set by WG are often unrealistic (Iacobucci, 2020) and pose barriers to the adoption of digital transformation. Key Performance Indicators (KPIs) against waiting times, ability for services to meet the needs of patients, staff morale, recruitment, and retention (Asthana at al, 2019) are creating unproductive attitudes and behaviours that focus on performance rather than the quality-of-service delivery. Consequently, this negatively impacts staff morale, develops a target driven culture, and “distorts priorities” (p297, Wilson & Davies, 2020).

O’Malley (2021) states “the combination of the culture, the policy, the procurement process, and the resources available, create an environment which means that not much change happens" (p50). Standards, regulation frameworks, legislation complexities, “expensive and unproven strategies and contracts that cost the taxpayer millions but don’t deliver” (para 7, Iacobucci, 2020), which haven’t been developed for future digital health (Cripps & Scarbrough, 2022) can cause partnership complications and confusion between cross border organisations (Wilson & Davies, 2022), and makes it difficult for digital health solution suppliers to enter and enhance innovation in such a multifaceted environment (Asthana et al, 2019). Often guiding regulatory documentation developed to encourage the use of new digital systems are created with the lack of presence and consensus from the suppliers and users. Resulting in limited adoption (Omar & Elhaddedeh, 2018), a digitally exaggerated separation between organisations and a reduced market as many digital health suppliers “do not have the capacity to address the technical, clinical or cost-effectiveness standards required by the NHS to achieve their digital vision (p4, Asthana et al, 2019).

The non-for-profit functions of public services combined with restricting policies, legislation, and finances, inhibit the implementation of digital systems due to their authority on procurement (Papanagnou & Shchavelava, 2018). NHS procurement processes including assessment frameworks (which concentrates on specification rather than outcome), the stages within the process such as system demonstrations, evaluation, and supplier selection (Papanagnou & Shchavelava, 2018), the length of time the process takes and the agility of the process are too lengthy for a rapidly evolving digital era, thus stifling innovation (O’Malley, 2021) and discouraging adoption at scale (Asthana et al, 2019).

Amongst other several pressures the NHS faces, the existing financial crisis (Benjamin & Potts, 2018) and the inadequate investment set aside by Government to deliver the digital ambition of healthcare are factors effecting digital adoption. Iacobucci (2020) calls for authorities “to develop a better understanding of the investment required” (para 5) in achieving digital transformation. In NHS Wales funding for digital transformation initiatives is obtained through DPIF (Welsh Parliament Health and Social Care Committee, 2022) however, this is disparately and competitively allocated across organisations (Asthana et al, 2019) and unintentionally “accentuates unevenness” across health boards and trusts (para 3, Cresswell et al, 2020). Consequently, introducing a “significant risk that trusts will be unwilling or unable to fund” (para 8, Iacobucci, 2020). Apprehensions have also been raised to the procurement incentives of organisations which are struggling financially, that they will purchase digital solutions based on cost rather than transforming services to improve quality and value of care (Asthana et al, 2019).

The increasingly important current resource, recruitment, and retention challenges of the NHS is impacting digital transformation (Acharya et al, 2022). This includes aspects such as limited specialist resource for example the “shortage of digital and data skills” (p4, Phiri et al, 2023), due to the newness of informatics as a profession in the NHS. Resulting in healthcare organisations competing against each other and with private sector for resource, as wages are generally higher (Addis et al, 2018). Consequentially, “many digital transformation roles are not well integrated into an existing organisational structure: this creates challenges relating to adoption." (p3, Benjamin & Potts, 2018).

Table 2.6. Summary of inhibiters. Source: (Authors own).

Inhibiters	
NHS Landscape	Complexity, separate organisations, different services, differing levels of digital maturity and infrastructure, variation in local practices/procedures, internal and external competing incentives, politics, isolated rollouts and adoption, immaturity of digital health environment, non-profit.
Bureaucracy	Rigid hierarchical structures, various boards, public service regulations, centralised governance yet locally responsible for decisions regarding re-design and service improvements.

Targets	Unrealistic public service performance targets (KPIs) and measurements.
Culture	Risk adverse, focused on meeting performance targets, staff morale.
Governance	Historic and restricting legislation, standards, regulation frameworks, policies, lack of suitable structures for IT and incomprehensive/unproven strategies, developed without user input.
Financial Investment	Limited funding, non-effective budgets, DPIF funding allocations, health boards/trusts inability to fund transformation without DPIF.
Leadership	Distorted priorities, poor leadership, non-digitally proficient, adoption of previous lessons learned.
Procurement	Processes (not agile), assessment frameworks, length of time, difficult for suppliers to enter NHS market, organisations purchasing on cost rather than quality and value.
Collaboration	Partnership complications, confusion between organisations.
User-centered	Lack of user-centered design.
Stakeholders/workforce	Challenges with recruitment, resource, retention, limited digital and data expertise, competition with internal (to NHS) and external organisations, limited time to be released for training and implementation, users not willing or capable to adopt, limited digital skills, fear of change, preconceived conceptions, concerns that digital transformation could change profession.
Engagement	Poor/lack of transparency.
Communication	Poor/lack of transparency.
Training & Education	Shortage of programmes to improve digital skills, knowledge, and expertise.
Suitability of technical solution	Unsuitable due to lack of user centered/co-design reduces adoption, review and reform of pre-existing processes, concerns regarding patient confidentiality (where data being shared between systems).
Methodology	One size fit all doesn't work.
Minimal Viable Product (MVP)	Workforce expectations of digital solution implemented may be different to what's initially implemented.

According to Omar & Elhaddadeh (2016), stakeholders significantly obstruct digital transformations, this could be due to various issues such as insufficient engagement with employees because of work pressures (Mantzourani et al, 2022), restricted time for employees to be released for training (Mantzourani et al, 2022), the "willingness and capability of end users to adopt" new technology (p4, Phiri et al, 2023), the fear of change, the 'can't do mindset' when presented with new technology, the concern that alterations could occur to their profession (Burgin et al, 2023) or the "perceived increased in workload" (p8, Janssen et al, 2021). The workforce and stakeholders preconceived perceptions of transformational change isn't widely discussed in UK literature at present.

"Changing behaviour, culture and poor leadership is often considered as one of the biggest barriers to successful technology transformation in organisations" (para 4, Farrell & Sood, 2020). The non-existence of digital proficiency at senior levels (Benjamin & Potts, 2018) can often affect the adequacy of the implementation, project and change management methods used (Omar & Elhaddadeh, 2016). Other inhibiting factors that could relate to leadership, workforce and stakeholders is the lack of transparency, and adoption of lessons learned from previous failed IT implementations (Iacobucci, 2020) and the shortage of programmes to improve the digital skills, knowledge, and expertise of existing and impending leaders (Farrell & Sood, 2020).

The suitability of the digital solution is also identified as a barrier to the deployment and acceptance of digital systems and services in the NHS. Lack of user centred design (UCD) and the review and reform of pre-existing processes prior to implementation causes strain on the workforce (Cripps and Scarbrough, 2022) and often results in the non-institutionalisation of the transformation, because the solution was not co-designed or developed with the users (Omar & Elhaddadeh, 2016). This has also created apprehensions related to concerns of patient confidentiality where, patient data is being shared between systems and services (Asthana et al, 2019).

2.7 Themes for conceptual framework

The conclusion from the review of current literature in relation to the research question, is that "the relationship between dimensions, influence implementation, adoption and optimisation" (para 19, Cresswell et al 2020). A singular factor cannot be held accountable for the success or failure of implementing digital systems, it is a combination of some or several factors.

The research question 'What enables and inhibits the adoption of value based digital systems in SC settings across NHS Wales?' derived from a gap exposed in the literature review. A holistic approach is required to produce a comprehensive study of NHS organisational digital changes. Previous literature has not used this research method to address this subject area and has only considered features individually.

The high-level themes (outlined in Table 2.3) which could impede or enhance digital implementation in SC settings, were collated from the substantial academic literature research. These themes combined with a socio technical system theoretical perspective were used to construct a conceptual framework presented in Figure 2.2. The researcher has labelled the framework, the DAFFS (Digital Adoption Framework for Secondary Care settings) model.

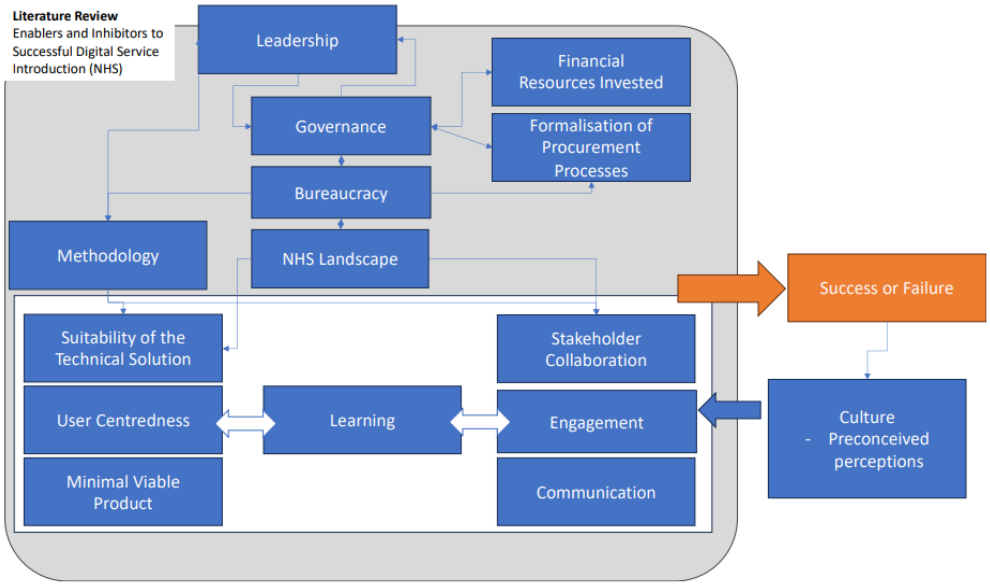


Figure 2.2. DAFFS model V1 (Source: Authors own).

The DAFFS model encapsulates the essential elements of digitising the NHS Wales ecosystem. Please refer to table 2.4 for a brief description of each theme and the relatable literature authors.

The next chapter will present and defend the chosen research strategy for this context rich and theory building study.

3 Methodology and Research Design

3.1 Purpose of Chapter

The research methodology design, which has been developed to explore the research question will be presented and explained within this chapter. A table outlining definitions of terms used throughout this chapter are depicted in appendix C.

3.2 Approach

As presented in Saunders et al (2007) research onion below, a realist and pragmatic approach will be employed to answer the guiding research question and examine a real-world enquiry.

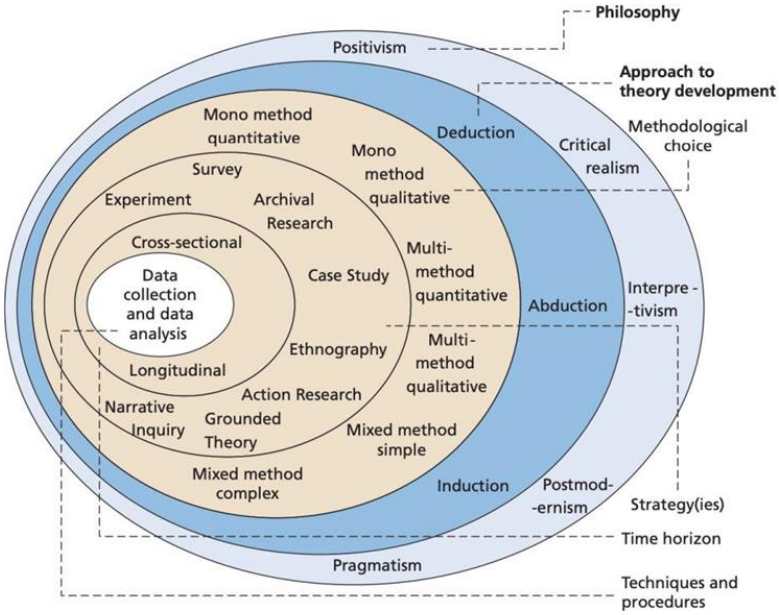


Figure 3.1. The Research Onion by Saunders et al, 2007.

The most effective research strategy that assists a pragmatistic method is the case study strategy. This enables the researcher to study the context and social sciences of an organisation, which is important to address when developing theory.

The following research methods were reviewed and discounted from this study when designing the approach.

Table 3.1. Discounted research methods. (Source: Authors own).

Alternative	Reason for rejection
Grounded Theory	The practical constraints of this MSc thesis.
Large scale questionnaire	The population is accessible, but the focus is on perceptions and understandings of all service users.
Process Research and Action Research	Impractical in such a confused setting. Too long in duration for an MSc project.
Modelling	Data was not available to look at how the data is used.
Social network analysis	The vast range of service users prevented the use of social network analysis for this study even where access could be negotiated.

The strategy for this research was to conduct a case study of NHS Wales ecosystem from the perspective of DHCW, which will support theory building that is applicable and can be generalised to digital transformation programmes/projects in SC settings across Wales.

This was enacted through a questionnaire, semi-structured interviews, and informal conversations. Providing the ability to capture both qualitative and qualitative data, obtaining perceptions, feedback, and suggested improvements from informants.

3.3 Questionnaire Design and Interview Types

Sheatsley (1983) states a “questionnaire is simply an instrument, a tool, to be employed in the study of a research problem.” (p195).

Various questionnaire and interview types, and the associated advantages and disadvantages are outlined in the tables below:

Table 3.2. Questionnaire Types. (Source: Authors own).

Questionnaire Type	Definition and Usage	Advantages	Disadvantages

Closed-ended questions	Multiple choice style usually answered by selecting from static responses for example 'strongly agree' to 'strongly disagree' or a rating scale.	Quick and easy to answer. Captures measurable data. Informants more likely to participate. Customisable.	Cannot obtain perceptions. Can suggest answers to participants. More choices can cause confusion. Difficult to conclude if too many neutral responses are selected.
Perceptual questions	Used to assess the views of informants. Ideal for this study based on a literature review.	Helps organisations understand the informant's perspectives. Obtain improvement suggestions.	Levels of bias Results could be inaccurate and unreliable.
Open ended questions	Free form that enables participants to answer in open text, where informants write what they think.	Provide new, sometimes unexpected insights. Deliver qualitative data. Capture opinions.	Difficult to code and analyse. Time-consuming for informants to answer. Response rates are usually lower. Difficult to analyse and compare responses.

A perceptual multiple-choice questionnaire was developed using a 5 stage Likert approach. The questionnaire was distributed to 60 participants who were selected based on criteria summarised in sub-section 3.4. Those invited to partake were issued an anonymous link via email and given a two-week time frame to submit a response. Follow-up communications were issued a week prior to the submission deadline date presented in Appendix F.

Edwards and Holland (2013) describe interviews as a discussion between participants, where one (or more) asks questions and the other(s) provides answers, which can be used "as data collection tools." (p143, Yazan, 2015).

Interviews were not conducted as part of this research due to time constraints, however qualitative data was captured within the questionnaire, providing insight into participants positive and negative experiences of digital transformation, and suggested future improvements.

Table 3.3. Interview Types. (Source: Authors own).

Interview Type	Definition and Usage	Advantages	Disadvantages
Structured	Questions are asked in a set order. Data collection tool. Usually, quantitative.	Comparitable responses. Efficient. Reduce bias. Ease for interviewer.	Restricts rapport development. Inflexible. Limit detail. No opportunity for context or to ask questions other than the predefined.
Semi-structured	Combination of structured and informal interviews. Used to investigate various aspects of research questions. No set order of questions. Qualitative. Exploration tool.	Able to ask follow-up questions. Two-way communication. More detail.	Can present difficulties comparing responses. Risk of bias. Challenging to develop the interview questions.
Informal/Unstructured	Conversational/informal chat. Seeks insights from participants with subject expertise and knowledge.	Flexible. Builds rapport/open environment. Reduced bias. Empowers participants. Discovery of context and nuances.	Difficult to generalise suggested ideas. Can present difficulties comparing responses as questions may differ from participant to participant. Small sample size due to time consuming nature. Risk of asking guiding questions.

3.4 Informant Selection

Expert informants were deliberately selected and invited to participate in the research questionnaire due to their significant knowledge of digital health care systems internationally and across NHS England and Wales. The following criteria was applied for participant selection:

- Employed by NHS Wales organisation.
- Role within NHS Wales environment.
- Experience and knowledge in digital health systems.
- Specialism – Digital, clinical, medical, education.

This criterion was set to reduce bias and obtain a holistic approach to the research.

3.5 Literature Review

The literature review conducted at the beginning of this study, presented findings from academic researchers, highlighted current gaps in research and outlined key themes. The repositories and search terms used to collate the literature can be found in sub-section 2.2 and table 2.1. The literature review resulted in the formation of a conceptual framework (Figure 2.2).

3.6 Conceptual Framework

The initial conceptual framework was reviewed by 12 experts, 75% of those invited to provide feedback responded. Collectively the critics have over 60 years' global experience (including Australia, America, NHS England, and Wales) in healthcare, digital transformation and digital health systems and services, from supplier, customer, and user perspectives. The reviewers' names have been anonymised for the purpose of this report, however organisation information, experience and the feedback provided has been included in Appendix D.

Feedback received from the reviewer's highlighted changes required to be actioned on the conceptual framework, to better illustrate the findings from the academic literature research and review. The framework was adjusted to reflect the feedback and is presented in the diagram below.

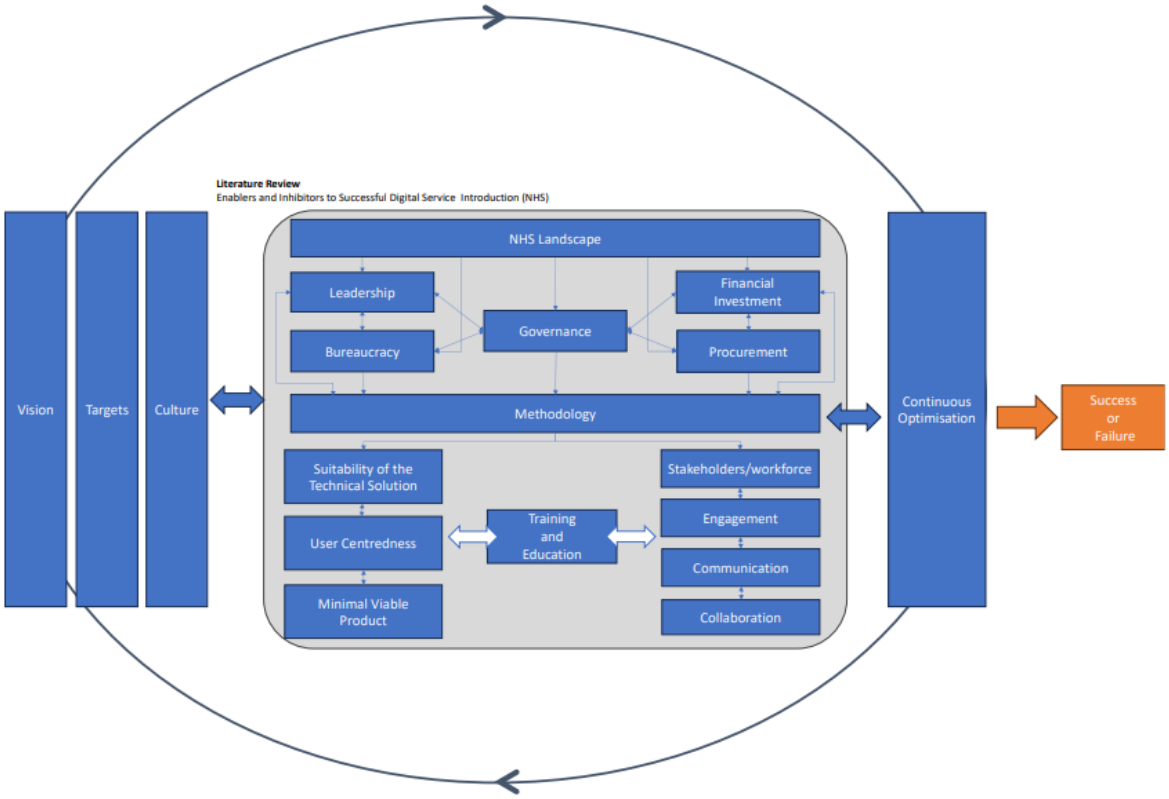


Figure 3.2. DAFFS model V2 (Source: Authors own).

The validity of this framework will be further explored through the findings and results of the questionnaire.

3.7 Defining the Case Study

As described by Yin (2011) “Case studies, traditionally have been associated with process evaluations. However, the method also has been and can be used to document and analyse the outcomes of interventions.” (p19) There are various types of case study, as presented below:

The embedded case study type has been selected for this research and will be applied to DHCW a special health authority (SHA) and will be further explored in the next chapter. The study type and organisation were chosen due to their relatability to the research question. This selection will enable investigation into the key themes identified within the literature review, an exploration into the digital healthcare eco system and support the validation of the DAFFs model.

Table 3.4. Case Study Types. (Source: Authors own; Ebneyamini & Moghadam, 2018).

Academic	Alternative	Reason for rejection
Yin (1989)	Exploratory	Used to develop understanding of the area of interest/investigate a problem.
	Explanatory	Empirical study. Investigates phenomenon within real-life context to understand 'why' and 'how'.
	Descriptive	Systematically and accurately describes a particular phenomenon e.g., people, groups, or situations in detail.
Yin (2003)	Embedded	Explores a main phenomenon comprised of smaller sub-phenomenon. Describes a case in detail. Uses both research methods (quantitative and qualitative).
	Longitudinal	Type of correlational research. Long term study. Researchers repeatedly monitor and collect data without influencing the variables.
Stake (1995)	Intrinsic	Looks at a singular/unique subject.
	Instrumental	Provides insight into a particular phenomenon through various data sources. Used for theory building.

	Collective	Identifies and researches differences within the phenomenon and with other cases to replicate findings.
Zainal (2007)	Interpretive	Investigates a phenomenon through observations and questioning to uncover or produce a deeper understanding of the case.
	Evaluative	Educates the researcher on a complex phenomenon through descriptive and analysis of the case and its context.
Dul and Hack (2008)	Single case study	Consists of an individual researcher. Studies one aspect of a problem in depth within a limited time. Used to develop concepts and hypotheses. Suitable for describing outcomes. Analysis of process within the context.
	Comparative case study	Compares two or more case studies. Look at patterns, similarities, and differences. Produces generalisable knowledge.

3.8 Data Analysis

The questionnaire results (downloaded from Qualtrics) were analysed collectively by question. This reflected the enabling and inhibiting themes identified in the literature review and those outlined within the DAFFS model. Occasionally, the Likert response options such as the strongly agree and somewhat agree were totalled to indicate the impact of the response rate for agreeing with statements. The qualitative data from the final question in the survey was reviewed and categorised by theme. Results were inputted into varying graphical figures and structured tables to present both quantitative and qualitative research (see Chapter 5 - The findings).

3.9 Suitability of the Research Design

The design enabled a multi stakeholder perspective of NHS Wales current digital ecosystem. The application of the research approaches to the study allowed for high levels of contextual data, whilst providing efficient and effective administration of research tools. The combination of data collection tools and techniques form an effective methodology to achieve the research goals and answer the guiding research question.

3.10 Research Limitations

The research limitations comprised of the following:

- NHS Wales landscape.
- WG funded digital transformations.
- Study was based on national digital systems.
- During a period of austerity.
- Time constraints due to MSc course.
- Time of year study being completed - high volume of NHS employees on annual leave.

3.11 Ethical Considerations

For this real-world study, ethical approval was granted by SU School of Management in June 2023 (See appendix E).

The following considerations directed the research strategy and design:

- Anonymity - removal of participants' names.
- Data management - password protected documents.
- Participants' consent was obtained as part of the questionnaire.
- Voluntary participation.
- Confidentiality.

3.12 Summary

This chapter has presented the multi-method classic research approaches to investigating and understanding the digital healthcare landscape of this study. The subsequent chapter will utilise an NHS organisation to present a mini case study of the digital environment in Wales.

4 A Case Study of DHCW

4.1 Chapter Purpose

DHCW is an organisation recently embedded within the NHS to "create the digital solutions needed to improve health and care in Wales." (Para 1, WG, 2023). This organisation is appropriate for exploring the research question 'What enables and inhibits the adoption of value based digital systems in Secondary Care settings across NHS Wales', due to its placement within the NHS environment.

To present and illustrate the environments complexity and context of the organisation, several presentation slides have been developed and inserted throughout this chapter.

4.2 History of DHCW

The SHA transitioned from the NHS Wales Informatics Service (NWIS) in April 2021, as a result of various government led third party reviews and strategic publications. A historic timeline of the organisation's evolution is illustrated below:

Figure 4.1. The evolution of DHCW (Source: Authors own).

4.3 DHCW Purpose

The core purpose of DHCW is delivering digital transformation improvements across the Welsh healthcare landscape, with a vision to "provide world leading services, empowering people to live healthier lives." (Para 1, DHCW, 2023) Further information regarding the organisations purpose, vision and how it aims to achieve both have been outlined in the two images below.

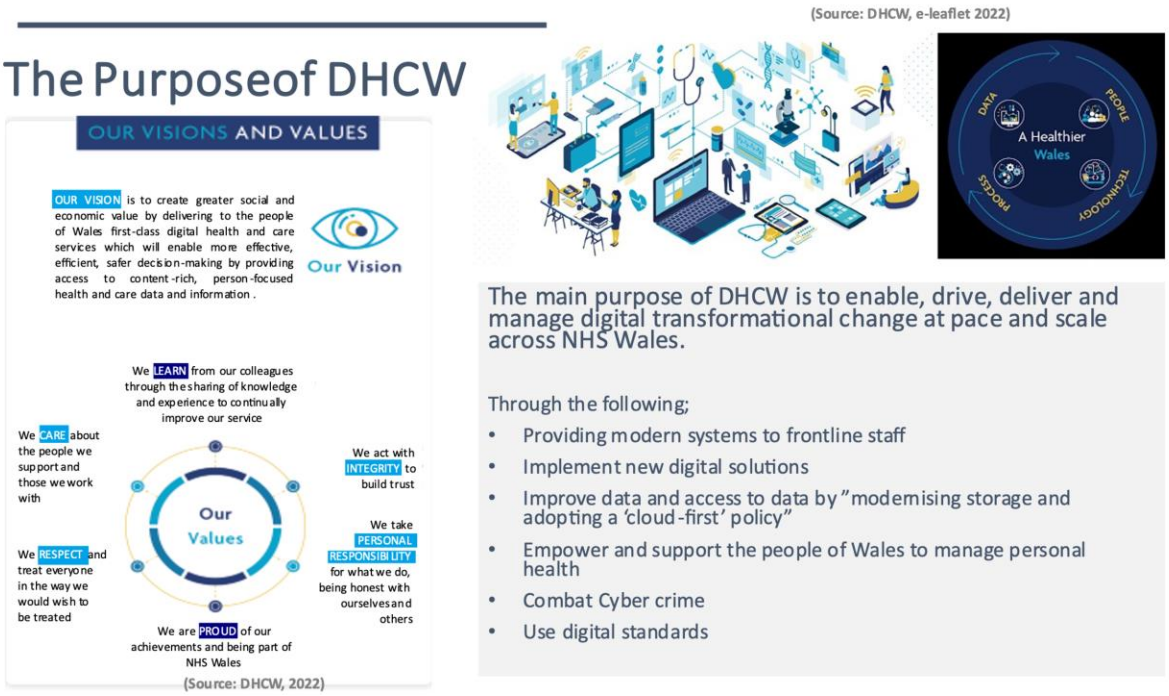


Figure 4.2. DHCW's purpose (Source: Authors own).

4.4 DHCW Digital Transformation

The DMTP and its four workstreams (exhibited in Figure 4.3) exemplifies one of many digital transformational delivery strategies DHCW are currently navigating. The target set by WG is for this portfolio of work to be achieved within the next 3-5 years, hence its position on WG programmes of work (WG, 2022). The SC electronic prescribing and medicines administration (ePMA) programme is of particular interest for this study, as it aims to digitise the paper medicine charts and prescriptions across SC settings (DHCW, 2023).

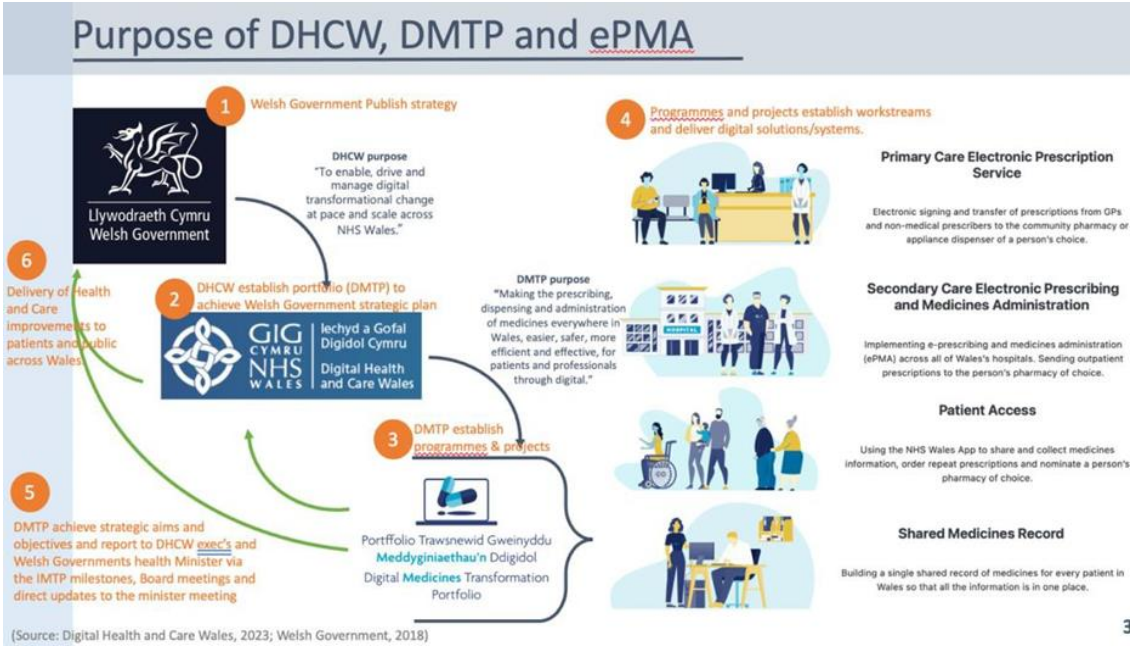


Figure 4.3. Purpose of DHCW, DMTP and ePMA (Source: Authors own).

4.5 NHS Wales environment

DHCW forms part of a complex NHS Wales environment, as described in section 2.4 it is separated into several health boards, trusts and SHA's that provide health and care services across the landscape. This convoluted system of organisations has been illustrated below:

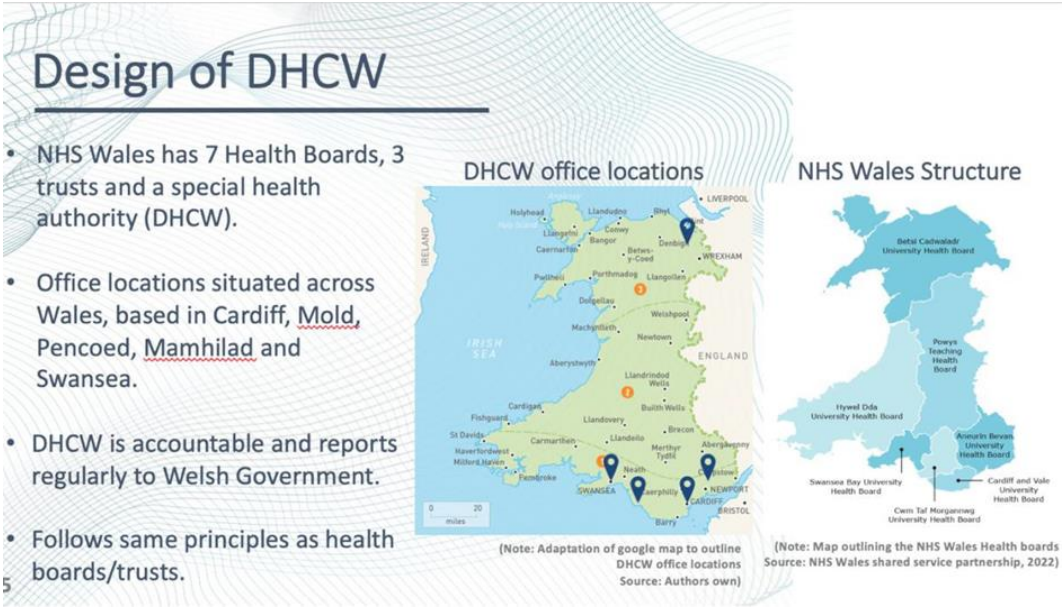


Figure 4.4. DHCW and the NHS Wales landscape (Source: Authors own).

The intricacy of this landscape causes various problematic challenges and issues as outlined in Table 4.1 and Figure 4.5, and often results in organisations adopting a bureaucratic management style with restricting governance structures as presented in Figure 4.6.

Table 4.1. NHS Wales challenges and Issues. Source: (Authors own).

Issue/Challenge	Example
Pre-existing/ historic perception of organization	DHCW transition from NWIS - DHCW is a new organisation with historic leadership and management causing reputational preconceptions with their partnership orgnaisations.
Recruitment of specialist resources	Movement of staff between NHS organisations and competition with private businesses.
Health board and trust priorities	Competing priorities across organisations and internally with other digital transformational or service improvement projects/programmes.
Funding	Funded through WG DPIF; Limited financial investment.
	Seperation of funding between organisations - don't all receive the same amount. Must submit funding proposals.
Bureaucratic and restricting governance structures	Many of the NHS organisations across Wales follow a traditional waterfall approach, which can stifle innovation, the pace of transformational change and the implementation of new digital solutions.
	Timely approval processes due to a multitude of boards.
	Currently working in a mechanistic way, structure is very rigid which is unsuitable in today's ever changing, innovative and fast developing digital and medical world.
Conflicting guidance	WG encouraging employees to undertake Centre for digital public services (CDPS).
Lack of user-centered design and understanding of the vision.	Introducing a new solution/system to solve problem instead of understanding the need first.
	Implementing solutions with limited user input to design functionalities.

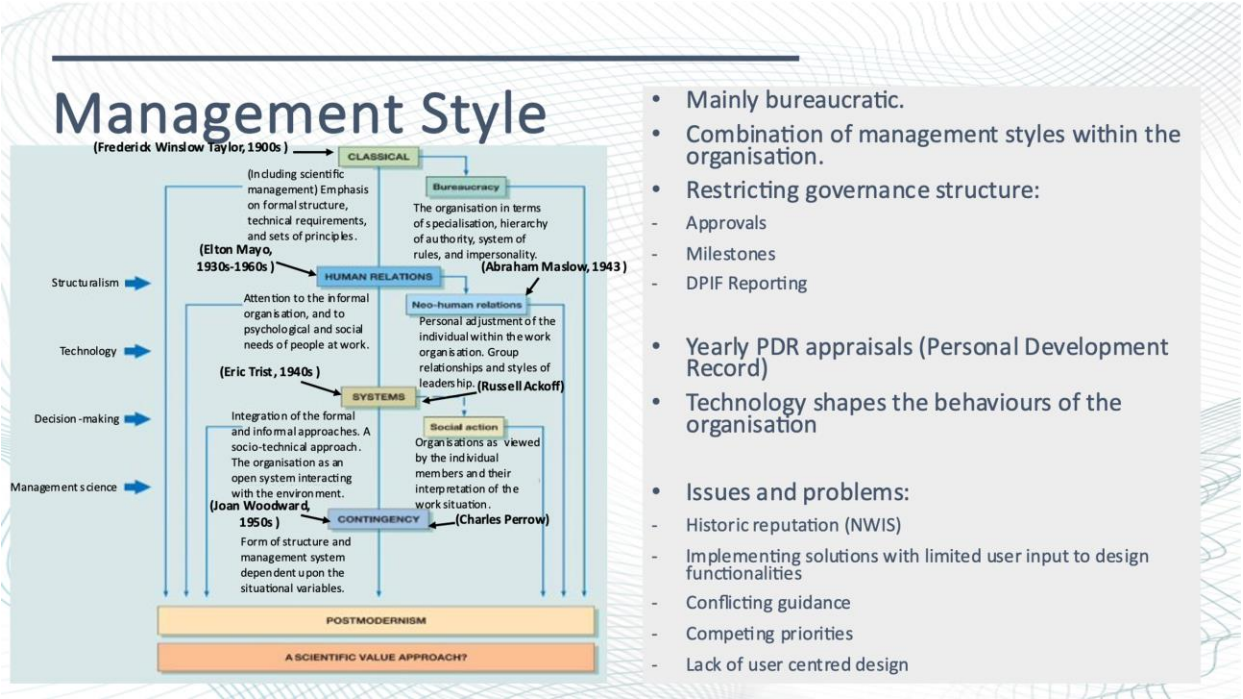


Figure 4.5. Management Styles (Source: Authors own).

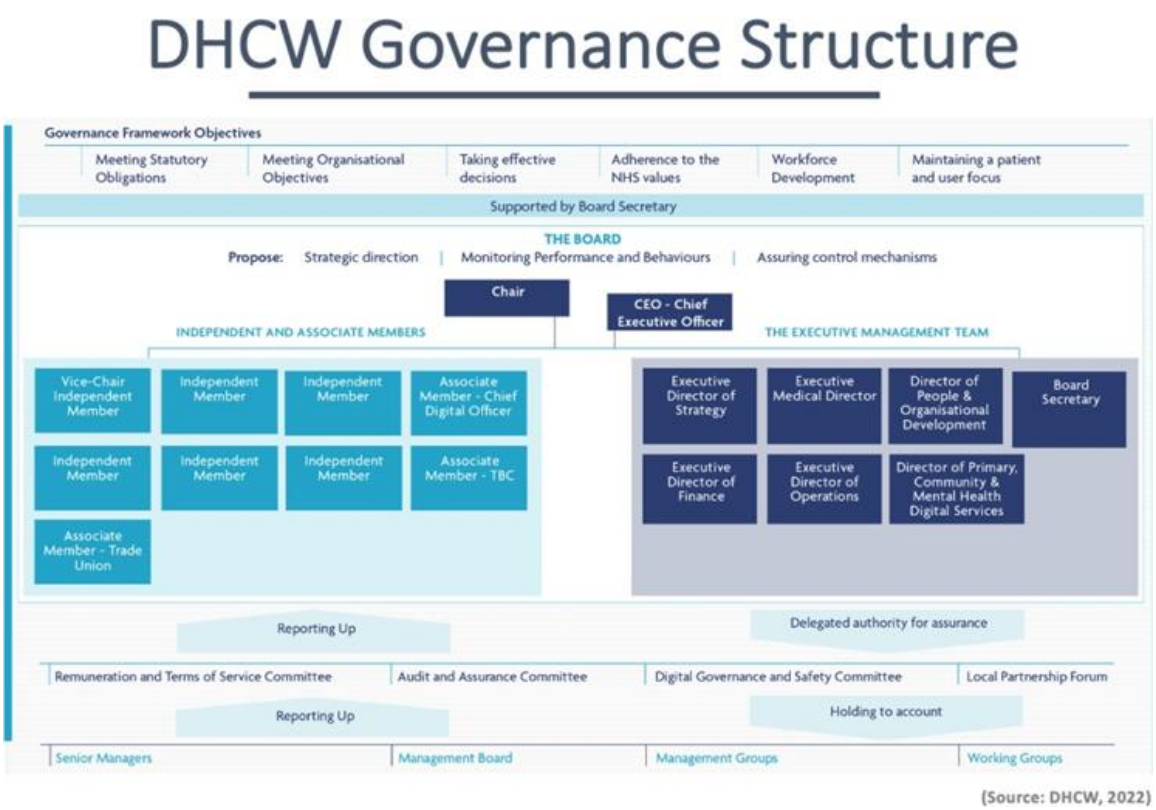


Figure 4.6. DHCW governance structure (Source: Authors own).

5 Research Questionnaire Findings

5.1 Chapter Introduction

This chapter presents the findings from the research questionnaire developed and published to further explore “What enables and inhibits the adoption of value based digital systems in Secondary Care settings across NHS Wales.”

5.2 Outline approach to findings

Findings will follow the structure of the questionnaire with some findings grouped to reflect key topics identified within the literature review, and the DAFFS model. Further details are held in appendix G.

5.3 General overview of questionnaire

The questionnaire was issued on the 17th of July 2023 and remained open until data was extracted on 5th of August 2023, providing two working weeks for respondents to submit. The image below evidences the number of completed surveys.

All Responses

Distribution Channel	Audience size	Surveys started	Surveys finished	Response rate	Completion rate
Anonymous link	N/A	N/A	**51**	N/A	N/A

Figure 5.1. Survey Response Rate (Source: Authors own).

51 out of 60 informants invited to partake responded, which equates to an 85% participation rate.

All partakers consented to participate in the anonymous study, as presented below.

Q1: Do you consent to participate in this study (your identity will remain anonymous)

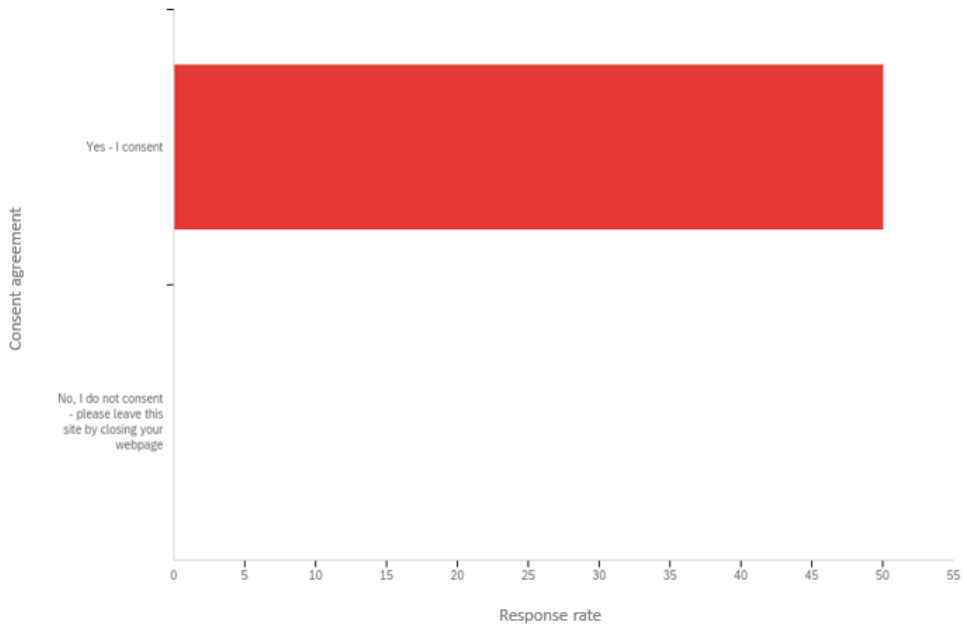


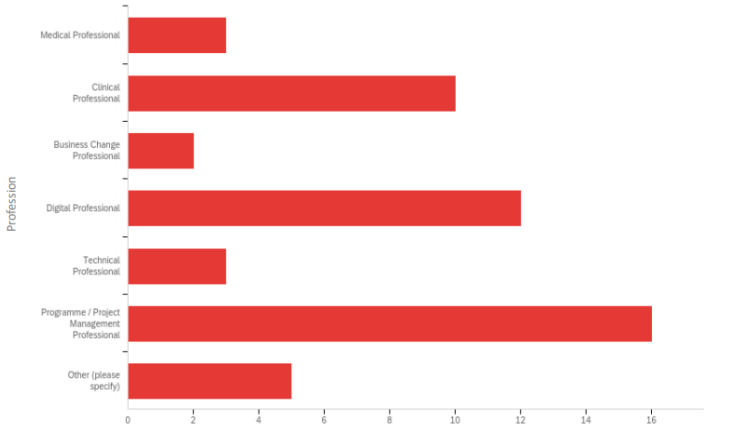
Figure 5.2. Participants’ Consent (Source: Authors own).

