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**“Surely we should all be doing it the same way?” An Ethnographic Study of Paediatric
Nurses Adoption of Aseptic Non-Touch Technique (ANTT)**

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“Surely we should all be doing it the same way?” An Ethnographic Study of Paediatric Nurses Adoption of Aseptic Non-Touch Technique (ANTT)

Abstract

Background: In 2015, NHS Wales introduced a national standardised approach to aseptic non-touch technique protected by copyright as ANTT. This approach aims to standardise practice and promote better clinical outcomes.

Aim of the study: To provide insight into the challenges faced by clinical staff adopting aseptic non-touch technique during intravenous therapy.

Methods: Focused ethnography across two paediatric NHS Wales wards. Data collection included participant observation, audit questionnaires and semi-structured interviews. Data was analysed according to Wolcott (1994) process and emerging themes were reflected upon against theoretical framework of Kirkpatrick’s (1967) model of training evaluation.

Findings: Absence of feedback following training, individual preference, lack of opportunity to practice ANTT technique, lack of clarity and standardisation and expectations of parents/medical staff are all challenges faced by registered nurses.

Implications of the study:

Study findings may be used by NHS managers to support national initiatives within staff training and development programmes and to improve infection prevention initiatives.

Organisational culture is a modifier of healthcare worker behaviour and requires further

attention locally and nationally. Quality assurance in the adoption of standardised best practice must take into account staff training and development needs and workplace culture.

Key Words

Workplace Culture; ANTT; Infection Control; Aseptic Technique; Nurse Training; Organisational Culture; Healthcare Worker Behaviour.

All healthcare organisations should adopt a single standardised approach to aseptic non-touch technique and review their policies, procedures, training and audit of practice in relation to aseptic technique (Public Health Wales, 2017). In order to unveil the reality of whether healthcare workers are implementing the principles of ANTT within their daily practice, a focused ethnographic study was carried out within one institution within a paediatric setting. The following typologies were identified: *Lack of knowledge* (failure to protect the key parts); *Confused terminology* (misunderstanding of ANTT terminology); *Lack of skill* (although staff were aware of the concept of ANTT there was a lack of confidence to practice); *Preference* (despite awareness, staff choose to adopt the technique according to personal preference); *Knowledge and skill staff demonstrated* (appropriate knowledge and skill resulting in the adoption of the technique). Further themes were derived from the interview data: training of staff; ANTT technique variation; and adoption of the All Wales Standardisation

Conflict of Interest

No conflicts of interest have been declared by any author.

“Surely we should all be doing it the same way?” An Ethnographic Study of Paediatric Nurses Adoption of Aseptic Non-Touch Technique (ANTT)

Background

In 2015, Welsh Government invested in a quality assured clinical practice framework in relation to aseptic non-touch technique (ANTT) with an aim to reduce inappropriate variation by implementing an evidence based practice framework (Rowley and Clare, 2011a). All healthcare organisations should adopt a single standardised approach to aseptic non-touch technique and review their policies, procedures, training and audit of practice in relation to aseptic technique (Public Health Wales, 2017). The Association of Safe Aseptic Practice have pledged to work in partnership with healthcare organisations in order to significantly reduce health care associated infections through standardising aseptic technique (Rowley and Clare, 2011b).

Methodology and Methods

Aims

The aim of the study was to gain insight into the challenges faced by clinical staff within NHS Child Health Services to adopting practices in relation to ANTT and intravenous therapy.

Research design

The use of qualitative research enables the identification of behavioural and cultural patterns regarding attitudes about infection prevention control practices (Shah et al, 2015). According to Burns & Grove (2011), qualitative research is as a systematic subjective approach involving perceptual awareness to describe phenomena and interpret meaning. This research method is well suited to study human experience of healthcare, as its aims to draw

conclusions generated by the individuals living the experience (Lo-Biondo Wood & Haber (2006). Ethnography, meaning, ‘portrait of people’ was originally developed by anthropologists as a qualitative social research method to study cultures where the researcher immerses them self within the culture (LoBiondo-Wood and Haber, 2006). Ethnography is perceived as both method and methodology. This is due to the concept that the process does not involve one particular means of data collection, but a style of research enabling understanding of social meanings and activities of people in a specific area, where the approach involves close association with and often participation in the setting (Brewer, 2000). The researcher was (and is) employed as a Practice Development Nurse within the Child Health Department of a Welsh NHS University Health Board Trust. She was actively involved in ANTT training within the department and so acted as a participant observer as part of her researcher role.

