

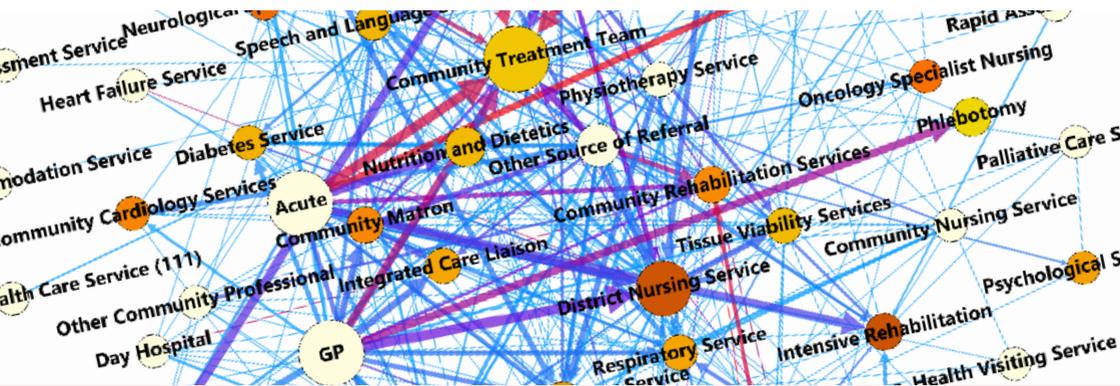


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CLAHRC BITE

Brokering Innovation Through Evidence

Understanding patterns in community referrals for patients 65 years and over and their use of multiple services through data visualisation



Community health care services are integral to overcoming future problems in health care.

However, this sector faces its own challenges in organising services to provide coordinated care given:

- their physical distribution
- patients using multiple services
- increased patient use
- and differing patient needs.

Our research explored this large and complex system to look for common patterns of referrals.

What was the aim of the project?

We aimed to explore, analyse and understand patterns in community referrals for patients aged 65 years and over, and their use of multiple services, through data visualisation. Our research questions were;

1. How can data visualisation help understand complex dynamics in community health care?
2. How can key patterns of referrals and timings of patient use be identified through data

visualisation?

3. How could the information gained from visualisation inform the future planning of services?

What did we do?

A researcher “embedded” within a major community health service provider offered support and guidance to managers and staff interested in getting the most out of routinely collected data. The partnership developed thus;

1. Scoping meetings with clinicians and care managers from a broad range of over 15 community services. We learnt the type of care provided by each service, what a patient’s typical use of service looks like and the timeframe of a typical patient use.
2. Three main characteristics emerged: that all 30+ community services for physical health provided by the Trust could theoretically refer to each other; that a large proportion of possible referral paths would be used; and, that it was common for patients to reuse services multiple times.
3. We then used specific visualisation methods to understand these characteristics within the system - individual patient pathways as well as the general trends and commonalities in patient use. We applied network methods and interactive visualisations to understand the data and better communicate insights from them.



What we found and what does this mean?

Our partnership offered the opportunity to ask more refined questions around the nature and pattern of referrals as they designed services. We gained answers through exploring the raw data and further analysis of more complete data.

Each map focussed on different referral characteristics of community health care. The network helped understand the vastness and complexity of the system; identifying common groups of services and levels of patient activity, while quantifying patient reuse.

Analysing chains – sequences of referrals - and concurrent uses of services – when a patient used several services at one time - provided insight into the progression of patient care and common combinations of services.

Used in conjunction, these maps produced a holistic understanding of the system, providing informative analysis in three ways.

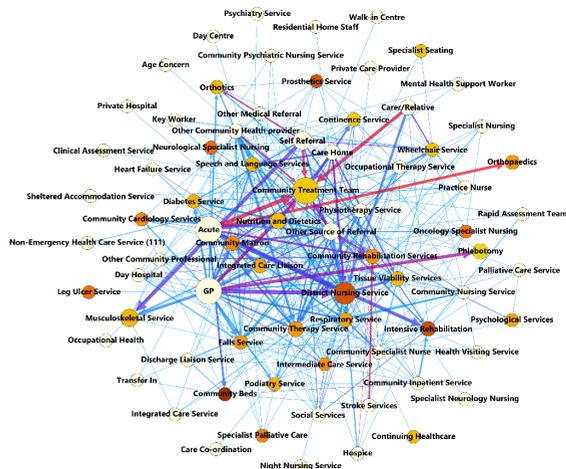
1. They helped to understand complex data.
2. They were accessible and aided the identification of individual or groups of services with interesting characteristics.
3. They stimulated conversation around what information is beneficial in planning these services and what areas may require further, deeper investigation.

Recommendations



Community health care consists of several, semi-autonomous services, each with a distinct function linked by an overarching purpose – the maintenance and improvement of patient health by ensuring equitable access to care that is free at the point of access.

Visualisation helps both researchers and care managers learn more about services and how they are best organised, identifying key dynamics of patient use among different demographics and highlighting possible issues in how patient's access and use services.



What next?

This mapping project generated further questions for future investigation including:

- Can groups of services which patients 'bounce between' be identified by data visualisation?
- Can data visualisation help to identify inappropriate referrals?
- Can a patient's total care be described by including services outside of physical community care, for example, acute care, social care and mental health?

Find out more

Helping the NHS visualise complex referral data
CLAHRC North Thames news item, accessed 25.3.19
<http://clahrc-norththames.nihr.ac.uk/helping-nhs-visualise-complex-referral-data>

Palmer, R., Utley, M., Fulop, N. J., & O'Connor, S. (2019). Using visualisation methods to analyse referral networks within community health care among patients aged 65 years and over. *Health Informatics Journal*.
<https://doi.org/10.1177/1460458218824717>