5.4 Participants Context

The following questions and statements provide individual context of participants.

In question two, participants were requested to provide their current professional status from the options presented in the graphs and table below.

Q2: Please select the option that best describes your professional status:



Other (please specify) - Text
Nursing Informatics
Digital Policy professional
clinical professional no longer practising
Both Digital and Clinical professsional
Commercial Proffessional

Figure 5.3. Participants' professional status. (Source: Authors own).

This evidence the range of professional views that were captured during the study. As the bar chart illustrates, the three key profession's (Clinical, Digital and Programme/Project Management), who are importantly required to achieve the successful adoption and implementation of digital systems and services in SC settings have been documented.

Questions three and four outlined with the graph below, exemplify participants length of service within the health and care sector and the digital healthcare environment.

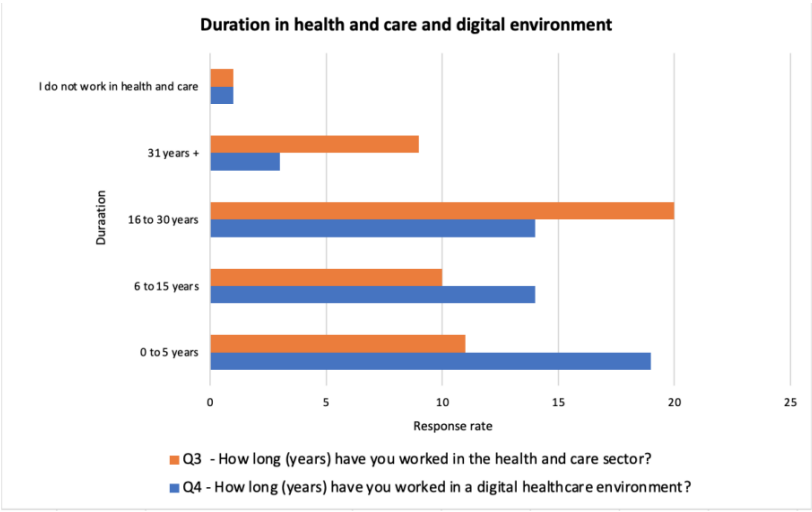
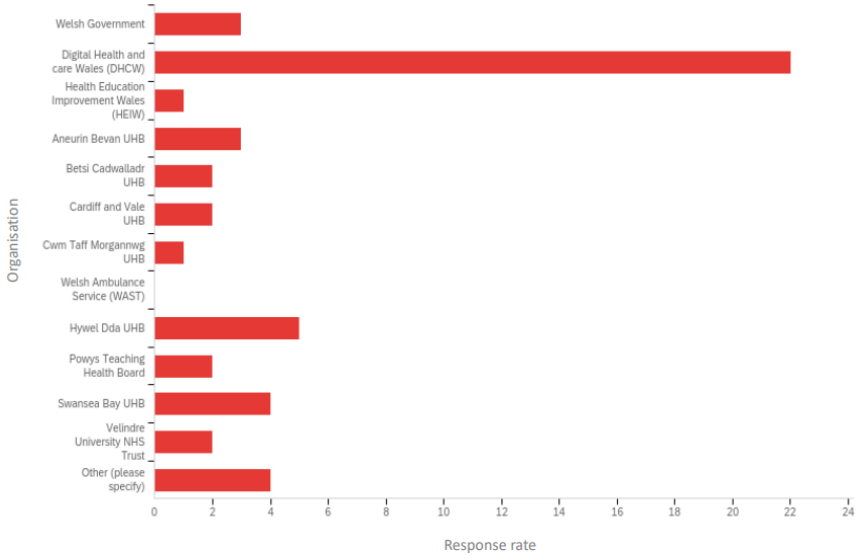


Figure 5.4. Participants length of service in health and care sector and digital environment. (Source: Authors own).

Interestingly this indicates that although most informants (58%) have worked within the health and care sector for 16 years or more, 37% are new to the digital healthcare environment with between 0 – 5 years' experience.

To ensure a variety of responses from health and care organisations across Wales and reduce bias, informants were requested in question 5 to select the organisation they are currently employed by and their length of service at the organisation. This information is displayed in figures 5.5 and 5.6 below.

Q5: Which of the following organisations do you current work at? (Please select only one option)



Other (please specify) - Text
Bevan Commission
Delta Wellbeing
Public Health Wales

Figure 5.5. Participants current employment organisation. (Source: Authors own).

Q6: How long (years) have you worked at this organisation?

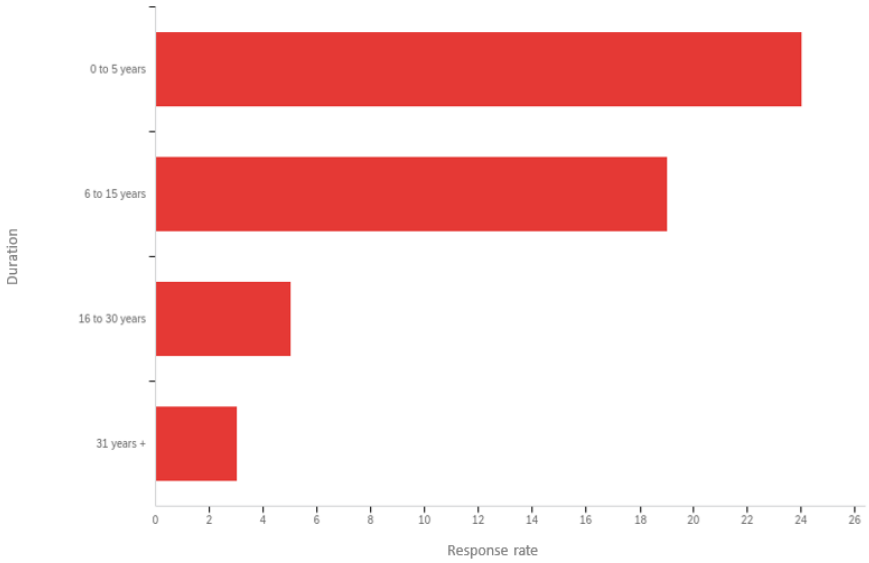


Figure 5.6. Length of employment at current organisation. (Source: Authors own).

This demonstrates 41% of responses were collected from individuals that are employed by health boards across NHS Wales, 43% from DHCW and the remaining responses from WG, HEIW and other Welsh public sector organisations. It also highlights that nearly half of respondents are new to their organisation. These findings combined with that of Question 3 could allude to regular (within 0-5 years) internal movement across health and care and public service organisations.

Questions 7 and 8, presented with the findings below, identifies whether participants had experience in digital environments outside of the NHS and international healthcare.

Q7: Have you worked in a digital environment outside of the NHS context?

Q8: Do you have experience of digital healthcare outside of the UK?

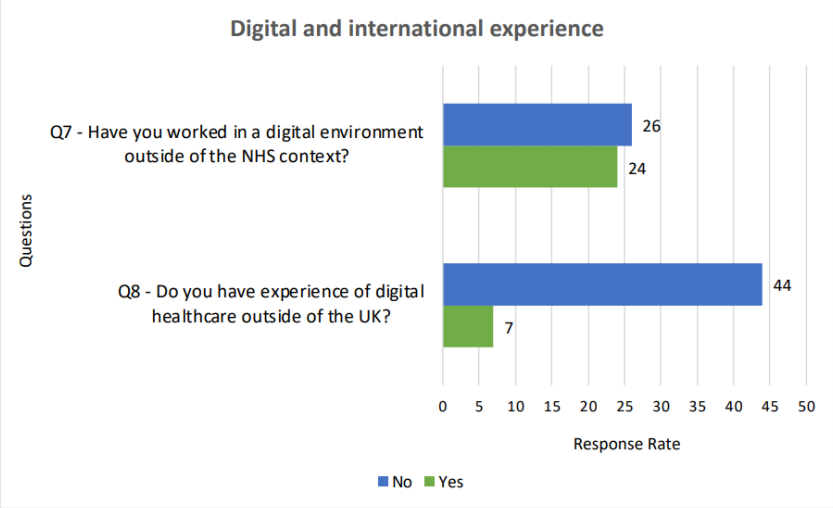


Figure 5.7. External (to NHS) Digital and international healthcare experiences. (Source: Authors own).

This suggests most respondents (86%) have only worked within a UK healthcare environment, however almost half of respondents (48%) have worked in a digital sector outside the NHS.

The following questions (9 and 10) were designed to understand informants' involvement in projects and programmes across the NHS sectors and services. These are outlined below with their respective charts.

Q9: How many digital projects and programmes have you been involved with, in the NHS?

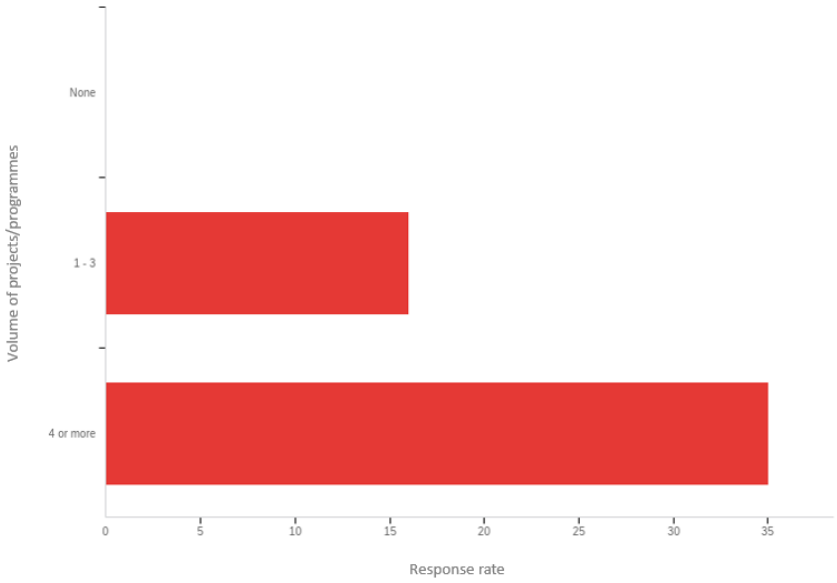
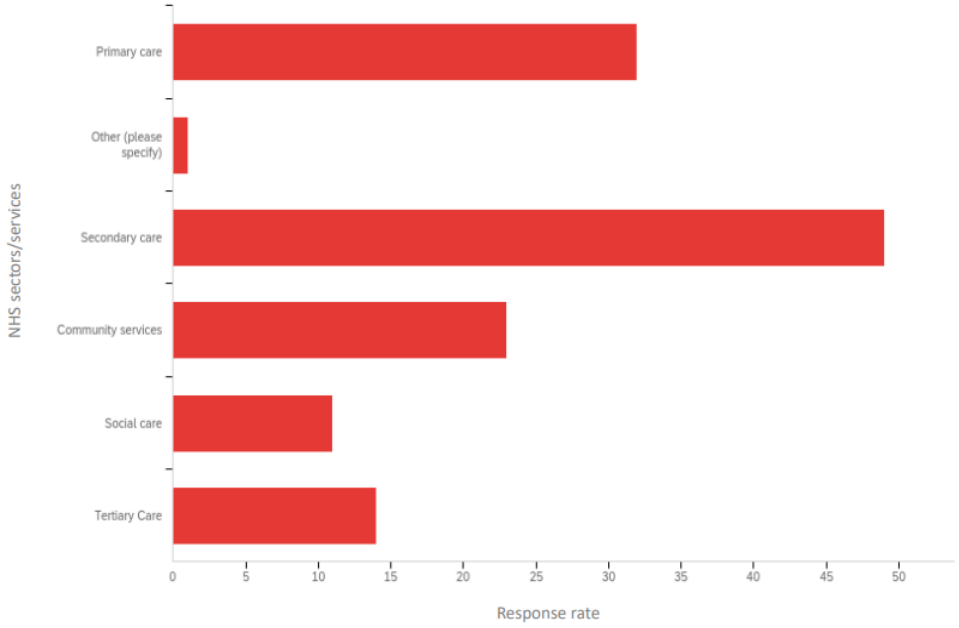


Figure 5.8. Involvement in NHS projects and programmes. (Source: Authors own).

Q10: Please select in which area of the NHS that these projects / programmes were implemented in: (You may select more than one option)



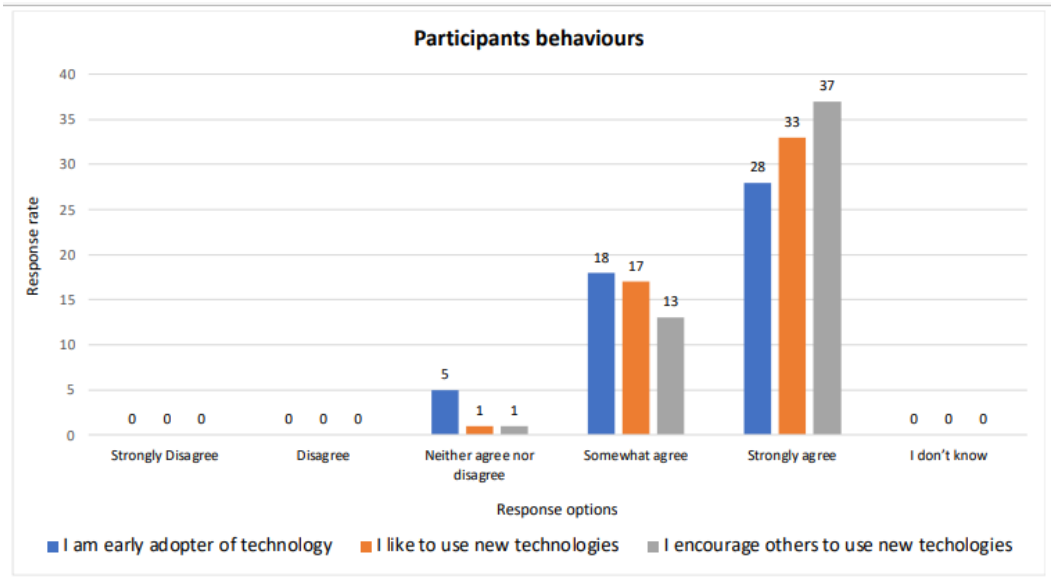
Other (please specify) - Text
Public

Figure 5.9. Participants experience of implemented projects and programmes, by NHS sector. (Source: Authors own).

68.6% of informants have been involved with 4 or more projects and programmes in the NHS, 37.7% of those have been in SC settings and 24.6% in PC.

Question 12 was constructed using a Likert scale and consisted of five statements to collate data on personal behaviours and perceptions related to digital technologies. These are displayed below.

Q12: - About You (Please select from the following statements by clicking on the position that best describes you and your opinion).



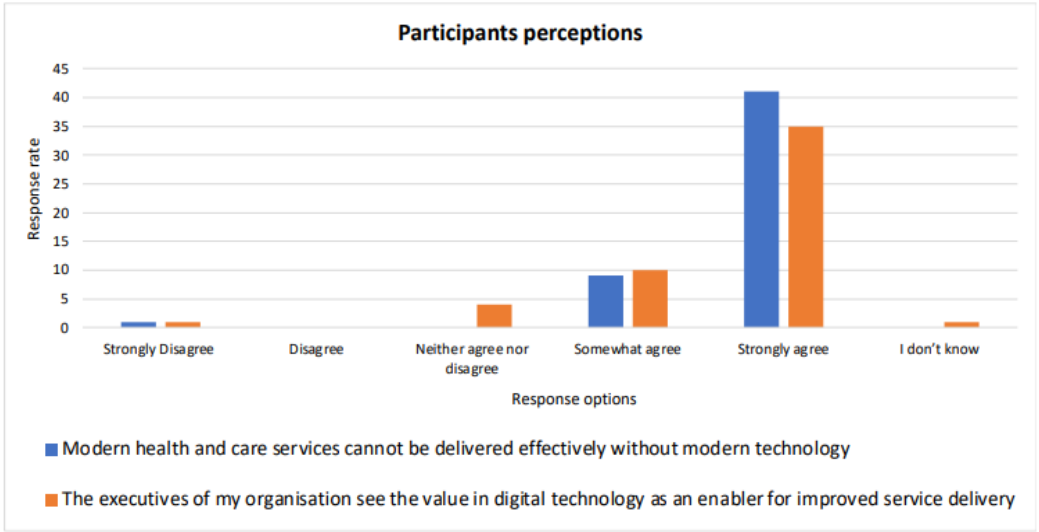


Figure 5.10. Participants behaviours and perceptions. (Source: Authors own).

90% of participants identified themselves to be early adopters, with 98% stating that they like to use and encourage others to adopt new technology. Most partakers agreed that the future of health and care service delivery is reliant on modern technology with 88% stating that the executives within their organisation support and perceive digital technology as a valuable enabler to improve services.

5.5 Key questionnaire findings related to the DAFFS model themes.

The subsequent set of questions, statements and findings relate to the literature review and the themes constructing the DAFFS model.

The following question consists of 8 statements to understand the informants' views of the outcomes and effective delivery of programmes and projects within the NHS.

Q13: My Views on NHS Wales (Please select from the following statements by clicking on the position that best describes your view).

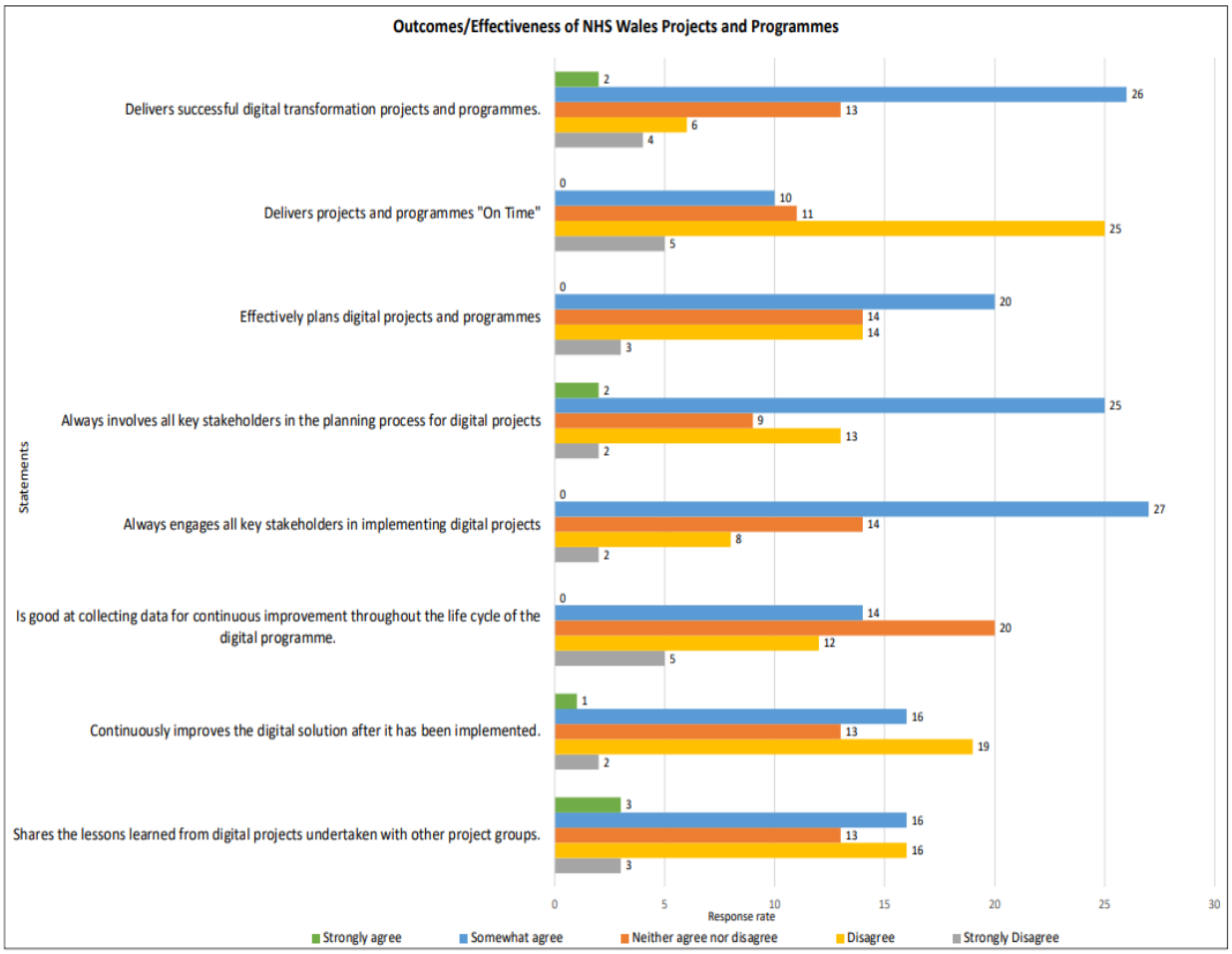


Figure 5.11. Participants' views on the NHS Wales project and programme delivery. (Source: Authors own).

54% of partakers agree that the NHS successfully delivers digital projects and programmes, however 58% view that this is not achieved 'on time'. Participants seem unsure whether effective plans are produced, with the neither agree nor disagree response rates equating to the disagree rates. There is a split view across organisations regarding sharing of lessons learned with other projects and programmes, a number of those from DHCW seem to disagree compared to those across heath boards who agree.

Question 14 and its findings (exemplified below) address the informant's perceptions of the context and environment of digital transformation in NHS Wales through various statements.

Q14: When managing a digital transformation project or programme, NHS Wales, and the Welsh Government, in general, (Please select from the following statements by clicking on the position that best describes your view).

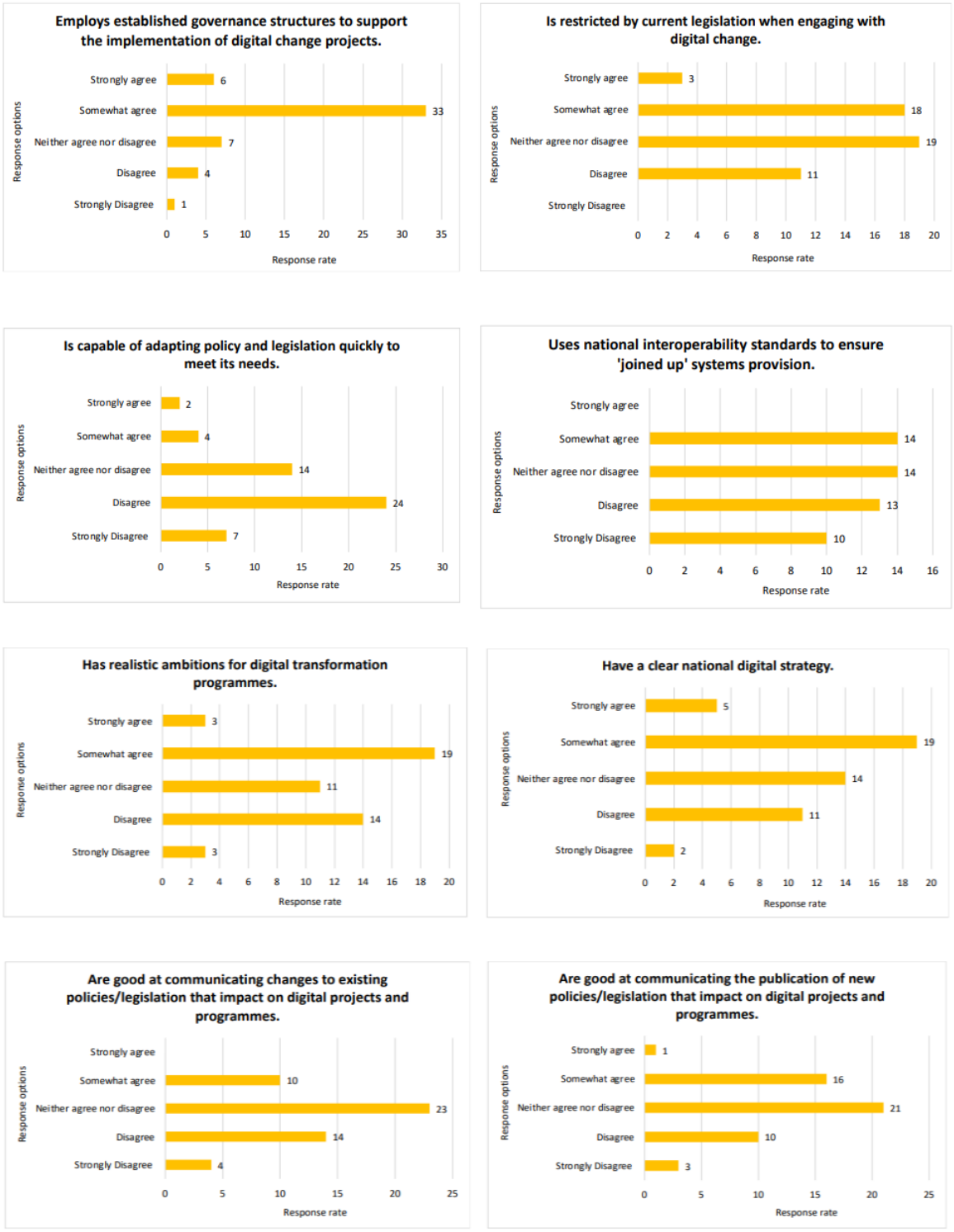


Figure 5.12. NHS Wales context and environment. (Source: Authors own).

76% of informants felt supporting governance structures are effectively established by NHS Wales and WG, however 60% believe digital transformation is restricted by current legislation, highlighting the incapability of adapting policy and legislation quickly. Participants also underline that communication related to the publication of new policies/legislation is slightly better than the changes to existing.

The findings above also emphasise the lack of standards used to create an interoperable environment, with 45% of responses disagreeing with the related statement. Most respondents allude to the existence of a clear national digital strategy, however there are mixed views regarding whether the NHS and WG have realistic ambitions.

The subsequent question ascertains the influencing positions on the adoption of digital healthcare, results are displayed below.

Q15: To what extent do you agree/disagree that the following positions influence the adoption of digital healthcare ..... (Please select from the following statements by clicking on the position that best describes your view).

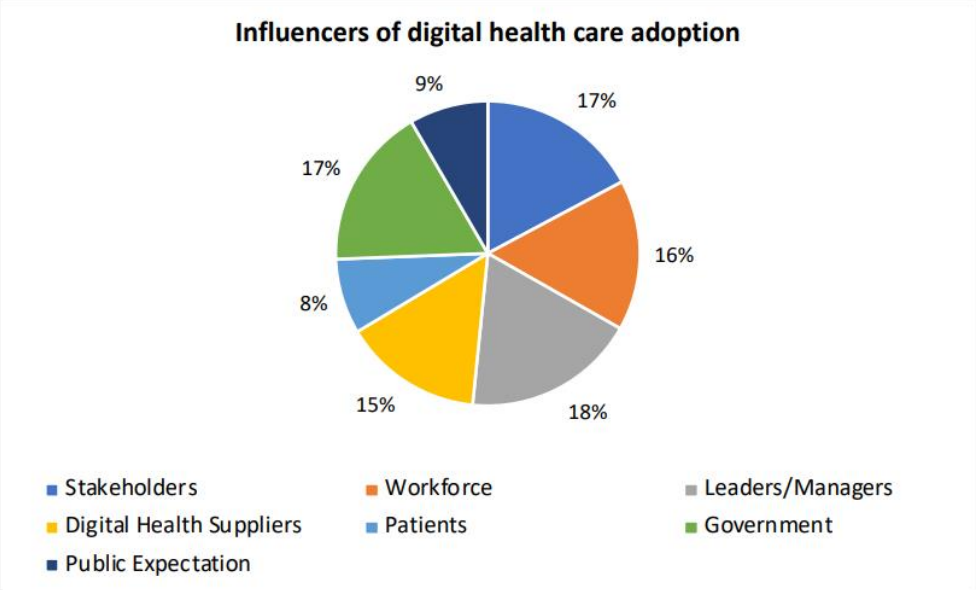


Figure 5.13. Adoption influencers. (Source: Authors own).

WG and the NHS workforce could be considered as stakeholders of digital transformation in NHS Wales. The sum of this combination would account for 50% of influencers, thus resulting in stakeholders being the number one influencer of effective adoption and implementation of digital systems and services, providing insight into the NHS Wales ecosystem.

The question below (Q16) and its proceeding statements encourage the user to score the attributes they deem are key to the adoption and spread of digital technologies across NHS Wales.

Q16: Which of the following do you believe are key to the adoption and spread of digital health technologies across Wales? (Please select from the following statements by clicking on the position that best describes your view).

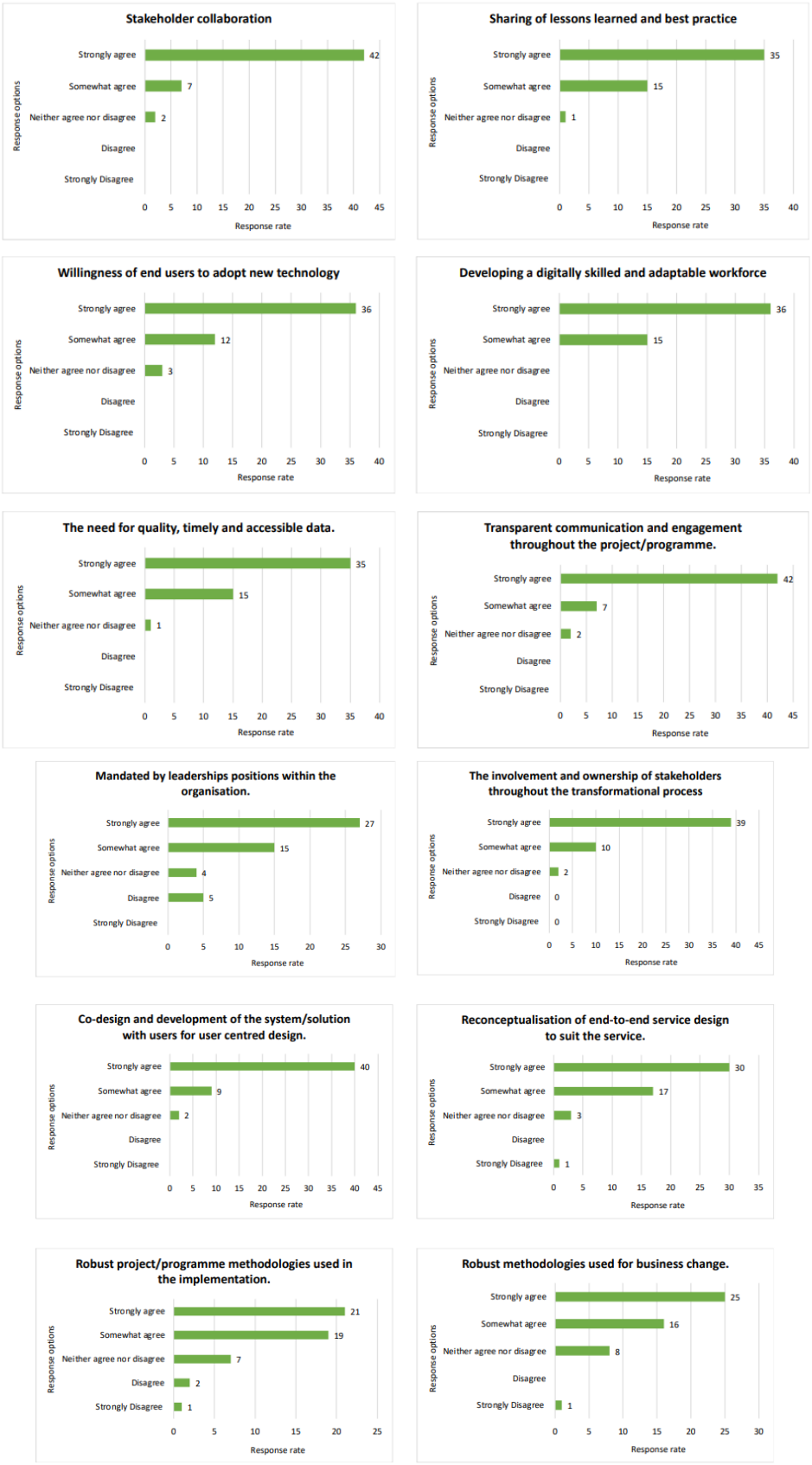


Figure 5.14. Digital adoption attributes. (Source: Authors own).

This demonstrates that all the above attributes must be present for the successful delivery digital transformation.

Informants were asked in question 17 to select the activities that are important to shared learning. The question, option choices and results data are illustrated below.

Q17: Which of the following do you believe are key to learning from digital implementations? (Please select from the following statements by clicking on the position that best describes your view).

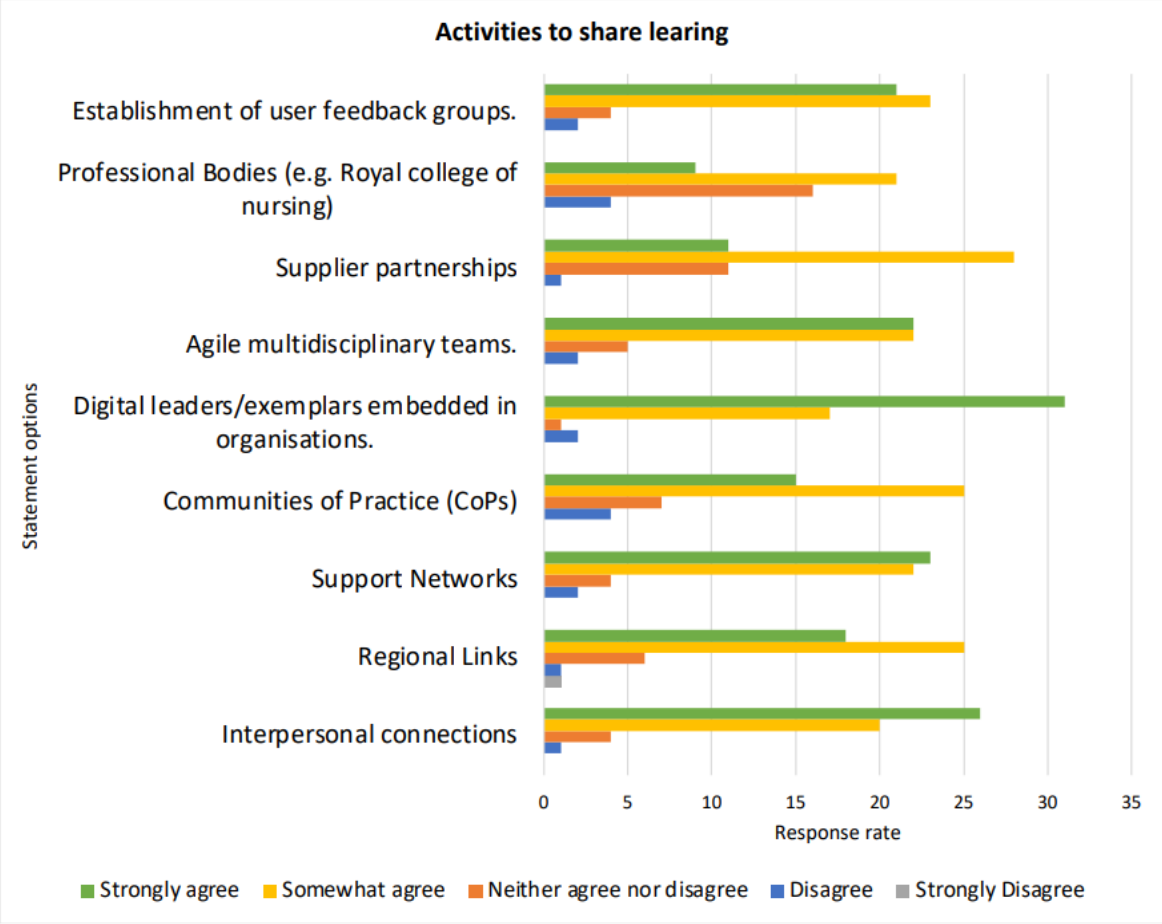


Figure 5.15. Shared learning activities. (Source: Authors own).

Most of the activity options provided to the participants are undoubtedly essential to share digital implementation learnings, the top four activities include:

1. Embedding digital leaders and exemplars into organisations = 94% agreement rate.
2. Interpersonal connections = 90% agreement rate.
3. Support networks = 88% agreement rate.
4. (Joint place) Agile multidisciplinary teams and user feedback groups = 86% agreement rate.

Question 18 and its results portray respondent's views on the main factors that discourage or inhibit the adoption of technology, as summarised below.

Q18: To what extent do the following discourage the adoption of technology? (Please select from the following statements by clicking on the position that best describes your view).

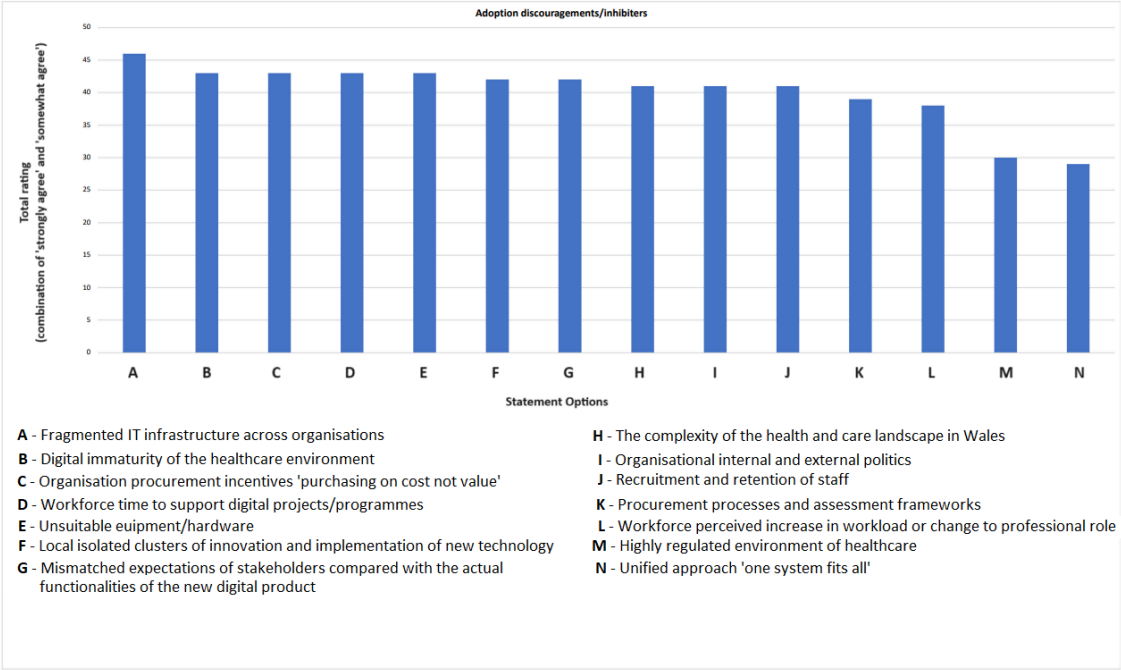


Figure 5.16. Adoption inhibiters/discouragements. (Source: Authors own).

Overall, there is very little difference in results between statements. However, the leading discouraging factor (with a 90% agreement rate) is fragmented IT infrastructure, followed closely by digital immaturity of healthcare, organisations procurement incentives, workforce time to support projects and unsuitable equipment (all with an 84% agreement rate).

To test the DAFFS conceptual framework, participants were requested to select whether the themes presented, enabled, inhibited, or could be seen to enable and inhibit (both) the successful adoption and implementation of digital systems in NHS Wales. Findings are presented in the bar chart below.

Q19: - In your view do the following themes, enable, or inhibit the successful adoption of digital systems in NHS Wales? (Please state your view by selecting from the following options).

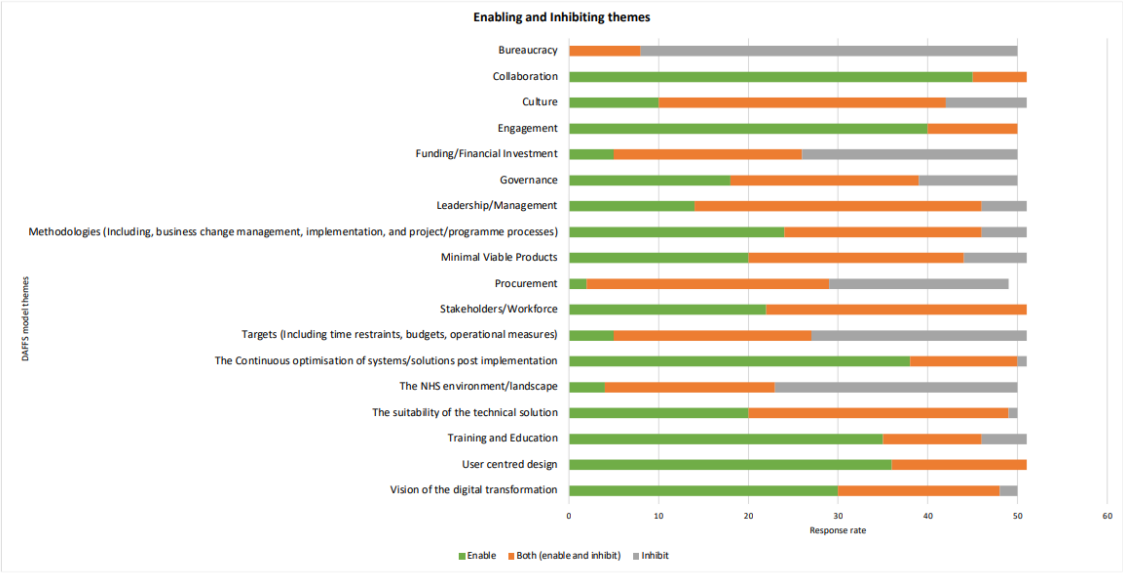


Figure 5.17. Enabling and Inhibiting themes. (Source: Authors own).

This validates the DAFFS model and identifies the core ingredients to achieve the successful adoption of digital healthcare systems, and concludes the following:

- Informants are critical of the current digital healthcare infrastructure in Wales.
- There is a strong need to prioritise stakeholders/workforce and collaboration.
- Bureaucracy, funding, procurement, and targets are restricting and hindering widespread adoption.
- UCD must be promoted to ensure the technical solution is suitable and continuously optimised post implementation.

The intension of the final free text question in the survey was to provide partakers an opportunity to express their experiences of digital transformation and propose potential future improvements. Figure 5.18 displays the volume of surveys submitted with comments upon completion of Q20.

Q20: - How would you describe your experience of digital transformation? Please describe positive and negative experiences, and feel free to provide suggested improvements. (Please note this question is optional).