Focused ethnography enables the application of ethnographic methods to concentrate on a distinct issue or shared experience within cultural settings (Cruz & Higginbottom, 2013). Ethnographic workplace analysis allows for the possibility of full immersion through being a member of the work force and personally sharing the experiences felt by colleagues, (Tope et al, 2005). Therefore, in order to unveil the reality of whether healthcare workers are implementing the principles of ANTT within their daily practice, ethnography has the potential to explore current practice through immersion within the clinical environment.

Sampling

A convenience sample of 23 registered nursing staff who received ANTT training of intravenous therapy was involved in the study (observed in practice). A purposive, stratified sample of six participants were selected for interview including a ward manager, junior ward

sister, experienced registered nurses and newly trained nurse in intravenous therapy. The sample inclusion criteria were registered nurses who are involved with intravenous therapy and who had received ANTT training and a direct observation of practical skill (DOPS) competency assessment. The exclusion criterion was staff who have not received ANTT training.

Data Collection

The Director of Nursing Services and Director of Medical Services for a university health board granted permission to access to potential recruits into this study and approved access to two paediatric NHS wards. Data collection was equivalent to 7.5 hours or 1 day working alongside clinical staff during their normal working time, undertaking field notes through participant observation for a period six clinical shifts over one month. Following this period, a stratified purposive sample of six participants were invited to attend semi-structured interviews lasting no longer than twenty minutes in their clinical area. Data collection included participant observation field notes, the ANTT audit questionnaire and semi-structured interviews. The study setting included both a medical and surgical ward in the paediatric department on a single hospital site within the university health board trust. During field visits, reflective thoughts and observations were documented within the field notes. In addition, an ANTT audit proforma was utilised to directly observe practical skill. Semi-structured interviews were undertaken in an office within close proximity to the clinical environment. Selected participants received a letter inviting them to attend an interview at a negotiated time of convenience to them. Interviews lasted no longer than 20 minutes. The interviews were audio recorded and transcribed by the researcher.

Ethical considerations

Ethical approval was granted from the Swansea University ethics committee and the relevant NHS research and development ethics committee in October 2016 subsequently followed by ethical approval from NHS local Health Board Research and Development. Gatekeeper permission was also secured as previously stated.

Data Analysis

Processing of the qualitative data was undertaken using the process adopted by Bryman (2015). The data were: read case by case, and major themes were identified including , unusual issues and group cases; read again, the text was marked, key words were highlighted and coding begun. The text was then coded, and following coding, theoretical ideas were related to the text in order to interpret, interconnect, identify significance and relate the interpretation to the research question.

Brewer (2000) identifies two steps for ethnographic coding; index coding and open coding. Table 1 represents codes as ‘descriptors’ identified from significant words or phrases transcribed in the field notes. An extract from the field notes was reviewed by an academic supervisor to illuminate the risk of researcher bias.

Table 1- Descriptive Open Coding (insert here)

Coding of semi-structured interviews

The interviews were transcribed by the researcher and analysed using qualitative content analysis. To aid objectivity, a sample of the transcript was reviewed by the academic supervisor. During this process new descriptive codes and categories were developed.

Data were further analysed according to Wolcott (1994)'s qualitative analysis process and emerging themes were reflected upon against the theoretical framework of Kirkpatrick's (1967) model of training evaluation. This framework adopts the characteristics of midrange theory and distinguishes four outcome levels: Level 1 -Reaction; Level 2 - Learning; Level 3 - Behaviour; Level 4 - Results.

Findings

The following typologies were identified: *Lack of knowledge* (failure to protect the key parts); *Confused terminology* (misunderstanding of ANTT terminology); *Lack of skill* (although staff were aware of the concept of ANTT there was a lack of confidence to practice); *Preference* (despite awareness, staff choose to adopt the technique according to personal preference); *Knowledge and skill staff demonstrated* (appropriate knowledge and skill resulting in the adoption of the technique).

Further themes were derived from the interview data: training of staff; ANTT technique variation; and adoption of the All Wales Standardisation. The findings from data analysis were reviewed against Kirkpatrick's (1967) Evaluation theoretical framework for further confirmation and validation.

