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Distributed team health data science in risk of non-Vitamin K Oral Anticoagulant after Intracranial Haemorrhage

Song, J[1], Elliot, E[2], Morris, A[2], Kerssens, J[3], Akbari, A[4], Thompson, S[5], and Lyons, R[1]

[1]Farr Institute, Swansea University Medical School

[2]Usher Institute of Population Health Sciences and Informatics, University of Edinburgh, Edinburgh, UK

[3]Public Health & Intelligence, NHS National Services Scotland

[4]Health Data Research UK - Wales and Northern Ireland, Swansea University Medical School

[5]Swansea University

Introduction

New non-vitamin K Target Specific Oral Anticoagulants (TSOACs) have a favourable risk-benefit profile and debatable cost effectiveness. Large numbers and data from multiple countries in a European study are required to investigate safety issue of TSOACs in subgroups, e.g. people with an intracranial haemorrhage.

Objectives and Approach

We developed an approach to rapidly replicate data and analyses to support cross-country distributed research within the UK/EU using Electronic Health Records (EHRs). This project was conceptualised and initialled by linking relevant datasets held in multiple data warehouses, in Scotland with the Scottish National Data Safe Haven, and in Wales through the Secure Anonymised Information Linkage (SAIL) databank. Analysts in Edinburgh and Swansea had remote access to each other's datasets and worked collaboratively to harmonise variables and analysis scripts. . A common R code script has been produced to harmonise individual data as well as the outputs from the study.

Results

The study screened data on 8M people to develop a cohort that included pseudonymised information of 4,153 individuals in Scotland and 2,676 individuals in Wales, 6,829 individuals in total. Standardised risk analyses were completed in both settings with ongoing work in combining the analyses. In Wales, 39.5% of the patients in the cohort had been admitted to hospitals due to serious vascular events or died caused by these events, after intracranial haemorrhage. Incident rates for male and female are 0.63 and 0.7 respectively. Within the cohort, 0.5% were prescribed with TSOACs and 3% with Warfarin (included as reference). The project is also in the process of including other European jurisdictions.

Conclusion/Implications

The adopted approach was the simplest, yet most efficient and cost-effective method to ensure consistency in analysis and coherence with currently available governance systems of both safe havens. It can also be considered as an initialisation of developing infrastructure to support research using EHRs across the UK and EU.

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