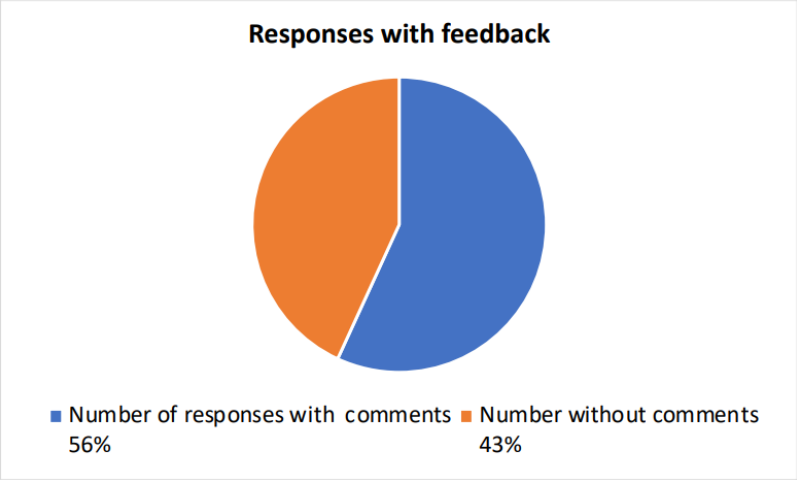


Figure 5.18. Volume of responses submitted with feedback. (Source: Authors own).

This demonstrates the extent of people that wanted the opportunity to voice their suggestions and experiences.

The following table exhibits the feedback and comments received from respondents. Note these have been categorised into the relevant themes outlined in the DAFFS model, however many of the comments could be categorised into multiple themes, due to the interrelations and interconnections of each theme and comment for example, actions of one theme impact others.

Table 5.1. Participants feedback and suggested improvements. (Source: Authors own).

DAFFS model themes	Informant's comments
Bureaucracy	• Lack of good career structures for technical colleagues. • The politics stifle innovation. • Sometimes an executive decision just needs to be made and things (patient safety aside), need to be allowed to fail fast and move on. • Negative: New transformation projects seem to come down from on high as opposed to from the professionals at the coal face. • I feel like there are so many opinions, views that whoever has the "loudest" voice gets things done their way and it is difficult arena for knowledgeable people to speak up and be heard.
Collaboration	• Poorly organised clinical networks. • When done well it is a positive and rewarding experience, which improves the working lives for clinicians and managers in the NHS and improves efficiency for patients. Effective partnership with an engaged supplier contributes to this.
Culture	• The culture does not facilitate learning from the experience of others and leads to projects taking wrong decisions. • Evaluation and lessons learned are absent and gate reviews seen only as some sort of threat or punishment. • Culture starts at the top and this is never more evident than in the digital transformation of the Welsh NHS.
Engagement	• There is inadequate leadership and stakeholder engagement and too much duplication of effort, with no proper coordination of work between programmes.
	• The hardest part is making sure you include all stakeholders. I think we're very bad at missing people out. That's not intentional, it's a lack of awareness because we have worked in silos for so long. This will improve.
Funding/Financial Investment	• Funding cycles also create a mass of movement to staff on a temporary basis, which upsets establishme team formation. • Having worked in technical environments in both the private and public sector for the past 20 yeas, the NHS Wales development teams are woefully underfunded, we are not competitive with the private sector and so miss out on attracting the best talent. • Sadly the private healthcare sector is already ahead, presumably due to different funding models, flexibility in roles, and lack of other constraints. • There must be a commitment to supporting recurrent funding and career pathways for clinical informaticists (in addition to the technical roles) to ensure that user experience informs design for to benefit patients and users of the digital systems.
Governance	• Any digital product should conform with appropriate legislation and have associated standards to ensure standardized approach to any data the digital product collects. • There is also a current tension between governance to ensure scalability and impact (based on current infrastructure and interoperability requirements) and innovation. We have to allow for new digital technologies that don't necessarily fit in with the way we currently do things. "Transformation" to me means doing things very differently, in a way that transforms outcomes, and if we want to be able to transform the health service from a reactive to proactive model then that will take some really innovative thinking, and clearly won't happen within our current operating model which only really supports incremental change. • Slow and frustrating, but it has to be done right. • Welsh Government and Organisational Executive sponsorship of the Digital strategy and project/programme milestones and benefits realisation - value for money and alignment with national policy and legislation are key.

	• The alignment of the digital projects to the Quality and Engagement Act provides a real opportunity for organisations to demonstrate how they are using the data from digital systems to demonstrate their duty of quality. • DHCW should be an enabler ensuring data can be shared across organisations using a standards based approach rather than mandating large systems across Wales which cost 10's of millions and take many years to implement. • There seems to be an obsession with governance and project management with increasing paperwork which can get in the way of agile and innovative development.
Leadership/Management	• Lack of technical leadership. • We can be discussing digital transformation and the people in the room are managers, and may not be technical or clinical. • Conversely most digital projects are not well managed or understood. • It is vital for health boards to ensure senior staff are seen to be positive role models within digital implementations as they are clinically. • Only changes that will be supported are where clinical leaders are supportive or like the idea. If Clinical Leaders are against the changes - they wont happen. • Some organisations do not understand that digital transformation has to be a total commitments from leaders and this means freeing up staff from BAU to spend time in this environment which rarely happens as change mostly appears to be 'just another job' on top of my busy workload.
Methodologies (Including, business change management, implementation, and project/programme processes)	• A paradox in which project management is centralised within NHS Wales, and strategy incoherent, inconsistent and frequently missing. • There is a strong focus on 'programme management' (the creation of artefacts, documentation) and less on 'managing projects' to a desired delivery endpoint.
	• Implementation plans repeatedly fail to recognise the change in roles needed to ensure digital tools function effectively. Eg in the paper non digital world the ward or clinic clerk ensures there is a stock of paper requests available and relevant for that specific ward or clinic. No one checks the computers are working and connected to the printers to ensure they will work when needed. • NHS Wales needs to adopt a much more agile approach to digital transformation.
Minimal Viable Products	• Believe all new or adapted technology should use the collect once, use many ethos. Data should be collected for both clinical and secondary uses at outset - unstructured data (text based for day to day clinical usage and structured outputs for secondary use) this should be embedded within all source systems
Procurement	• There is also a lack of higher level pan-NHS Wales executive decision making due the legal framework NHS Wales is build on. • Learning from others is very helpful but procurement process means opportunities to do this meaningfully are sometimes restricted and there is significant duplication in work.
Stakeholders/Workforce	• When not understood by management and the workforce, becomes fragmented and disruptive. • Positive experience with NHS providers across the landscape who endeavour to participate in engagement despite resource pressures. • Believe there is an imbalance between resource dedicated to initially develop solutions and that required to effectively implement. • Most staff under a negative influence are harder to transition than those with positive role-modelling who are more eager to adapt. • It seems like more and more stakeholders are now akin to the idea of Digital transformation in the NHS in Wales, which is great, however agreement by committee and ensuring that everyone is "happy" can both be an enabler but also an inhibitor.

	• Positive: Actual time and cost savings for healthcare professionals brought about by digital transformation programmes. (WCCG, WCP, WNCR three great examples) • Digital transformation doesn't work if it is imposed on a workforce who are not fully engaged with the identification and requirements of the solution. • I would like to encourage and see more support for time to be spent enabling teams/organisations to really understand true working practices and what is needed to really make a difference. • Time and workforce required always underestimated that can impact on the best optimisation of a solution. • The two projects I've been involved in have been very different in terms of the level of support available.
Targets (Including time restraints, budgets, operational measures)	• A more portfolio level based resource and milestone planning process would allow focus in the critical areas and ease bottlenecks. • My own personal experiences of working with digital incentives with NHS Wales, is that there are often too much emphasis on pace and timelines.
The Continuous optimisation of systems/solutions post implementation	• What NHS Wales does offer has great foundations, but there needs to be better long term plans, a project should not just be about getting the product out of the door, our USP as NHS Wales should be that we are more adaptable to the needs of the whole organisation, and can turn around changes and updates quickly, ensuring that we are providing front line staff with the tools they need to support them in providing the care they deliver. • Also, off the shelf systems don't tend to keep up to date with new technology so 5-7 year cycles can mean having to transfer old data into a new system which might not match new standards.
The NHS environment/landscape	• Artificial boundaries between organisations and what we think of as direct care, management/secondary uses and research, while we lump together things that should be separate. Lots of impediments to fast pace of delivery - not least bottlenecks created by centralised project management and a technical architecture that means development cannot occur at pace. At a time we need "digital" embedded in every organisation in Wales, we see a central organisation pulling resources centrally, rather than distributing expertise and forging multidisciplinary teams. • Digital transformation is hard, particularly in an environment which is completely stretched to its maximum. • I find the programmes in Wales are constrained by inter-organisational politics, a dearth of real-world experience and an unwillingness to learn from others. • Covid allowed organisation to become enablers of digital transformation. The pace of delivering digital change has been incredible which has supported A Healthier Wales (2015) by bringing care closer to home and supporting staff work more agile. This has brought about many advantages. The negatives are the infrastructure and working in old buildings that are unable to support the digital landscape, i.e., lack of Wi-Fi. A lot of capital is required to strengthen the infrastructure which is not readily available. • Digital transformation is complex. • The challenge had been in successful implementations being adopted and spread nationally. • Without digital transformation the NHS will not be able to survive the changes required of it to support delivery of service. Digital transformation when delivered well is a key enabler but if not delivered well will kill a project. • Once for Wales has not worked after 17 years so we need a different way focused on the recommendations of the Architecture Review in 2019. • The fact that there are so many different systems and IG rules makes it very difficult to achieve anything on a genuine All Wales basis.
The suitability of the technical solution	• Lack of design and interoperability with source systems. • There is a critical disconnect between a procured solution working in the isolated test environment and the real clinical world.

	• Unreliable hard ware, internet connections and poorly performing servers, connections and the need for multiple products to interact mean that IT limits productivity on a daily basis. There isn't a clinical session in which every functionality is available to use first time without delay, resetting or having to switch off and on. The multiple problems with IT are resulting in reduced productivity rather than increased efficiency.
Training and Education	• Feel that within my own organisation additional focus should be given to the provision of training on effective engagement and appropriate methods. • User-centred approaches are slowly changing this but rely on the time, motivation, and digital skills and confidence of the workforce.
User centred design	• The involvement of end users is a foundational pillar of planning for digital change, but ironically there is often not enough involvement, which diminishes the value gained from transformation. This limits delivery of the majority of initiatives. • Clinical and patient focussed digital transformation needs to be delivered by people close to the end user. • Historically technology people have driven technology changes and this leads to a disconnect in terms of how products work in practice. Only end-users / practitioners really have the ability to understand the potential of technology in their specific context, with their patients. • Testing of solutions doesn't seem to take into account users jumping from machine to machine every 5 minutes, with each machine being used by multiple users. • Digital transformation has worked best where clinical end users have identified the need for a digital solution and have been fully involved from the outset in informing project and technical support staff about how they work to deliver services. This ensures that anyone working on the transformation has an understanding of the work environment concerned and adapts the plan to fit the constrains of the environment taking into account staff availability, space equipment required etc.
	• Lack of understanding of user centred design and user research within programme teams can inhibit development (and new ways of working) - this is really important not just at the beginning but throughout the life of a product. • Once the data and information from the digital ways of delivering services/working are realised then the improvements for patients, staff and carers can be achieved.
Vision of the digital transformation	• When rolled out universally and supported with good level of training, then a positive experience. Even better when visually seen as improving services. • If WG provided firm direction for their digital ambition, funding could be channelled more effectively. • Positive: Acknowledgment that NHS Wales needs digital transformation for successful healthcare delivery, in a continuously changing and challenging environment. • Negative: Unrealistic expectations on delivery given the financial and resource constraints. • At present we often fail to deliver the expected as the expected was not realistic or was required to be done quickly. I would like to see better of awareness of what is being asked for and what is required to truly transform the ways in which services in the NHS are delivered. Maybe this will help us stop producing piece meal products which are not fit for purpose in the long term. • Challenging- meeting expectations with the reality.

The volume of comments per theme, the views, experiences, and future improvement suggestions represented, reflect that of the associated findings recognised and discussed throughout this chapter.

6 Discussion

6.1 Chapter introduction

This chapter, will discuss the study findings (Chapter 5) with the themes identified in the literature review (Chapter 2), which were embedded in the DAFFS conceptual framework to answer the research question, 'What enables and inhibits the adoption of value based digital systems in Secondary Care settings across NHS Wales.'

6.2 Summary of findings

Professionals from across the NHS were keen to be involved in the study, are enthusiastic about digital transformation and suggested potential changes of improvements for the successful implementation and adoption of new digital systems. No detectable out layers of professional participants held an indifferent view.

NHS Wales successfully delivers digital projects and programmes, however not on time and do not continuously optimise systems once implemented. Bureaucracy, Governance (for example restrictions caused by the lack of rapid adaptability of current legislation), fragmented IT infrastructures such as historic systems and the digital immaturity and complexity of the NHS landscape/environment are inhibiters to the successful adoption of digital healthcare systems in an ever-evolving ecosystem. Stakeholders are the number one influencer of effective implementation and adoption of new systems/solutions.

The core enablers for digitising services across Wales are collaboration, the education, skills development and adaptability of the workforce, communication, engagement, involvement of the end user in the design and development of systems, strong leadership/management (using suitable methodologies) and the reconceptualisation of service design.

6.3 Discussion

The table below has been constructed by combining Tables 2.5, 2.6 in Chapter 2, the themes outlined in the DAFFS model V2 (Figure 3.2) and the findings from question 19 presented in figure 5.17.

Table 6.1 DAFFS model themes validation of enablers and inhibiters (Source: Authors own)

Themes	Impact on digital transformation	Related literature
Bureaucracy - rigid hierarchical structures, various boards, public service regulations, centralised governance yet locally responsible for decisions regarding re-design and service improvements.	Inhibiter	Omar & Elhaddadeh (2016), Benjamin & Potts (2018), Papanagnou & Shchavelava (2018), Asthana et al (2019), Iacobucci (2020), Wilson & Davies (2020), Cripps & Scarbrough (2022), Phiri et al (2023)
Collaboration - internal and external to organisation. Partnership complications, confusion between organisations.	Enabler	Hamilton (2019), Asthana et al (2019), Howson (2020), Cresswell et al (2020), Janssen et al (2021), Acharya et al (2022), Phiri et al (2023)
Culture - encourage change, share knowledge, connections, support networks, learning, innovative, risk adverse, focused on meeting performance targets, staff morale.	Enabler and Inhibiter	Asthana et al (2019), Hamilton (2019), Howson (2020), Cresswell et al (2020), Janssen et al (2021), Acharya et al (2022), Wilson & Davies (2022), Phiri et al (2023), Burgin et al (2023)
Communication & Engagement - using mixed approach (e.g., videos, infographics) with users to capture clinical and technical needs, improves development and productivity, poor/lack of transparency, create awareness and understanding of new technology and potential benefits, creates transparency, maybe poor/lack of transparency.	Enabler	Benjamin & Potts (2018), Janssen et al (2021), Mantzourani et al (2022)
Financial investment - limited funding, non-effective budgets, DPIF funding allocations, health boards/trusts inability to fund transformation without DPIF.	Inhibiter	Benjamin & Potts (2018), Asthana et al (2019), Iacobucci (2020), Cresswell et al (2020)
Governance - including legislation, standards, clear structures, regulation frameworks, policies, lack of suitable structures for IT and incomprehensive/unproven strategies, developed without user input.	Enabler and Inhibiter	Benjamin & Potts (2018), Iacobucci (2020), O'Malley (2021), Cripps & Scarbrough (2022), Mantzourani et al (2022), Phiri et al (2023)

Leadership/Management - digital skills, motivation workforce, looking to the future, Distorted priorities, poor leadership, non-digitally proficient, adoption of previous lessons learned.	Enabler and Inhibiter	Benjamin & Potts (2018), Farrell & Sood (2020), Iacobucci (2020), Janssen et al (2021), Acharya et al (2022), Wilson & Davies (2022), Mantzourani et al (2022)
Methodologies (Including, business change management, implementation, and project/programme processes) - Agile, Prince 2, mixed method, multidisciplinary teams, continuous evaluation, redesign of whole service, one size fits all don't work.	Enabler and Inhibiter	Omar & Elhaddadeh (2016), Benjamin & Potts (2018), Iacobucci (2020), Mantzourani et al (2022), Burgin et al (2023)
Minimal Viable Product (MVP) - enable solution to be implemented more quickly future iterations can follow, workforce expectiations of digital solution implemented may be different to what's initially implemented.	Enabler and Inhibiter	Theme identified during initial DAFFS framework review - see sub-section 3.6.
NHS Landscape/environment - complexity, separate organisations, different services, differing levels of digital maturity and infrastructure, variation in local practices/procedures, internal and external competing incentives, politics, isolated rollouts and adoption, immaturity of digital health environment, non-profit.	Inhibiter	Benjamin & Potts (2018), Asthana et al (2019), Hamilton (2019), Iacobucci (2020), Cresswell et al (2020), O'Malley (2021), Wilson & Davies (2022), Tolley et al (2023)
Procurement - processes (not agile), assessment frameworks, length of time, difficult for suppliers to enter NHS market, organisations purchasing on cost rather than quality and value.	Enabler and Inhibiter	Papanagnou & Shchavelava (2018), Asthana et al (2019), O'Malley (2021)
Stakeholders/Workforce/Users - digital skills, specialist expertise, adaptability, challenges with recruitment, resource, retention, limited digital and data expertise, competition with internal (to NHS) and external organisations, limited time to be released for training and implementation, users not willing or capable to adopt, limited digital skills, fear of change, preconceived conceptions, concerns that digital transformation could change profession.	Enabler and Inhibiter	Omar & Elhaddadeh (2016), Addis et al (2018), Benjamin & Potts (2018), Hamilton (2019), Asthana et al (2019), Howson (2020), Janssen et al (2021), Acharya et al (2022), Mantzourani et al (2022), Phiri et al (2023), Burgin et al (2023)
Suitability of technical solution - suitable if include users from beginning increases adoption. Unsuitable due to lack of user centred/co-design reduces adoption, review and reform of pre-existing processes, concerns regarding patient confidentiality (where data being shared between systems).	Enabler and Inhibiter	Omar & Elhaddadeh (2016), Cripps and Scarbrough (2022), Mantzourani et al (2022)
The Continuous optimisation of systems/solutions post implementation - Continuous improvements to systems once implemented (instead of re-procuring when system no longer suitable) to maintained pace with evolving digital, technical, medical, and clinical ecosystems.	Enabler	Theme identified during initial DAFFS framework review - see sub-section 3.6.
Timelines and Targets (Including time restraints, budgets, operational measures) - Unrealistic public service performance targets (KPIs) and measurements. Time constraints related to the vision of the digital transformation and funding set by WG, Execs leaders/managers.	Inhibiter	Omar & Elhaddadeh (2016), Asthana et al (2019), Iacobucci (2020), Wilson & Davies (2020)
Training & Education - leadership, digital skills, various methodologies for project management, business change, implementation. Shortage of programmes to improve digital skills, knowledge, and expertise.	Enabler	Janssen et al (2021), Cripps & Scarbrough (2022), Burgin et al (2023)
User centered design - users at heart of transformation (patients and staff), involve from beginning of process, co-design, co-develop, co-create. Possible lack of user centered design.	Enabler	Shemtob & Littlewood (2019), Howson (2020), Mantzourani et al (2022)
Vision of the digital transformation - Sometimes unrealistic vision, leads to procurement difficulties as want something that is not currently in the market.	Enabler	Theme identified during initial DAFFS framework review - see sub-section 3.6.

This clearly validates the DAFFS model and portrays the potential impact of each theme on the adoption of value based digital systems in SC settings across NHS Wales. This will be further examined in the successive sub-chapters.

6.3.1 Enablers for successful digital transformation

The literature review identified several enabling elements that can positively enhance the digitisation of healthcare services. Literature stated that demand is increasing for better IT infrastructures, supported by suitable governance arrangements, legislation (Phiri et al, 2023), and national standards (Benjamin & Potts, 2018). The findings suggest a national alignment with this concept, as presented in figure 5.12. WG and the NHS employs established governance structures to support the implementation of digital change projects, however, to meet the needs of said projects there is a requirement to improve the adaptability and quickness of publishing (currently restricting) policies and legislation. Findings also portray that communication to stakeholders with regards to the publication of new standards, policies, and legislation is better compared with communicating changes made to existing documentation. Results also highlighted a demand for utilising standards to develop an interoperable environment across the NHS to create seamless healthcare for patients and the public. This would assist in achieving Michael Porter (2013) VBHC across Wales. Additionally, responses advocated that a clear national digital strategy exists, but question whether strategic objectives are realistic (see Appendix A) and allude to utilising the vision of digital transformation as an enabler to encourage the adoption of digital systems and services (see figure 5.17).

Phiri et al, (2023) and Omar & Elhaddadeh (2016) claim the people (workforce and stakeholders) are imperative to accomplishing successful digitisation of healthcare services. They emphasise the importance of ensuring consideration and commitment to these core influencers for effective transformation, which is supported by the findings in figure 5.13 that evidences stakeholders including WG and the NHS workforce are core influencers in the NHS Wales ecosystem.

Howson (2020) builds upon this theory and suggests several stakeholder related digital adoption attributes such as interpersonal, cross border organisational relationships, geographical networks and assistance groups and societies, are essential for capturing clinical and technical requirements (Janssen et al, 2021). Findings from questions 16, 17 and 19 of the survey illustrated in figures 5.14, 5.15 and 5.17, supports Howson, Janssen et al and Shemtob & Littlewood (2019) philosophies, recommending stakeholder collaboration and the involvement and ownership of stakeholders be present throughout the transformational change process, providing the ability for new solutions to be tested in clinical locations prior to deployment.

Workforces with the necessary skills (Cripps & Scarbrough, 2022) combined with an enriching culture that encourages change, distributes knowledge (Cresswell et al, 2020), previous lessons learned and best practice (Acharya et al, 2022) and enhances the eagerness and readiness of end users, is important for adjustment to changes (Phiri et al, 2023). Correspondence between the questionnaire results data and the literature is evidential. The behaviours of professionals in the NHS are that of early adopters which inspire others to embrace new digital technology (outlined in figure 5.12), who perceive the following attributes to be essential for digital implementation: Sharing of lessons learned and best practice, willingness of end users to adopt new technology and the need to develop a digitally educated, skilled, and adaptable workforce (figure 5.14 & figure 5.17). However, there is a separated view as to whether the NHS is good at sharing lessons learned between projects and programmes across organisations (see figure 5.11).

Findings indicate activities to share learnings such as immersing proficient digital leaders/managers and agile multidisciplinary teams in organisations (figure 5.15) are important to motivating change, uniting the workforce, and enlightening users of the technology being implemented. This corresponds with the viewpoints of Acharya et al, (2022), Janseen et al, (2021), Benjamin & Potts, (2018), Mantzourani et al, (2022) and Wilson & Davies (2020), who state leadership duties should develop a positive culture, open to learning that will advocate those with the correct skills, knowledge, and expertise, rather than a bureaucratic top-down management structure. Questionnaire responses conclude leadership and management both enables and inhibits digital transformation (see figure 5.17), those within the NHS feel their organisation executives understand the value in digital technology as an enabler to service delivery improvements (see fig 5.10), which is mandated by leadership positions (see figure 5.14).

According to literature, management and methodology approaches to implementation, project, programme and business change should radicalise ways of working (Benjamin & Potts, 2018), for the following purposes: to encourage innovation, organisational agility, personnel development, benefits realisation, to

increase system use and create an adaptable workforce (Burgin et al, 2023). The findings (see figure 5.17) suggest these factors can enable and inhibit the introduction of new digital systems across the NHS, and that robust project and programme methodologies used in implementation and business change are key to effective adoption (see figure 5.14). Feedback outlined in table 5.1 supports this notion and recommends embracing "a much more agile approach to digital transformation." Results indicate that those within the NHS prefer to have a flexible and personalisable approach as opposed to a unified 'one system fits all'. This is interesting considering most health boards across Wales use WCP, a national system developed by DHCW, that continuous to be further developed for integration with new applications. It could also be argued that a one systems approach is easier for the users, for example if a nurse is moving geographically between health boards, they would be familiar with the system rather than having to learn how to use a whole new solution when transitioning to another health board.

Academic text proposes that learning and evaluation throughout the transformation cycle (Mantzourani et al, 2022) facilitates UCD, the remodelling of service delivery and enables the continuous optimisation of digital solutions. The results data in figure 5.17 and 5.14 stipulates that these elements, especially the reconceptualisation of the end-to-end service and the co-design and development of the solution with users, is important for its successful delivery. The view of those within the NHS is that there is limited continuous improvement to digital systems post implementation (see figure 5.11). Capturing the expertise, personal experiences and providing a space for users to suggest improvements and alternative innovative methods empowers and inspires the workforce (Howson, 2020). Participants of the study feel we need to ensure "that we are providing front line staff with the tools they need to support them in providing the care they deliver" and that "the involvement of end users is a foundational pillar of planning for digital change" (table 5.1).

Engagement and communication for the duration of the digital transformation process provides benefits to delivering change as it enhances the interest and willingness of the workforce to accepting the new solution (Janssen et al, 2021), and ensures the system is suitable to meet the needs of the service (Hamilton, 2019). The results support this notion, with 96% of participants agreeing that transparent communication and engagement are crucial to the adoption and spread of digital transformation (see figure 5.14) and stakeholders are always involved during the planning and implementation processes (see figure 5.11). Conversely, comments provided in table 5.1 insinuate not all stakeholders are captured in the distribution of announcements, which causes duplication of efforts.

6.3.2 Inhibiters impacting digital transformation in the NHS

Literature depicts the NHS landscape as complex, consisting of multiple organisations (Hamilton, 2019), which are managed, governed, utilised and funded separately (Tolley at al, 2023 & Asthana et al, 2019), yet often directed locally (Phiri et al, 2023). This intricacy makes it difficult for change to occur (O'Malley, 2021), action a unified approach, it manufactures contending politics, conflicting incentives (Benjamin & Potts, 2018), puts pressure on digital health services to utilise interoperability to create seamless delivery of healthcare, produces a digital divide (Iacobucci, 2020) and procurement competency differences between organisations (Asthana et al 2019). The NHS environment was rated as one of the highest inhibitors for digital adoption in the survey (see figure 5.17). According to research findings, the highly regulated landscape of NHS Wales, its organisational internal and cross border external politics, local isolated clusters and a unified 'one system fits all' approach are deemed to discourage change (see figure 5.16). This is interesting considering most health boards across Wales use WCP, a national system which continues to be developed to integrate with new applications. It could be argued that a one systems approach is more suitable for users, for example if a nurse is transitioning between health boards they would be familiar with the system, eliminating the need to retrain on a new system. Findings from the survey also call attention to the digital immaturity of the healthcare environment and stress one of the leading factors to inhibiting digital adoption is the fragmented IT infrastructure across organisations (see figure 5.16). This could be because national interoperability standards are not being used when managing digital transformation projects and programmes to ensure a 'joined up' provision (see figure 5.12).

The validation of the DAFFS framework identified bureaucracy as the main inhibiter of digital change (see figure 5.17). Feedback (presented in table 5.1) implies there is a top-down hierarchical approach to projects and programmes, innovation is stifled by politics, decision making and the adaption of legislation and policies is slow (see figure 5.12), and opportunity for professionals on the front line to provide feedback and suggestions is limited. It indicates the governance to support new transformational projects and programmes are correctly established (see figure 5.12), but can sometimes hinder (see figure 5.17) the agility and innovation of organisations (see table 5.1). Criticisms (outlined in table 5.1), highlight that there is a "strong focus on 'programme management' (the creation of artefacts and documentation) and less on 'managing

projects' to a desired delivery endpoint", that "implementation plans repeatedly fail to recognise the change in roles needed to ensure digital tools function effectively" and feedback recommend embracing "a much more agile approach to digital transformation." This relates to Omar & Elhaddadeh (2016) view that these issues disrupt service transformation, which could be due to the central governance positioning of WG (Wilson & Davies, 2020), the intricacies of the healthcare ecosystem resulting in several authoritative decision-making boards (Phiri et al, 2023) or the underdeveloped non future proofing strategies published by WG (Cripps & Scarbrough, 2022).

Academics state the financial pressures and limited investment hinder the understanding of what is required monetarily to achieve the digital vision of the NHS (Benjamin & Potts, 2018 and Iacobucci, 2020). This combined with how funding is issued in Wales via DPIF, increases the digital and technological inequality between organisations (Creswell et al, 2020) and risks health boards inabilities to self-fund (Iacobucci, 2020). The research confirmed funding and financial investment is one of the biggest inhibiters to the successful adoption of digital systems in NHS Wales (figure 5.17). This could be due to funding allocation, which is usually a fixed term temporary basis, generating cycles of workforce movements, that hinders the establishment and long-term formation of teams.

Lacobucci (2020) proposes public sector unrealistic performance measurements, targets (for example KPIS) and time constraints obstruct implementation. Findings revealed (figure 5.17) a split in opinion as to whether targets (including time restraints, budgets, operational measures) solely act as an inhibiter. Comments (presented in table 5.1) indicate there is "often too much emphasis on pace and timelines" and recommend "a more portfolio level-based resource and milestone planning process would allow focus in the critical areas and ease bottlenecks."

UCD has become an important theme in service transformation and a current focus across Wales, evident with the establishment of CDPS (WG, 2018) and supported by the data in figure 5.17. Published journal articles voice the consequences of not involving users in the process, declaring that it risks the production and procurement of inadequate systems, the incorrect design of service improvement, reduces acceptance rates (Omar & Elhaddedeh, 2018) and puts pressure on the workforce (Cripps and Scarbrough, 2022). Responses disclosed a disconnect between the design and testing environment of the technology with its intended use, it highlighted deficiencies in the inclusion of users, which devalues transformation and impedes on the delivery of initiatives. Results discovered that often workforce and stakeholder expectations do not correspond with the functionalities of the new digital product (figure 5.16) this could be due to a lack of understanding that a system is sometimes developed in phases and therefore an MVP must be implemented first (see table 1.5). Opinions from the study expressed a lack of design to ensure interoperability with source systems and indicated technical solutions are unsuitable and unreliable (figure 5.16), limiting workforce productivity, decreasing efficiencies, thus imposing disbenefits.

Limited literature exists which addresses the direct relationship between procurement processes and incentives, with that of digital transformation in SC settings. Papanagnou & Shchavelava (2018) discussthe restrictions stowed upon public sector organisations including policies, legislation, finance and the limitations of assessment frameworks which impact procurement. O'Malley (2021) and Asthana et al (2019) build on this theory, stating the duration of procurement processes are stifling agility and adaptability which deters the scale of adoption, and question whether organisational procurement is cost driven. The survey discovered organisational procurement incentives, for example purchasing on cost instead of value, and the procurement processes and assessment frameworks do impede digital adoption in the NHS (see figure 5.16). Only 3.9% of participants identified procurement as an enabler (figure 5.17) and implied there is a lack of high-level pan-Wales decision making and alluded to framework procurement causing "significant duplication of work" (see table 5.1).

The research reinforces the assumption that workforce/stakeholders are the largest influencers of digital adoption in the NHS (figure 5.13). It revealed underfunding of the NHS consequently effects the recruitment and retention of staff (see table 1.5), which is discouraging the deployment of new systems. The workforce has little time to support digital projects and programmes (figure 5.16), this could be due to implementation support being an addition to their current high-pressured roles (Mantzourani et al, 2022). As literature suggests, digital roles within the NHS are new and are often difficult to recruit into. According to the responses received from the study, 48% of participants experienced digital environments outside of the NHS, however a small amount had practised in international healthcare settings. This insight strengthens current publications such as, Acharya et al (2022), Phiri et al (2023), Addis et al (2018) and Benjamin & Potts (2018), which outline the impact of NHS workforce challenges including the obtainment of specialist digital and data resource and the competitiveness with private sector due to greater wages.

Writings imply stakeholders' obstruction to digital transformation could be due to insufficient engagement (Omar & Elhaddadeh, 2016), concerns to accepting change (Burgin et al, 2023 & Janssen et al, 2021), reduced competencies, willingness, and limited training times. The survey results contradict literature (see figure 5.11), revealing stakeholders feel fully engaged throughout the lifecycle of projects and programmes delivered by the NHS in Wales. However, it did conclude that the workforce perceived increase in workload or change to professional role does negatively impact the execution and adoption of new systems.

The questionnaire uncovered that culture plays both an enabling and inhibiting role in the embracement of digital systems in healthcare (figure 5.17), however there was a slight disconnect with the comments provided by responders in table 1.5. Criticisms suggest culture changes need to be driven top down, they emphasise an absence of lessons learned during projects and programmes and stress current culture does not facilitate shared learning of experiences. The comments resemble academic literature from Farrell & Sood (2020), who suggest culture and behaviour are obstacles to digital transformation.

6.4 Chapter summary

Regarding the speed and scale of digital transformation, NHS Wales is perceived be underperforming, because it is not utilising its strengths to enable transformation. The findings, discussion and authenticated conceptual framework identifies and describes how to develop upon the strengths and challenges. If WG and the NHS focused on the redesign of processes (instead of developing or reprocuring a solution to replace current processes), addressed fundamental issues such as value-based healthcare, procurement, outdated policies, legislations, and standards and reviewed legacy systems and integrations, this would put them on the road to fully digitising the NHS landscape.

This study, through its significant insight into the modern phenomena of digital health care and its facilitating and challenging factors, has generated a new model illustrated below.

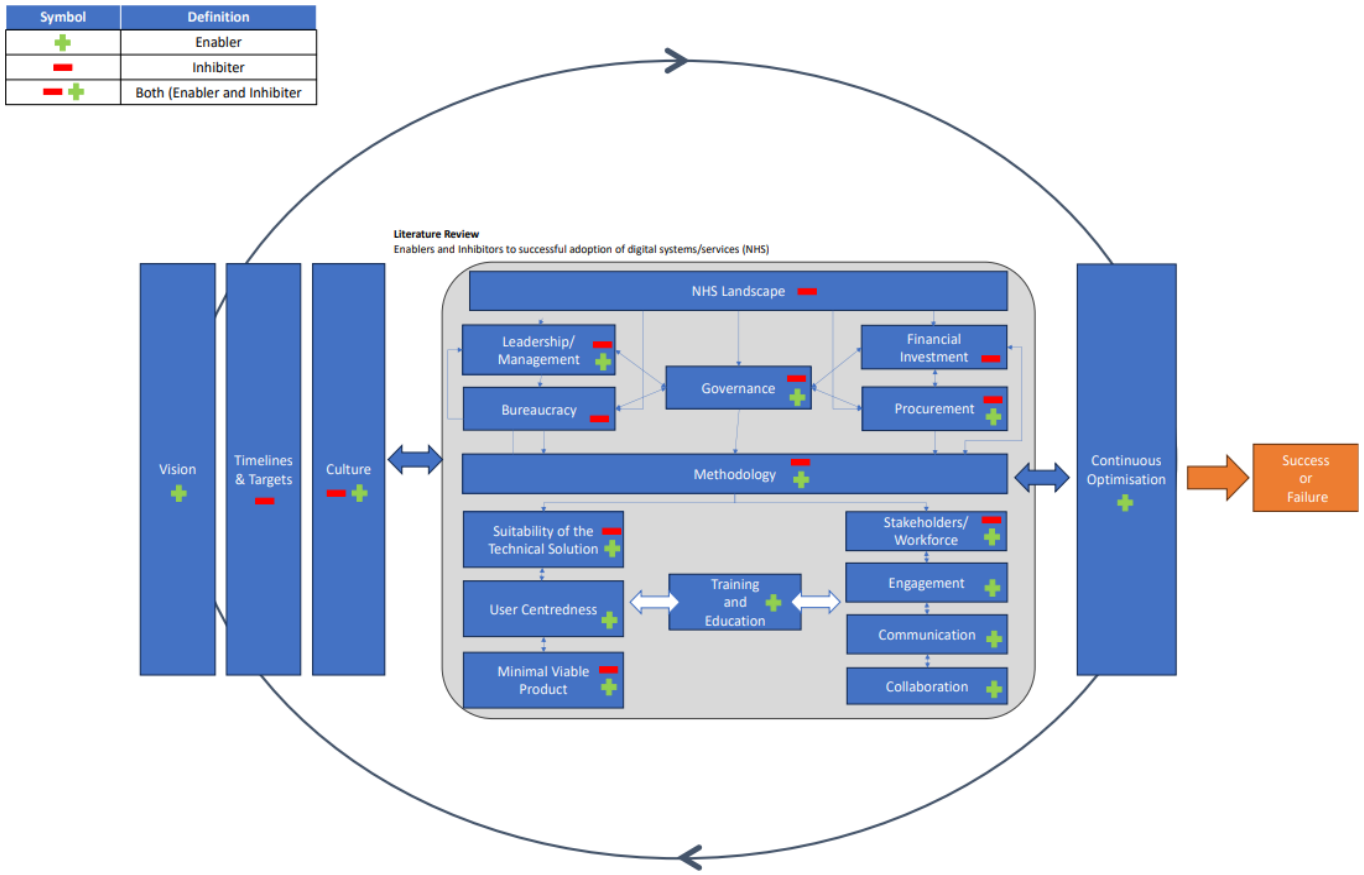


Figure 6.3. DAFFS Model V3 (Source: Authors own).

This research builds upon existing literature, provides a new perspective and is one of the first holistic views of a complicated ecosystem, I would like to see other research studies and continue to build upon this research.

7 Conclusion and Recommendations

7.1 Conclusion overview

This research exposes a need to review and reform current practices, processes, structures, and methodologies of digital health transformation in the NHS. These include collaboration, leadership and management, the sharing of best practice/lessons learned, UCD (to include users from conceptual phase to implementation), procurement processes and WG published documentation. A gap in academic literature has been identified, in which the new holistic adaptable DAFFS framework would suitably fulfil.

7.2 Reflections as professional researcher

Upon reflection the research journey has been both enjoyable, challenging and highly rewarding especially with the number of responses received. Certain aspects of the study were challenging as described below:

- Time constraint of study duration in comparison to the usual research periods.
- Undertaking the research during the summer months in alignment with the university schedule, slightly affected the obtainment of responses and informal virtual meetings with NHS stakeholders, as it is a popular period where many choose to take annual leave.
- Difficult managing the study as the sole researcher, whilst in full-time employment for a public sector organisation.
- Maintaining a non-bias approach when analysing research results data.
- Upholding focus and motivation for the duration of the study, especially through stages of personal health and well-being hurdles.

There were surprisingly positive results obtained during the publication of the questionnaire such as, the high volume of participants and the number of responses submitted that were accompanied by comments of experiences and suggested improvements. This combined with requests from responders for the completed study to be shared (Appendix H), clearly accentuates the enthusiasm of healthcare stakeholders to share their insights and drive enhancements to systems and services, for the future development of the NHS Service provision. The rate of participation suggests that addressing participants on a personable level when requesting to complete the survey was advantageous to the study.

7.3 Implications for different stakeholders

The research findings impact a variety of health and care stakeholders, these have been identified below and are accompanied by an explanation of the potential implications:

- Government and NHS:
  - The research clearly indicates legacy systems and fragmented IT infrastructures inhibit the adoption of digital systems between organisations and across sectors (for example Primary, Secondary and Social care services), which is influenced by the slow responding publication of new and changes to current standards, policies, and legislation.
  - Procurement hinders the purchasing of value based digital systems and research development is required in this area to further explore the direct impact on digital transformation.
- Professionals involved in transforming healthcare and implementing and influencing the wide-spread adoption of digital services:
  - The research shows UCD approaches, utilising the correct project/programme management methodologies, whilst engaging and communicating with stakeholders is key to successfully developing and implementing suitable systems. More should be done to include the workforce/stakeholders to obtain feedback for the continuous optimisation of digital systems (once implemented), and to share learnings and best practice across organisational and service boundaries.

- Teachers/Lecturers:
  - The application of a case study for this research provided the ability to observe and better understand the properties of a specific environment by researching that ecosystem. The establishment of the DAFFS model evidences the importance of applying case studies in teachings.
- Other/future academics:
  - The research and the DAFFS framework deliver a new perspective in an area of study with limited literature. The DAFFS model provides a predicative tool to assess the adoptability of new digital systems in healthcare.
  - The study has identified core enabling and inhibiting themes to the adoption of digital systems in SC settings across NHS Wales. Many of these themes have been newly identified, but due to limited timescales of the study, have not been researched in depth therefore providing future researchers the opportunity to develop upon these areas.

7.4 Implications for research

Potential opportunities for future studies could include a longitude study for example three years, to capture the changes of digital health and care and understand how roles within the landscape have changed and evolved. Another could examine the motivational drivers of stakeholders/the workforce to establish the optimal methods of maintaining their engagement with the digital agenda. Additionally, research of digital health and care transformation in international countries (such as other public funded nations (Australia) or privately funded (America)) to compare the study with that of Wales, will enable the identification of differences between public and privately funded healthcare, and provide insight into the country's advancement in digitising services.

7.5 Concluding comments

The journey of completing the study has been long and complex, occupying hours of research time. Difficulties arose during the initial stages of research because there wasn't a publicised model that could be applied to the area of study, resulting in the establishment of a new conceptual framework. For the first time in research, the DAFFS model consolidates key themes that enable or inhibit the success of digital transformation. The application of the model during the study to inform and guide the construction of the questionnaire, has proven its effectiveness and robustness in the health and care community. The generalisable model can be used across the health and care environment to analyse the sub-optimisation of newly implemented digital systems.