Level 1: Reaction

This level acknowledges the effectiveness of training. When staff were asked what they thought of the way the ANTT training had been delivered, there was a positive response:

'I think it was very good. It was informative and displayed appropriately. Yourself and your colleague have gone to the ward and introduced it. This was audited and assessed and it was done in a much-organised manner. I think overall it was very good and

obviously, we had the e-learning to do as well, ideally prior to attending the study day. It was very organised'.

[Interview 1, P2, T38]

An innovation is more likely to be accepted if is promoted by someone who shares similar character and language of the target audience (Dulcan, 2005). Successful training should build upon learners past experiences and connect learning to clinical practice (Knowles et al, 1998).

Level 2: Learning

This level seeks to determine whether knowledge transfer, skill development/modification and attitudes were changed. Following data analysis, typologies were subsequently identified as; lack of knowledge, confused terminology, knowledge without skill and knowledge with skill.

Lack of knowledge

A lack of practitioner knowledge and understanding of key principles was observed.

Observed deviation from the taught technique that involved unnecessary use of a sterile field, use of both sterile and non-sterile gloves and potential failure to protect key parts. During the preparation phase I was confident there had been no risk of contamination, however in order to reach the patient we had to leave the treatment room and negotiate a corridor. I therefore chose to intervene as I noticed the key parts of the syringes were exposed. I informed the nurse she would need to protect the key parts before we could leave the treatment room.

The nurse appeared to understand the reason why I had intervened. [Nurse R7, (Ward A- Extract from field visit 3)]

Confused terminology

Despite undergoing training, some staff still appeared confused regarding the concept of asepsis. During observation, I asked what was the aim of the technique?

‘To be as close to clean and sterile as possible’ [Nurse R6, Ward A, field visit 3]

Knowledge without skill

According to Harrison (2005), learning is a social process, influenced by everyday experiences, where a shift of control of learning to the learner develops. During field visits, the researcher became aware that although staff had received the training they did not have the confidence or experience to practice the technique.

How do you find using Standard ANTT with a central line?’ [Extract from field visit 2 & 3]

‘To be honest, I haven’t had much chance to practice the new technique as I haven’t been on duty when I’ve needed to use it. I suppose it’s like anything else, you just have to get used to it, although it’s difficult as I’ve been doing it another way for 10 years’.

[Nurse R9, Ward A, field visit 2]

If individuals do not value the content and are unable to apply it to the work place, it is unlikely learning will be transferred successfully (Knowles et al, 1998).

Knowledge with skill

During field visits, 10 out of 12 staff directly observed administering intravenous therapy displayed the ability to perform to a specific standard in the clinical environment with appropriate knowledge, skill, behaviour and attitude (Franklin & Melville, 2013).

During a ward-based discussion with an experience band 5 staff nurse, the researcher was informed:

‘Before I transferred to this ward I hadn’t had much experience with central lines and I asked staff to show me how to use them until I was competent and felt safe as I would never do anything I didn’t feel safe to do. I have been shown a variety of ways until it was clarified exactly which way you do it. I am now confident with the technique’.

[Nurse R8, field visit 3]

Jenner et al (2002), suggest that knowledge is achievable via training provision, however that does not guarantee sustained behaviour change. Effective clinical practice is the result of a combination of knowledge, skills and attitude (Cooper, 2007). Throughout the field visits and interviews, it was evident that confusion existed regarding the terminology regarding aseptic, sterile and clean. The evaluation of learning provided examples of lack of knowledge, knowledge without skill, knowledge and skill acquisition.

Level 3 – Behaviour

Behaviour can be defined as the extent to which change in behaviour has occurred as a result of receiving training (Kirkpatrick 1994). Throughout my field visits, the researcher had noticed there was a variance in the way staff performed ANTT. Although it is acknowledged that staff maintained asepsis while adopting ANTT, the researcher reflected whether varying

techniques can be confusing for teaching others such as parents and students. According to Ward (2013), understanding intention to perform a behaviour is a key factor in promoting this behaviour. Interviewing participants provided an opportunity to explore this issue further:

'I think it would be great if we could all do it the same way, especially now that we have the bigger blue trays. I notice more people are doing it the same way now. However, I think that it can be difficult to change practice when this is the way you have been doing ANTT throughout your career. I think as long as practice is safe and all key parts are protected then there is always going to be slight variations'.

