NETIMIS

CASE STUDY

Using NETIMIS to investigate alcohol-related admissions and model variations in patient demographics to better understand the care pathway in the North West Coast

Client: North West Coast Connected Health Cities

Overview

With growing demand on the NHS to provide a high-quality service for a variety of modern healthcare problems with limited resources to support growth; "The NHS is currently facing the biggest challenge in its existence." (MyHealthNHS 2018). To tackle these challenges, the Department of Health have funded a £20 million programme across the North of England called CHC (Connected Health Cities), that aims to find better ways of using healthcare data to improve the effectiveness and efficiency of the NHS, and ultimately improve patient outcomes.

This project involves a collaboration between the University of Liverpool from the North West Coast CHC region, division and X-Labs from the Connected Yorkshire region of CHC. The teams aimed to construct a real-world representation of the healthcare system and patient flows for all unplanned alcohol related admissions to Provider Trusts across the North West Coast.

About

Within the North West Coast, "Alcohol admissions are rising by 11 per cent each year and the NHS cannot sustain this." (LiverpoolAlcoholService 2011). As a result of the current drinking culture, alcohol misuse is leading people to develop chronic diseases such as ARLD (Alcohol-Related Liver Disease), with new figures showing a lower survival rate than most common cancers. It is part of the North West Coast CHC initiative to improve the health care systems in place and support clinical professionals in their delivery of care. The deployment of clinically validated algorithms and smarter data analytics is providing healthcare teams with a more meaningful representation of health care data and better insights into how patients are interacting with healthcare services.

The University of Liverpool have created a data linkage framework based on historical patient data that allows us to better understand and plan for future patient care. Pairing the newly created data linkage framework model and X-Labs simulation software tool NETIMIS, a detailed visual and dynamic model can be created of the alcohol related care pathways. This visual model will provide a greater insight into the patterns of care and a deeper understanding of the health needs of patients in this area, enabling demand to be matched with service provision.

Challenges

The main challenges of improving the alcohol admission rate is to gain a clearer understanding of the current alcohol admission care pathways. Simulated data linkage framework such as those we have created using NETIMS facilitates identification of problems in patient pathways; such as bottle-necks and revolving door scenarios. This will provide commissioners and healthcare teams with insights they need to better target their resources and interventions to better manage the growing number of alcohol-related admissions in the North West Coast. To accomplish this, a method must be constructed to properly utilise the Connected Yorkshire approach with the historical patient data provided by Liverpool University. To develop a true representation of the care pathways, a balance between the qualitative and quantitative data must be found to create the care pathway model and a way to support it with the real patient data from Liverpool University's data linkage framework.

Method

By replicating the Connected Yorkshire's approach in the North West Coast to visually map care pathways, a realistic model can be produced. The process of constructing the model is a combination of qualitative and quantitative investigation.

The majority of the structural data was collected by interviewing NHS staff providing care within a number of the North West Coast's Provider Hospital Trusts. This work was conducted by a team of qualitative researchers based within the University of Liverpool. The insights gathered by this team about the various pathways and flow of patients admitted for alcohol related problems through the healthcare system, was then used to develop the NETIMIS model structure. The model was subsequently populated with real patient data values from Liverpool University's data linkage framework.

Solution

To gain a deeper understanding into alcohol admissions, multiple models will be created. The structure of the models will remain constant but the data populating them will change to show how different patient demographics flow through the care pathway. This will show how different types of patients interact within the system and their distribution throughout. Segmenting patients into specific cohorts based on the pattern of their interactions with health services will allow more targeted interventions at points across and within pathways where problems evidently exist.

Conclusion

Through a successful partnership with Liverpool University and X-lab Systems, multiple models have been created to visualise different patient demographics for alcohol admissions within the North West Coast. Using an intuitive simulation software tool, NETIMIS enables intelligent models to visualise a clear, real-world representation of the alcohol admission healthcare pathways. By following the Connected Yorkshire innovative approach to modelling care pathways, supported by the data linkage framework developed by the North West Coast; it proves transferability of CHC assets at scale and across regions.

References

MyHealthNHS (2018). Today's NHS - our current challenges | myhealthlondon. [online] Available at: https://www.myhealth.london.nhs.uk/help/nhs-today [Accessed 1 Apr. 2018].

LiverpoolAlcoholService (2011). City Alcohol Service Launches. [online] Available at: http://www.liverpoolalcoholservice.nhs.uk/aboutus/news/City_Alcohol_Service_Launches.aspx [Accessed 1 Apr. 2018].

All Alcohol Admissions Care Pathway Within the North West Coast