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9 Appendix A: Key Documents Outlining the importance of digital transformation in Wales

Date published	Title	Author(s)	Publisher	Links	Findings
17th June 2022	Written Statement: Transforming health and social care using digital and data services	Eluned Morgan MS, Minister for Health and Social Services	Welsh Government	https://www.gov.wales/written-statement-transforming-health-and-social-care-using-digital-and-data-services	"Digital technology has an important part to play in delivering high-quality health and social care services."
					Pandemic forced pace of digital change.
					Difficult to share data digitally for clinical decision making (not unique to Wales).
					Collaboration and cooperation required.
22nd September 2021	Written Statement: Appointment of Chair - Digital Health and Care Wales	Eluned Morgan MS, Minister for Health and Social Services	Welsh Government	https://www.gov.wales/written-statement-appointment-chair-digital-health-and-care-wales	Simon Jones appointed as DHCW chair.
23rd March 2021	Written Statement: Digital Health and Care Wales	Vaughan Gething, Minister for Health and Social Services	Welsh Government	https://www.gov.wales/written-statement-digital-health-and-care-wales-0	DHCW appointments:
					Helen Thomas, CEO.
					Rhidian Hurle (Consultant Urological Surgeon), Medical Director.
					Claire Osmundsen-Little, Director of Finance.
23rd March 2021	Digital strategy for Wales	Welsh Government	Welsh Government	https://www.gov.wales/sites/default/files/pdf-versions/2022/3/4/1646322827/digital-strategy-wales.pdf	"How we will use digital, data and technology to improve the lives of people in Wales."
Apr-21	The Future of Electronic Prescribing in Wales	Channel 3 consulting	Welsh Government	https://dhcw.nhs.wales/files/eprescribing/welsh-government-eprescribing-review/	Sets direction and vision for electronic prescribing (e-Prescribing) in Wales.
					Disconnected e-Prescribing landscape in Wales.
					Challenges - Legislation, Cross border issues, standardisation of drug descriptions, integration, suitability of system (e.g., mental health - patients are required to be anonymised), governance, implementation timescales, design.
2020	The Digital Health and Care Wales (Establishment and Membership) Order 2020	Welsh Government	Welsh Government	https://www.legislation.gov.uk/wsi/2020/1451/made	Functions of DHCW

12th November 2020	Written Statement: Digital Health and Care Wales	Vaughan Gething, Minister for Health and Social Services	Welsh Government	https://www.gov.wales/written-statement-digital-health-and-care-wales	
7th September 2020	Consultation Document: A Digital Special Health Authority for Wales	Welsh Government	OGL (Open Government License)	https://www.gov.wales/sites/default/files/consultations/2020-09/consutation-document.pdf	Currently NHS Wales's national systems store and use data differently.
					Welsh Government wants to create a well described clear and unambiguous statutory responsibility for the collection, processing and dissemination of Welsh Resident Health & Care Information for NHS Wales.
					DHCW will support the delivery of new technologies and software across the Health and Care Sector in Wales.
30th September 2019	Written Statement: Update on Digital Health and Care	Vaughan Gething, Minister for Health and Social Services	Welsh Government	https://www.gov.wales/written-statement-update-digital-health-and-care	Digital change to be driven at scale and pace.
					Transition of NWIS (NHS Wales Informatics Service) to a special health authority.
					"Digital technology is a key enabler of change."
					5 digital technology strategic aims: Transforming digital services for patients and public. Transforming digital services for professionals. Investing in data and intelligent information. Modernising devices and moving to cloud services. Cyber-security and resilience".
					Challenges - Brexit and health and care pressures.
30th September 2019	£50 million and new body to transform digital health and care services in Wales	Vaughan Gething, Minister for Health and Social Services	Welsh Government	https://www.gov.wales/ps50-million-and-new-body-transform-digital-health-and-care-services-wales#:~:text=Alongside%20strengthened%20leadership%20and%20%20delivery,services%20for%20patients%20and%20public	

3rd April 2019	Written Statement: Update on the review on the future structure and Governance for Health Informatics in Wales	Vaughan Gething, Minister for Health and Social Services	Welsh Government	https://www.gov.wales/written-statement-update-review-future-structure-and-governance-health-informatics-wales	Task and finish group developed to drive key recommendations set out in the “Future Structure and Governance for Health Informatics in Wales” report. Consists of "representatives from all NHS Wales stakeholder organisations".
Mar-19	Digital Architecture Review; Final Report.	2020	Welsh Government	https://digitalhealth.wales/sites/default/files/2020-04/WG%20Digital%20Architecture%20Review%202019.pdf	The focus of this review was to assess the extent to which the current Digital Architecture of NHS Wales is ready to meet the ambition set out in “A Healthier Wales”.
					Collaboration.
					Whole System Approach.
					Constraining lack of standards.
					Improved integration.
8th June 2018	A healthier Wales: our plan for health and social care	Welsh Government	Welsh Government	https://www.gov.wales/sites/default/files/publications/2021-09/a-healthier-wales-our-plan-for-health-and-social-care.pdf	Technology is transforming the way we live.
					New and emerging medical technologies.
					Speed up change.
					Partnership and Collaboration.
					User-centered design.
					Equitable and personalised care.
					Sustainable for future generations in Wales.
					Providing high value evidence-based care.
					Siginificant increase investment in digital priorities.
					Need agility to respond to ever changing technology.
					Workforce skills development.
					Open digital architecture - improved flow of data.
					Challenges – Existing pressures on health and care services (capacity and capability of health boards and trust), governance, digital architecture, workforce skills, investment, and innovation.
	Written Statement - Statement of Intent	Vaughan Gething,	Welsh Government	https://www.gov.wales/written-statement-	Data essential for safe and effective health and care.

19th October 2017	– Better use of health and care data for safe, effective care and efficient ser	Cabinet Secretary for Health, Well Being & Sport		statement-intent-better-use-health-and-care-data-safe-effective-care-and	Improve decision making, plan change and drive improvements in quality and performance.
2015	Informed health and Care: A Digital health and social care strategy for Wales	Welsh Government	OGL (Open Government Licence)	https://www.gov.wales/sites/default/files/publications/2019-03/informed-health-and-care-a-digital-health-and-social-care-strategy-for-wales.pdf	Prudent healthcare vision.
					Improving access to information.
					Improve healthcare delivery through digital technologies.
					Personalised health.
					Efficiency, safety and quality improvements.
					Accurate information, safely, wherever and whenever it is needed.
					Use technology to deliver effective treatment.
					Importance of Clinical engagement for technological adoption.
					A once for Wales approach.
Apr-15	Well-being of Future Generations (Wales) Act 2015. The essentials.	Welsh Government	Welsh Government	https://www.futuregenerations.wales/wp-content/uploads/2017/02/150623-guide-to-the-fg-act-en.pdf	Act effects all public bodies in Wales.
					Prevention of health inequalities.
					Collaboration
					Integration
					Sustainable Development
					Transparency

10 Appendix B: Academic literature research findings

Date published	Title	Author(s)	Publisher	DOI	Findings	Key Themes
10th March 2023	Barriers and Opportunities for the Use of Digital Tools in Medicines Optimization Across the Interfaces of Care: Stakeholder Interviews in the United Kingdom	Clare Tolley, Helen Seymour, Neil Watson, Hamde Nazar, Jude Heed & Dave Belshaw	JMIR publications	https://doi.org/10.2196/42458	"Health care and digital leaders must support and strongly encourage the adoption of established and approved digital information standards." p1 "Local variation in practice." p2 "System reliability, technical issues, and patient concerns regarding inaccuracies and the governance around sharing data." p2 "Navigating between a growing number of different systems to fulfill different tasks and purposes." p4	• Collaboration. • Sharing of best practice. • System/technical • Governance • Data Standards • Change Management
17th January 2023	Digital Maturity Consulting and Strategizing to Optimize Services: Overview	Peter Phiri, Heitor Cavalini, Suchith Shetty, Gayathri Delanerolle.	JMIR publications	http://dx.doi.org/10.2196/37545	"The balance of power and decision-making in the NHS is led locally and not centrally controlled."para3 "A contributory factor could be multiple hierarchical boards making decisions that are not necessarily aligned with the national digital strategy for health care." "Willingness and capability of end users to adopt and adapt to the change". "There is a shortage of digital and data skills. The profession of informatics is not widely recognized within NHS [23], while these skills have a global competitive market. There is a need for a systematic plan to develop informatics as a profession within the NHS." "It is imperative to stabilize the growing demand for IT infrastructure with an established governance framework underpinned by legislative measures that align with the national standard."	• Resources, infrastructure, and costs. (inhibiter) • Governance. (inhibiter) • Culture. (inhibiter) • Digital skills. (inhibiter) - digital literacy self-assessment tool (enabler)**link to HEIW. Need for specialist training. (inhibiter) • Financial. (inhibiter) • Procurement. (inhibiter) • Digital Leaders. (enabler) • Collaboration. (enabler) • Technical standards (enabler) to enable interoperability. • Complexity and diversity of NHS landscape. (inhibiters) • Infrastructure (inhibiter)

					"Programs and policies are touching upon various pieces of the puzzle that can come together to help achieve the target objective. People, process, and technology infrastructure are the three pillars that need equal focus and attention to achieve success in an initiative like digital transformation."	
13th April 2023	Barriers and facilitators to the development of pharmacy workforce digital skills– a qualitative study	A. M. Burgin, P. H. Gardner, C. Easthall and R. Randell	International Journal of Pharmacy Practice	https://doi.org/10.1093/ijpp/riad021.047	Fear of change leading to resistance. Staff forced to learn new skills and processes due to implementation of new technology. "can't do mindset" when presented with new digital technology. Change in profession as a consequence of the technology	• Workforce culture (Inhibiter) • Incremental implementation approach (enabler)
28th October 2022	Development, implementation and evaluation of the digital transformation of renal services in Wales: the journey from local to national	E. Mantzourani, O. Brooks, D. James, A. Richards, K. Hodson, H.Akhtar, M. Wakelyn, L. White, R. Williams, G. O'Gorman, A. Kervin, J. Chess, C. Brown.	International Journal of Clinical Pharmacy	https://doi.org/10.1007/s11096-022-01466-9	Limited time for employees to be released for training. Overcome this by developing short training videos and training in the care setting. Dedicated IT resources (Help overcome ITT barrier). Clear implementation strategy was essential. "Media, such as videos and infographics, were used for engagement to tell the story of the project and transformation; these resources were made accessible to those unable to attend events." p7 Standardised hardware.	• Limited engagement (Inhibeter) • Workforce work pressures (inhibiters) • Agile and adaptable teams (enablers) • Phased implementation (iterative) approach and continuous evaluation (enabler) • Co-design with service users (enabler) • Engagement with stakeholders (enabler) • Action research throughout process (enabler) • Collaboration (enabler) • Experienced/skilled team (enabler) • On site support during implementation (enabler) • Continued remote support. (enabler).
29th April 2022	Evaluating the impact of a digital leadership programme on national digital priorities: a mixed methods study	Amish Acharya, Ruth Claire Black, Alisdair Smithies, Ara Darzi	BMJ Open	https://10.1136/bmjopen-2021-056369	"Crucial to achieving these aims and enabling local digital transformation is the development of a digitally prepared workforce and a digitally proficient leadership team." Para2	• Digital Maturity. (inhibiter) • Culture - difficult to scale. (inhibiter) • Limited resources. (inhibiter) • Networks and "change agents/leaders" (enablers) - "to leverage shared experiences."p6 • Stakeholder engagement - lack of (inhibeter) • Infrastructure. (inhibeter) • Organisational support. (inhibeter)

31st March 2022	Making Digital Health “Solutions” Sustainable in Healthcare Systems: A Practitioner Perspective	Matthew Cripps and Harry Scarbrough	Frontiers	https://doi.org/10.3389/fdgth.2022.727421	Barriers to adoption - lack of user centered design and the lack of review and reform of pre-existing processes prior to implementation, causing strain on the workforce. "Digital technology is being introduced into an analog world; that is, an environment where policies, infrastructures and practices have not been adapted to the potential of digital health."para16 Note, refers to Greenhalgh.	• Policy-level barriers. • "Understanding of the ecosystem within which the innovation is being deployed."para16 (enabler) • Good infrastructure in place (enabler) • Right skills (enabler)
Aug-21	SHOCK TREATMENT: CAN THE PANDEMIC TURN THE NHS DIGITAL?	James O'Malley	Engineering & Technology Magazine	https://doi.org/10.1049/et.2021.0705	Covid-19 forced the health service to change how it adopts technology - "things that would have taken a long time suddenly got adopted within the space of weeks. Victoria Betton, a digital health consultant and strategist" para3 "Rapid uptake of technology." Risk adverse decision-making. NHS procurement driven by specification rather than the outcome – stifles innovation.	• Complex system of different organisations. (inhibiter) • Bureaucratic complexity (inhibiter) • Procurement process (inhibeter) • Culture (inhibeter) • 'The combination of the culture, the policy, the procurement process, and the resources available create an environment which means that not much change happens." • Funding (inhibeter)
2021 (note this paper = Sydney, Australlia)	Electronic medical record implementation in tertiary care: factors influencing adoption of an electronic medical record in a cancer centre	Anna Janssen, Candice Donnelly, Elisabeth Elder, Nirmala Pathmanathan and Tim Shaw	BMC health services research	https://doi.org/10.1186/s12913-020-06015-6	"notable gap in understanding about the best ways to implement digital health."p2 Awareness and understanding of the technology being implemented. - (enabler) Engagement in the implementaiton process. Impact on workload of users. Value in involvng the users - from the pre-implementation phase. "Highlight the need for technical and clinical experts to collaborate closely from the outset when developing digital technologies for healthcare, in order for those technologies to capture the complexity of clinical care." p8	• " Identified eight categories of barriers to EMR adoption: Financial, Technical, Time, Psychological, Social, Legal, Organizational and Change process." p2 • Resistance of workforce. • Collaboration • Preconcieved perceptions - Gap in UK research? • Engagement (enabler) • Training and Upskilling (enabler)

					" Lack of technical support, perceived increase in workload." p8	
1st December 2020	Bridging the growing digital divide between NHS England's hospitals	Kathrin Cresswell, Robin Williams and Aziz Sheikh	The royal society of medicines journals	https://doi.org/10.1177/0141076820974998	Pairing digitally mature hospitals with slightly less mature hospitals to share experience and best practice. "Growing concerns about the digital capability divide among English hospitals, which needs to be bridged if we are to avoid creating a two-tier secondary care sector." para2 "Competitive allocation of funding tends to favor already well-resourced hospitals (thereby accentuating unevenness). para3 **Refer to figure 1** "A supporting framework is required to promote the spread of experience and expertise across the NHS by incentivizing knowledge sharing and networking. This can be facilitated through strategically building on organic relationships, regional links, and common technological platforms." para3	• Digital Exemplars (enabler) • Knowledge sharing and networking (enabler) • Leadership, capacity building, finances, and staff recruitment/retention. (Inhibeters)
6th November 2020	Government's plan to digitise NHS risks wasting billions, MPs warn	Gareth Iacobucci	BMJ Online	https://doi.org/10.1136/bmj.m4317	Lack of governance, transparency, detailed and realistic plans, accountability, sufficient funding, and adoption of lessons learned from previous failed IT implementations. "Local NHS trusts were at varying levels of digital maturity."para10	• Funding (Inhibiter) • Governance (inhibiter) • Not acting on lessons learned. (inhibiter) • Unrealistic targets. (inhibeter)
1st September 2021	Success Factors for more Prudent, Integrated Care Transformation	Helen Howson	International Journal of Integrated Care	https://doi.org/10.5334/ijic.ICIC20524	"A Parliamentary Review into Health and Social Care in Wales (2018) reinforced these and called for 'revolution not evolution and a new system of care where change is significantly accelerated; unless faster, more widespread progress can be unlocked, access to and the quality of services will decline in the face of the predictable pressures'." para2	• "Themes for successful integrated care service transformation:" - Key individuals/leaders to challenge the status quo. - Creating support networks and influencers of change. - Workforce built for the future. - "Empowering and engaging" the users. - Readiness for change assessments.

10th June 2020	Developing and Applying a Formative Evaluation Framework for Health Information Technology Implementations: Qualitative Investigation	Kathrin Cresswell, Robin Williams and Aziz Sheikh	JMIR Publications	https://doi.org/10.2196/15068	"Social and organizational challenges, which vary across contexts and technological functionalities, are often hard to navigate and predict for those managing change."	• Formative evaluations (enablers) • **User engagement and leadership, Dimensions:** • Technological factors • Social/Human factors • Organisational • Wider macroenvironment "The relationship between dimensions influences how implementation, adoption, optimization." para 19
					"Other factors, such as political and market dimensions, have more recently received increasing recognition in shaping HIT implementations."	
					Refer to figure 1 - highlights framework published by Greenhalgh et al.	
					"We observed some commonalities across diverse settings and technological functions." para 18.	
					"Important characteristics of the implementation landscape, where a range of technological, people (social/human), organizational, and wider macroenvironmental factors play an important role." Para 18.	
14th April 2020	Rhetoric or Reform? Changing Health and Social Care in Wales	Alan Wilson and Andrew Davies	International Journal of health policy and management	https://doi.org/10.34172/ijhpm.2020.53	"Wales has very centralized governance arrangements for the NHS." para2	• **Complex systems.** • Engaging frontline staff and building their skills. • "Nuffield cites these two attributes – **consistent improvement** focus and a **legislative framework** to enable cross-sectoral working – as transferrable lessons." (enablers) • **Legislation and Policy** (inhibiter) • "Overlapping **geographical** footprints." para 12 – varying
					"Since 1999 there have been many independent reviews aimed at reforming public services in Wales.6-9 The similarities between their recommendations suggest that progress has been inadequate." para 5	
					Complexity of Welsh Government legislation and policy - causing confusion	
					Need for culture change	

					"The latest response by Welsh Government, apparently based on the OECD report and parliamentary review, proposes a 'strong centre' streamlining current functions through a new Welsh Executive Board in the form of a special health authority. With no powers transferring to the new executive body, and its relationship with health boards unclear. It is difficult to see how this will not add to, rather than reduce, the current confusion." para 13	**governance structures**. (inhibiter) • "Good practice examples relied on **key enthusiastic individuals**". para 12 • **Culture and appropriate leadership** (enabler) • Welsh Government set **performance measurements and targets**. (inhibiter) • **Hierarchical structure** influencing culture.
Oct-20	The NHS Digital Academy – learning from the past to look ahead	David Farrell and Harpreet Sood	Future Healthcare Journal	https://doi.org/10.7861/fhj.2020-0166	"Firstly, changing behaviour, culture and poor leadership is often considered as one of the biggest barriers to successful technology transformation in organisations" para3	
14th May 2020	Plan to digitise NHS will fall short without extra investment, says spending watchdog	Gareth Iacobucci	BMJ	https://doi.org/10.1136/bmj.m1972	Failure to learn from previous lessons. Need to set clear directions for organisations.	• Outdated IT infrastructure (Inhibiter) • Competing demands on resources. (inhibiter) • Funding (inhibiter) – limited investment to deliver ambition set out by Governement. • Inconsistent strategies. (Inhibiter)
21st August 2019	Transformation Within the NHS and Diversity	Johanna Hamilton. (Nicki Rayment is Head of Digital Services at Cornwall Partnership NHS Foundation Trust, a Community and Mental Health Trust covering Cornwall and the Isles of	ITNOW, Volume 61, Issue 3, September 2019, Pages 48–49	https://doi.org/10.1093/itnow/bwz079	"The NHS, as you're probably aware, isn't just one organisation, it's lots of separate organisations; all slightly different, offering different services and commissioned in different ways. From this aspect the one-size-fits-all approach of the National Programme didn't work. The challenge for the NHS now is to achieve the same outcome through interoperability." para3	• Stakeholder engagement (enabler) - listen to the users aka clinicians, doctors etc for better understanding of user needs/requirements and improvements.

		Scilly. She tells Johanna Hamilton AMBCS, about digital transformation within the NHS)			"Technology in the NHS can be a dichotomy. In one organisation you can find areas that are making use of modern technology, such as robotics for dispensing medicines. In the same organisation there can be legacy systems, such as older patient administration systems, that can't or struggle to meet the current interoperability standards."	
2019	Challenges for digital services in the NHS: drowning in a sea of innovation	Shemtob, L., & Littlewood, R	British Journal of General Practice	https://doi.org/10.3399/bjgp19X704177		• Limited funding (inhibeter) • Enhanced collaboration (enabler)
2019	Why does the NHS struggle to adopt eHealth innovations? A review of macro, meso, and micro factors	Sheena Asthana, Ray Jones and Rod Sheaff	BMC health services research	https://doi.org/10.1186/s12913-019-4790-x	Different scales of barriers - "macro, meso and micro factors". Macro = institutional, meso (commissioner and provider organisations), Micro = staff and patients. Geographical digital divide Need for full integration of the health and social care system. "The UK is great at generating innovations but poor at adopting them." "The area where the UK has fallen particularly behind is in digital health systems and eHealth interoperability. This has consequences for the sharing of information across different providers and the coordination of care." P2 NHS in crisis - financial, "performance against KPIs" e.g., waiting times, ability for services to meet needs of patients, recruitment, staff morale and retention. Innovation not let by need for payments in the NHS compared to that of health care in the US. Insurance claims/payments creating demand for developing technology. Primary care more advance in digitising processes compared with Secondary Care.	• "Fragmentation of NHS" and digital maturity - "complex landscape" p2. "It has led to significant geographical variation in digital readiness, infrastructure, competencies regarding procurement and so on." P4 • Digital skills. (Inhibiter) • Funding. (inhibiter) • Stakeholder engagement. (Inhibiter, enabler - "led by the health ministry, is a key catalyst for success". • Policies & strategies (support innovation and transformation - enablers). Agility of national regulations. • Technological, safety and quality standards – Limited capacity for SME 's to meet the standards. • Procurement – Complex assessment frameworks P4, not agile for rapidly evolving technology landscape. • Risk appetite – risk adverse P4. • "Cultural barriers" - Resistance to technology/"acceptance by professional staff" - concerns could lead to more work and "undermine the quality of patient professional interactions." P5 • "Interpersonal connections" (enabler) – to create trust. • Politics.

					Recognizes incompatible systems "developed to meet the needs of local services or specialties" and the need to fully integrate these systems. - "Mandated standards for interoperability". P3	
					"High regulatory, bureaucratic and administrative burden of the NHS." P5	
					Isolated clusters/local isolation roll-outs - successful localized innovations not widely adopted and spread. Wider roll-out requires wider interactions between NHS staff.	
					Variations in digital health systems used between health boards.	
13th December 2018	Elements of Trust in Digital Health Systems: Scoping Review.	Afua Adjekum, Alessandro Blasimme & Effy Vayena	JMIR publications	https://doi.org/10.2196/11254		
8th October 2018	Investigation of current perspectives for NHS Wales sustainable development through procurement policies	Christos I Papanagnou & Natalia Shchaveleva	Taylor and Francis Online	https://doi.org/10.1080/09540962.2018.1527535	Triple bottom line (TBL) framework and 5Rs "right quality, in the right quantity, at the right time, from the right place (source), and at the right cost." My observation, could this be adding to the complexity of the procurement process.	
24th August 2018	Implementing Prudent Healthcare in the NHS in Wales; what are the barriers and enablers for clinicians?	Samia Addis, Daniella Holland-Hart, Adrian Edwards, Richard D. Neal, Fiona Wood	Journal of Evaluation in Clinical Practice	https://doi.org/10.1111/jep.13023	"Three components that are essential to behaviour: Capability, Opportunity, and Motivation."	• Resource Levels and recruitment issues- barrier.
27th February 2018	Digital transformation in government: Lessons for digital health?	Katherine Benjamin and Henry WW Potts	Digital Health	https://doi.org/10.1177/2055207618759168	"Furthermore, many digital transformation roles are not well integrated into an existing organizational structure: this creates challenges relating to adoption." p3	• Complex governance (inhibiter) • Agle methodology (enabler) • Multidisciplinary teams (enabler) • Highly regulated environment (inhibiter) • Competing incentives and political agendas (inhibiters) • Limited finances (inhibiter) • Promoting user-centred design, an iterative
					"The absence of digital expertise at the most senior levels of management makes the execution of digital transformation a perilous pursuit."p3	

					"Yet, we also note that digital transformation programmes are contingent and inescapably political."p4 "Successful digital transformation means bringing radically different ways of working into established organisations."	approach and transparency (enablers) • Collaboration (enabler)
Sep-17	Digital health is a cultural transformation of traditional healthcare.	Meskó, B., Drobni, Z., Bényei, É., Gergely, B., & Győrffy, Z	Mhealth	https://doi.org/10.21037%2Fmhealth.2017.08.07		
2016	Structuring Institutionalization of Digitally-Enabled Service Transformation in Public Sector: Does Actor or Structure Matters?	Amizan Omar amd Ramzi Elhaddadeh	Americas conference of information systems		"Findings indicate that the actors (stakeholders) and structures (procedures and resources) had significant roles in facilitating or impeding transformations." para1	• "Weak project management approaches and inadequate change management frameworks or methods." para2 (inhibiter) • Complexity of public services. (inhibiter) • "Dynamic institutional elements, including the social factors or the stakeholders, organizational structures (such as resources and policies). para 3. (inhibeters)

11 Appendix C: Table of terms

Term	Definition
Methodology	A system of methods used in a particular area of study or activity.
Realism	The quality or fact of representing a person or process in a way that is accurate and true to life.
Pragmatism	An approach that evaluates theories or beliefs in terms of the success of their practical application.
Epistemology	The theory of knowledge, especially with regard to its methods, validity, and scope, and the distinction between justified belief and opinion.
Positivism	Relies on measurement and reason, that knowledge is revealed from a neutral and measurable (quantifiable) observation of activity, action or reaction.
Interpretivism	A qualitative research method that analyses events based on the specific value-system of the society or culture they occur in.
Case Study	Generates an in-depth, multi-faceted understanding of a complex issue in its real-life context. Used mainly in social sciences.
Semi Structured Interviews	A qualitative research method that combines a pre-determined set of open questions (questions that prompt discussion) with the opportunity for the researcher/interviewer to explore particular themes or responses further.
Perceptual questionnaire	Used to understand opinions of employees, customers, students, patients, public etc.
Social Sciences	The scientific study of human society and social relationships.
Qualitative data	Information and concepts that are not represented by numbers. Usually obtained through observations and other materials such as interviews and focus groups.
Quantitative data	Data that can be counted or measured in numerical values.
Conceptual framework	Illustrates the expected relationship between your variables. It defines the relevant objectives for your research process and maps out how they come together to draw coherent conclusions.

12 Appendix D: List of conceptual framework reviewers

Number	Current/Historic Organisations	Experience	Feedback/Comments	How feedback was obtained
1	DHCW, NHS Wales, Retail, Higher education, international organization	Digital architecture, Project and Product Management, Education, Software engineering	Just some thoughts: 1) Being adaptable - May have to make tactical decisions on the way to strategic vision 2) Responding to change when you learn more 3) Modernisation is needed on how we deliver digital services e.g., devops, automated testing, cloud, be a shipper – workforce needs upskilling 4) Delivering via a community so winning hearts and minds – building excitement, keeping people informed - Comms 5) More of a Welsh NHS vision needed to break down the health board silos 6) Listen to the voice of the patient. 7) Ruthless prioritisation 8) What gives the best value for money and do that first	Email
2	NHS England, higher education	Digital transformation, implementation, Pharmacy, ePrescribing, Medicines Management	Need to be specific that it is clinical systems that should enable transformation of patient care.	Informal virtual conversation
			The biggest item missing on the framework is the common shared vision/the conceptualization (without this progress is limited. There needs to be a clear understanding from stakeholders about what the transformation is and the rational aka benefits).	
			Engagement section is more than just about engagement; it is also about shared ownership.	
			Adoption of digital/digital transformation can fail at any point, not just during implementation.	
			Successful adoption goes beyond the implementation need to continuously optimize the system (this never stops). How we treat patients and healthcare sciences are always evolving. Failure can occur further down the line of transformation at BAU if doesn't continuously optimise in line w environment.	
			Cycle starts after the initial implementation this is when optimisation commences.	
			Governance changes throughout dependent on the phase, like other components within the framework. These also need to transition, evolve, and change, there is failure where this doesn't occur.	
			Show the journey (different phases) in the framework, at the moment it looks static.	
			Suggested looking at papers from the following researchers Kathrin Cresswell and Robin Alun Williams.	
			Suggested looking at the e-Prescribing toolkit for phases of the cycle.	
			Healthcare hasn't learned how to use digital.	

			See digital as a facilitative tool to deliver care - the tool enables the organisation to offer care in new innovative ways. It's not just about better data and improved access but using the data to understand how/where improvements can be made to patient care.	
			QUOTE: "Think about the journey that doesn't finish."	
3	DHCW, NHS England, Supplier, consultancy	Clinical Informatics, Pharmacy, ePrescribing, Product management, strategy, health care digital implementation	Hi Rebecca It's not a problem and I'd be happy to help. I see you have most / all of the key themes included, but I'm not sure I understand their inter-relationship within the diagram and so would be happy to talk through this. I am working today and tomorrow (as I need to be in London on Tuesday next week), and so am available if you have any time.	Email
			The key issues for implementation from my experience were: High level (CEO and Board) leadership and engagement Understanding the 'business transformation' nature of the implementation (it is NOT and 'IT Project') Preparing the ground (stakeholder engagement) so that everyone understood what was happening and, more importantly, had a 'say' so they were involved and 'owned' the process. Stakeholders include the suppliers – indeed if you can forge a 'collaborative approach with your suppliers it makes everything so much easier (they have as much interest in a positive outcome as we have)	
			Understanding what you want from a product and what can realistically be achieved (most people have huge over-expectations of what a product can do) Being clear about the critical path (both in terms of product functionality and in terms of the procurement and implementation processes) I would agree about 'user-centric' – depending on what you mean by this – but often people don't understand what it is they want and think 'the computer' should be able to do anything …. User-centric design (they make the functionality easy to use) is a common many 'clunky' system that people 'live with' but which make their lives difficult – this can lead to workarounds or reduce uptake – so really is an area to focus on – as most 'requirements' look for 'bells and whistles' and don't consider workflow and ease of use.	

			I would agree that 'bureaucracy' is often a major barrier – Government projects are commonly associated with a need for extensive governance – which is understandable (given the focus on sensible use of public money) but this often translates into a somewhat and reduce the chances of delivery. There is, in my experience, a significant difference between project managers who manage projects and project managers who 'project manage'. Having a defined 'process' is useful to aiding delivery – but it is not a substitute for delivery of a suitable outcome… lose sight of the desired outcome. Government involvement often adds additional layers of process that are often unhelpful – but a bit like the suppliers – if you can engage them and form a 'collaborative' approach, then things can often move more smoothly	
			Procurement is an interesting process: For example, if you were buying something significant (a car, a house, etc.) at home, you would work through all of your 'requirements' (what elements are 'must haves' and what would help you to determine one from another) You would then look at (either on-line or physical examine) the options that might be available. You'd then critically compare these with your list of 'requirements' and determine whether the colour of the car – or the way the house was presented – was really more important than it being a 5 door – or having a decent garden – or being in the 'right' place) Then you'd make your decision based on your 'wants' (and hopefully try to keep emotion out of the process) Then you'd have to 'manage' your expectations within your budget Not sure that our process has been like that so far … and there is a risk that people might prioritise the choice of colour over whether it has 5 doors or 3 (when a 5 door is critical, for example).	
4	DHCW, NHS England, Supplier, international health care organisation	Clinical Informatics, Pharmacy, ePrescribing, Business analysis, application specialist, health care digital implementation	Hi Bec, Had a quick look – looks good. It might be good to spell out which are the barriers and enablers. I assume the top is the barriers and bottom enablers but 'Formalisation of Procurement process' is an enabler – it would 'lack of standardisation of procurement I would split out Learning into 'Education and Training' and 'Lesson learnt' as they are slightly different. Another thing to consider it the 'people change' versus the 'business change' – both fit under the umbrella of change management. Effective change management is the key enabler really, you can configure a system to high heaven but if doesn't fit in with existing the solution.	Email
5		NHS Wales	When asking the questions "what are the enablers and inhibitors to the adoption of digital systems in secondary care settings", I think about things like - Technology, data management, Interoperability, resistance to change, Fragmented IT infrastructure, Data p	Email
6			Consider the Macro and Micro level factors.	

	DHCW, NHS Wales, Higher education	Nursing, education, service improvement, workforce, health care digital implementation	Questioned the difference between the white and grey box.	Informal virtual conversation
			Concept of time - pivotal to projects/programmes. Time pressures (enabler and inhibiter).	
			Suggested separating out stakeholder and collaboration - are connected but separate.	
			Suggested adding workforce and users to stakeholder section to clearly show the parameters of that theme.	
			Suggested rewording the learning section to training and education.	
			Methodology section - discussed implementation approaches big bang and phased.	
			Believes 2 key things to success/failure - time and people. Suggested highlighting their importance within the framework.	
7	DHCW, Welsh public service organisation, Retail	Project and programme management, strategic transformation, health care digital implementation	**Some things I might consider:**	Email
			Leadership – Is this the leadership style or leadership buy in? Both are important, but the latter would be critical for me.	
			Financial resources invested – Human resource availability and investment are equally important.	
			Does programme and project methodology become an enabler? (Connected to governance I guess, but using the right approaches, framework, and tools and techniques are important).	
			Culture is a huge one – Could you stick it above learning (like attached), as learning (or not) is a function of culture?	
			MVP – Might you call this ‘product iteration’ or agile instead of MVP, as that’s the bit that allows learning and improvement to take place.	
			Infrastructure/Hardware – Easily as important as the software itself….this could be anything from wifi, printers, mobile devices, smart cards, etc.	
8	Welsh public service organisation		Suggested placing a two-way arrow by the culture section to show that the factors in the box influence culture but culture also influences the other factors.	Informal virtual conversation
			Culture hugely important theme as encompasses/effects all the themes included in the grey and white box - possibly enlarge box to illustrate importance.	
			Discussed where subcultures could reside within organisations (sub-departments, teams, specialisms).	
			Questioned what the difference is between the themes within the white box compared to those in the grey.	
			Discussed importance of the NHS landscape and methodologies sections and how to illustrate this on the Framework. Recommended enlarging this across the top and bottoms of the framework.	
			Think about how the themes in the white box are currently done compared to the future.	

			Remove "formulisation of" and just have procurement processes - two aspects to this theme 1) Standardised by Welsh Government, 2) Health Boards/Trusts own procurement processes.	
9	Welsh Government, Welsh public service organisation	Strategy, Policy, project, innovation, digital health care	Hi Rebecca, I think it looks great. And I didn't expect anything less. I think you have everything covered in terms of enablers and inhibitors but to help your 'checklist' things against your framework, I've listed below some headings and bullets: **Guiding Principles** Will it have impact? What are the main 3 or 4 focus areas? Always user centric Inclusive – 'leave no one behind' (e.g. district nurses / community workers who might be digitally excluded – what are the non-digital alternatives?) Re-use (a lot of existing HB IT infrastructure and equipment is useless or poor, and does not 'talk' to other systems, so an inhibitor if it is non-integrate-able or an enabler if it can support existing kit) Trust – confidentiality and sensitivity of data. Agile – empower staff to focus on working solutions. **Key digital enablers** Solutions and frameworks that close the data gap across NHS IT network (enabling collaboration locally, regionally, and inter-regions) Easy to use digital solutions (cloud based, interoperable) Building DDaT-like capabilities within non-DDaT workforce, supporting the workforce to challenge the way it works Benefits Realisation – value delivered through tangible and intangible benefits to the communities. **Key Inhibitors** Changes to legal frameworks and policies – info sharing protocols, etc GDPR to UK version. Perception of increased job complexity Poor change management - inappropriate leadership / resistance to change Inadequate resources and funding. Hope this feedback makes sense and is useful but you are definitely on the right track…	Email

13 Appendix E: Ethical Approval Letter

Swansea University
Prifysgol Abertawe

Approval Date: 15/06/2023

Research Ethics Approval Number: 1 2023 6987 5803

Thank you for completing a research ethics application for ethical approval and submitting the required documentation via the online platform.

Project Title	What enables and inhibits the adoption of value based digital systems in Secondary Care settings across NHS Wales.
Applicant name	MISS REBECCA JELLEY
Submitted by	MISS REBECCA JELLEY /
Full application form link	https://swansea.forms.ethicalreviewmanager.com/Project/Index/8717

The Humanities and Social Sciences ethics committee has approved the ethics application, subject to the conditions outlined below:

Approval conditions

1. The approval is based on the information given within the application and the work will be conducted in line with this. It is the responsibility of the applicant to ensure all relevant external and internal regulations, policies and legislations are met.
2. This project may be subject to periodic review by the committee. The approval may be suspended or revoked at any time if there has been a breach of conditions.
3. Any substantial amendments to the approved proposal will be submitted to the ethics committee prior to implementing any such changes.

Specific conditions in respect of this application:

The application has been classified as Low risk to the University.

No additional conditions.

Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees. It complies with the guidelines of UKRI and the concordat to support Research Integrity.

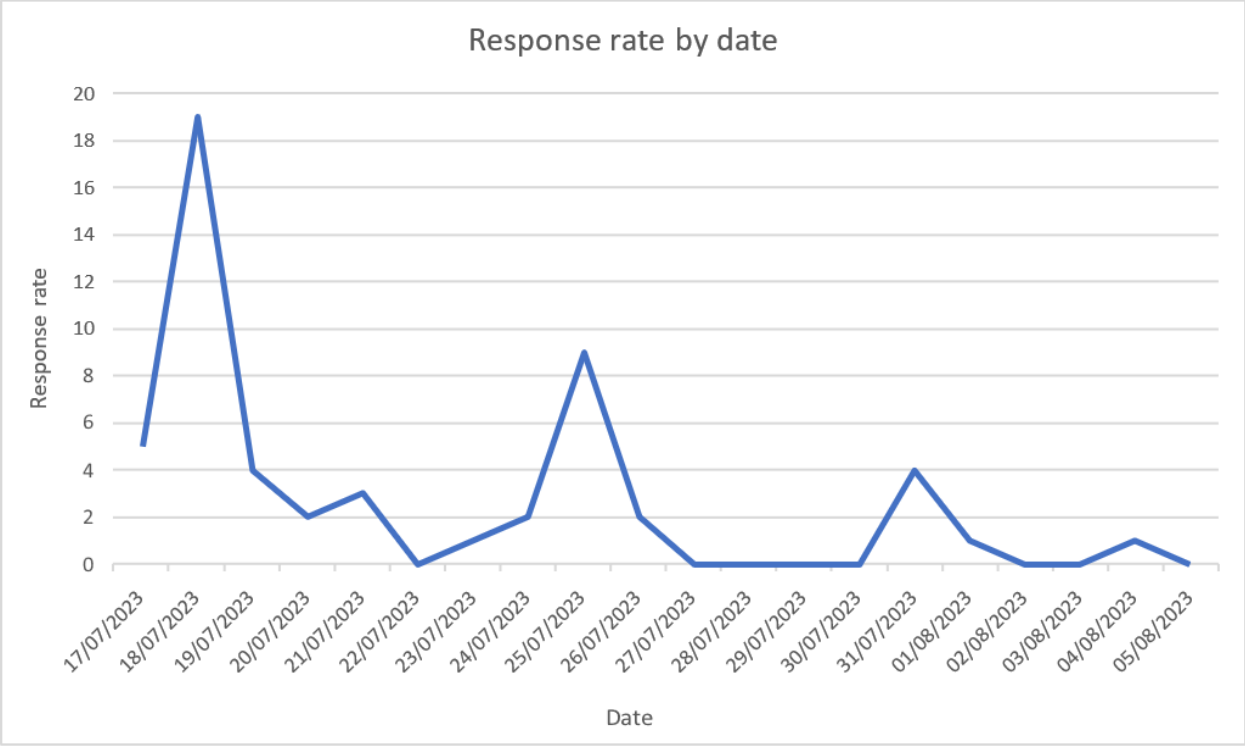
Humanities and Social Sciences Research and Ethics Chair

Swansea University.

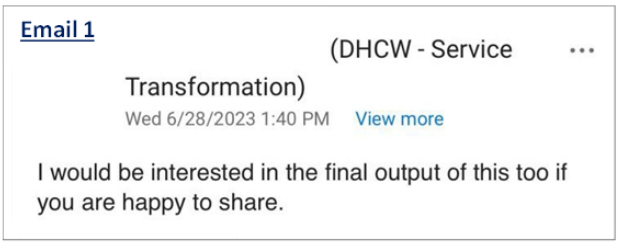
If you have any query regarding this notification, then please contact your research ethics administrator for the faculty.

- For Science and Engineering contact FSE-Ethics@swansea.ac.uk
- For Medicine, Health and Life Science contact FMHLS-Ethics@swansea.ac.uk
- For Humanities and Social Sciences contact FHSS-Ethics@swansea.ac.uk

14 Appendix F: Questionnaire response rate by date



15 Appendix G: Participants correspondence and requests to view the completed study

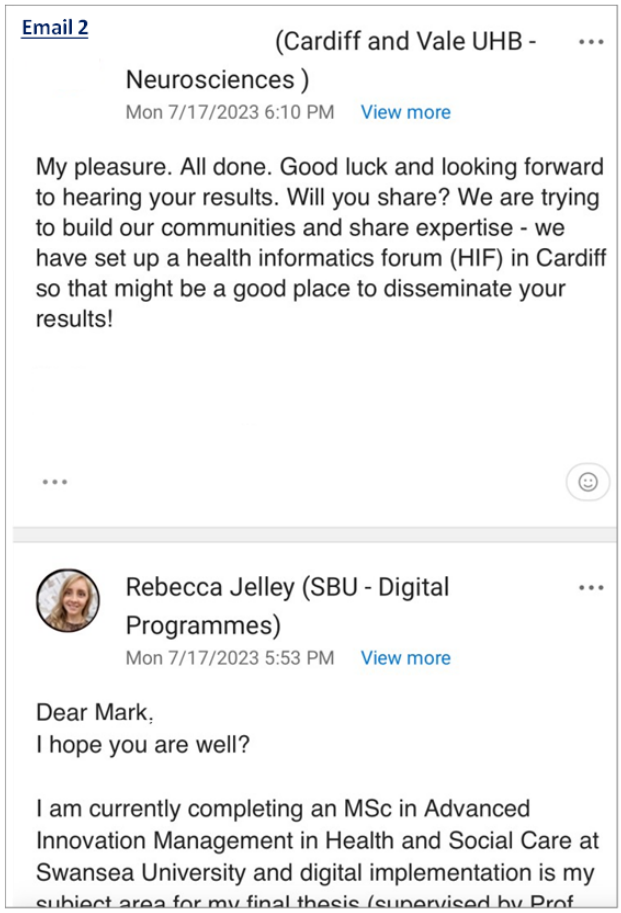


Email 1

(DHCW - Service Transformation)

Wed 6/28/2023 1:40 PM View more

I would be interested in the final output of this too if you are happy to share.



Email 2

(Cardiff and Vale UHB - Neurosciences)

Mon 7/17/2023 6:10 PM View more

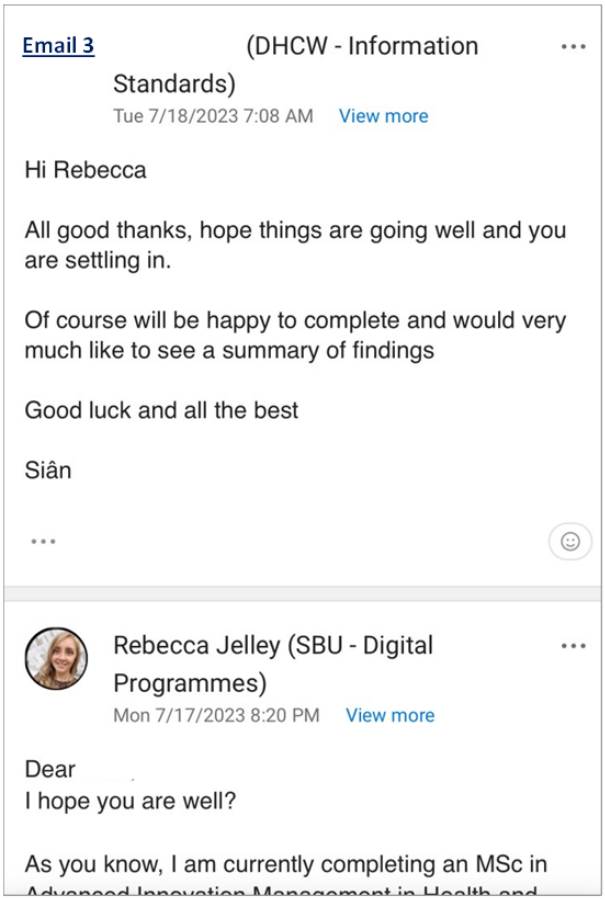
My pleasure. All done. Good luck and looking forward to hearing your results. Will you share? We are trying to build our communities and share expertise - we have set up a health informatics forum (HIF) in Cardiff so that might be a good place to disseminate your results!

Rebecca Jelley (SBU - Digital Programmes)

Mon 7/17/2023 5:53 PM View more

Dear Mark,
I hope you are well?

I am currently completing an MSc in Advanced Innovation Management in Health and Social Care at Swansea University and digital implementation is my subject area for my final thesis (supervised by Prof



Email 3

(DHCW - Information Standards)

Tue 7/18/2023 7:08 AM View more

Hi Rebecca

All good thanks, hope things are going well and you are settling in.