[Interview 2 Experienced Registered Nurse, P4, T30]

Level 4 – Results

It was noted that rather than fully employing standard ANTT, staff are adapting by using a trolley rather than a blue tray to undertake intravenous therapy. Some nursing staff unnecessarily place a sterile field on the trolley while others manage the equipment in their packets or with caps on, either directly on the trolley or in a blue tray. One of the principles of ANTT is to allow the nurse to risk assess how to achieve asepsis rather than dictate how clinical procedures should be performed (Rowley, 2011a). The researcher observed significant variation in the way that staff approach the technique with central lines. Risk assessments are subjective due to the principles of ANTT that permit the nurse to decide how they can manage the technique and minimise risk of contamination and introducing infection. This raises the question whether this is better for the patient or whether clinical procedures should be standardised.

'I think reflecting on my practice, the techniques has changed based on what a certain area or Ward Sister likes to use. Things have come in and out of fashion and there have been different ways of doing it. Therefore, I think it would be a positive thing if we all sing from the same hymnbook and use the same technique. As a mentor, I'm going to be teaching nurses of the future, and if I teach them, the way I used before they are going to get quite confused. It is better to have the one practice and I would like all my students to learn the same way so that they are not confused'

[Interview 3, Experienced Registered Nurse, P6, T26]

The principles of ANTT allow the healthcare worker to rationalise their behaviour based on the number and size of key parts (the part of equipment that provides a direct mode of access to the patient).

Challenges found by nursing staff with introduction of ANTT

Iedma et al (2015) suggest that people are able to learn from scrutinising their own behaviour and habitual way of doing things. During participant observation, staff were asked to voice their opinion regarding whether they experienced any challenges adopting ANTT. There were comments received regarding the reaction of medical staff.

'Medical staff have raised concerns about the technique. Parents are also taught a different way. I have seen people doing different versions of ANTT,

[Nurse R4, field visit 3, Ward A]

De Bono et al (2014) state medical professionals often prefer to adhere to known practices rather than exploring new innovative methods. Significantly, although the paediatric consultant expressed concerns; he accepted the change of practice from a traditional aseptic technique to ANTT. Nursing staff voiced concerns regarding lack of clarity and standardisation of using ANTT.

'I have observed some people doing a mix of the old technique. They still like to use sterile gloves and a sterile field but then manage the parts in their individual packets. Surely we should all be doing it the same way?'

[Nurse R2, field visit 1, Ward A].

McAteer et al (2014) suggests that implementation of interventions to change health care practice may be influenced by attributes of the intervention (e.g. clarity of instructions for delivery) and psychological factors such as motivation and preference. This attitude was witnessed on both the study ward settings, but appeared prevalent on one ward more than the other due to a variance in the way staff chose to administer parenteral nutrition.

ANTT and Application of Kirkpatrick's (1967) Model of Evaluation

Tarrant et al (2016)'s ethnographic study suggests that when implementing staff training there is a need to go beyond focusing on individual behaviour change and should include an assessment of barriers and challenges to the implementation. There was positive training evaluation by nursing staff to the implementation of ANTT; the researcher assumed that learning would follow, leading to positive organizational results (Reio et al, 2017). However in order for learning to take place it requires a combination of attitude, knowledge and skill development. This study found evidence of insufficient knowledge, and that staff were confused with clinical terminology and lacked the necessary skill to implement ANTT due to

lack of confidence and lack of opportunity to practice sufficiently. Staff who demonstrated competence with ANTT technique also acknowledged their difficulties 'getting to grips' with the technique, with some initially preferring to revert to the previous aseptic technique.