Of course will be happy to complete and would very much like to see a summary of findings

Good luck and all the best

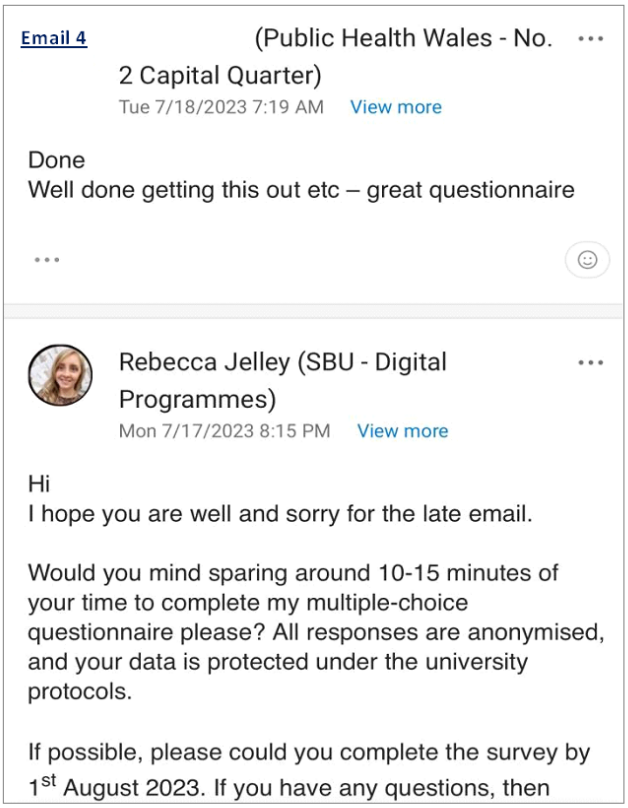
Siân

Rebecca Jelley (SBU - Digital Programmes)

Mon 7/17/2023 8:20 PM View more

Dear
I hope you are well?

As you know, I am currently completing an MSc in Advanced Innovation Management in Health and



Email 4 (Public Health Wales - No. 2 Capital Quarter)
Tue 7/18/2023 7:19 AM View more

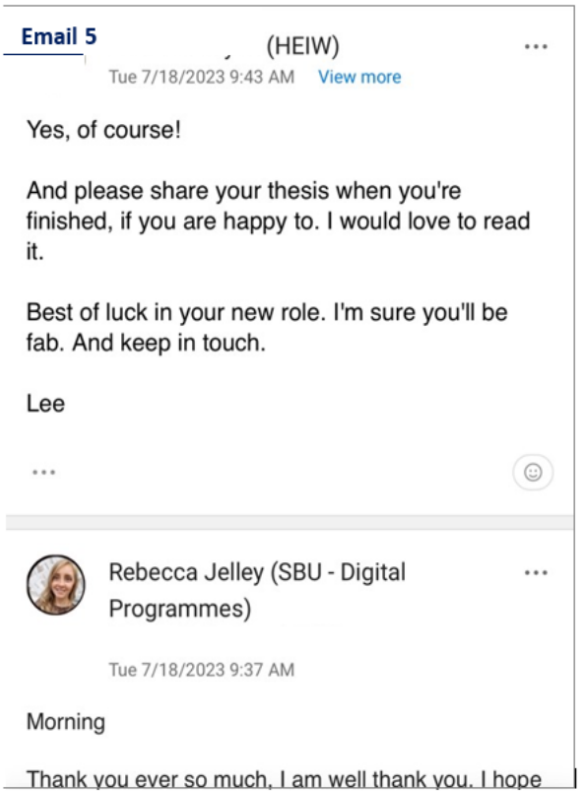
Done
Well done getting this out etc – great questionnaire

Rebecca Jelley (SBU - Digital Programmes)
Mon 7/17/2023 8:15 PM View more

Hi
I hope you are well and sorry for the late email.

Would you mind sparing around 10-15 minutes of your time to complete my multiple-choice questionnaire please? All responses are anonymised, and your data is protected under the university protocols.

If possible, please could you complete the survey by 1st August 2023. If you have any questions, then



Email 5 (HEIW)
Tue 7/18/2023 9:43 AM View more

Yes, of course!

And please share your thesis when you're finished, if you are happy to. I would love to read it.

Best of luck in your new role. I'm sure you'll be fab. And keep in touch.

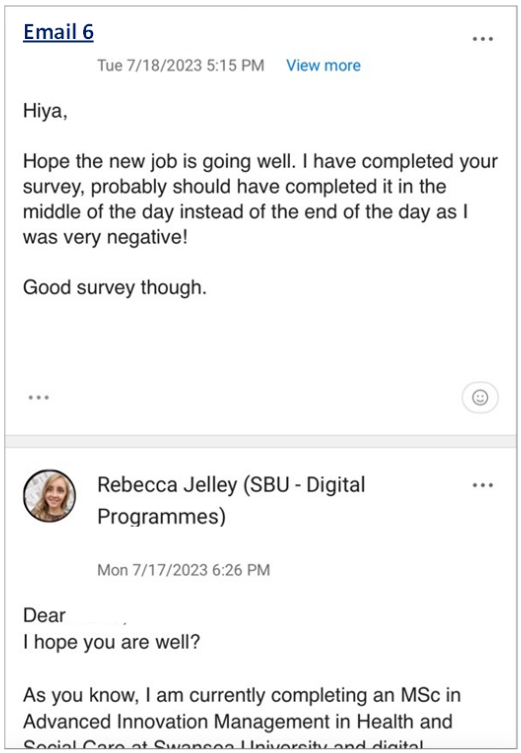
Lee

Rebecca Jelley (SBU - Digital Programmes)

Tue 7/18/2023 9:37 AM

Morning

Thank you ever so much, I am well thank you. I hope



Email 6
Tue 7/18/2023 5:15 PM View more

Hiya,

Hope the new job is going well. I have completed your survey, probably should have completed it in the middle of the day instead of the end of the day as I was very negative!

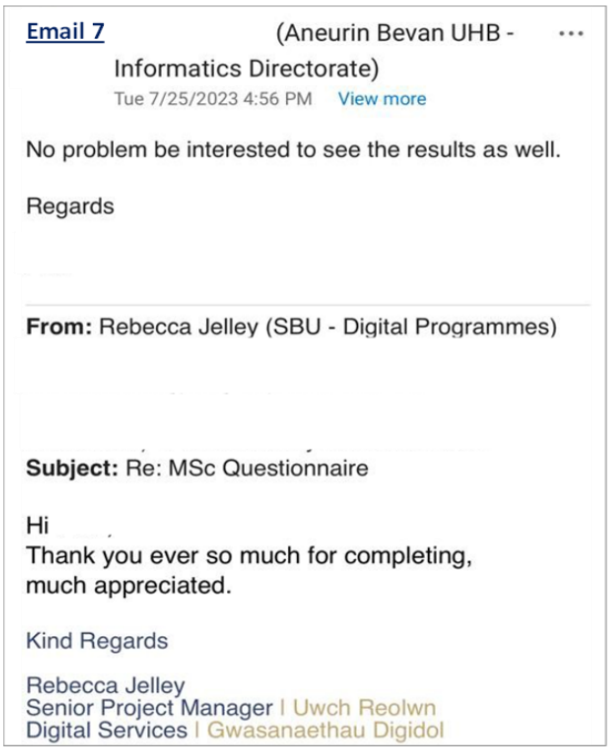
Good survey though.

Rebecca Jelley (SBU - Digital Programmes)

Mon 7/17/2023 6:26 PM

Dear
I hope you are well?

As you know, I am currently completing an MSc in Advanced Innovation Management in Health and Social Care at Swansea University and digital



Email 7 (Aneurin Bevan UHB - Informatics Directorate)
Tue 7/25/2023 4:56 PM View more

No problem be interested to see the results as well.

Regards

From: Rebecca Jelley (SBU - Digital Programmes)

Subject: Re: MSc Questionnaire

Hi
Thank you ever so much for completing, much appreciated.

Kind Regards

Rebecca Jelley
Senior Project Manager | Uwch Reolwn
Digital Services | Gwasanaethau Digidol

Innovating for Value in the NHS in England.

Sara Roberts
Head of Innovation, NHS Arden & GEM Health System Support
NHS ARDEN & GEM, England, UK
Email: sara.roberts2@nhs.net

Abstract:

This research report delves into how NHS Arden and GEM (AGEM) can foster the implementation of value-based approaches within the National Health Service (NHS) through innovative services and solutions, termed as "Innovates for Value." AGEM, a provider of support services for the NHS and its partners in England, operates under a semi-commercial model, recently establishing an Innovation Function to meet evolving healthcare needs amidst a changing landscape.

Focusing on understanding current and future NHS needs, the role of value-based healthcare (VBHC) and innovation, and the operationalization of AGEM's Innovation Function, this study outlines three main objectives:

Understanding NHS needs and the support required for VBHC.

Addressing gaps in evidence related to NHS innovation and value delivery.

Informing the operation of AGEM's Innovation Function for effective support and value-driven innovation.

Methodology: Employing a cross-sectional time horizon from June to August 2023, data collection methods included literature review, surveys, and interviews. The literature review explored evidence and case studies, emphasizing NHS priorities, innovation, and value-based healthcare. Surveys targeted AGEM staff, while interviews engaged external stakeholders from Integrated Care Boards and provider organizations.

Findings: Findings suggest a need for AGEM's Innovation Function to prioritize value-based innovations aligned with NHS needs. Key areas identified include data analytics for decision support and leadership development for operational model redesign. Collaboration emerges as crucial, both internally across AGEM's service lines and externally with other organizations, fostering multi-disciplinary innovation teams and partnerships. Value measurement is deemed essential, with outcomes and quality metrics linked to cost serving as key performance indicators. The Innovation Function should track value throughout the innovation process, disseminating results through various channels to communicate the impact effectively.

Conclusion: this study provides recommendations for AGEM's Innovation Function, emphasizing customer-centricity, collaboration, and rigorous value measurement. By aligning innovation efforts with NHS needs and demonstrating tangible value, AGEM can play a pivotal role in advancing value-based approaches within the healthcare sector.

Keywords: Innovating, Value, NHS England, NHS, Value-based healthcare, Innovation, Value measurement, Collaboration, Healthcare management.

Tables and Contents

1 Introduction

This report presents the findings of research exploring how NHS Arden and GEM ("AGEM" or "the organisation") can contribute to implementing value-based approaches in the National Health Service ("NHS") through innovation of services and solutions or - how it "Innovates for Value".

AGEM provides a range of support services for the NHS and its partners in England (sometimes referred to as "customers" during this report, as although AGEM does not seek profit, it covers its running costs and funds innovation through a semi-commercial model relying on payment for services). An Innovation Function has recently been established, through which the organisation is seeking to innovate its support services and solutions, to meet its customers emerging and future needs, under the context of a changing health and care landscape in England.

As such, this research focusses on the current and future needs of the NHS and its partners; the role to date of value- based healthcare ("VBHC") approaches and innovation in addressing the needs of the NHS; and how AGEM's Innovation Function should operate to ensure its future innovations are value-based.

The objectives of the research are as follows:

Objective 1: Understand the current and future priority needs of the NHS in England, and the support required to address these needs through new VBHC approaches.

Objective 2: Bridge the research and evidence gap relating to NHS innovation and its link to delivering value.

Objective 3: Inform how NHS Arden & GEM's innovation function should operate in order to effectively support their customer's needs and innovate for value.

1.1 Personal Motivations for the Research

My personal motivation for researching this topic is two-fold. Firstly, my role as Head of Innovation at AGEM means I have a professional interest and responsibility to both understand the changing support needs of the organisation's customers, as well as develop an innovation function that effectively responds to those needs through its activity in developing and deploying innovative support services. Secondly, having worked in, or with the NHS for the last 15 years, more recently in roles focused on strategic change, I am genuinely invested in the future of our health and care services. I have always been motivated by the desire to improve the health and wellbeing outcomes of the people the NHS serves, and as such, believe value-based approaches to transformation are the solution for achieving the whole system change now required to keep people healthier for longer, through best use of the resources available.

2 Methodology

This section outlines the methodology adopted for this research project. The Research Onion (demonstrated below) has been used as a framework against which to map the methodology selected (from the philosophical outer layers of the "onion" to the more tactical inner layers). There are numerous potential methodologies described within the research onion, those selected align with, and will be most effective in delivering, the research aims and objectives laid out in the introduction section.

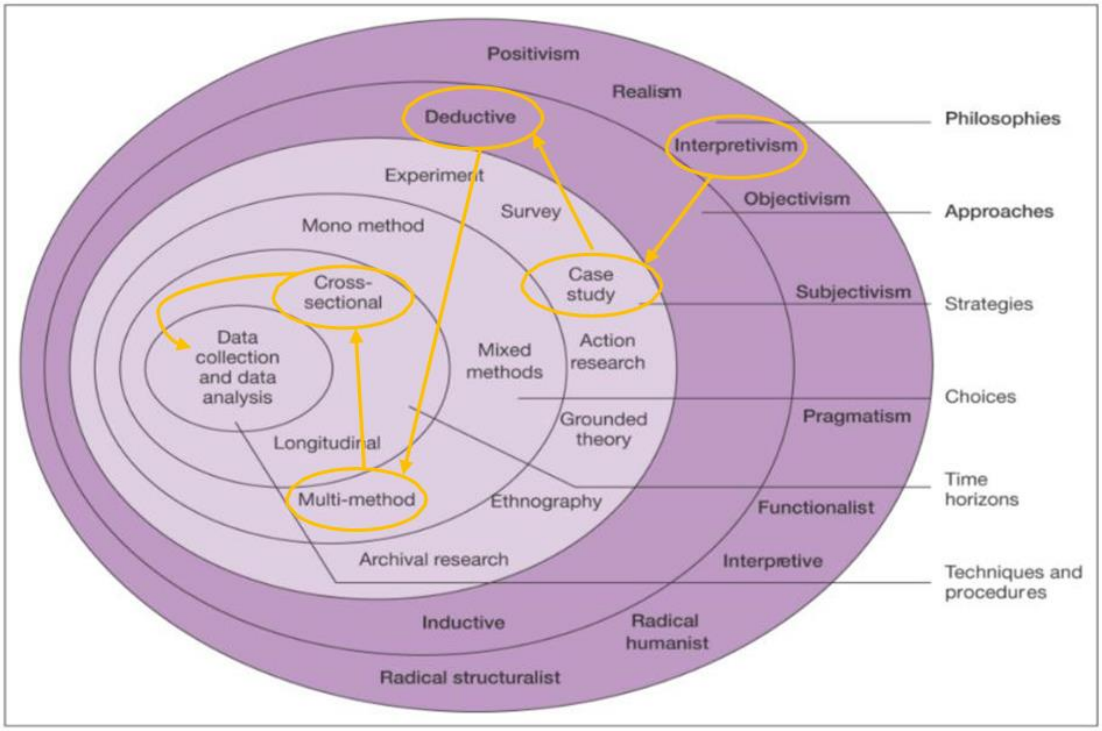


Figure 1. The Research Onion (Saunders et al., 2009).

Table 2. Interpretation of Figure 1.

Research Onion "Layer"	Methodology	Reasoning
Philosophy - the set of beliefs upon which research is built. Can be considered through the lenses of ontology ("what" we consider to be the nature of our reality) and epistemology ("how" we use knowledge in order to understand our reality).	Interpretivism	Requires the researcher to see the world through the eyes of those being studied. It stems from the basis that due to different social and cultural factors, different people will give different meaning to situations and events, and as such it is necessary to understand their subjective realities and opinions, in order for the researcher to form a holistic view and conclusion.
Approach - the broad method used for the research.	Deductive	The research begins with a theory and builds on evidence and information already in existence, in order to enrich the evidence base around the topic. An inductive approach on the other hand, investigates something not already articulated by previous research generating new theories and hypotheses.
Strategy - the research design, and how it will be conducted	Case Study	It is a subject (as detailed in the introduction section) undergoing a detailed analysis of multiple variables of interest (relying on multiple sources of evidence), that are triangulated, in order for the researcher to gain a greater depth of understanding. It takes into account social and cultural factors (aligned to the interpretivist philosophy) and allows the researcher assumptions and holistic understanding to inform the conclusion. Yin (2003) describes a case study as "an empirical inquiry investigating a contemporary phenomenon within its real-life context". The case study selected for the research is AGEM's Innovation Function, and how the focus of its innovation activity can deliver greatest value to the NHS in England.

Choices	Multi-method	The research makes use of more than one type of qualitative only data to inform its findings and conclusion. A mixed-method design on the other hand would include both qualitative and quantitative data.
Time Horizons - relates to the number of points in time across which data will be collected for the purpose of the research.	Cross- sectional time horizon of June – August 2023	The research analyses a case study at a certain point in time, as opposed to a longitudinal one which allows for researching if and how a subject has changed throughout fixed points in a time period.

2.1 Data Collection and Data Analysis

This final core section of the Research Onion details the specific research techniques and procedures used.

2.2 Literature Review

A literature review was undertaken to frame and guide the study by, identifying current evidence, gaps in evidence, and any case studies to be drawn upon. It utilised repositories held under Swansea University's iFind system as well as Google Scholar.

The literature review started from the research question and scope of work, then implemented a logical search strategy to get to a final list of evidence as follows:

- Publication date range back to latest date of 1999
- English language articles
- Both primary research and literature reviews

Search terms were applied as follows:

NHS England	Health Policy	Value Based Healthcare (VBHC)
Stewardship	Innovation	Population Health Management (PHM)

A quality assessment was then undertaken, considering the number of citations received, publication source (reputable journals or publishing organisations) and publication date (most recently favoured).

2.3 Survey

AGEM staff were identified as key stakeholders for this research, and as such, a survey was undertaken using Slido technology to capture and analyse results, as part of a virtual meeting of AGEM's "Triple Aim Community of Practice (CoP)" on Wednesday 12th July 2023. The CoP was attended by 80 people, 19 of whom participated in the survey and provided 81 responses across 3 open-ended, free text questions as follows:

Q1. What are AGEM's strongest skills and capabilities that we should be utilising to innovate and deliver value to our customer?

Q2. What are AGEM's main skills and capabilities gaps that we should be developing in order to innovate to deliver value for our customers?

Q3. How can we make sure we measure and demonstrate value for our customers when innovating?

The responses underwent a thematic analysis and are presented in the findings section, aggregated for each question.

2.4 Interviews

Key stakeholders external to AGEM, within customer and partner organisations, were selected and interviewed based on their job role (within either an Integrated Care Board (ICB) or a Provider organisation) playing a key part in the delivery of VBHC approaches. A total of 6 people were interviewed from the following roles:

- Clinical Director
- Director of Strategy
- Director of Population Health Management
- Chief Executive
- Director of Finance

Semi-structured interviews were designed to last no longer than 45 minutes and included the following questions:

Q1. How do you define value in health and care in [insert name of organisation or system]

Q2. What are your biggest needs and challenges as a system / organisation currently?

Q3. What support do you need in order to address those needs and challenges and deliver value?

Results were anonymised, aggregated, and underwent a thematic analysis. The data is presented in the findings section, aggregated for each question.

2.5 Limitations

The research was limited to the NHS in England, as well as commissioning (in this case ICB) and provider organisations, it therefore did not include regional and national bodies such as NHS England (NHSE).

2.6 Ethics

Ethical approval was not required (see appendix 1), confirmed by use of the NHS Health Research Authority (HRA) research decision tools. All participants in the survey and interviews provided consent relating to use of their data and data storage (see appendix 2). All primary research has been anonymised and is non-attributable to individual participants or their organisations.

3 Findings

A review of key academic literature, national policy and case studies was undertaken focussing on the three main themes of the current and emerging national context relating to healthcare; VBHC theory and approaches; and existing models of innovation within the NHS. Although these are presented separately in this section, they are related in the context of this research and will be considered in a more joined up way in the following Discussion section.

3.1 Current and Emerging National Policy and Operating Context for the NHS in England

Two major events in recent years have shaped the current and future policy context of the NHS in England. The direction was set in 2019 with the publication of The NHS Long-Term Plan (NHSE, 2019). Three years later, the Health and Care Act 2022 enshrined in law an obligation for health and care organisations to integrate through the formation of Integrated Care Systems (“ICSs” or “systems”), governed by ICBs and various configurations of Provider Collaboratives (based on population groups or population sizes in a geography (NHSE, 2019)) across regional, system, place, and neighborhood footprints. The Act places a collective responsibility on ICBs and Provider Collaboratives for the planning and delivery of health and care services, and ultimately for delivery of the NHS Long Term Plan. This includes being measured against a “Triple Aim” of improved population outcomes (including reducing inequalities), improved quality of care and the best value, sustainable use of NHS resources (NHSE, 2022).

The content of the Long-Term Plan, and the passing of the Health and Care Act is a policy response to the growing operational pressure on the NHS because of several factors:

- Ageing populations (Nash, 2019; DH, 2012) with increasingly complex health needs placing increasing demands on services. Projections show in 50 years’ time the UK population will include an additional 7.5m people aged 65 years and over (ONS, 2022).
- Little improvement in population outcomes despite increased spending (as a share of gross domestic product (GDP)) on health services over the last 30 years (Schneider et. al. 2021).

- Widening inequity and disparity across demographic profiles in access to and outcomes from health and care services (Watt, Raymond & Rachet-Jacquet, 2022), compounded by the impact of the Covid-19 pandemic.
- Operational pressure from demand and capacity issues including elective waiting list backlogs, emergency care response and access times and access to general practice (BMA, 2023).
- Economic austerity and inequity resulting in diminished financial resources coupled with rising costs due to inflation (Martin et. al. 2021).
- Workforce shortages because of multiple factors including the impact of Brexit (Dayan et. al., 2021), the growing threat of the private sector and off-framework agencies offering higher wages (Kituno, 2022), and a greater prevalence of "burnout" amongst clinicians and in primary care (Wilson et. al. 2021).
- Poor NHS Information Technology (IT) infrastructure including fragmented data systems and a lack of pace compared to other industries in utilising technological advancements, making better use of data to plan services, and changing the way care is delivered through introducing innovative digital solutions into care pathways (Keith, Grimm & Stevenson, 2022).

This is not unique to the NHS, health and care systems globally face the same pressures and for the most part, no longer have the capacity of capability required to meet the needs of the patients and populations they serve, and at the same time recover from the ongoing impact of the Covid-19 pandemic.

3.2 Value-Based Healthcare (VBHC) – The Strategy to "Fix Healthcare"

Concurrently, VBHC approaches continue to be developed and implemented as solutions to the challenges described above, often referred to as a 'new paradigm' for restructuring health and care services no longer adequately equipped to meet the needs of their populations. First introduced by Michael Porter and Elizabeth Teisberg (2006), they defined it as "the achievement of the best possible outcomes through sustainable use of the resources available." Later definitions build on Porter and Teisberg's, for example the European Commission's Expert Panel on effective ways of investing in Health (EXPH, 2019) describe four more specific value domains:

Technical Value	The best possible outcomes with the resources available
Personal Value	Providing appropriate care to achieve patients' personal goals
Allocative Value	The equitable distribution of resources across all patient groups
Societal Value	The contribution of healthcare to social participation and connectedness

Porter later went on to outline six major elements necessary to realise a truly value based system (Porter & Lee, 2013). These are interdependent but mutually reinforcing; greatest progress will be made if multiple components are advanced together as shown in Table 2.

Table 2. List of advancements suggested.

1.	Care is organised around medical conditions or population cohorts	As opposed to around clinicians or a building as they often are currently
2.	Outcomes and costs are measured for every patient	Including clinical, personal, and social outcomes, at every point across a full cycle of care in order to pinpoint areas of least and greatest value (as opposed to understanding charges or budget as we most often do in the NHS)
3.	Payment models are aligned with value by rewarding improving outcomes and efficiency of care	As opposed to rewarding volume, an example of this being Payment by Results (PbR)
4.	Delivery of care is integrated across multiple organisations within a geographical region	Such as an ICS in England
5.	Care for complex cases or specialised services is delivered once across a greater geographical region	Such as a regional networked specialist service in England
6.	And finally, the agenda is supported by an effective, integrated IT system	Allowing for accurate data driven decision making

An estimated $3.2trillion of annual global health spending makes zero or minimal contribution to health outcomes (WEForum, Global Coalition for Value in Healthcare section). Despite this, systematic

implementation of VBHC as a solution is rare, has varying degrees of maturity, or is implemented in siloes with less evidence of successful scaling or spread (e.g. a single element of Porter's 6 requirements, or within a single pathway or population group in a geography) (Cossio-Gil et. al., 2022).

3.3 Innovation Implementation in the NHS

Innovation can be defined as "a new or improved product or process (or combination thereof) differing significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)." (OECD, 2018). It is not a new concept, Joseph Schumpeter provided one of the earliest definitions of innovation in 1934 (Schumpeter & Opie, 1934) in which he described five types of innovation:

1. The introduction of a new product or service
2. The introduction of a new production process
3. The opening up of a new market
4. The securing of a new source of raw materials or other supply
5. The creation and application of a new organisational structure within an industry or sector

The annual 'Most Innovative Companies Index' (BCG, 2023) shows year on year the most innovative companies are delivering higher than market shareholder returns, and there is a link between innovation, increased performance, and value creation.

The NHS does not seek competitive advantage (linked to shareholder returns or profit) the way Schumpeter viewed innovation, and as is the context of most of the organisations in BCGs annual index. The Long-Term Plan (NHSE, 2019) does however recognise that research and innovation in the NHS is linked to opportunities for service improvement and patient outcomes, and as such, developing and implementing new value-based services, solutions or products in the NHS should be viewed as innovation. The Long-Term Plan also recognises the real challenge of both spread, and scaling up of innovation, pointing out that almost all the priorities listed in the plan itself are happening somewhere within the NHS, but are yet to be widely adopted or systematised. Key barriers to implementing, spreading and scaling innovation found in literature include:

- Funding: There is usually a need to spend money, or invest, and money is usually trapped or constrained by an annual budget cycle and perverse financial incentives.
- People resource: Staff capacity and capability must be diverted away from day-to-day planning and delivery in an already overstretched service.
- Digital Maturity: Greater digital maturity than is currently present in the NHS is often required; and
- Culture: Change usually requires the shifting of often deeply held cultural and professional norms.

  (Greenhalgh & Papoutsi, 2019; Boyd, 2020).

There is also a growing body of research on what the enablers, or conditions for successful adoption of innovation in the NHS are:

- Measuring and evidencing success: Innovations should have a clear advantage evidenced through appropriate metrics (outcomes, quality, cost effectiveness, value etc.) that are observable and disseminated through different mediums such as business cases, practical case studies and peer-reviewed papers.
- Understanding the market: This includes finding ties to and taking advantage of national policy levers, as well as understanding local contexts and nuances in market sectors (commissioning, hospitals, primary care).
- Collaboration is key: With service users and population representatives, across multiple level of stakeholders in systems, across professional groups (clinical, finance, operations etc.) and across roles (in planning and / or providing care), as well as collaboration with other organisations to provide additional capacity and capability.

- Culture: Innovations need to be compatible with the adopters' values, norms and perceived needs, and accompanied by an appropriate culture, leadership or OD (organisational development) programme.
- Flexibility: There will be elements of flexibility required in the strategy and approach to addressing all four of the above conditions. Likewise, implementation strategies may change throughout an innovation lifecycle and those required in development and early adoption stages may be different to those required when scaling up or spreading. Metrics relevant to local need can be flexible, but some dimensions must remain constant, when measuring and evidencing success. Measuring clinical outcomes, personal outcomes or experience and cost-benefits both during and following adoption of an innovation should be mandatory.

  (Greenhalgh et. al. 2004; Hemmings et. al. 2020; NHS Confederation, 2023a).

4 Case Study – NHS Arden & GEM's Innovation Function

AGEM is a Health Service Support Organisation (HSSO), providing expert professional support services for a broad range of customers including ICBs, NHSE Regional and National teams, Local Authorities (LAs), and providers of care spanning primary, secondary (acute Trusts), community, mental health, and voluntary care, including those operating as collaboratives.

Considering the national context within health and care, the implications of the Health and Care Act (2022), the growing body of evidence relating to VBHC and innovation, as well as the call within the NHS Long Term Plan for innovation to improve outcomes - there is a strategic opportunity for AGEM to innovate and diversify the services and solutions it provides. As AGEM's key customers change in type and shape, their needs in terms of support services are shifting away from transactional needs to more insight driven, transformational services providing greater value in terms of operating efficiencies and achieving improved outcomes for the populations they serve. In 2022 AGEM began its journey to operationalise an Innovation Function tasked with the innovation of services, solutions, and products to meet its customer's current and emerging needs and challenges. An innovation process and framework were tested, refined, and simplified in 2022-23; the figure below demonstrates the high-level operating model (source: internal NHS Arden and GEM document):

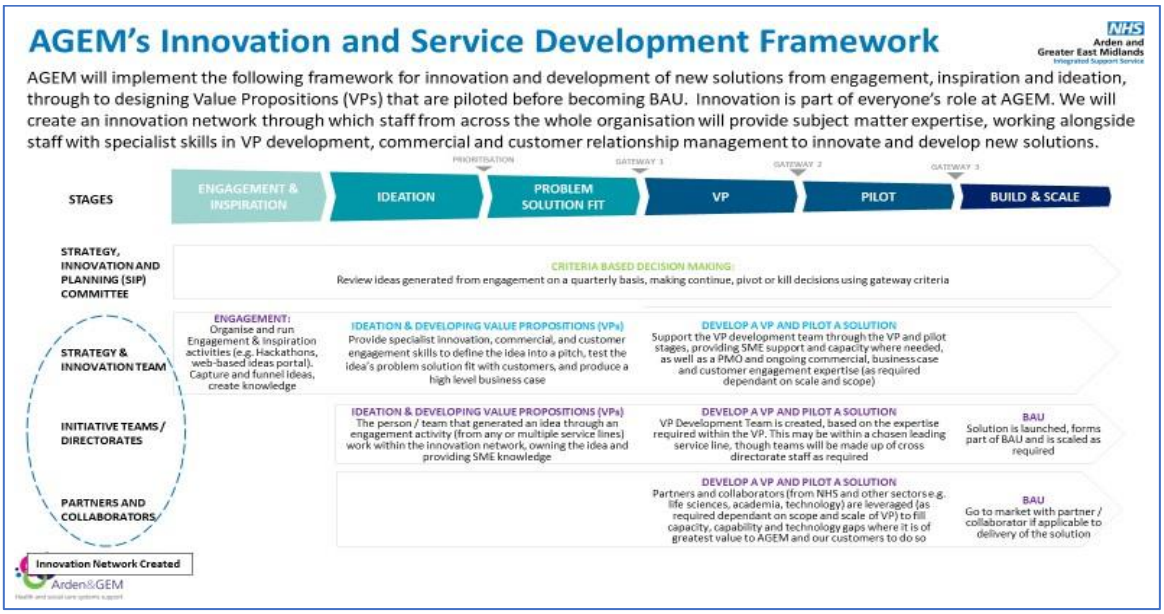


Figure 2. AGEM's Innovation and Service Development Framework.

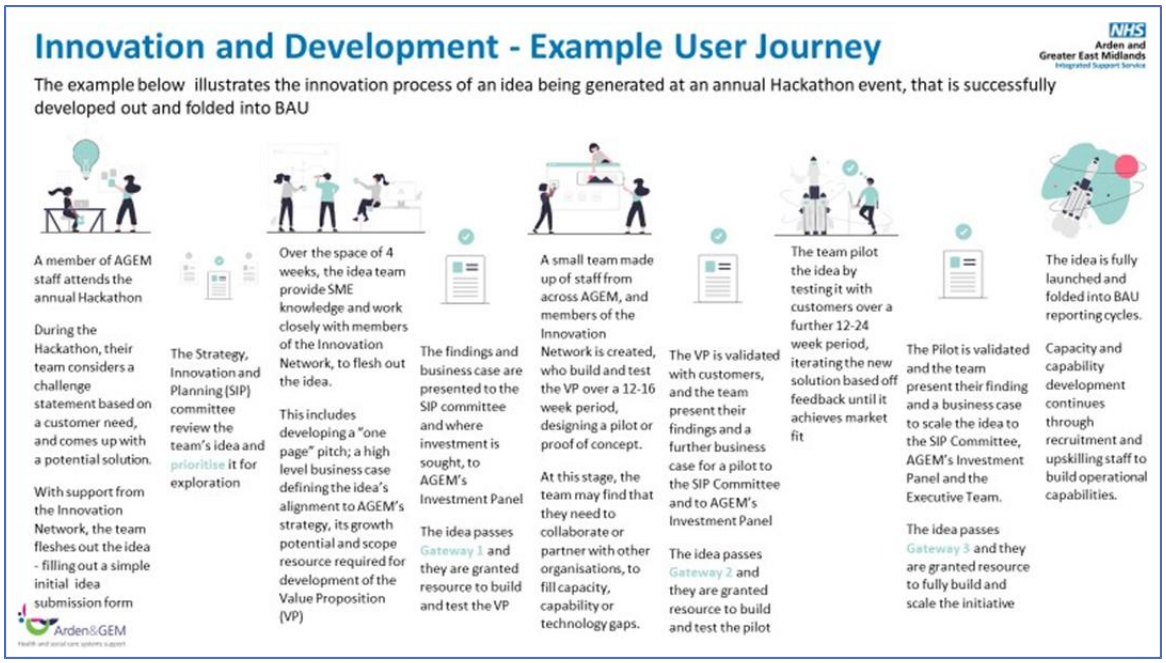


Figure 3. Innovation and Development – Example User Journey.

KPIs To Track Innovation Success

The success of innovation and service development at AGEM can be measured using a set of metrics that address key activities and outcomes during each stage of the innovation process.

Process stage	Metric	Rationale
Engagement & Inspiration	• # of culture & engagement events held • # of employees attending events • # of (external to AGEM) organisations or individuals engaged in events or other engagement activities • Satisfaction of staff as well as external stakeholders and partners attending events • Perceived engagement with innovation and impact on BAU in employees daily roles	• Assesses AGEM staff as well as external stakeholder and partner experience with Innovation Activity • Tracks AGEM staff as well as external stakeholder and partner engagement with all Innovation Activity
Ideation	• # of idea submissions received, measured across grade and directorates	• Tracks healthiness of pipeline generated
Prioritisation	• # of ideas progressed to incubation process • # of ideas not progressed with clear strategic reason as to why	• Tracks healthiness of pipeline of potential ideas • Tracks whether business clearly articulated Innovation & Growth Strategy, objectives and ambition
Incubation	• # of incubation stages conducted (incl. maturity of stages) • # of incubation stages that support each of the triple aims • # of ideas to complete pilot stage • # of employees engaged in incubation stages, across which service lines • Value of support provided by incubation process • Capital deployed	• Tracks employee engagement with the Incubator • Assesses employee experience with the Incubator • Assesses employee perception of the Incubator • Measures financial performance of the Incubator
Build & Scale	• # New projects, products or capabilities integrated into BAU or launched as a new service • # New projects that support each of the triple aims • Value to BAU (revenue/cost reduction/speed to market) • Value to Customer (outcome/cost) • Return on Investment (ROI)	• Measures efficacy of the Incubator towards reaching strategic and business objectives as well as customer needs

Figure 4. KPIs to track Innovation Success.

5 Primary Research

To complement and build on the literature review, primary research was undertaken to gather the views of both internal and external stakeholders to AGEM. This consisted of:

- A customer needs analysis undertaken through one-to-one interviews with a range of senior NHS Leaders in roles spanning clinical, finance and strategic from within both commissioning (ICB) and provider organisations

- Gathering the views of AGEM staff relating to the organisation's capabilities and skills, and how AGEM can meet its customers' needs, through innovation of services.

5.1 Customer Needs Analysis

Key stakeholders external to AGEM participated in semi-structured interviews exploring three key questions as demonstrated in the headings below. Those interviewed were in Executive level roles spanning clinical, finance and strategy in both ICB and provider organisation, ensuring a broad range of perspectives. The results have been anonymised and have undergone a thematic analysis:

5.1.1 How is Value Defined in the NHS?

Two terms were used by those interviewed when describing their local use of language relating to value: Value-Based Healthcare (VBHC) and "Stewardship".

Where the language of VBHC is used, this was always linked back to Michael Porter's (2006) definition, that value equals outcomes to patients and populations over the total cost of care delivered. Two examples were heard of ICS wide "value improvement programmes", replacing the old language of cost improvement programmes (CIPs), in which outcome measures (albeit mainly clinical) or quality measures (in relation to corporate services) were included alongside cost metrics. These were called "Improving Value" and "Value for Patients".

Where the language of stewardship is used, this was described as the cultural mechanism to deliver value and create ownership through partnership. Eleanor Ostrom's "theory of the commons" (McGinnis, 2013) was cited to explain the definition of stewardship as pooling resources (finance and people) from across the health system and forming multi- professional teams with a mandate to make collective decisions on the best use of resources to improve a population or condition group's outcomes.

Aside from VBHC and Stewardship, the use of productivity and efficiency language has made a resurgence, considering growing pressure on elective waiting lists and issues in managing demand for, access to and capacity in primary care and in urgent and emergency care. Recent correspondence to ICBs (NHSE, 2023) demanding reductions in running cost allowances (RCAs) of 30% per ICB by 2025/26, has resulted in increased use of the term "productivity and efficiency" but this mostly comes back to cost savings, with little inclusion of quality, outcomes, or value within the discussion.

Despite its prominence within the Long-Term Plan (NHSE, 2019) and the Health and Care Act as a legal obligation of NHS organisations, those interviewed felt that use of the term "Triple Aim" was very much at a policy level as opposed to a system or local level, where value-based healthcare and stewardship dominate the vocabulary relating to value.

Amongst all, implementation of VBHC and / or Stewardship was based on similar specifications:

- Defining population groups through segmentation models or around conditions, spanning the total continuum of care
- Bringing previously siloed organisations together to work in partnership by establishing teams who share resources, and collectively make decisions for a defined population group or condition.
- Value-based teams are multidisciplinary and include clinicians working alongside finance, operational and business intelligence (BI) and analytics specialists.
- These teams are mandated to make the best use of resources to improve outcomes.
- Outcomes are more than just clinical outcomes and include personal outcomes as well as those relating to equity and equality and the social determinants of health such as housing and education.

There is a need to focus on reframing the conversations clinicians have about finance. Linking outcomes to "pound spent" is the best mechanism to do this, equipping clinicians with the ownership to use financial resources to improve clinical pathways (and as a results outcomes). This language resonates much more with clinicians, compared to "cost improvement programmes".

5.1.2 What are the Greatest Challenges and Needs of AGEM's Customers?

5.1.3 Challenges

- ICSs are under significant financial constraints which act as a barrier to being able to focus on or invest resources in addressing many of their needs.
- Competing demands and expectations from a strategic level (National, Regional, System) cause a dissonance between the culture required and the culture that exists, for example asks to control running cost allowances at the same time as reducing waiting lists.
- Differences in maturity between ICBs and provider organisations, where one is further ahead in their implementation of VBHC approaches than the other, but as a result cannot progress further until the other has "caught up".
- Working with limited or incomplete data, or in some cases "instinct" (which may be open to bias) where data is not available.
- Leaders are unable to fully understand end to end cycles of care, both due to the difficulty in measuring, collecting, and using cost data and the barriers that current commissioning approaches present, such as historic contracts not representing the full cycle of care being looked at in isolation.
- Workforce shortages are driving increased costs (e.g. for agency staff) and leading to a lack of capacity to step away from "business as usual" to undertake transformation.

5.1.4 Needs

- Enabling integration and the adoption of VBHC approaches through new operating models, systems, processes, leadership behaviours and ways of working.
- Improved use of resources - both to realise efficiencies but also to improve sharing of resources between organisations in an ICS. This includes delegation of financial resource from NHSE to ICBs, and ICBs to provider collaboratives providing genuine stewardship to those designing and delivering models of care.
- Strategic and systematic adoption of VBHC approaches as opposed to it happening in siloes.
- IT and data infrastructure that enables collective, fully data informed value assessments. This includes integrated and linked data at a personal level, from multiple organisations onto a single platform for data visualisation, analysis, and reporting purposes.
- Access to total cycle of care cost data, as opposed to spend or budget data as is currently available.

5.1.5 What Value-based Support Services do AGEM's Customers Need in order to Address their Needs and Challenges?

The key support need identified was the provision of specialist VBHC capacity and capability delivered at scale, with a particular focus on providing the following support:

Culture change, Organisational Development (OD) and Leadership Development:

- Design and delivery of OD programmes focused on VBHC and stewardship, from a perspective of understanding its context in a public sector organization.
- Leadership development enabling leaders to step up into system wide roles requiring integration and collaboration skills (as well as VBHC understanding).
- Leadership development enabling difficult decision making such as taking forward new value propositions for population groups that may require differential allocation of resources.
- Clinical leadership development focused on understanding finance (and how costs are linked to outcomes) and the need to include finance, analytical and operational colleagues in multi-disciplinary teams (MDTs).

- Designing both operating models and OD programmes that bring together system partners, across multiple organisations and roles, to an aligned vision and understanding around VBHC. The focus is on embedding a systematic approach to value from strategic planning through to service redesign.

5.1.6 Systems and Infrastructure for integrated and linked data and intelligence:

- The technical element of designing and implementing effective infrastructures, systems and decision support tools, to allow ICSs to fully understand and make decisions based on cost and outcomes at a person level, across a whole cycle of care.
- Includes point of care systems and a patient facing element so patients have access to the same data their clinician is seeing when making decisions on care.

5.1.7 Specialist VBHC skills, knowledge and capacity:

- Population and patient level finance and costing; health economics; public health; clinicians, advanced analytics.
- Supporting value-based service redesign through in-depth analysis of processes, pathways and models at a population and condition group level, considering outcomes and cost.
- Using data and intelligence to enable planners and providers to record, measure, understand and use costing and outcomes data across a full care cycle. Ongoing support where this is more specialist, and training / upskilling customers where it is simpler.
- Developing outcome frameworks and outcome-based contracts.

5.2 Survey of Arden and GEM Staff

AGEM runs a "Triple Aim Community of Practice" (CoP), a forum for staff to come together to discuss various topics relating to delivery of the Triple Aim. During a CoP in July 2023, those in attendance (virtually via Microsoft Teams) were asked to participate in a survey conducted via Slido. The results have been anonymised and have undergone a thematic analysis:

5.2.1 Q1. What are AGEM's strongest skills and capabilities that we should be utilising in order to innovate and deliver value to our customer?

- Innovation and responsiveness - being creative, responsive, and horizon scanning. AGEM is always looking for new ways to improve its services and has an advantage and strength in terms of innovation, given its broad set of skills, expertise and experience.
- Planning, evaluation and understanding policy - AGEM is committed to delivering high-quality services aligned with the needs of its customers.
- Data - Access, analytics, and stewardship (PHM). AGEM has strength in using data to improve its services.
- Collaboration and partnership - working with other HSSOs, and the wider healthcare system to achieve value.
- Multi-specialty and diverse workforce, expertise and capability - specifically mentioned were change management, BI analytics, clinical and non-clinical, stakeholder management skills, and diversity in terms of health and care market segment experience (commissioners, providers, primary care etc.).

5.2.2 Q2. What are AGEM's Main skills and capabilities gaps that we should be developing in order to innovate and deliver value to our customer?

- Commercial thinking - developing how we manage customer relationships and knowledge as well as contracting and procurement implications. This will help the organisation grow in terms of working with more parts of the NHS including provider organisations, primary care, community services etc. (current key customers are NHSE and ICBs).

- Data and analytics - including understanding the data the organisation has and doesn't have access to, and what insights can be generated from that data, to help AGEM understand its customers, identify opportunities, and measure the impact of this innovation. There is a view the organisation should promote its own PHM tool to rival competitors such as Optum.
- Collaboration and partnership - building on what we already have to include local authority, schools, patient groups, and the voluntary / community sectors. This will help AGEM bring together different perspectives and ideas (including understanding the needs of local populations which we don't always do currently), and to create innovative solutions.
- Matrix working - and multidisciplinary, cross-team working. This will help the organisation leverage the breadth of skills and expertise it has, as well as the personal experiences and passion present in order to work in a collaborative and integrated way, and foster a culture of innovation.

5.2.3 Q3. How can we make sure we measure and demonstrate value for our customers when innovating?

- Measuring the value of innovation - tracking metrics such as cost savings, patient outcomes (as well as organisation outcomes), and quality of care.
- Communicating the value of innovation to customers and the organisation - explaining how innovation is meeting their needs and how it is improving their experience.
- Involving customers and patients in the innovation process - getting their feedback and input on how to innovate for value.
- Evaluating the impact of innovation - tracking the results of innovation and making changes as needed.

6 Discussion

The research purpose was to explore how AGEM can contribute to implementing value-based approaches in the NHS through innovation of services and solutions or - how it “Innovates for Value”. The first two objectives of the research will be met in this Discussion section, and the third objective will be covered in the Conclusion and Recommendations section.

6.1 Current and Future Priority Needs of the NHS in England

The NHS, like most health and care systems around the world, is under significant pressure from a number of factors including ageing populations with more complex health needs, widening inequity, workforce shortages and increasing access, demand and capacity issues alongside diminishing resource. The findings of the literature review relating the current systematic challenges of the NHS in England were corroborated by local leaders interviewed as part of the primary research.

The Health and Care Act 2022 introduces two key new pieces of legislation intended to support the NHS to overcome its operational challenges, as well as improve the health and wellbeing of the populations it serves. The first is a ‘duty to collaborate’, which dismantles the previous internal competitive market and applies to all NHS organisations and Local Authorities. The second is for delivery of a “Triple Aim” of improved population outcomes; improved quality of care; and the best value, sustainable use of NHS resources.

There is clear alignment within literature between these legal duties, and with the key components of VBHC as an approach to deliver these legislative requirements, and interviews with key NHS leaders confirmed their agreement that at a local ICS level, VBHC is viewed as the solution required. Although the research found there is differing language being used to describe value in the NHS in England, including VBHC itself, stewardship and at a policy level the Triple Aim, the definition of each was broadly the same amongst those interviewed.

Locally, leaders want longer term, systemic change as opposed to what they are often being asked to do from a national, strategic perspective which feels like “quick solutions” to access, demand and capacity issues, often focussed on cost (with the language of productivity and efficiency used frequently) but not outcomes and quality. The go-to NHS response to diminishing resource coupled with increasing demand

over the past decade has been cost improvement programmes (CIPs). CIPs are however a perverse incentive, creating a volume driven approach in which activity and cost are not only the key metrics but are also rewarded, and where costs are cut without considering the impact of this on quality and outcomes. A recent national survey of ICS leaders on the progress of ICSs since their establishment a year ago corroborates this, with leaders saying a short-termist government approach is dragging ICSs into more immediate operational priorities, and away from focussing on the long-term shift required for integration, equity of outcomes and prevention (NHS Confederation, 2023b).

Where systems are beginning to implement VBHC approaches, they have started by segmenting their populations, and organising care around medical conditions or population cohorts, and where possible, measuring outcomes and cost across a whole continuum of care. Others have been working to ensure quality and outcomes are considered within traditional cost improvement programmes. Culture change is considered particularly important to implementing value-based approaches, with all those interviewed identifying a culture of “stewardship” amongst clinical leaders as key, by using the language of value to teach clinicians about finance, then working together with finance and analytics colleagues to make decisions on use of resources in care model redesign.

Key barriers to further progressing the implementation of VBHC approaches as a solution for ICSs challenges were identified, with the greatest barrier being the inability to understand accurate patient level costs across a full cycle of care; there was however less concern about outcome data. Kaplan and Porter (2011) consider the root of the incentive problem in health and care to be the inability to properly measure cost compared with outcomes.

The issue around the ability to collect and use cost data is compounded by poor legacy IT infrastructure and a lack of linked up data to inform decision making. In particular, access to accurate total cycle of care cost data from multiple organisations onto a single platform for data visualisation, analysis and reporting, meaning decisions are made with incomplete or inaccurate data, or sometimes on instinct. This is a clear link to the academic thinking on VBHC (Porter and Teisberg, 2006), where enabling IT and data infrastructure, as well as BI, analytics, modelling and forecasting underpins value-based approaches through providing the right kind of data to drive decision making through stewardship, as a powerful lever for cost reduction linked to improved outcomes.

Where ICSs are considering resources across population or condition groups, financial governance mechanisms to support this (such as delegated budgets and responsibilities from ICBs to provider collaboratives) are not currently in place to enable genuine ownership of resource. The knock-on effect is it is then difficult for value-based systems to mature further, and progress effective whole system change (both at a strategic planning level and a service delivery or intervention level). This makes it more difficult to argue against quick planning decisions at a national and system level, for example on waiting list or running cost reductions, without the mechanisms required to give full stewardship for value-based decision making.

The findings of the research show NHS partners see a space for deployment of support to overcome these barriers at scale, in particular as they often face the added challenge of not having the capability and / or capacity to do this themselves.

6.2 Value-Based Innovation in the NHS

Innovation as a concept and approach is not new, and although in other industries it is often linked to gaining competitive advantage, in the NHS, research and innovation is increasingly being linked to opportunities to improve services as well as patient outcomes. As such it is can be viewed through the lens of, and included in the language of value.

The research findings show (positively) there is a growing body of evidence on the barriers to innovation (funding, capacity, digital maturity and culture), and as a response to this, as well as due to the inclusion of a commitment to innovation in the NHS Long Term Plan (NHSE, 2019), organisations and networks have been established with the specific remit of supporting the development and adoption of innovation in the NHS.

At the forefront are the Academic Health Science Networks (AHSNs) (AHSN Network, n.d.b.) and the NHS Accelerated Access Collaborative (AAC) (NHSE, n.d.b.) acting as enablers and integrators by providing some of the conditions required for successful innovation in the NHS. In particular they focus on bringing together diverse partnerships and collaboratives, including bringing patient or population representatives,

national bodies representing professional groups, academic institutions and technology companies into an innovation ecosystem alongside NHS partners. They are also thought leaders on the NHS's needs, both locally, and from a national policy opportunity context, using this knowledge to inform solution development. AGEM Staff surveyed consider innovation and bring responsiveness to customer needs amongst AGEM's key strengths.

Fostering partnerships to deliver greater value through collaborative change is key; large or highly innovative change is often too complex for a single organisation to achieve independently, as they cannot hold all knowledge, competencies and skills required (Gray, 2016; Curley & Salmelin, 2013). Likewise, although the Health and Care Act 2022 includes a new duty to collaborate, many believe this alone will not lead to success, and effective system wide collaboration will require further facilitation (NHS Confederation, 2021). AGEM can learn a lot from organisations such as AHSNs and the AAC as it establishes its Innovation Function and should seek to work collaboratively with them, or even form more formal partnerships.

When innovating for value, there should be some flexibility in defining the value proposition based on the specific needs of the type of innovation or change, or likewise the organisation or system in which it is being developed and / or implemented. Somethings must however remain constant and those are measuring impact on clinical outcomes, personal outcomes and experience and cost benefits. The AHSN network and the NHS Innovation Service have both produced resources to support innovators and systems to define their value propositions to include the above factors (NHS Innovation Service, n.d.b.), as have Deloitte in a joint piece of analysis with the United States Network for Excellence in Health Innovation (NEHI) focussed on value-based medical innovation delivery (Deloitte, 2016).

There is therefore excellent evidence of best practice for AGEM to build upon with its new innovation function to ensure it is one that innovates for, measures and demonstrates value to the NHS.

7 Conclusion and Recommendations

7.1 Innovating for Value at NHS Arden & GEM

This section concludes the research by fulfilling its third objective, providing a set of recommendations for how AGEM's

Innovation Function should operate to effectively support the organisation's customer's needs and innovate for value.

7.2 Recommendation 1: Prioritising Value Innovations Based on Customer Need

The work of AGEM's Innovation Function should always start from understanding its customer's needs, both at a local level (through a systematic approach to stakeholder engagement and needs analysis) and through horizon scanning and keeping at the forefront of national policy and guidance, so that AGEM is responsive to the NHS's needs through its innovation,. This should therefore be forefront of the very first phase of AGEM's Innovation Framework (see below).

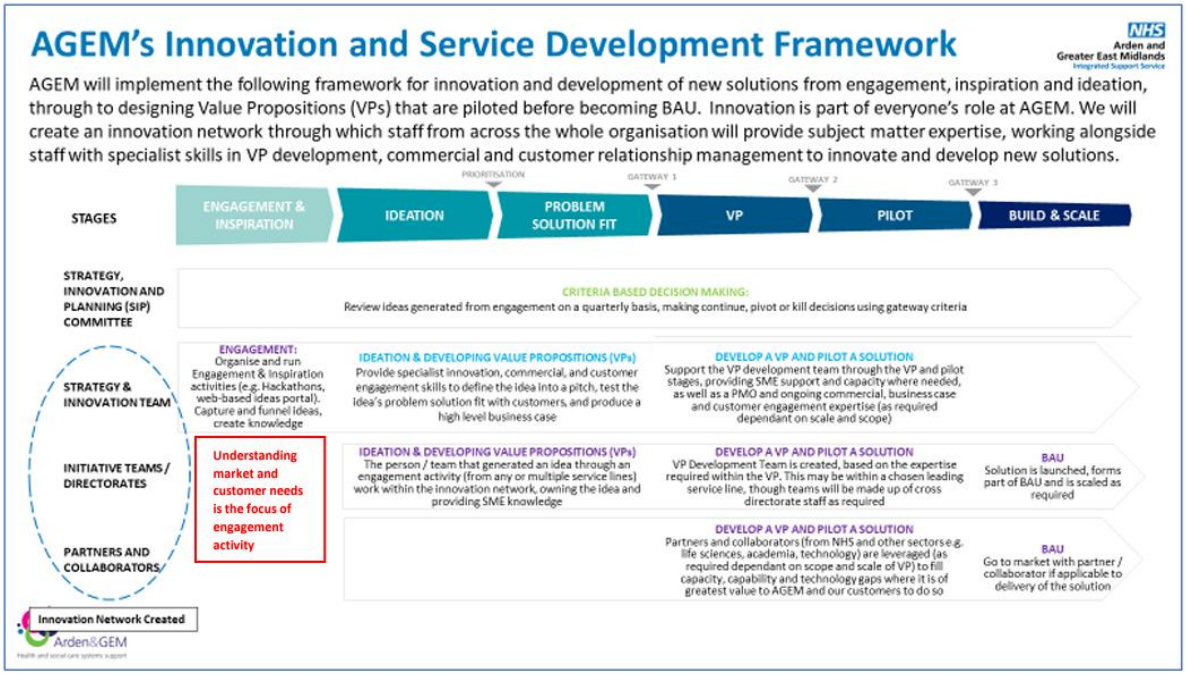


Figure 5. AGEM's Innovation and Service Development Framework.

Both external (customer) and internal (staff) stakeholders were unanimous on what the current priority needs on which value-based innovation should focus are, and these are aligned with the principles of VBHC (Porter & Lee, 2013). The two main needs identified are for services that address data, analytics and intelligence immaturity to support value-based change, as well as leadership, OD and culture change programmes developed and delivered by a team with specialist VBHC expertise.

7.2.1 Data, Analytics and Intelligence for Decision Support

Innovation should focus on both the development of an integrated data platform or system, as well as the specialist capabilities required to analyse and use data to drive value-based decision making. This should include systems and infrastructure models for integrating and linking person level data and intelligence, as well as developing data visualisation solutions, such as decision support tools that provide a "single source of the truth" for both the commissioning of services, and for service and intervention redesign. AGEM staff recognise the organisation already has strength in this area through access national data sets such as the National NHS Commissioning Data Repository

(NCDR) (NHS Arden & GEM, n.d.b (a)) and its analytics and PHM tools, in particular Athena, a strategic data and analytics platform (NHS Arden & GEM, n.d.b (b)).

Data is the foundation for value-based approaches to redesigning health and care services, in particular, the ability to collect, analyse and use person level cost data across a whole cycle of care, so as to accurately inform the allocation of resources for value was seen as a key need. Importantly there is a need to focus innovation activity on patient level costing solutions, linked to patient outcomes, that can then be used to inform the development of further solutions such as frameworks for outcome-based commissioning or contracting for population or condition groups.

7.2.2 Leadership, Operating Model and Organisational Development

Secondly, the innovation function should focus on the development of new leadership and organisational development programmes that enable integration and the adoption of VBHC through the implementation of new operating models, governance, behaviours and ways of working. In developing and delivering these programmes, OD and change expertise should be coupled with specialist VBHC expertise in population and patient level finance and costing; health economics; public health; clinical specialists; advanced analytics; data scientists; and citizen engagement expertise.

Of particular focus should be programmes for clinical leaders, bringing them together with finance, operational and analytics leads to develop their understanding of finance (cost and outcome data) to drive decision making on resource allocation and service redesign. Operating model redesign programmes should focus on enabling integration of multiple organisations within an ICS, as well as between ICBs (commissioners) and providers who may be at different levels of maturity around a shared vision aligned to VBHC, to ensure a top-down commitment to change. They should also include the design and delivery of new governance models that enable delegation of financial resource and provide genuine stewardship to those designing and delivering care.

7.3 Recommendation 2 – Collaborating for Innovation

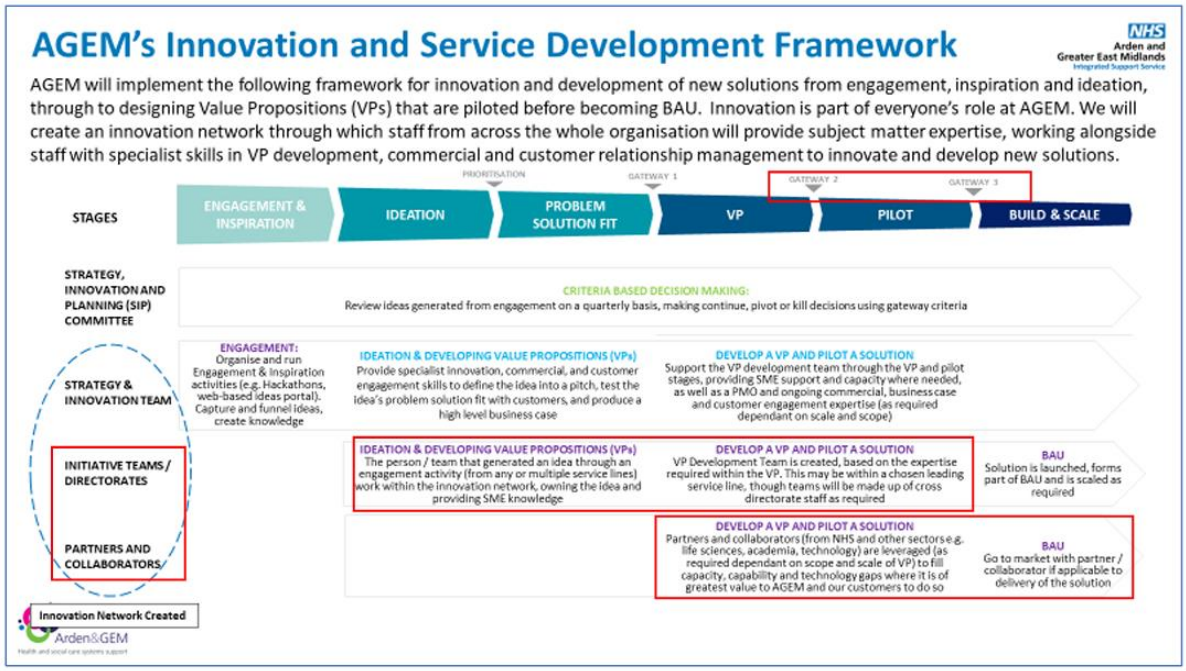


Figure 6. AGEM's Innovation and Service Development Framework.

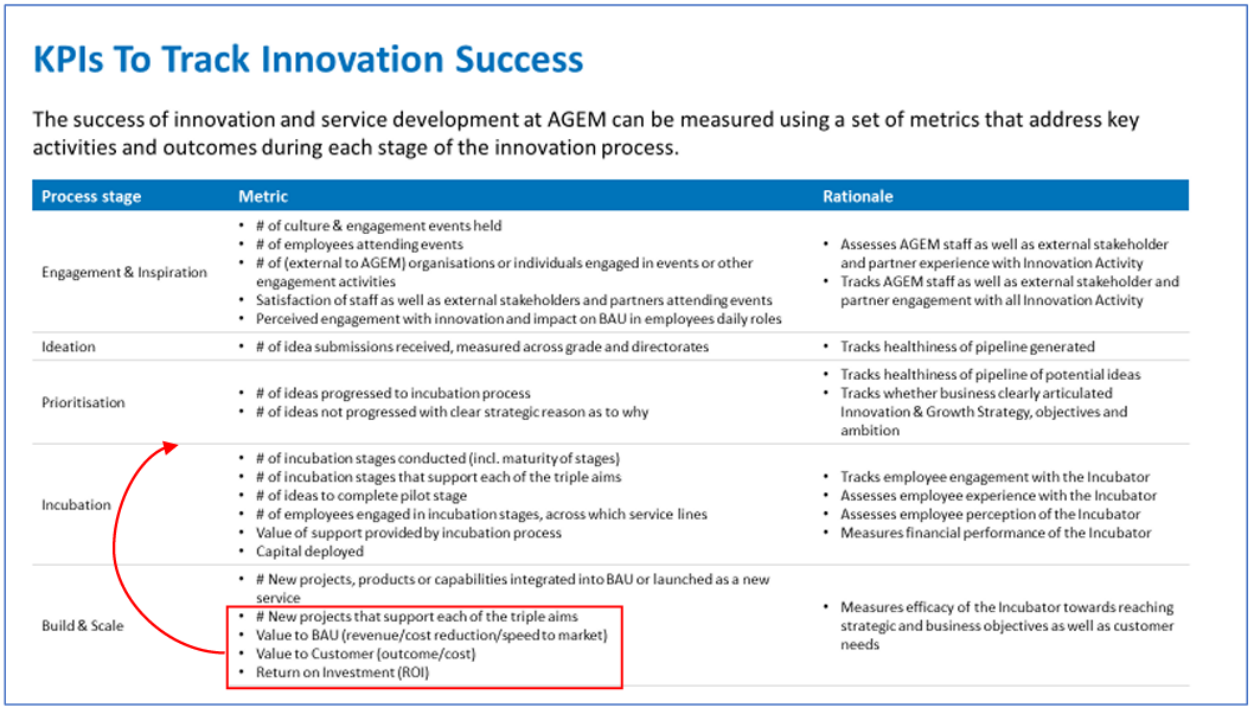
AGEM's Innovation Framework comprises of six innovation phases as well as three gateway stages at the latter end of the framework through which ideas progress to become value propositions, pilots and then finally to be delivered and scaled. Collaboration, both in terms of bringing together multi-specialist teams from across AGEM's service lines, as well as seeking collaborative partnerships with other organisations is already a key feature of the innovation process (see figure above). The research confirms one of the key barriers to innovation in the NHS, and an identified support need, is access to resource (both funding and people capacity) and specialist expertise to undertake innovation – both of which AGEM has and must leverage through the assembling of multi-specialist innovation teams.

A needs assessment for collaboration or a formal partnership with other organisations, for both development and delivery of new service innovation is built into the governance process as part of gateways 2 and 3. This may include with other HSSOs, with wider health and care system partners, AHSNs, LAs, population representatives and service users, community organisations or with technology or life sciences organisations. The Innovation Function should also create the conditions required to bring together multiple capabilities and potential partners to drive innovation. One model for achieving this is Open Innovation 2.0 (OI2) which is based on multi-disciplinary collaboration around a shared vision and commitment to collaborate, and includes a commitment for service user representatives to participate in innovation at the appropriate point (stage gate) in the process (Curley & Salmelin, 2013).

7.4 Recommendation 3 – Value Measurement

Innovations need to have a clear and unambiguous advantage that is evidenced through appropriate metrics, and when innovating for value, these must always include measuring outcomes and quality and

their link to cost. AGEM's Innovation Function has already begun to define its KPIs to track success, including the need to measure value to its customers (see figure below).



KPIs To Track Innovation Success

The success of innovation and service development at AGEM can be measured using a set of metrics that address key activities and outcomes during each stage of the innovation process.

Process stage	Metric	Rationale
Engagement & Inspiration	• # of culture & engagement events held • # of employees attending events • # of (external to AGEM) organisations or individuals engaged in events or other engagement activities • Satisfaction of staff as well as external stakeholders and partners attending events • Perceived engagement with innovation and impact on BAU in employees daily roles	• Assesses AGEM staff as well as external stakeholder and partner experience with Innovation Activity • Tracks AGEM staff as well as external stakeholder and partner engagement with all Innovation Activity
Ideation	• # of idea submissions received, measured across grade and directorates	• Tracks healthiness of pipeline generated
Prioritisation	• # of ideas progressed to incubation process • # of ideas not progressed with clear strategic reason as to why	• Tracks healthiness of pipeline of potential ideas • Tracks whether business clearly articulated Innovation & Growth Strategy, objectives and ambition
Incubation	• # of incubation stages conducted (incl. maturity of stages) • # of incubation stages that support each of the triple aims • # of ideas to complete pilot stage • # of employees engaged in incubation stages, across which service lines • Value of support provided by incubation process • Capital deployed	• Tracks employee engagement with the Incubator • Assesses employee experience with the Incubator • Assesses employee perception of the Incubator • Measures financial performance of the Incubator
Build & Scale	• # New projects, products or capabilities integrated into BAU or launched as a new service • # New projects that support each of the triple aims • Value to BAU (revenue/cost reduction/speed to market) • Value to Customer (outcome/cost) • Return on Investment (ROI)	• Measures efficacy of the Incubator towards reaching strategic and business objectives as well as customer needs

Figure 7. KPIs to track Innovation Success.

The Innovation Function should also measure value earlier than at the build and scale (i.e. go to market) stage, so that value can be evidenced, and if needed improved, during the development and testing of new services. In all future innovation, success and impact measures may be flexible relevant to service specific or local needs, however AGEM should ensure that measuring clinical outcomes, personal outcomes and cost-benefits are mandatory.

Finally, the results of this measurement should form an observable evidence base, disseminated through different channels and mediums for different audiences such as business cases, practical case studies and peer reviewed papers to ensure transfer of knowledge and learning. This is key to effectively communicating the value of innovation to customers, bringing the innovation process full circle as it begins with understanding the customer's needs, and ends with a clear demonstration of how a service innovation has met those needs.

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Inform service redesign and demonstrate how VBHC, can be used to enhance well-being for the individual and population: 'Reablement place-based approach supports delivery of Value-based Healthcare'

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Abstract:

The project aimed to implement a place-based reablement approach within Nevill Hall Hospital (NHH) for Monmouthshire patients. By enhancing relationships between Monmouthshire Integrated Services (MIS) staff and the Acute Medical Unit (AMU) and ward staff within NHH, the project has supported positive risk-taking and facilitated successful discharges back to the community. With patient flow managers to support the collocating of Monmouthshire residents where medically appropriate they were transferred onto a dedicated ward within NHH as an integrated delivery unit. This approach was anticipated to have enhanced the patient's experience, improved individual well-being, and contributed to a more sustainable and efficient delivery of care and support.

The implementation of this approach has benefited Aneurin Bevan University Health Board (ABUHB) by ensuring better patient flow and reducing the risks associated with extended hospital stays, such as deconditioning and infection. From Monmouthshire County Council (MCC) perspective, individuals received appropriate reablement and short-term care upon discharge, enabling more effective management of long-term needs and optimising the allocation of the care budget. Following up in the community with designated therapy and reablement staff with whom the patients are familiar improved confidence of the individual and the competence of the staff to support positive risk taking.

Before applying this to ABUHB and MIS, it is key to explore the development and understanding of both reablement and place-based working in the national context and in relation to VBHC. It is also important to explore the rational for where possible, collocating Monmouthshire patients onto a designated ward.

An action research and case study methodology were used to drive change and promote engagement across the teams involved in the delivery of the acute sector and MIS, allowing the project to focus on real life context and improvement in delivery of the service, which is pragmatic, through allowing clinicians to assist in the implementation and development.

Consent to complete the work-based development project has been gained from ABUHB and MCC and is considered to be within the remit of quality improvement and service development rather than research in terms of the ethical considerations as confirmed NHS Health Research Authority, which can be found in the appendix 1-3.

The body of the text will explore why the project was implemented in the context of the current local and national strategies, and how implementing a reablement place-based approach has had a positive impact on reducing the length of stay and the patient experience, using both qualitative and quantitative data collection.

Keywords: VBHC, Reablement, Patient Experience.

Table of Contents

1 Identification of Project Requirements and its complexities

Developing place-based partnerships is recognised as a method for enhancing integrated care systems as documented by The Kings Fund (2021) and the Welsh Government's long-term plan to build sustainable communities and enhance wellbeing, as a mechanism to improve individual and thereby population wellbeing as outlined in: A Healthier Wales: our plan for Health and Social Care (Welsh Government, 2021).

The project aims to utilise a pull model using a place-based reablement approach to improve the overall experience and well-being of Monmouthshire patients receiving secondary care within NHH. “Reablement is a strengths-based, person-centred approach that promotes and maximises independence and wellbeing. It is seen as a mechanism to:

- Promote faster recovery from illness.
- Prevent unnecessary acute hospital admissions and premature admissions to long-term care.
- Support timely discharge from hospital.
- Maximise independent living and reduces or eliminates the need for an ongoing care package.

(Social Care Institute for Excellence, 2020)

By establishing and strengthening relationships between the MIS staff and secondary care staff within NHH, this initiative aims to facilitate effective support for positive risk-taking and enable successful transitions back to their normal place of residence. The goal is to enhance the patient's experience using a strength based [collaborative/care aims] approach, using joint decision making around health and care interventions, and promote the well-being of both individuals and the broader population of Monmouthshire.

Implementation will facilitate the implementation of our strategic drivers such as the six Goals for Urgent & Emergency Care (Welsh Government, 2021b) and Placed Based Care set out in the Integrated Services Partnership Board [ISPB] Monmouthshire Integrated Medium-Term Plan (IMTP) (Monmouthshire Integrated Services Partnership Board, 2023) and Welsh Government Building Capacity through Community Care – Further Faster strategy (Welsh Government, 2023).

By using a value-based healthcare (VBHC) model it enables us to consider the impact of equitable, sustainable, and transparent use of the available resources to achieve better outcomes and experiences for the people Monmouthshire in the context of both the individual and population rather than purely focusing on the bottom line. This will enable the delivery across the four domains of VBHC: Personal value, technical value, allocative value, and societal value as depicted in figure 1.

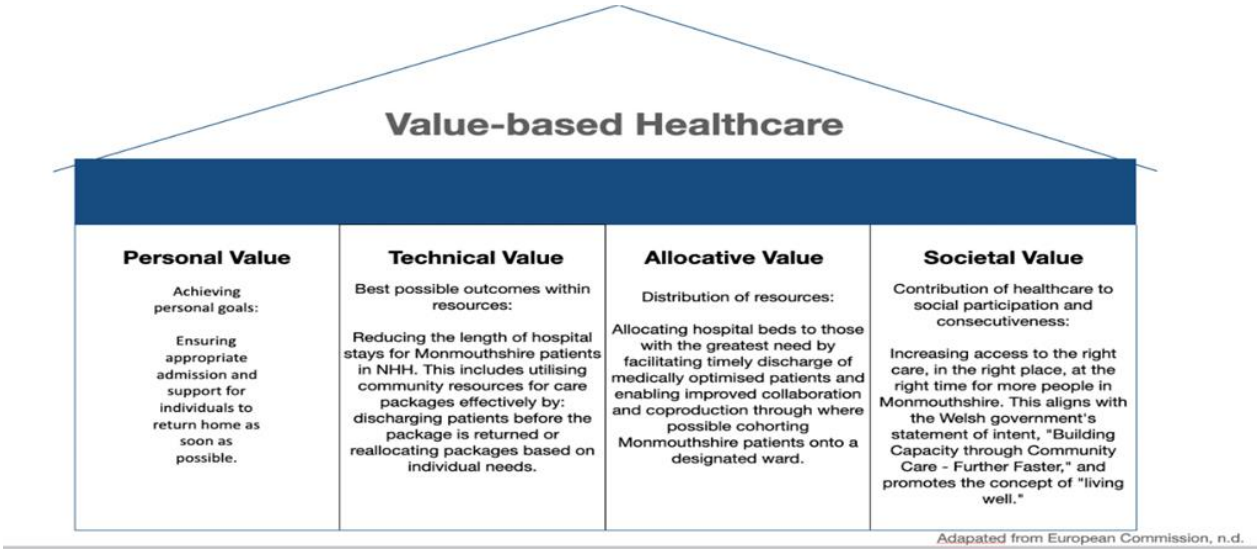
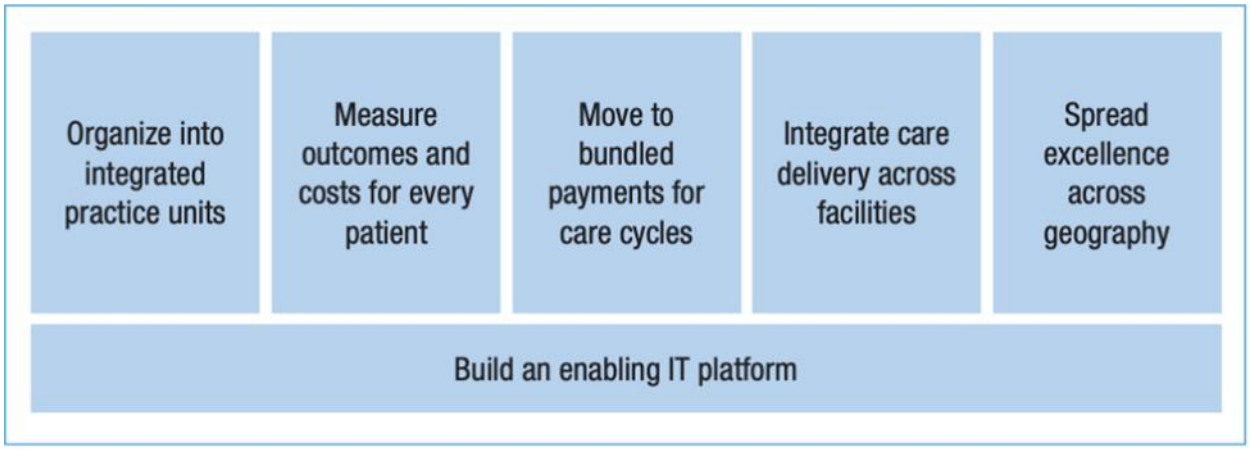


Figure 1. Adapted from European Commission, n.d.

It is well recognised that by collocating patients, healthcare providers can better manage resources, reduce the risk of cross-infection, and provide specialised care tailored to the specific needs of the patient group in

relation to specific diagnoses. However, this project aimed to establish whether collocating Monmouthshire residents who have generic/multi-pathology diagnoses i.e., they do not require specialist medical input from for example respiratory, neuro, stroke teams and have the need for lower-level rehabilitation in the form of reablement to enhance function in preparation for home would reduce the length of stay and enhance the patient experience.

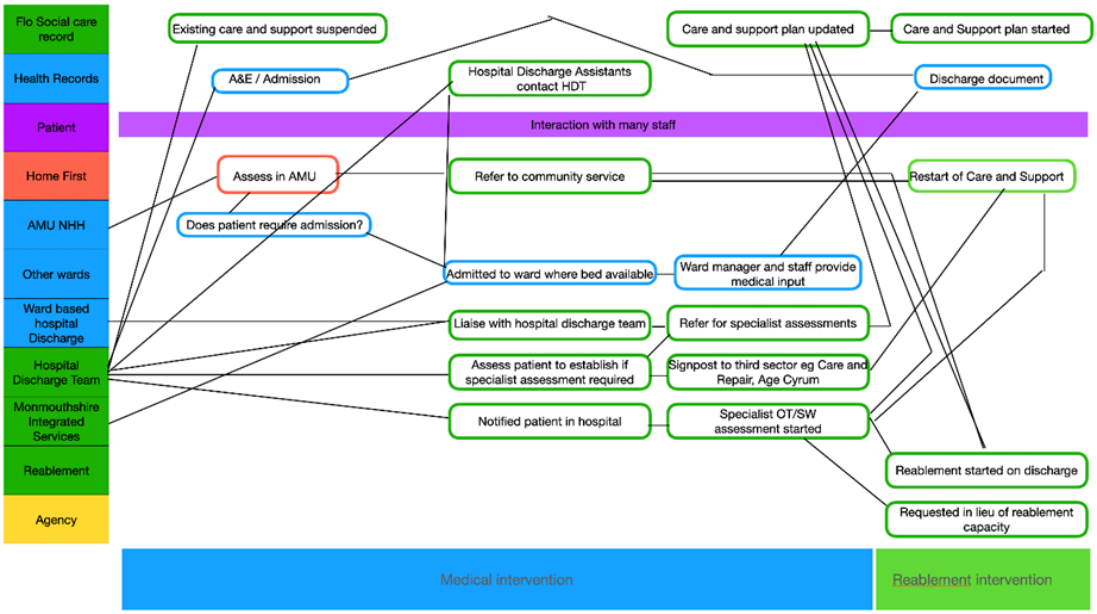


(Dobbs & Warriner, 2018. Adapted from Porter and Lee, 2013)

Figure 2. The five basic principles of value-based healthcare delivery.

Dobbs and Warriner describe the delivery principle of VBHC as being organised into integrated practice units whereby “all the patient’s needs are met at one location with clinicians being arranged around conditions and at the convenience of the patient rather than the traditional model of discrete individual clinical silos at the convenience of the physician.” This approach allows streamlining the delivery of their care and provides more effective and efficient delivery to meet the patient's needs. This would enable the implementation of Monmouthshire Integrated partnership key priorities “To support older people to live or return following a period of hospitalisation, to their own homes and communities through early intervention, integrated care models and a whole system approach.” (Monmouthshire Integrated Services Partnership Board, 2023). The project board agreed to simulate this approach by where appropriate collocating Monmouthshire residents onto a designated ward within NHH, integrating the delivery of care and support between ABUHB and MIS as previously identified as an action to meet its Integrated Medium-Term Plan 2023 –2026. (Monmouthshire Integrated Services Partnership Board, 2023)

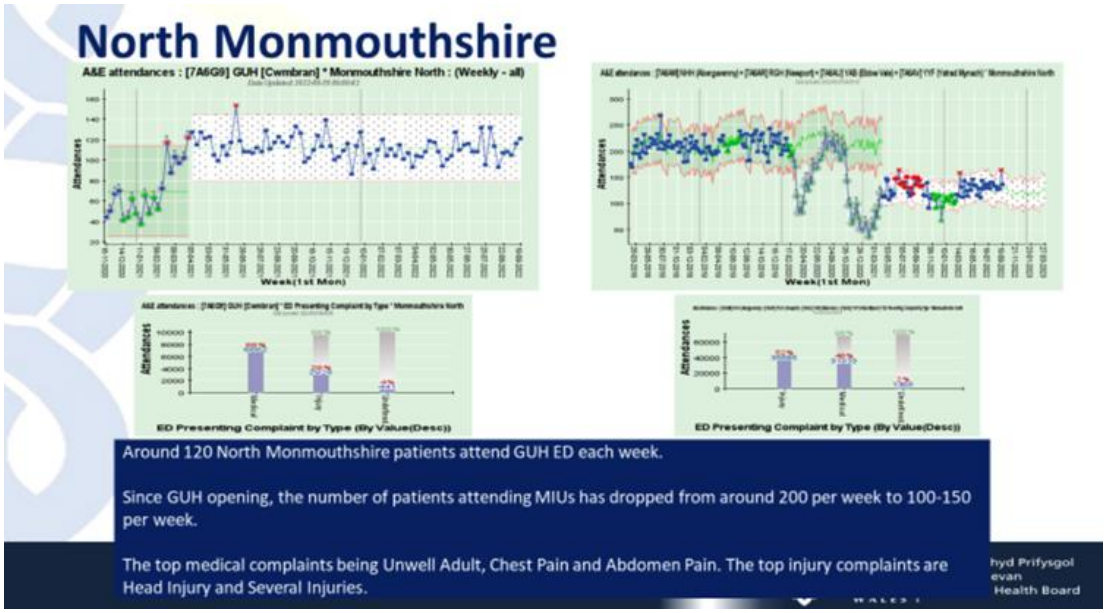
The Monmouthshire Hospital Discharge Team has successfully utilised a pull model approach to discharge planning in NHH for more than fifteen years, whereby all residents presenting at NHH are seen and MIS do not wait for referrals. However, it is important to acknowledge that the landscape has evolved over time, especially since the opening of Grange University Hospital (GUH), impacting the type of patients within NHH and the staffing structure within the hospital. The introduction of hospital discharge assistants and a more active approach to patient flow has brought about changes in the dynamics and processes of discharge planning. Therefore, the current model of delivery of the discharge service within NHH can appear disjointed as depicted in swim lane diagram, figure 3.



(Authors own)

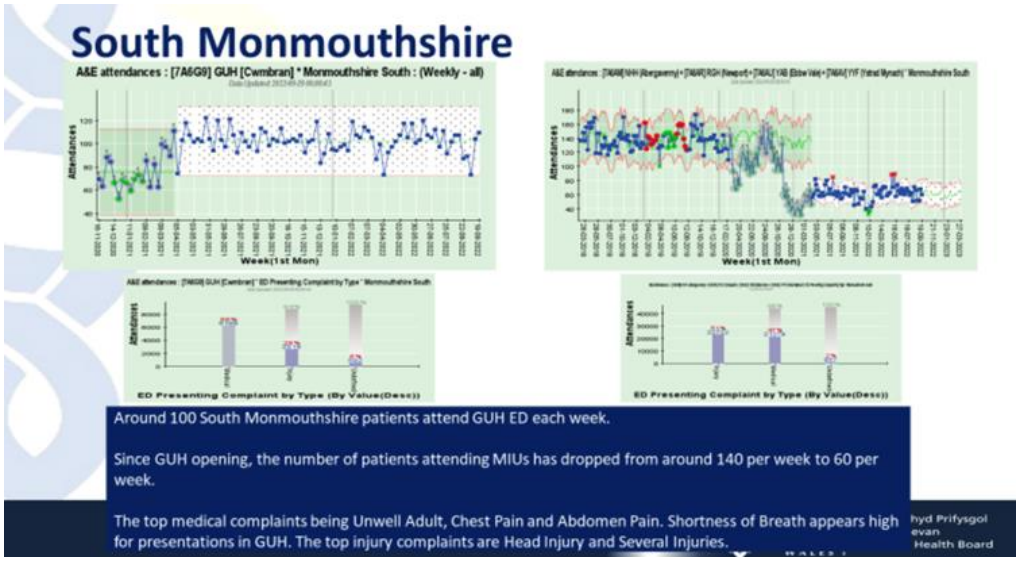
Figure 3. Swim Lane diagram depicting model of delivery, showing patient and teams involved.

Based on the review of baseline data found in figures 4 and 5 around length of stay, and outstanding levels of care need which was completed in conjunction with senior managers across ABUHB and MCC in Autum 2022 it was established that the current demand is unsustainable with 220 Monmouthshire accident and emergency (A&E) attendances. There needed to be improved mechanisms for communication and information sharing across the acute, and primary and community care. The review of relevant literature and policy drivers support the rational for the implementation of the Monmouthshire Integrated NHH discharge model.



(Aneurin Bevan University Health Board, 2022)

Figure 4. North Monmouthshire A&E weekly attendance March to September 2022.



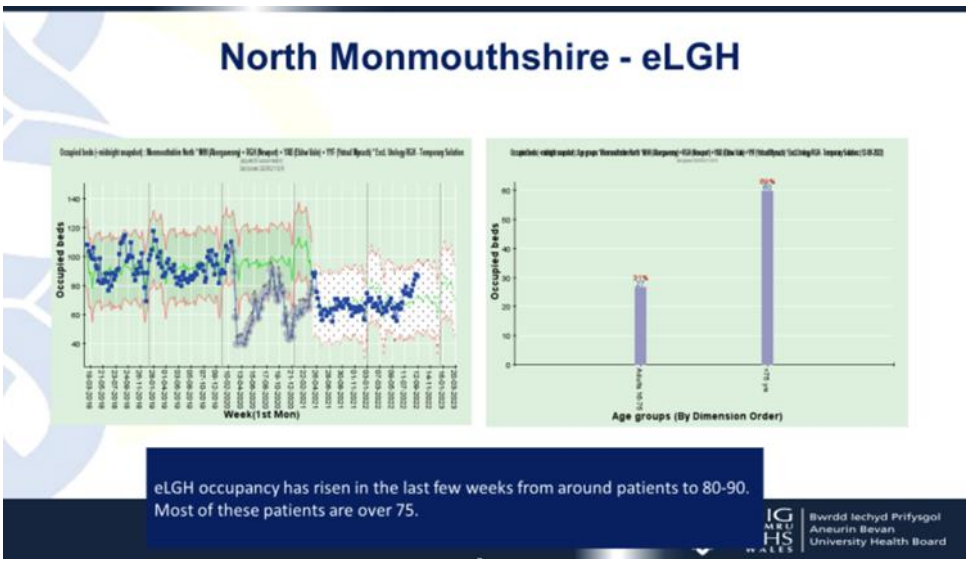
(Aneurin Bevan University Health Board, 2022)

Figure 5. South Monmouthshire A&E weekly attendance March to September 2022.

Since opening Grange University Hospital (GUH) the attendance at the medical injuries units has dropped in the North from 200 to 100-150 a week and in the South from 140 to 60 a week. Although the number of attendees at the highly specialist A&E center has increased from across Monmouthshire to around 220 a week. Those who do attend A&E the majority are in the correct place as they are presenting with complex medical injuries/events that require A&E e.g., chest pain, abdominal pain, head injury and multiple injuries, rather than with minor injuries.

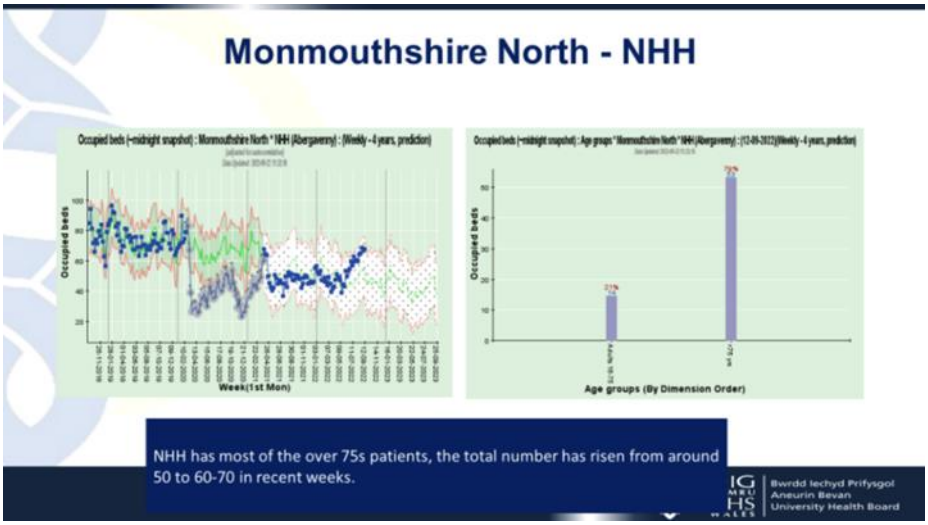
This study will focus on residents from the North Monmouthshire Neighbourhood Care Network (NCN), as the majority pf people in the north are typically admitted to NHH as their enhanced local general hospital (eLGH). In contrast, those from the South NCN usually go to the Royal Gwent eLGH.