Organizational cultural challenges

It is acknowledged that within the organisation a range of supra- and sub-cultures exist, influencing other existing levels affecting individual behaviour (Karahanaa et al, 2005). According to Public Health Wales (2017), executive leadership is required to support the implementation of ANTT. Commitment requires a robust training and assessment programme, equipment and resources, raising the profile of ANTT and ensuring auditing and robust monitoring systems are in place. Across the organisation, there have been failures with engagement of other health professional groups including medical and allied health care professionals. In order to empower staff to provide high quality care it is essential to commit to a teaching and learning ethic, through the means of routine practice and innovation (Dixon-Woods et al 2013). Culture change requires all those involved with the health service to open their minds and change behaviours (Clark & Nath, 2014). However achieving high levels of engagement is only realistic within positive cultures, where staff feel valued and where relationships are effective between managers, staff teams and departments (Dixon-Woods et al, 2013). The key to improving infection prevention control behaviour is motivation, education and system change all of which are potentially influenced by cultural elements (Borg 2014).

Evaluation

Limitations of the Study

During the research period the level of ward activity was comparatively lower than winter months, which led to limited opportunities to observe nursing staff undertaking intravenous therapy. A longitudinal study including night shifts and weekend working may have provided additional insight. The researcher acknowledged that the outsider occasionally participating in a culture does not have the opportunity to systematically cultivate the collection of all kinds of information at all levels (Wilson, 1977) and future studies should take this into account.

Omitting patients and parents in the research process led to the exclusion of potentially valuable information and further dimensional viewpoints. The value of patient and service user involvement has been acknowledged by National Institute of Health and Care Excellence (NICE) since 1999. NICE suggest that involving patients and service users, focuses on the humanity of the topic and orientation of patient experience, (NICE, 2013). The disadvantages of participant observation are noted as the ‘Hawthorne’ effect. This effect threatens the validity of research as people may perform differently as a direct result of being observed, such as behaving in a way they believe is expected of them (Fiest & Gorman, 2013). However, Cargan (2007) suggest that such altered behaviour is usually temporary and routine behaviour soon returns. Similarly, the interviewer effect can result in respondents failing to admit something or express an opinion depending upon their thoughts regarding the interviewer (Brewer, 2000).

Implications of this study

Changing behaviour and cultural norms at multiple levels of the organisation are key challenges of infection control practice (Pittet, 2004). The findings suggest that in order to drive change, leadership is required at all levels of the NHS organisation, and that this

leadership should espouse the highest levels of knowledge, understanding and clinical evidence in practice. At the core of the organisation are its values, beliefs and rituals (De Bono et al, 2014) and some of these were evident here. The study identified the challenges faced by members of the organisation following the introduction of a mandatory training intervention, some of which were mediated through cultural understanding. Organisational culture is a significant modifier of healthcare worker behaviour, and therefore acknowledging organisational culture should influence infection and prevention control performance significantly (Borg et al, 2015). Future studies should focus on managing the culture change required to address habitual behaviours and any reasons for deviation from standard/best practice.

Modification of infection prevention practices are vital to improve patient care (Pittet, 2004). However it unusual for a single profession to deliver a complete episode of care in isolation (Reeves et al 2011). Senior medical staff and ward managers are highly influential and maintain an important influence on organisational culture and barriers to improvement (Cooper, 2007). Changing behaviour and cultural norms at multiple levels of the organisation are key challenges of infection control practice (Pittet, 2004). Significant factors to improve infection prevention control behaviour are effective education, motivation and system change, (Borg, 2015). Edberg (2010) suggests that resources and opportunity are likely to dictate behavioural achievement.

The findings demonstrate that prior to introducing change, all levels of staff should be consulted and all staff should be trained. Evaluation of practice should take place regularly to address consistency and quality of care.

Relevance of findings to further research

There are few studies that have undertaken focused ethnography in the form of embedded research to study ANTT implementation in clinical practice. The data enabled evaluation on the effects of practice change, as perceived and experienced by the clinical staff concerned. This study was a small-scale study; further studies should incorporate multi-professionals, service-users and additional departments outside of child health across multiple sites in Wales.

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Figures and Tables

Table 1:

Category	Descriptors
Category 1 Ward Acuity	Variety of skill mix Supportive environment Staffing levels
Category 2 Position of researcher	Reaction to my presence Professional duty Embedded research Ethical dilemma
Category 3 Competent	Adopted Knowledge & skill
Category 4 Knowledge or skill deficit	Insufficient knowledge Terminology Knowledge without skill
Category 5 Reaction to change	Adjustment Adoption Acceptance Justification Preference
Category 6 Challenges	Clarification Standardisation
Category 7 Expectations	Leadership Peer observation

	Parenteral expectations Reaction from medical staff
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