The numbers of people being admitted once they have attended A&E or minor injuries or directly to the eLGH Assessment Medical Unit (AMU) or stepped down from Grange University Hospital (GUH) has increased and this rate is not sustainable, and there are a significant 69% of these patients are over the age of 75 as shown in figure 6.



(Aneurin Bevan University Health Board, 2022)

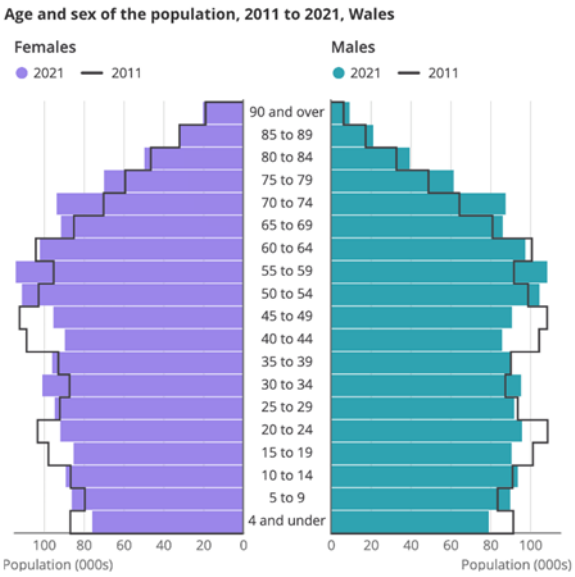
Figure 6. Number of Monmouthshire people in ABUHB Local General Hospitals.



(Aneurin Bevan University Health Board 2022)

Figure 7. Number of Monmouthshire people admitted to Nevill Hall Hospital.

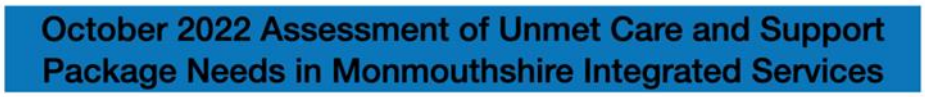
The number of people over 75 years in NHH accounts to 79% as shown in figure 7, which given the future demographics is likely to increase over time as the number of older people in the population increases. The over 65's in Monmouthshire accounted for 25.8% of the population in the 2021 census which has increased across the upper age groups as shown in Figure 8. It also indicates a drop in the number of working populations which impacts on the availability of staff to provide health and care interventions. (Office for National Statistics, 2022)



(Office for National Statistics, 2022)

Figure 8. The trend for population across Wales from 2021 Census.

Due to their multi-pathology and frailty of the over 75-year-olds they often necessitate needing support on discharge. The harsh reality of remaining in hospital too long without the appropriate allocation of intervention and failed care pathways is demonstrated in the Health Service Journal where Mrs. Andrew's, ended up requiring a 7 week stay in hospital and never returned home whereby people is demonstrated in the Health Service Journal (Case Study: The Harsh Reality and What Should Have Happened to Ensure the Best Care Pathway, 2014) The alternative pathway recommends timely intervention, where possible this should be outside the hospital through community intermediate care services, which could include reablement.



Place	Count of Pid	Sum of Wk Hours
Abergavenny Integrated Services	13	118
Chepstow Integrated Services	43	647
Monmouth Integrated Services	76	693
Older Adult Mental Health Team	3	32
Carers	1	5
Grand Total	134	1,466

(Author's own)

Figure 9. October 2022 Outstanding assessment of unmet care and support package needs in Monmouthshire depicted by place/team.

This current demand for care and support within Monmouthshire is escalating at an unsustainable rate, leading to several challenges within the health and care sector. Figure 9 shows there were a total of 1,466 unmet need hours for care and support packages in Monmouthshire in October 2022, broken down by area. Of these outstanding hours 548 hours relate to 30 people as shown in figure 10, are medically optimised and assessed as being ready for discharge.

Type	Count of Pid	Sum of Wk Hours
a) In Reablement waiting for LTC	13	112
b) No Care at Home waiting for LTC	65	493
c) In Hospital ready for Discharge	33	548
d) Change of Care and/or Agency	11	110
e) In Care Home waiting to go home	2	30
f) In Hospital not fit for discharge	3	40
g) Step Closer to Home (ABUHB)	5	110
h) In Community change of care and/or agency	1	11
j) In Hospital waiting for Reablement	1	12
Grand Total	134	1466

(Author's own)

Figure 10. Outstanding care needs based on status/place of waiting October 2022.

Whilst the Monmouthshire hospital discharge Liaison service has endeavored to bridge the gap between community and acute services there is often an inefficiency between communication and information sharing as the two entities have a different focus. The community is focusing on getting discharged right and the acute sector is looking to clear its beds, which hinders a strengths-based approach and effective risk mitigation for individuals. The provision of intervention is primarily reactive rather than preventative, resulting in delayed transfers of care and impacting patients' overall well-being. The sectors focus on supply rather than the management of demand, which exacerbates the strain on resources, leading to increased wait times, and longer lengths of stay, increasing the cost to ABUHB and MCC.

These problems highlight the need for a comprehensive approach to address the growing demand for care and support in Monmouthshire to enable a reduced length of stay for patients particularly in NHH. Teisberg et al. (2020) highlights that by focusing on the patients' health outcomes, can achieve better outcomes overall and look to ensure efficient if not potentially lowering costs. This project aims to focus staff involved with NHH patients to listen to understand what matters to the individual rather than imposing a service led risk adverse approach. So instead of "Mrs X cannot go home without a full care package," we can work with

the individual and their families to ascertain their strengths, networks, and assets they have access to support them to live well and facilitate earlier discharge planning, avoiding the need for longer lengths of stay in hospital.

Traditionally, the reablement aspect of service has typically been associated with post-discharge care, in individuals' own homes. However, due to the increasing demands on reablement services and the limited capacity for long-term support across Wales, the project believed that by enhancing reablement while patients were still in the hospital, it could improve their function and reduce the need for support upon discharge. Historically, the inpatient rehabilitation service has been provided by therapists and focusing on therapeutic goals which may not be the patient's focus and typically in ABUHB provided in the community hospital. Therapists in the acute sector provided an assessment for discharge service, often leading to patients being quickly discharged off caseloads only to deteriorate as their stay in hospital lengthened. Therefore, the project would realign the reablement ethos onto the Monmouthshire ward across all staff and greater collaboration between the reablement staff who would in reach into the ward.

Communication and information sharing, across community and acute sectors can be challenging as they operate within different systems and have differing priorities. Collocating Monmouthshire residents will enhance patient experience, improve well-being, and achieve a more sustainable and efficient system through building more sustainable communities, ensuring both personal and societal value can be improved. Allowing for better risk mitigation with individuals and more efficient delivery of care by the acute sector to those in greatest need which is in line with the principles of both Prudent Health Care (Bevan Commission, 2015) and VBHC. Porter (2010) recognises the need for utilising change management as part of VBHC and this is reflected throughout this project through the engagement events and workshops across the partnership to complete the initial gap analysis, senior leadership meetings and moving towards engagement between key MIS and ward staff who are key to understanding the real-life context and the implementation.

The driver diagram in figure 11 represents the strategy for change and the steps required to implement the project's aim. The secondary drivers demonstrate how the interventions relate to the four domains of VBHC. The improved systems of work contributing to the enhanced development of integrated care delivery, through timely intervention enhancing allocative and technical value reducing the cost of the delivery by getting it right focusing on “What matters” to the individual in line with the Social Care and Well-being Act (Wales) 2014.

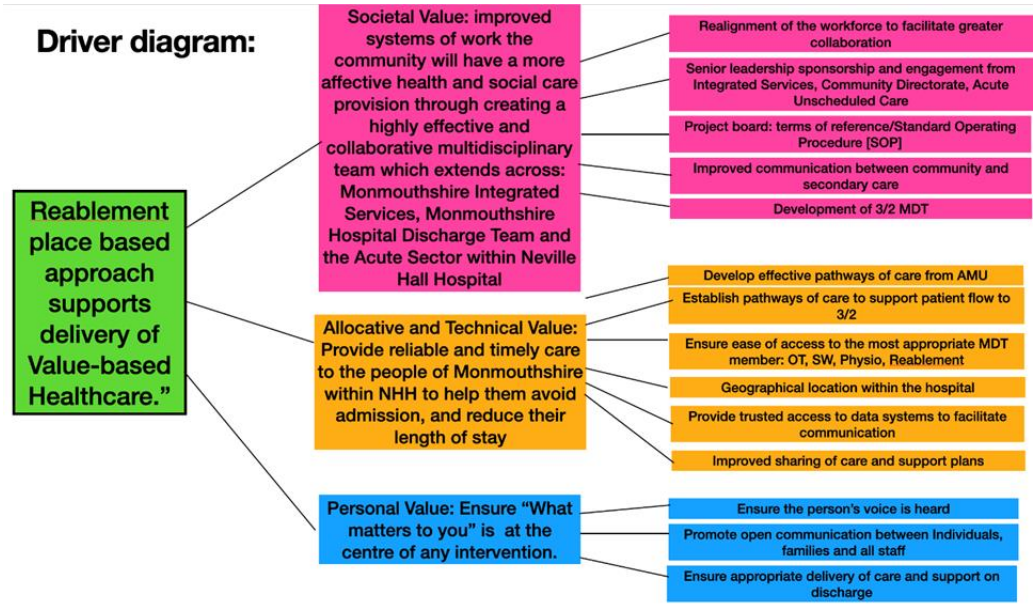


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Figure 11. Driver Diagram.

Given the complexity of delivering acute care in a reablement place based approach, focusing on peoples' strengths rather than deficits and the difference in culture across health and social care it is important to ensure effective stakeholder engagement throughout the project and develop a strong sense of purpose.

2 Key Stakeholders and accountability

Van Ingen et al., defined Organisational Purpose as: “an organization’s reason for being characterized by significance, aspiration, direction, unification, and motivation” (2021) and whilst the aspiration to improve well-being and discharge the people at the earliest opportunity remains a focus for health and social care the stakeholders ie ABUHB and MCC are governed via a variety of codes of practice and standards which can be regulatory: Social Care Wales (2022) and National Institute for Health and Care Excellence (NICE 2022) Social Care and Well-being Act (Wales) 2014 (Welsh Government 2015, as well as through codes of practice for the various professional bodies: British Medical Association (BMA), Royal College of Occupational Therapists (RCOTs), The British Association of Social Workers (BASW). Thus, the project needed to invest in ensuring not only that there was a common purpose but to build trust and a collective understanding between the stakeholders, acknowledging each other's pressures. This enables the development of empathy to support shared decision making.

Implementing VBHC across the ecosystem is already acknowledged by ABUHB as something that “takes considerable time, energy and effort” (Aneurin Bevan University Health Board, 2020) and needs to be clinically lead and outcome focused rather than imposed by the senior leadership team.

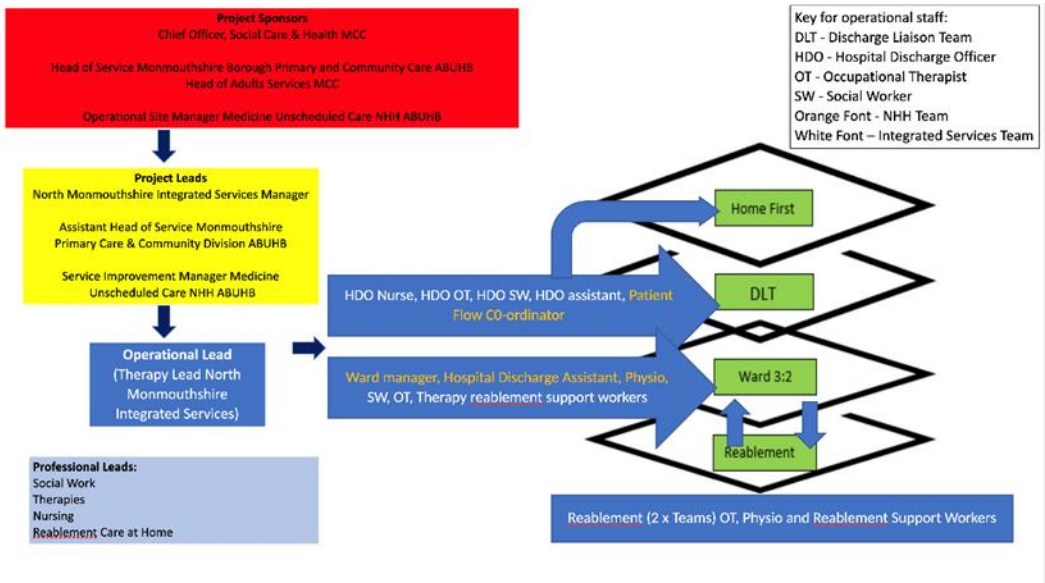

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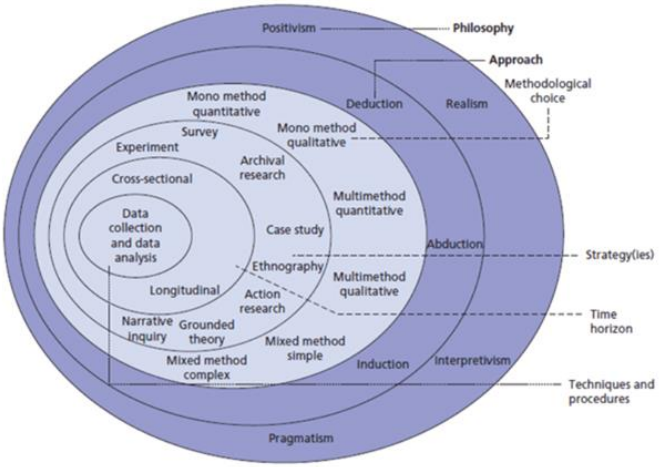
Figure 12. Project Structure depicting stakeholders involved.

Therefore, to maintain the project's focus, a formal project board was established with sponsors representing the key stakeholders as shown in figure 12 in social care and health, including community and acute divisions across MCC and ABUHB. The project board is the central decision-making body, providing guidance, oversight, and support to ensure the project aligns with the needs and the strategic priorities of all stakeholders. By including representatives from various sectors, the project board facilitates collaboration, communication, and shared decision-making, enabling a holistic and inclusive approach to addressing the challenges faced by the healthcare within NHH. A Standard Operating Procedure (SOP) was agreed, and regular monthly meetings, progress updates, and feedback mechanisms developed to ensure active engagement and participation to foster a sense of ownership and shared responsibility for the project's success. The involvement of the range of stakeholders contribute to the development of sustainable solutions that meet the diverse needs of the community, promote transparency, and enhance the overall effectiveness of the project.

3 Methodology

Sanders et al, (2015) used the theoretical concept of an onion to help structure research methodology as a mechanism to demonstrate the many layers involved in developing the appropriate methodology. It is well

recognised as a concept for research in social science whereby the different layers are used to symbolise the stages involved as depicted in figure 13.



(Saunders et al, 2015)

Figure 13. The Research Onion.

The outer layers relate to the philosophy and approach to be used, the focus for this project is on realism and pragmatism. The project aim being to inform service redesign and demonstrate how VBHC, can be used to enhance well-being for the individual and population. Through seeking to answer whether a "Reablement place-based approach supports delivery of VBHC" by incorporating operational engagement of clinicians to seek the answers to "what works best" to support quality improvement using a variety of techniques. The inner ring of the onion outlines specific strategies, time frames and techniques that could be deployed to prove the hypothesis. An outline of the methologies to be used is summarised in figure 14 including the benefits and disadvantages of these methodologies and reviewed in relation to the project.

Methodologies Summary using the Research Onion

	Action Research	Case study
Description/ Purpose	• A collaborative approach to problem solving which drives change involving a range of teams/staff as well as people who received inpatient care in NHH	• An in-depth study • Used to provide feedback and develop concepts/hypotheses
Approach	• Realism/Pragmatism	• Realism/Pragmatism
Method	• Qualitative and Quantitative	• Qualitative
Data Captured	• Empirical data	• Empirical data
Instruments used	• Observations • Interviews • Questionnaires • Review • Collection of patient stories	• Observations • Interviews • Questionnaires • Documentation reviews
Benefit	• Provides real life context and appropriate for elevating and improving delivery in real time • Researcher is an active participant as the operational lead therefore it encourages clinicians' involvement • Project board helped ensure stakeholder engagement	• Provides real life context. • Illustrative
Disadvantage	• Potential for researcher bias as they are active participants • Can add additional time to intervention • As operational lead a lot of time was spent on building relationships and developing rapport across the staff teams • Cultural differences in leadership across the sector • Data collection evolved through the project	• Consists of an individual researcher - "Potential for bias as researcher may be both participant and observer" This was reduced by not interviewing people where the interviewer was involved in providing therapy intervention • Time consuming number of interviews was limited
Application to research question	• Used to understand behaviour in real time • Allows testing of the technology in the community and population its designed to support • Not all aspects of the project are scaleable or relevant to be duplicated as Monmouthshire and NHH, as delivery area/unit is unique	• Used to understand patient and staff behaviours and measure impact of reablement place-based approach on the individual

Figure 14. Summary of methodologies to be used in the project using the research onion.

The data from the Autum 2023 service review (ABUHB., 2022) which lead to the project being included in the Integrated Services Partnership Board medium term plan 2022-26 (Monmouthshire Integrated Services Partnership Board, 2023) workshops identified that the current service delivery of acute care, and the health and social care and support services on discharge is not sustainable. It identified the potential need for

further integration, pace, to enable reduction in admissions and length of hospital stays to ensure the people of both Monmouthshire and the Greater Gwent Area covered by ABUHB could be met at the point of need. The need to engage with all staff across MIS and ABUHB involved in the delivery of assessment and intervention within NHH and supporting discharge planning was critical to the delivery of the project, particularly as they would be involved in the action research approach to establish whether "Reablement place-based approach supports delivery of Value-based Healthcare."

The evaluation framework was agreed at the project board, a copy of which can be found in the appendix 4 are summarised in figure 15. A key element of the framework was to improve staff experience therefore action learning approach used to encourage staff to think about the mechanisms that could be used to record the data and implement the plan. As with any service that is provided within a hospital environment it is difficult to get all staff together due to shift patterns, work pressures therefore key people were identified, and a communication strategy was established that encourage staff to enhance and develop their interpersonal relationships with one another to drive the change from an operational rather than strategic level. A key element of this was to ensure that "What matters" to the individuals is central to the delivery of interventions.

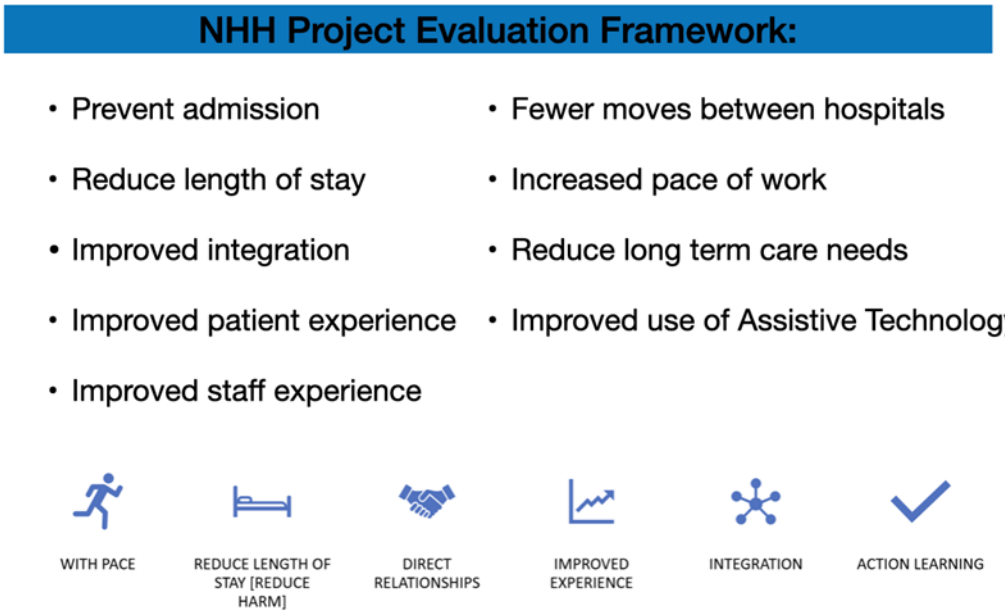


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Figure 15. "Reablement place-based approach supports delivery of Value-Based Healthcare" Evaluation Framework.

Due to the nature of data collection across ABUHB and MCC using various applications and being disparate in nature the team needed to work with data analysts from across both organisations, a specific dashboard for aspects of the project.

An action learning approach was chosen as an appropriate methodology to drive change and would involve the teams in the delivery of place-based reablement within NHH, MIS and the individuals in receipt of the service. This allows the pursuit of the change and development of the understanding in real-time, allowing for the refinement of the methods, data, and interpretation because of understanding the earlier development. Utilising action research empowers the teams to sustain the provision of necessary care and treatment for patients while facilitating workplace health and social care research through practice development. (Andrews et al., 2015) Implementing clinical trials or other methodologies would prove too challenging and jeopardize the essential level of service delivery within NHH. Alongside the action research, some case studies were captured to show the effectiveness of the changes in service delivery.

Each project board meeting and various aspects of the service delivery used the Plan Do Study Act (PDSA) cycle, which is recognised by IHI, Institute for Health Improvement (2023), to analysis the intervention and make recommendations. Appendix 5 contains an example of a PDSA from this project. Some aspects of the evaluation framework sit within the scope of the larger organisational developments and therefore

cannot be analysed in depth for this project although the focus on improved integration, and the experience of the patients and staff will create the foundations for further change and development across the health and social care sector.

More specifically the project used primarily quantitative data collection to demonstrate reduced length of stay, fewer moves between hospitals, increased pace of work, and reduced long term care needs, and qualitive data collection in terms of feedback from board meetings, staff. This included interviewing four patients to establish their thoughts on the services they received during their recent admission to NHH.

4 The Intervention

In Autum of 2022, the senior leaders in MCC and ABUHB agreed to support the development of what has become known as “The Monmouthshire NHH project”. To collocate Monmouthshire patients onto a designated ward within NHH, creating an integrated practice unit underpinned by VBHC principles. Alongside this Monmouthshire Hospital Liaison Team continued to review all Monmouthshire patients within NHH to support discharge planning.

The framework was introduced to the key staff groups from: Home First (HF), discharge liaison team, the ward staff from 3/2 which was earmarked to become a designated Monmouthshire ward for patients not requiring specialist intervention from neurology, orthopeadics or respiratory intervention, and reablement during a designated workshop.

The project start date was set for February 2023 and all stakeholders agreed that they would work towards the aims in the framework. Since then, 1060 Monmouthshire residents have been seen in NHH, of which 995 have been discharged.

Figure 16. Number of people seen by the NHH project from 1st February until 17th August 2023.

Several milestones were achieved through the project in part due to staff commitment to work across their traditional boundaries:

- Joint working between MIS and ABUHB data analysts to enable the necessary data collection
- Designing a new electronic data collection system to allow the level of MIS interventions and services provided to be analysed in relation to the project evaluation framework
- Access to the social care FLO data base granted to the Monmouthshire designated ward hospital discharge assistant.
- Staff from acute and community roles have been encouraged to work closer together, to build understanding of each other's roles. Acute staff who are historically driven by the need to clear beds have had the opportunity to learn how getting the discharge right impacts on people, having their personal outcomes met and its contribution to living well in the community.
- Enhanced information sharing and collaboration between HF and MIS to help establish the type of response/service required in AMU

- Joint working between patient flow, MIS, and wards to facilitate getting the right patients to the right place to receive their medical and reablement interventions.
- Employment of two part time therapy support workers, to work across the NHH site and reablement to support therapists delivering of reablement interventions at ward level, and provision of ad hoc follow up visits on discharge.

In addition to developing the new ways of working as described above, the project interviewed four individuals to ascertain their thoughts on the service they received in NHH. Interviews rather than questionnaires were chosen as there is often a poor response to questionnaires. The interview allowed a more person-centered approach using strengths-based practice to collect qualitative data and allow more in-depth discussions to enable quality improvement.

The number of interviews were limited to ensure sufficient time for integrating the new practices into the various staff groups' daily routines, and to meet the studies completion deadline. A copy of the consent form for the interviews and outline of the interview are in appendix 6 and 7.

5 Analysis

To structure the findings of the project the evaluation framework headings will be used whilst also referring to the four VBHC domains to demonstrate how: "Reablement place-based approach supports delivery of Value-based Healthcare".

5.1 Prevent Admission

The ability to prevent admission within NHH can be challenging due to the change in configuration of the A&E services, anecdotally staff feel it can be easier for people to be stepped down to NHH rather than assessed out from the front door. Figure 18 shows the number of admissions for Monmouthshire patients to NHH has remained stable at 70-100 per week.

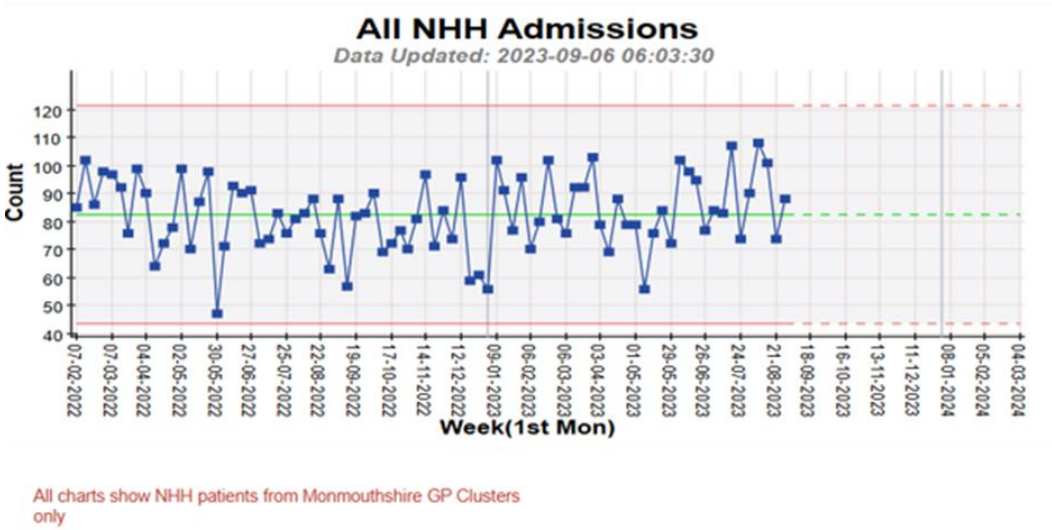

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Figure 18. ABUHB admissions and attendance data captured 6th September.

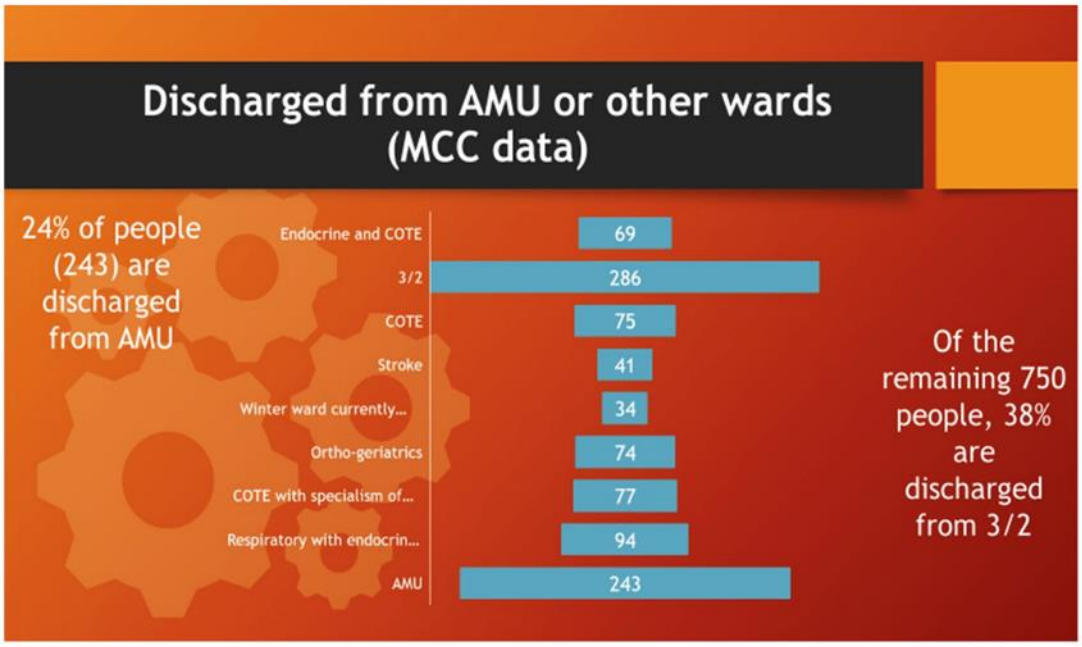

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Figure 19. MIS discharge data based on people seen by MIS 1st February 2023 to 17th August 2023.

Developing better working relationships with HF colleagues in NHH AMU has enabled analysis of the type of patients within NHH allowed the opportunity to consider what front door resources are required in NHH now that the demographics of the patients has changed since opening of the new critical care emergency hospital GUH.

Most patients presenting at NHH are turned around within 48 hours and do not require any additional care and support from social care, having been assessed, received the necessary diagnostics, and treated medically. ABUHB data shows a larger number of people going through AMU as they calculate their figures over the 24-hour period 7 days a week. Whereas MIS data in figure 18 only sees and captures people Monday – Friday once a day unless the nursing team request support. During the project MIS saw 243 people in AMU who were successfully discharged from AMU. Those that remain in AMU longer are either patients that have been stepped down from GUH or assessed as being inappropriate to be turned around. Such patients are then outside the 72-hour remit of the HF teams and become the responsibility of MIS for discharge planning.

Through the projects intervention it has demonstrated the potential for HF capacity to be released from NHH to concentrate on prevention of admission in GUH, thereby reviewing the allocative and technical value of where best to place specialist staff. As the HF provide cover for all local authorities covered by ABUHB further work around this will be required with the other authorities and the GUH, to establish whether an alternative delivery model would allow more appropriate use of resources and improved response for those in GUH to prevent admission. Thereby, improve personal value to the individual patient in avoiding unnecessary transfers between sites and maintenance or improvement of personal and population well-being.

Due to the project board's acceptance and proactive support for change regarding engagement and participation between wards and patient flow, ward managers on AMU and the designated Monmouthshire ward have forged closer collaboration with patient flow (bed management). This partnership has enabled a more in-depth analysis of patients' needs, rather than simply transferring them to the first available bed. Resulting in more Monmouthshire patients with generic medical and reablement needs to be transferred to the Monmouthshire ward, and allowing patients with specific medical needs to access the more specialised wards e.g., respiratory, stroke, neurological conditions.

5.2 Reduce Stay

There has been a significant drop in the average length of time spent in AMU from 20 hours May2023 to 15 hours in August. When the data in figure 21 was captured on 6th September from 1st February 2023 the average length of stay of patients in NHH was 15 days. This gives a mean value of 12.49 when accounting for the 9 patients with complex medical needs who have had a length of stay longer than 21 days. The histogram in figure 20, shows 23% of people being discharged on day five, which means that 53% of Monmouthshire people in NHH are discharged within 5 days.

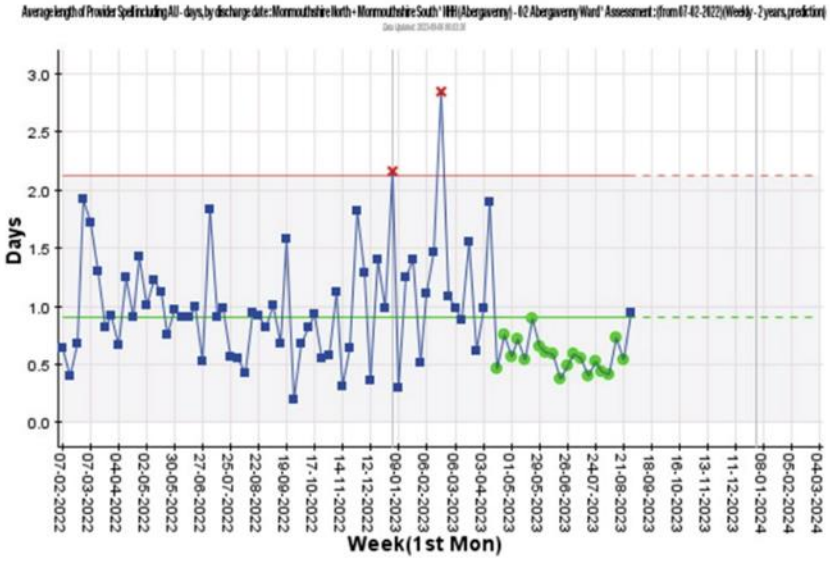

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Figure 20. ABUHB length of stay in AMU data captured 6th September 2023.

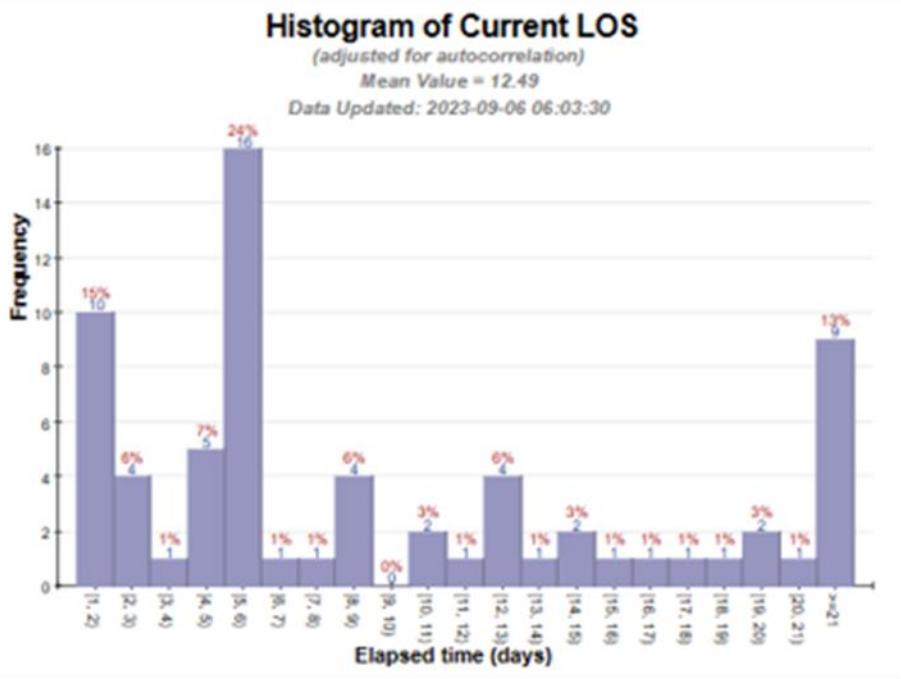

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Figure 21. ABUHB length of stay discharged from NHH data captured 6th September 2023.

The increased pace of working, with greater integration, has had a positive impact and is demonstrated through the significant drop in length of stay in AMU. Enabling people in need of a reablement to be moved to where possible Monmouthshire ward and allowing AMU staff to use their technical expertise to concentrate on medical interventions.

In Autum 2022 there were significant concerns about the sharp increase in the number of complex patients within NHH I.e., who required complex input from health and social care to enable discharge which require care and support in the community. The introduction of the project demonstrates that since June 2023, figure 22 shows there has been a significant run of less than 2 complex patients added to the list per week within NHH. This indicates patients have been discharged before they become a delayed transfer of care.

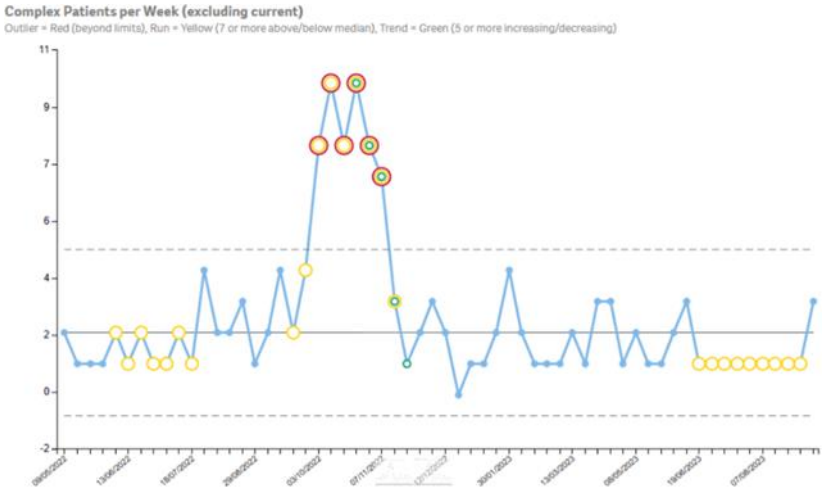

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Figure 22. ABUHB data Number of patients added to the complex list May 2022 to August 2023.

5.3 Improved Integration

The project focus has enabled the strengthening of partnership working across the acute and community divisions within ABUHB and MIS through the development of a shared vision and evaluation framework. This has been achieved through implementing the principles to develop place-based partnerships as cited by Charles et al., (2021). It has built stronger interpersonal relationships at ward level, building on the existing success of the Monmouthshire Pull model, nurturing staff to have confidence to act, strengthening the role of reablement as a provider within NHH. All staff became more focused on where appropriate discharging patients at the earliest opportunity. Monmouthshire Hospital Liaison, patient flow and the wards actively looked to supporting those with generic needs for admission for medical intervention and reablement to be transferred to ward 3/2. By working collaboratively to challenge each other's clinical reasoning more effectively without blaming each other for delays and promote the patient's voice. The designated Monmouthshire ward became less reliant on bed management filling the empty beds because the ward had empty beds, and proactively sought the next appropriate patients as the current one's discharges were being planned.

The provision of ad hoc follow-up from therapy support for those living in Abergavenny area rather than waiting in hospital for daily essential calls has allowed positive risk taking in collaboration with the individual knowing they will receive a follow-up visit within a few days. The spread and scope for providing this across Monmouthshire as a way of reducing demand on reablement and LTC needs further exploration.

Whilst overall this has had a positive impact on integration, the implementation of the place-based reablement approach within NHH has faced several barriers that needed to be addressed to ensure successful execution of the project itself.

One significant barrier is the belief that the prior pull model used by the Monmouthshire hospital discharge workers is successful. Therefore, it has been important to communicate the benefits and potential improvements of the place-based reablement model, emphasising how it complements and enhances the existing system rather than replacing it entirely.

Another challenge is the dynamics and varying management structures across the different staffing groups involved in the project's delivery. Collaboration and coordination between MIS staff, AMU, HF, ward staff, nursing, and medical personnel has been crucial for effective implementation. The amount of time and effort, both strategically and operationally, to implement the change should not be taken for granted, which reiterates the findings of previous VBHC practice change innovations (Aneurin Bevan University Health Board, n.d.). Establishing clear lines of communication, fostering mutual understanding, and providing support and potentially training on the strength-based approach have all been interictal parts and not always been successful given the complexity of the task and number of people involved.

Reablement staff providing input into the ward has been successful where capacity has allowed this to happen as demonstrated in patient feedback, however to enhance the approach it has been agreed that all staff need to engage in it to ensure consistency and enhance the individuals ability to achieve their personal outcomes eg of being able to meet their personal care needs to enable them to return to accessing the community on discharge. With regard to this the unscheduled care team and ward have agreed in the first instance for the ward-based health care assistants to be trained by MIS in reablement techniques to support them in being less risk adverse. This would include, for example, feeling more confident to walk patients to the toilet rather than be over reliant on the use of equipment such as a stedy or commode. Thereby ensuring the best possible outcomes within the resources available to achieve personal, technical, and allocative value to the patients' journey.

As part of the project implementation the team has also become involved with the Institute for Healthcare Improvement (IHI) Safe and Effective Ambulatory Care workstream and been working with a designated coach who has supported engagement from MIS and ABUHB staff as equal partners in the workstream in conjunction with the IHI. This will continue beyond the scope of this report to March 2024.

5.4 Improved Patient Experience

Figure 19 indicates that 286 (38%) of people were discharged from the designated Monmouthshire ward which demonstrates that Monmouthshire patients with generic medical need are being brought together rather than scattered across the site wherever a bed is available. This has enabled more discussions around what matters to the individuals. The positive impact of collaboration between the acute, community and MIS has had on the individuals' outcomes is demonstrated in figure 23 where feedback demonstrates that those attending NHH feel listened to, have elements of choice and control over their care and treatment through being treated as individuals rather than as patients to be done to.

Using the place-based reablement ethos, has also led to the development of closer working relationships in the orthopeadic ward where the occupational therapist is working closely with the patients and patient flow.

My Journey to NHH	Were you listened to in NHH
I requested to go to NHH following my second fall and hip surgery as I had a good experience last time.	I was described by the Monmouthshire Hospital Discharge Team as an "independent lady" they explored with me how I thought I would manage and the support I had in the community to help me make my decisions about my discharge, as some staff wanted me to have support.
999 medical call attended by crew who were able to convey me to NHH, as I didn't need A&E ie GUH based on my assessment.	It was frightening to think that they couldn't improve my breathing anymore. I have seen the same member of the Monmouthshire Service about 3 times [admissions] and it was good to know I didn't need to repeat my story each time. I just updated them about this time.
GP requested admission and I was advised to present at at NHH AMU and then I went to 3/2	Yes, we had a plan for my discharge to go home with reabelment on Monday, but a new doctor came to see me on a Friday and I think they just wanted to clear the beds and they sent me home and the reablement service weren't aware of my discharge
Having fallen at home I was taken to the GUH, as there was no fracture sent to NHH. I then asked about going to Mardy as I didn't feel confident about going home as my balance is poor.	Yes, although sometimes they were slow at seeking information and updating me
	Doctors need to make sure they inform people of their treatment and why things aren't improving as it seemed a long time for my cough to improve which I was worried about it. May be write things down as its difficult to remember everything.

Have you felt involved in what was happening to you during your stay in hospital?	What could have been done differently?
I felt involved in developing a plan for going home, fortunately when I was discharged, I was able to contact reablement directly when they weren't aware of my discharge as I had their telephone number, as the ward team had said for me to go home late on a Friday.	The physio and team worked with me to get me walking which was great. They worked hard with me.
Yes, initially I didn't want help but I'm glad one of the therapy support workers followed me up in a couple of days as they could assist with getting a rail as I didn't feel confident in the shower.	I was told I could do my injections myself, which was not possible if they looked at my arthritic hands they would have realised
It was good to have other patients on the ward who lived near me and I'm still in contact with some of them.	When a bed became available in Mardy, I has moved quickly but I felt I could have gone sooner.
The nurse offered me transport to home, but I got my family to collect me.	Having information on ward 3/2 about the project so families and patients can understand what you are trying to do and have opportunity to give feedback may be useful.
I was pleased they were able to send me to Mardy Park rather than Monnow Vale as I live in Abergavenny and I felt able to talk to the OT about this.	

What have we done well?	Anything else you'd like to let us know?
The physio and team worked with me to get me walking which was great. They worked hard with me	Volunteer cars to attend my hospital appointments are far better than using the ambulances.
Listened to me as a person and not as a patient.	The ward chairs need to be higher, so people can get up themselves.
I was asked what I wanted to do? Just because I'm 80 doesn't mean I don't want to walk with a stick and make full use of my new hip!	I have the biggest respect for everyone in NHH.
Staff were very attentive.	I am pleased I could go to Mardy as it could improve my confidence to go home as I live on my own.
I had contact from the same people I saw in NHH when I returned home.	

(Author's own)

Figure 23. Feedback from individuals interviewed about their experiences in NHH.

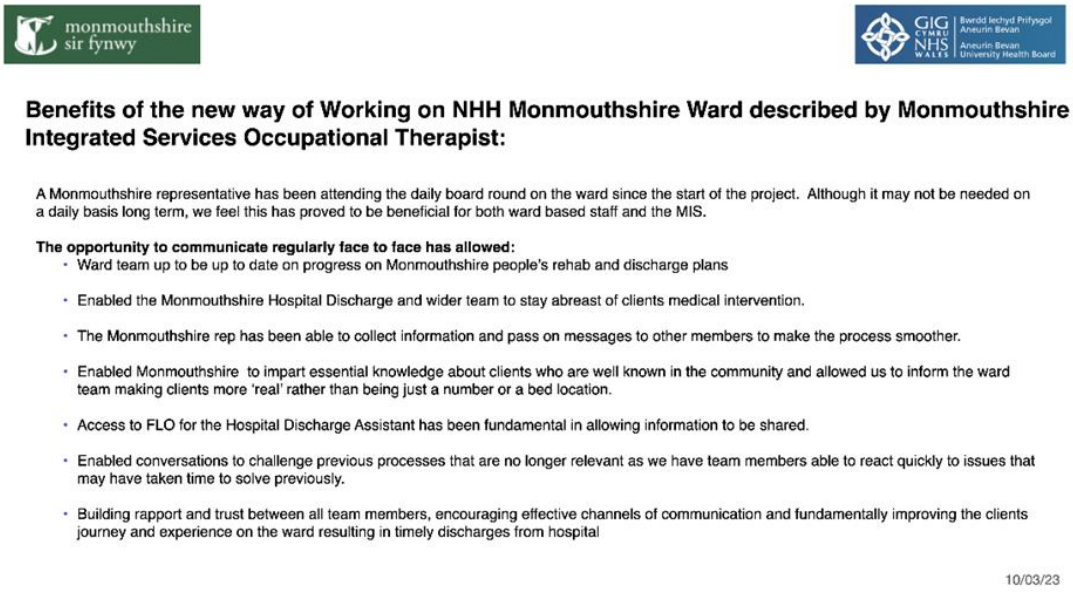
A strong theme from the interview feedback is the relationships between the staff and the follow-up received in the community and the impact this has had on people feeling confident to be discharged knowing they have a point of contact.

Having chairs of a suitable height on the ward would have a significant impact on the implementation of reablement and allowing people to take their own risks and improve and maintain their mobility during their admission and is identified from an individual in their interview. This is something that will be explored in

conjunction with the health care support workers receiving reablement training. Another individual identified the need for information around the service redesign and having the opportunity for family and patients to give feedback. This has also been highlighted by the staff as a way of collaborating more closely with those who use our services and their families and will be investigated as an option to add personal and societal value to the Monmouthshire ward.

5.5 Improved Staff Experience

The benefits of collocating onto a designated ward for staff were realised early in the project as reflected in the feedback by an occupational therapist in March 2023 in Figure 24. Of note is the empowerment of the MDT (multidisciplinary team) to challenge and share information. The comments around improved rapport and trust and positive effects on the patients have since been reiterated by the wider multi-disciplinary team.


monmouthshire sir fynwy

GIG CYMRU NHS WALES | Bwrdd Iechyd Prifysgol Aneurin Bevan | Aneurin Bevan University Health Board

Benefits of the new way of Working on NHH Monmouthshire Ward described by Monmouthshire Integrated Services Occupational Therapist:

A Monmouthshire representative has been attending the daily board round on the ward since the start of the project. Although it may not be needed on a daily basis long term, we feel this has proved to be beneficial for both ward based staff and the MIS.

The opportunity to communicate regularly face to face has allowed:

- Ward team up to be up to date on progress on Monmouthshire people's rehab and discharge plans
- Enabled the Monmouthshire Hospital Discharge and wider team to stay abreast of clients medical intervention.
- The Monmouthshire rep has been able to collect information and pass on messages to other members to make the process smoother.
- Enabled Monmouthshire to impart essential knowledge about clients who are well known in the community and allowed us to inform the ward team making clients more 'real' rather than being just a number or a bed location.
- Access to FLO for the Hospital Discharge Assistant has been fundamental in allowing information to be shared.
- Enabled conversations to challenge previous processes that are no longer relevant as we have team members able to react quickly to issues that may have taken time to solve previously.
- Building rapport and trust between all team members, encouraging effective channels of communication and fundamentally improving the clients journey and experience on the ward resulting in timely discharges from hospital

10/03/23

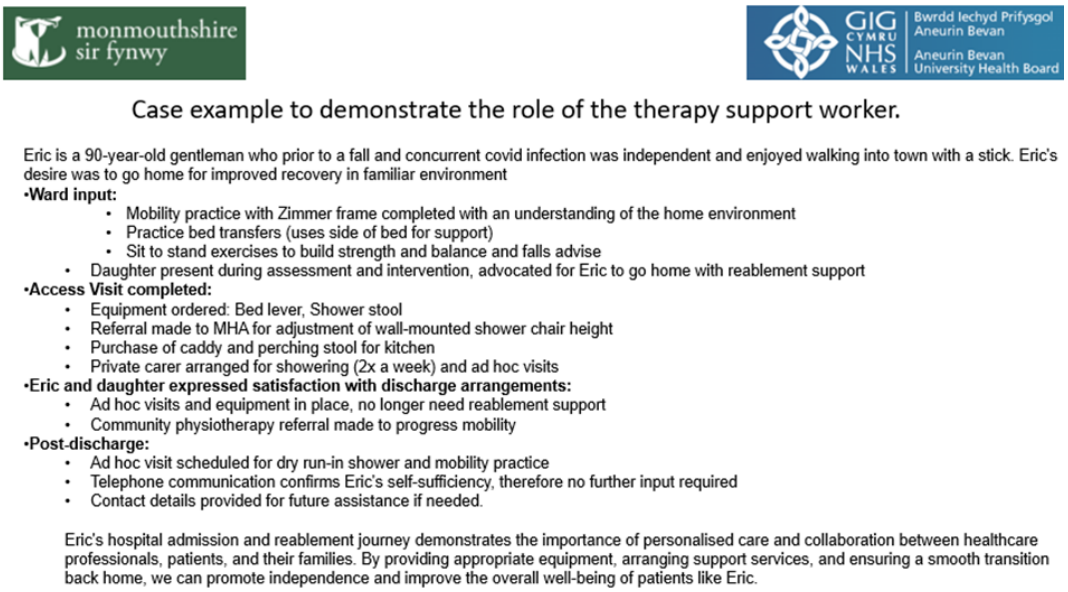
(Author's own)

Figure 24. Benefits of the new ways of working on NHH Monmouthshire ward.

From a nursing perspective the ward manager has been inspired to complete PDSAs on the ward to enhance the service development and produce a poster presentation, (appendix 8) for inclusion in the Autum 2023 Nursing Conference, to demonstrate the impact of the effectiveness of integration and cross sector working the project has had. Although the PDSA introducing a package of care magnet on the ward patient status at a glance (PSAG) boards was positively received by the Designated Monmouthshire ward to drive pace in discharge planning and challenge the timeliness of medical interventions eg bloods results need to be followed up this afternoon to allow the discharge if they are medically optimised, the magnets use has been stopped due to it not being a standardised format for the boards across the site.

During the project there have been changes in personnel in the MIS hospital discharge team and the exact makeup of the team needs further investigation in terms of how the hospital discharge officers interrelate to the wider MIS and designated Monmouthshire ward and the other NHH wards that continue to take Monmouthshire patients where specialist medical support is required. This needs careful consideration so that resources can be allocated appropriately and ensure individuals in other wards have opportunity to meet their outcomes.

The provision of the therapy reablement support workers within NHH have proved successful when they have been available. The case study in figure 25. The individuals themselves have found it frustrating to be called to provide the daily essential reablement calls in the community rather than enhancing the delivery in the hospital and follow up ad hoc interventions to reduce the potential need for support on discharge. The benefit of this type of role also needs to be explored across Monmouthshire.



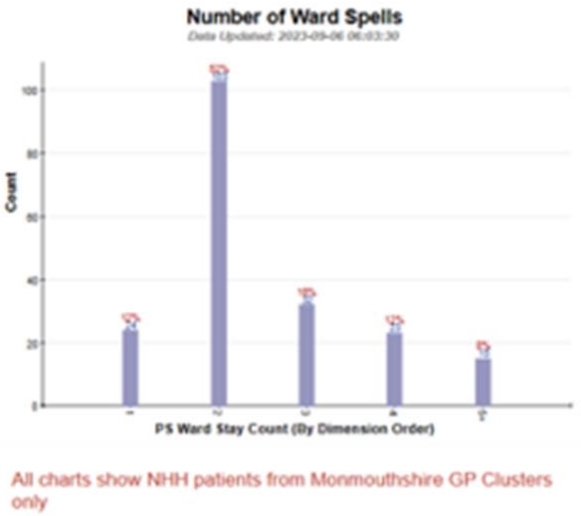
(Author's own)

Figure 25. Case example demonstrating the benefits of the introduction of reablement therapy support workers.

The co-location of patients has also highlighted the need for further work around people with mental health needs. As the mental health teams have moved to using WCCIS as a system for recording, MIS cannot access the full information to help inform the person's care and treatment. In essence, physical or mental ill health should not determine the ability to respond or share information, as this could negatively impact all VBHC domains.

5.6 Fewer Moves Between Hospitals

As reported in the media across Wales ABUHB like other health boards are under huge pressure to free beds and prevent ambulances from being unable to off-load when they arrive at the hospital. During the initial workshops between ABUHB and MIS, it was determined that when Monmouthshire residents presented at A&E, they were typically assessed as appropriate for the front door services to provide medical assessment and intervention and there is positive signposting from patient flow. Most North Monmouthshire patients are then stepped down to NHH leaving those residents in the South of the County to go to the Royal Gwent or Chepstow hospitals. However, the overall demand for beds across the hospital sites still presents a huge challenge and requires strategic bed management and allocation to accommodate collocating Monmouthshire residents and facilitate successful discharges without having a detrimental effect on the other residents within ABUHB area. Over the period of the project 33% of people had a spell on over 3 wards as shown in figure 26 with an average time of around 4 days on a ward which still means there is a high turnover of patients who are frail, over 75years and may have cognitive impairments. Therefore, it is necessary to closely monitor bed availability and align resources accordingly to ensure the project's success, whilst not moving patients unnecessarily. In part this may mean more work with GUH to consider being admitted to Monmouthshire ward directly, rather than stepping down to NHH AMU then transferring them to the Monmouthshire ward.



(Author's own)

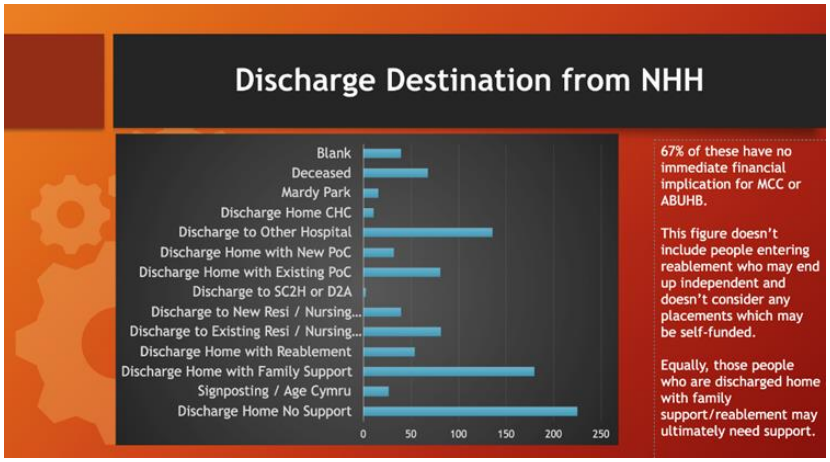
Figure 26. Ward Spells of patients discharged from NHH during the period February to August 2023.

5.7 Increased Pace of Work

Through the introduction of the project the MIS team have demonstrated that they have seen Monmouthshire patients within 2 days of admission to NHH. This has enabled an integrated approach to discharge planning and appropriate signposting towards or home at the earliest opportunity. The MIS have also used their expertise to signpost people to third sector support eg Age Cymru and community team follow up using a discharge to assess model rather than waiting unnecessarily in hospital for everything to be completed and risk the patient deteriorating.

5.8 Reduce Long Term Care Needs

At the project's outset there was significant concern about the impact the lack of community resources has on the hospital admission, as people waiting for care and support packages and reablement, would be at risk of loss of function and independence. Since the start of the project the data indicates that 67% of people have been discharged from NHH with no financial implication for MIS or ABUHB as depicted in figure 27. There is another significant group of people who are discharged with reablement who potentially end up independent or with less needs than on their discharge however the detail around this has not been captured. Equally there are people who were discharged from hospital with family support or reablement who may ultimately need support.



(Author's own)

Figure 27. Discharge destination from NHH.

In October 2022 there were 1466 hours of outstanding care needs, as shown in figure 9 which has been reduced to 879 in figure 28, across Monmouthshire in September 2022, however this cannot all be attributed to this project. Although the reduction does facilitate hospital discharges as there is more availability of care and demonstrated through a reduction in the number of medically optimised in hospital waiting for long term care to 17 and 12 waiting for reablement as shown in figure 29. This accounts for a reduction in outstanding hours for those who are medically optimised waiting in hospital from 560 in October 2022 to 397 in September 2023.

September 2023 Assessment of Unmet Care and Support Package Needs in Monmouthshire Integrated Services

Place	Count of Pid	Sum of Wk Hours
Abergavenny Integrated Services	11	97
Chepstow Integrated Services	18	219
Community Learning Difficulties Team	2	7
Monmouth Integrated Services	38	367
Older Adult Mental Health Team	18	179
Carers	2	10
Grand Total	89	879

(Author's own)

Figure 28. September 2023 Outstanding assessment of unmet care and support package needs in Monmouthshire depicted by place/team.

Unmet Care and Support Package Needs in Monmouthshire Integrated Services: Current Waitlist Status as of September 2023.

Type	Count of Pid	Sum of Wk Hours
a) In Reablement waiting for LTC	5	50.75
b) In Community waiting for LTC	42	284.75
c) In Community waiting for Reablement	8	78.75
d) In Community change of care and/or agency	4	28.5
e) In Hospital ready for Discharge awaiting LTC	17	292
f) In Hospital ready for Discharge waiting for Reablement	12	105
(blank)	1	
h) In Care Home waiting for LTC (Community Admission)	1	35
Grand Total	89	878.75

(Author's own)

Figure 29. Outstanding care needs based on status/place of waiting September 2022.

These aspects need further investigation to understand the true value of the place-based reablement approach and its impact on the allocative, technical, societal, and personal value. The technical value of not providing care and support may be a huge value to health and social care from an initial budget perspective. However, the personal impact on a person's resources and how they live their life may mean that other aspects of their well-being are affected, which could result in the need for further admissions. Further

analysis of the level of care and the impact of delivering a reablement approach within the hospital and having reablement availability on discharge is required. Whilst there has been funding for two part time therapy support workers, to work across NHH delivering reablement interventions at ward level, and ad hoc follow up visits on discharge, they have frequently been called back to their substantive posts in reablement due to staffing shortages.

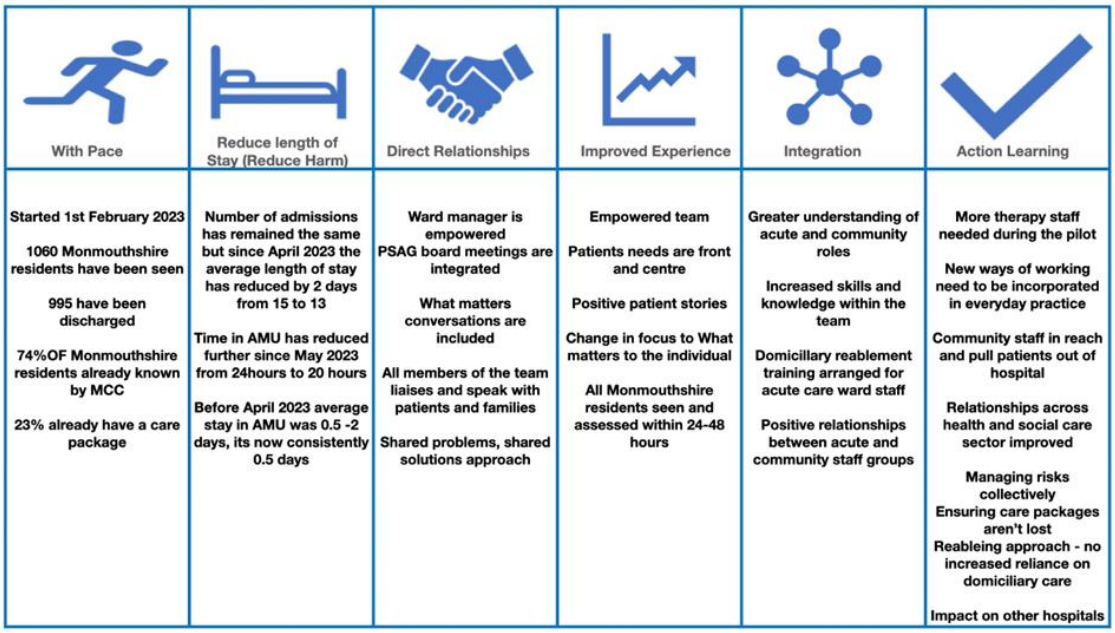
5.9 Improved Use of Assistive Technology

The project has had limited impact on improving assistive technology use. Whilst it is something that can be considered as part of discharge planning to add personal value, it is often not considered until individuals are discharged. MCC set up an inter directorate steering group, including representatives from ABUHB, to work on this element. It has also been included as a data set on the MIS assessment documentation to prompt staff to consider it as an option to support well-being.

6 Conclusion

Introducing the place-based reablement approach within NHH has had significant effects on enhancing the collaboration and capabilities for the staff to work together for the benefit of both the individual patients and thereby the population of Monmouthshire. Which demonstrates that through the introduction of place-based reablement approach VBHC, can be used to enhance well-being for the individual and population.

The use of action learning as a methodology has enabled a real-time review of practice, enabling clinicians' engagement in the service redesign. The measurement strategy has enabled monitoring over time which has demonstrated that there has been sustained co-location of Monmouthshire patients, reduction in length of stay, improved experience through closer integration across ABUHB acute and MIS. Figure30illistrateshow place based Reablement approach facilitates the implementation of VBHC against the outcomes that were agreed at the outset.



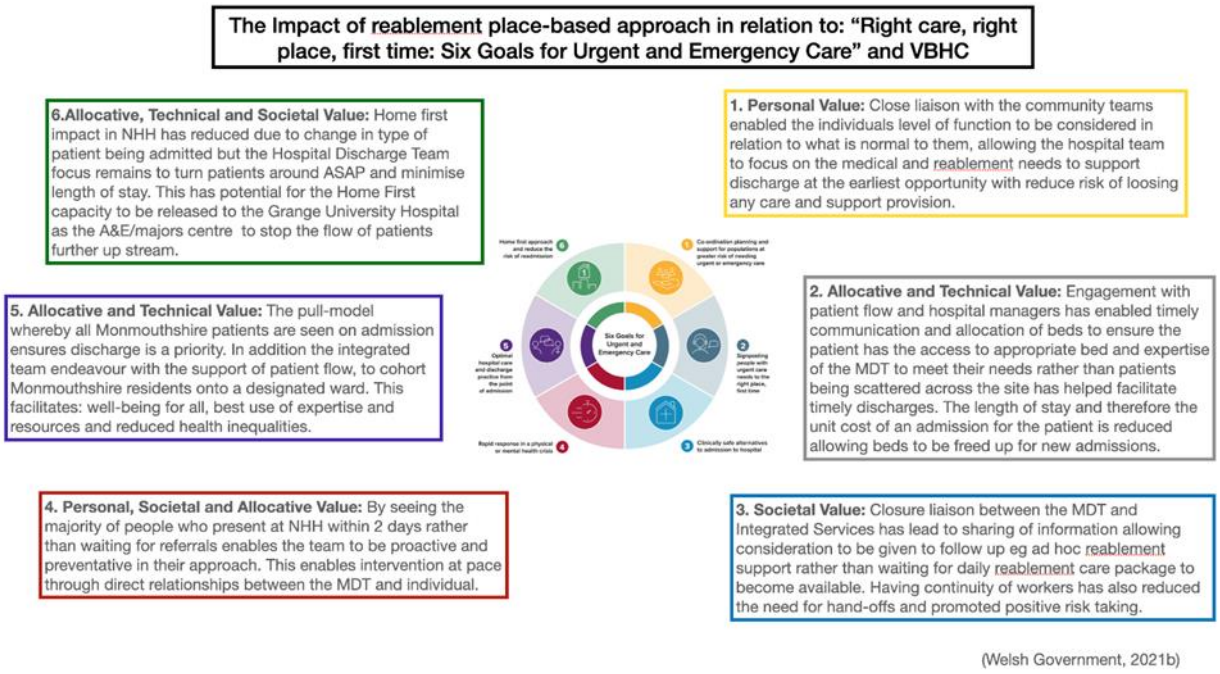
(Author's own)

Figure 30. Summary of key findings "Reablement place-based approach supports delivery of VBHC" against the outcomes.

The significant contribution the project has made to achieving both "Six goals for Urgent and Emergency Care and the principles of VBHC is highlighted in figure 31. Whereby the use of meaningful discussions with patients focusing on what matters and is normal to them enhances their collaboration meets goal 1 and adds personal value through interventions and building resilience in them maintain people's wellbeing through a reablement approach. Working closely with patient flow enables more appropriate allocation of beds and more appropriate use of the clinician's technical expertise supports goal 3.

Through the project implementation, the acute sector increased awareness of the demands on community services, which has helped them provide interventions at pace enabling clinicians to make rapid decisions and encourage planning for discharge on admission, allowing care and support plans to be restarted or released for re-allocation, reducing potential for harm through long hospital stays.

The review of the prevention of admission and length of stay data highlighted the change in patient demographics and identified the potential for HF resource to be released to the GUH as the A&E center to stop the flow of patients' further upstream, which would support the front door to be less risk averse. Demonstrating how the project's reablement place-based approach using the principles of VBHC implementation has a significant contribution to sustaining individuals' well-being to assist in admission avoidance.



(Welsh Government, 2021b) and VBHC Domains (Adapted by Author)

Figure 31. The impact of reablement place based against Six Goals for Urgent and Emergency Care.

It's challenging to attribute all these improvements explicitly to the project's intervention and the project board aims to complete a further review of the evaluation framework in relation to aspects of the intervention and data collection to ensuring the sustainable success as part of the Safe Care Collaborative with the IHI. Due to the constraints of the reports submission date consideration to spread and scale cannot be presented here. However, if the elements of reablement place based approach were to be implemented in conjunction with other eLHG's and community hospitals across the ABUHB there is likely to be significant benefit across the domains of VBHC for all stakeholders. Enabling the delivery of health and social care statutory obligations, ensuring that people receive the right care, in the right place, first time. (Welsh Government., 2021b).

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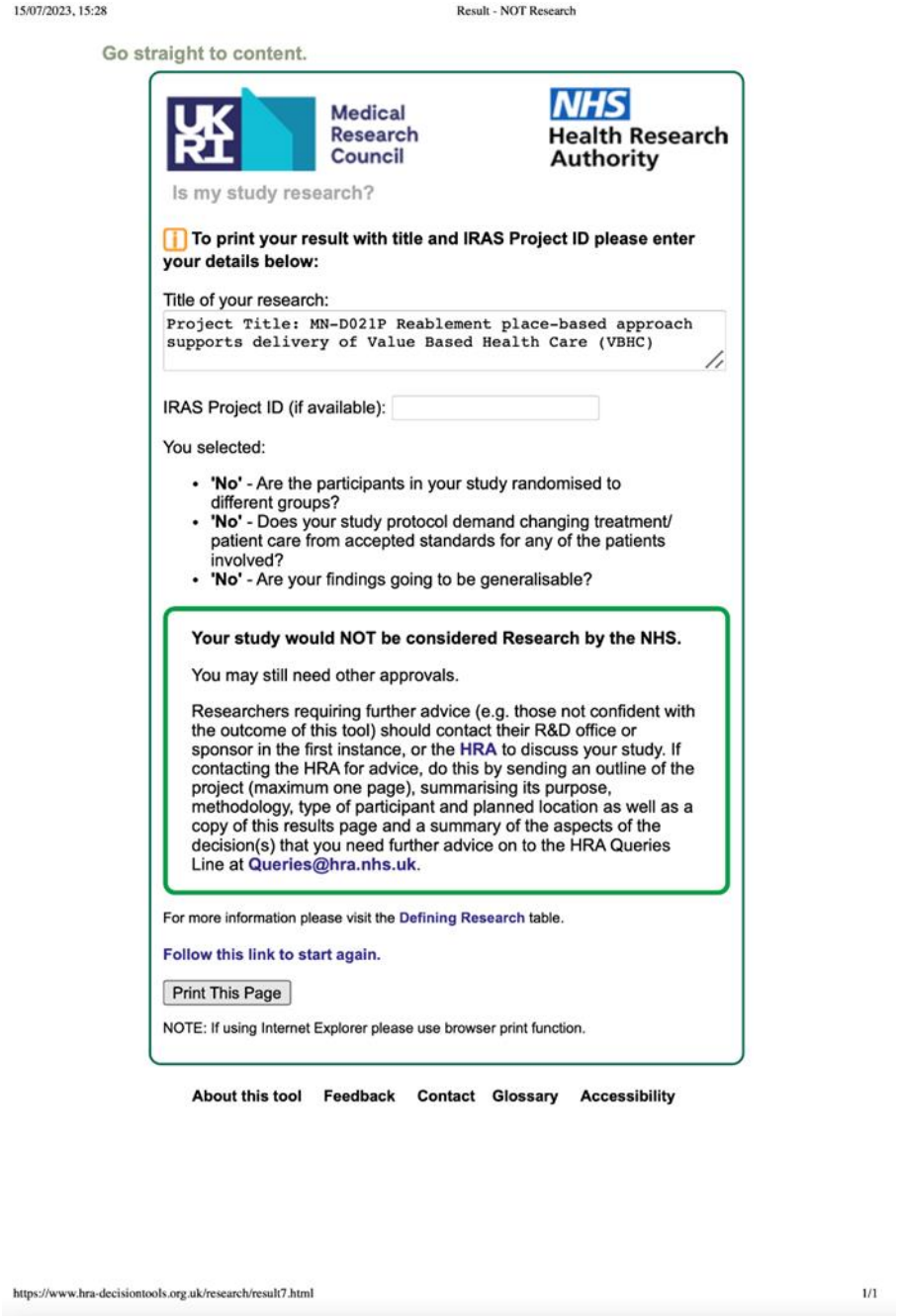
8 Appendices

8.1 Appendix 1 NHS Health Research Authority evidence to indicate this study would not be considered research by the NHS.



15/07/2023, 15:28 Result - NOT Research

Go straight to content.

Medical Research Council

NHS Health Research Authority

Is my study research?

To print your result with title and IRAS Project ID please enter your details below:

Title of your research:

Project Title: MN-D021P Reablement place-based approach supports delivery of Value Based Health Care (VBHC)

IRAS Project ID (if available):

You selected:

- **'No'** - Are the participants in your study randomised to different groups?
- **'No'** - Does your study protocol demand changing treatment/ patient care from accepted standards for any of the patients involved?
- **'No'** - Are your findings going to be generalisable?

Your study would NOT be considered Research by the NHS.

You may still need other approvals.

Researchers requiring further advice (e.g. those not confident with the outcome of this tool) should contact their R&D office or sponsor in the first instance, or the HRA to discuss your study. If contacting the HRA for advice, do this by sending an outline of the project (maximum one page), summarising its purpose, methodology, type of participant and planned location as well as a copy of this results page and a summary of the aspects of the decision(s) that you need further advice on to the HRA Queries Line at Queries@hra.nhs.uk.

For more information please visit the Defining Research table.

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https://www.hra-decisiontools.org.uk/research/result7.html 1/1

8.2 Appendix 2 Ethical Review

School of Management Ethical Review Checklist

This checklist should be completed with the assistance of project or dissertation supervisors.

Does the proposed research involve any of the following?

☐ Vulnerable people or participants unable to give informed consent.

☐ Deception, misrepresentation, or covert research.

☐ Any risk of harm, damage, or distress to anyone.

☐ Collection of personal or sensitive personal data as defined by GDPR.

☐ Data collection from participants without prior, recorded, informed consent.

☐ The sharing of data or confidential information beyond the initial consent given.

☐ A lack of anonymity for research participants. (i.e. it will identify participants).

☐ Interventions and therapies, including clinical and non-clinical trials.

☐ Study or exposure of illegal activity, or research that is likely to discover illegal activity.

☐ Financial inducements offered to participants.

☐ Collection or purchase of human samples including bodily fluids e.g., blood, saliva

☐ Other aspects that pose significant concerns such as:

- Coercion.
- Conflicts of interest.
- Research in countries where research integrity cannot be ensured.
- Data security.
- Use of administrative or secure data.
- Inappropriate inducements.
- Poor practice.
- Artificial Intelligence.
- Security-sensitive data or materials.
- Sensitive objects, artifacts, or topics.
- Potentially dangerous and/or illegal internet sites.

Postgraduate research undertaking **any of the above will require ethical review** using the online research ethics system. https://swansea.forms.ethicalreviewmanager.com

☒ Students should also confirm that they will comply with Health and Safety guidelines and undertake risk assessment of the research as required.

☒ Students should also confirm that they understand that all projects and activities will be undertaken in accordance with relevant external and internal policies, regulations, codes of practice and other requirements, and that further information on these is available from University and Faculty research and teaching support services.

For further assistance on ethical review contact FHSS-Ethics@swansea.ac.uk

Signed by Student:

Student Name: Sarah Vaughan **Student number:** [redacted]

Signed by Supervisor:

Roderick Thomas  **Date:** 5th September 2023

8.3 Appendix 3 Consent to use work-based project for MSc module

monmouthshire sir fynwy

GIG CYMRU NHS WALES | Bwrdd Iechyd Aneurin Bevan Health Board

Consent Form for Sarah Vaughan's Participation in Monmouthshire Integrated NHH Discharge Model Work-Based Development Project for MSc Research Module.

I, Sarah Vaughan, hereby give my consent to participate in the work-based development project: **Monmouthshire Integrated NHH Discharge Model** as part of my MSc research module at Swansea University. I understand that this project will be conducted in affiliation with, and I have obtained the necessary consent from both the representatives of MCC (Jenny Jenkins Head of Adults Services) and ABUHB (Trisha Edwards Head of Service for Primary and Community Division Monmouthshire Borough,) to use the project for my MSc research module.

Project Overview:
The purpose of this work-based development is to primarily support the service development to improve the outcomes for the people of Monmouthshire who are admitted to NHH. In addition, it will support my research and studies as part of the MSc research module at Swansea University and demonstrate:

Inform service redesign and demonstrate how VBHC, can be used to enhance well-being for the individual and population:

"Reablement place-based approach supports delivery of Value-based Healthcare."

The project aims to investigate how using a place-based reablement approach to providing input into secondary care will enhance the patient experience and well-being for both the individual and the population. Building and using Monmouthshire Integrated Services staff relationships with emergency and secondary care staff will enable them to support positive risk taking to manage discharges back to the people's community.

The data collected and analyzed during the NHH project will be used to assist in the service development. It will be analysed and reported on by myself anonymously for the fulfillment of the MSc requirements.

Roles and Responsibilities:
As part of my participation in this project, I understand that I am responsible for:

Defining and undertaking the research project within the scope outlined in the proposal.
Conducting data collection, analysis, and interpretation based on approved research methodologies.
Maintaining confidentiality and not disclosing any sensitive or proprietary information of MCC, or ABUHB without explicit permission.
Presenting the findings to my academic institution as required for the MSc research module.

Data Confidentiality and Use:
I acknowledge that all data collected during the project belongs to MCC, and ABUHB, and I will handle it with utmost confidentiality. I will not disclose, share, or use any information obtained through this project for any purposes other than academic research unless specific agreement is obtained. Additionally, all data will be anonymized during the reporting process, and any information identifying individuals will be removed.

Intellectual Property:
I understand that any intellectual property rights arising from the project's outcomes, including reports, publications, and presentations, will be owned by MCC, and ABUHB, and will be subject to their existing policies on intellectual property.

Voluntary Participation and Withdrawal:
I affirm that my participation in this project is voluntary, and I have the right to withdraw at any time without any adverse consequences. My decision to withdraw will not affect my employment status or relationship with MCC, or ABUHB.

Contact Information:

If I have any questions or concerns about this project, I may contact the following individuals:

Supervisor Alan Wilson, Swansea University
a.r.willson@swansea.ac.uk
Researcher: Sarah Vaughan Therapy Lead North Monmouthshire Integrated Services
Sarahvaughan@monmouthshire.gov.uk

Representatives' Consent:

We, the undersigned representatives of MCC and ABUHB, hereby agree to grant the necessary consent for Sarah Vaughan to use the work-based development project for their MSc research module at Swansea University. We acknowledge the academic and professional development significance of this research project and authorise the utilisation of relevant data and information within the scope of this consent form.

MCC Representative's Signature: Jenny Jenkins
Jenny Jenkins
Head of Adult Services

Date: 25.07.23

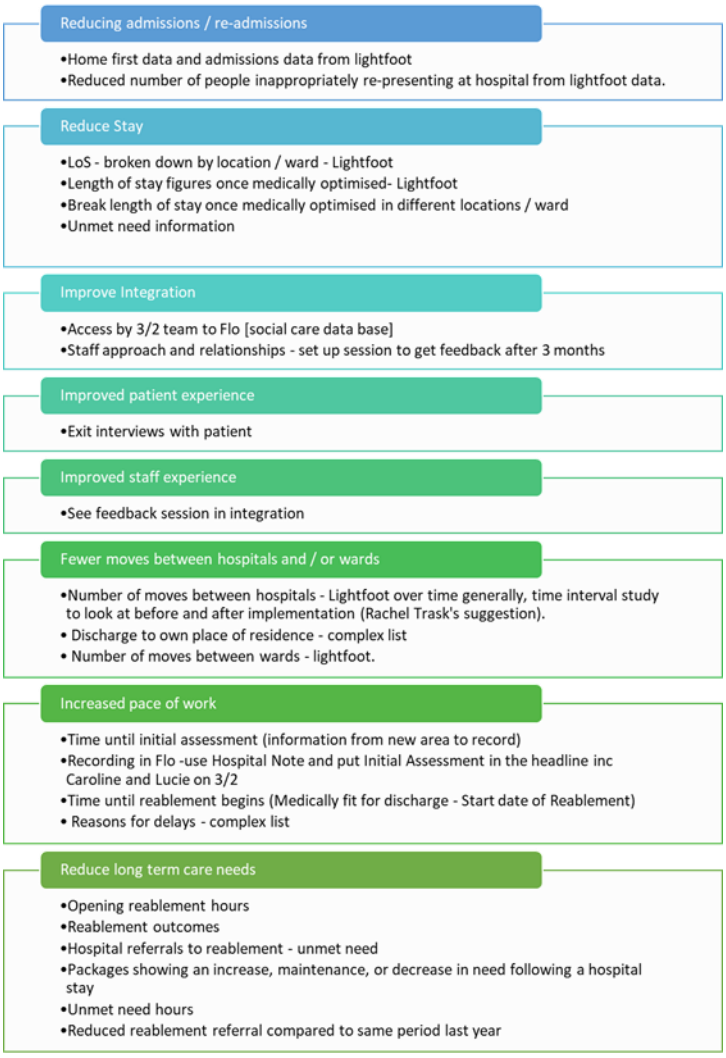
ABUHB Representative's Signature: P Edwards
Trisha Edwards
Head of Service Monmouthshire Borough

Date: 25.07.23

Participant's Signature: S J Vaughan

Date: 25.07.23 Note: A copy of this signed consent form will be provided to the participant and retained by all relevant parties for record-keeping purposes.

8.4 Appendix 4 Evaluation Framework – NHH Project Evaluation Framework



(2023)

8.5 Appendix 5 Example of PDSA from project

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PDSA Form

Aim:	**What is your overall aim? How much, by when?**			
	Reablement place based approach supports delivery of value- based healthcare.			
PDSA cycle objective:	**What is the objective of this PDSA? What questions do we want to answer with this test?**			
	Enable improved access to assessment and, care and support plans to acute health care colleagues in NHH to help inform discharge planning at ward meetings. This will assist in providing allocative and technical value through allocation of the resources and prevent associated delays and risks due to limited supply of care.			
	Describe your test of change (what):	Person responsible (who)	When to be done	Where to be done
	The Hospital Discharge Assistants (HDA) will have increased knowledge of individuals care and support they receive in the community through allowing them access to the MCC FLO data base.	SV and GT	Feb 2023	Remote access
Plan:	**List the tasks needed to set up this test of change (what):**	Person responsible (who)	When to be done	Where to be done
	Ensure access is within data sharing protocols. Arrange logins. Test accessing the system via ABUHB computers. Support HDA to access the system	Project board SV and GT SV and AP SV, AP, and MIS staff	Feb 2023	Remote access
	Predict what will happen when the test is carried out	**What data will you collect during this test to determine if predictions were correct?**		
		What?	Who will collect it?	When will it be collected?	Where will it be collected?
	HDA on designated Monmouthshire ward will be able to access FLO remotely.	Access obtained and used.	SV	Feb/March2023	Ward

Do:	**Carry out the test, collect data, describe what actually happened when you ran the test, what worked, what went wrong, what happened that was not part of the plan**
	Access to FLO agreed and set up for 2 HDA. Support and training to access the system provided including search for individuals and reading their care and support plan.
Study:	**Describe the measured results and how they compared to the predictions, were your predictions confirmed?**
	1. HDA gained access to individual patient's social care records. 2. These records contained information about the patient's current level of function and received care and support. 3. The data was shared with the Multidisciplinary Team (MDT) to inform discharge planning. 4. Physiotherapists could understand the patient's normal mobility level. 5. Nurses could identify key family members involved in caregiving. 6. This was particularly useful for patients with cognitive deficits or confusion. 7. Real-time updates from the Management Information System (MIS) aided proactive discharge planning by the ward MDT.
Act:	**Describe what modifications to the plan will be made for the next cycle from what you learned**
	Trial the ward implementing a care package initiative involving the use of magnets, with a specific focus on highlighting a 14-day suspension period from the admission date during which care plans will remain active. This strategic approach aims to encourage the resumption of care packages and facilitate their release for reallocation in situations where the patient's medical review indicates a likely hospital stay exceeding 14 days.

Adapted from the 'Worksheet for Testing Changes' by Corinne Thomas Consulting

8.6 Appendix 6 Interview Consent Form

Interview Consent Form

Title of Study: Inform service redesign and demonstrate how Value Based Health Care, can be used to enhance well-being for the individual and population: "Reablement place-based approach supports delivery of Value-based Healthcare."

Interviewer: XXXXXXXXXXXX

Therapy Lead

North Monmouthshire Integrated Services

Xxxxxxxxxxxxxxxx @monmouthshire.gov.uk 07xxxxxxxxxxx

Introduction: Thank you for considering participation in our study aimed at developing value-based health care delivery services to support Monmouthshire people during their admission and discharge from Nevill Hall Hospital.

Using a Monmouthshire focused approach to helping patients regain their independence will make their experience at the hospital better. It will also improve the well-being of both the individuals and the community as a whole. By developing and maintaining good relationships between Monmouthshire Integrated Services staff and emergency or hospital staff, we can help people take positive risks and safely return to their home after being discharged from Nevill Hall Hospital.

Before you decide to participate, it is important that you understand the purpose of the study, the procedures involved, and any potential risks or benefits associated with your involvement. Please read the following information carefully and feel free to ask any questions you may have. Your participation is voluntary, and you have the right to withdraw at any time without penalty.

Purpose of the Study: The purpose of this study is to gather insights and perspectives through interviews to aid in the development of Monmouthshire's assessment and discharge service for patients admitted to Nevill Hall. Your participation will contribute to the improvement of health care systems and help us understand how to provide better value-based care to patients.

Procedures: If you agree to participate, you will be interviewed by North Monmouthshire Integrated Services Therapy Lead, to gather your views on your experience of admission and discharge planning from Nevill Hall Hospital. The interview will be conducted in person. During the interview, you will be asked questions about your experiences, opinions, and suggestions regarding your recent admission and discharge from hospital. The interview is expected to last approximately 30 minutes.

Risks and Benefits: There are minimal risks associated with participating in this study. However, as with any questioning involving personal experiences and opinions, there is a slight possibility of discomfort or emotional stress when discussing your health and well-being. If you feel uncomfortable at any point during the interview, you may choose not to answer a question or end the interview.

There are no direct benefits to you for participating in this study. However, your insights and perspectives will help improve and add value to health care delivery services, potentially benefiting patients and the health care system.

Confidentiality: Your privacy and confidentiality will be strictly maintained throughout the study. Any information you provide during the interview will be anonymized and reported in aggregate form. Your name or any identifying information will not be disclosed in any publications or reports resulting from this study. All data will be securely stored.

Voluntary Participation and Right to Withdraw: Participation in this study is entirely voluntary, and you have the right to withdraw at any time without penalty. If you choose to withdraw, any data collected up to that point will be anonymized and included in the analysis.

Contact Information: If you have any questions or concerns regarding this study or your participation, please feel free to contact xxxxxxxxxxxxx.

Consent: I have read and understood the information provided above regarding the purpose, procedures, risks, benefits, confidentiality, and voluntary nature of the study. I have had the opportunity to ask questions,

and where applicable my questions have been answered to my satisfaction. I freely consent to participate in the interview for the development of value-based health care delivery services.

Participant's Name:

Participant's Signature:

Date:

Interviewer:

Interviewer signature:

Date:

A copy of this signed consent form will be provided to the participant.

8.7 Appendix 7 Inform service redesign and demonstrate how VBHC, can be used to enhance well-being for the individual and population: "Reablement place-based approach supports delivery of Value-Based Healthcare".

Interview:

1. What was the reason/journey for you being admitted to hospital?

2. Do you feel like you were listened to during your time in hospital?

3. Have you felt involved in what happened to you during your hospital stay?

4. Did you understand what was going on and feel you were kept informed?

5. What could we have done differently?

6. What have we done well?

7. Is there anything else you would like to tell us?

8.8 Appendix 8 Poster Submission for Nursing Conference

Back page

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School of Management, Swansea University
Bay Campus, Fabian Way
Swansea, SA1 8EN, UK

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