Empowered patients
Sustainable healthcare

Reducing the high healthcare demand of a few individuals

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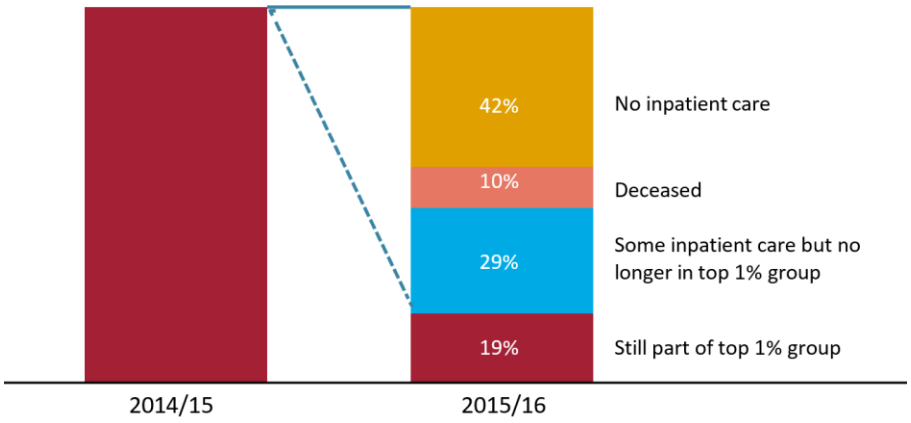
Emergency Medicine Clinician and HN Advisory Board Member, Professor Matthew Cooke talks about how the demands on healthcare systems can be reduced by focusing on a select cohort of the population.

We know that a small proportion of the population use a lot of NHS resources. Most people estimate that about 1% of the population use 30% of hospital resources. While we do not have figures for community care, most people agree it is likely to be similar. This group of people appear to have a high turnover (81%) every year with a high mortality rate (10%).

Figure 1. The 1% of the population who use 30% of healthcare resources. Source: HN data from the randomised controlled trial (RCT) with the NHS Vale of York Clinical Commissioning Group.



Interventions have been introduced in several countries to address high intensity A&E attenders[i ii iii iv v vi vii viii ix x xi xii xiii]. In 2011 a systematic review[xiv] concluded that case management reduced costs and improved social and clinical outcomes for these individuals.

The NHS High Intensity User programme was established to try and reduce the burden on Systems, whilst also improving the care of the individuals. It uses a case management and health coaching approach for identified extremely high-volume users, lasting for up to 18 months. The programme focuses on the top 50 users from A&E data. It is therefore looking at less than the top 0.1% of the A&E population, which is likely to be less than 0.05% of the general population.

The quoted improvements sound impressive: 999 calls down by 15%, A&E attendances down by 38% and admissions were down by 51%. However, we must remember that this group is transient and a significant number will leave over an 18 month period.

These improvements may therefore represent the natural history of the individuals' health seeking behaviours, rather than success of any intervention. We therefore need, not a time series but an RCT to show benefit.

A suitable study protocol was published by Bodenmann et al[xv]. One RCT[xvi] looking at those with mental health and addiction problems (common amongst the highest users) found that 'compared to usual care, a brief case management intervention did not result in significantly reduced ED use or improved health outcomes among frequent ED users with mental health or addictions challenges in a large urban centre in Canada.'

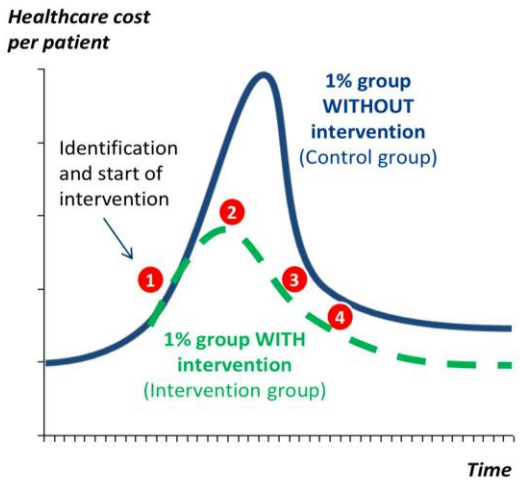
Another RCT[xvii] stated that 'case management may reduce ED use by frequent users through an improved orientation to the health care system,' but the data does not show statistical significance. Therefore, we must consider if the case management of established high frequency users is the best approach.

Do we need a different approach?

By the time people have reached the threshold of a frequent attender, whether this is a number of attendances or being in the top 50, they are likely to have passed their peak rate of attendances. Health seeking behaviours may be established, and their health condition will have progressed. Various studies have shown that many of these patients have common characteristics, we should be able to predict those who are likely to become high frequency users.

For the extremely high frequency users (the top 0.5% of the hospital population) we know that mental illness, alcohol problems, housing issues and deprivation are common. For the next tier, the high utilisation 1% of the population, they often have multi-system disease, live in deprived areas and have respiratory illness. Predictive analytics may be able to accurately forecast which individuals will join this high utilisation group next year, with sufficient specificity and sensitivity to target interventions at a very early stage of their health deterioration. Machine learning will then allow these predictions to become increasingly accurate.

Figure 2. From the RCT with the NHS Vale of York Clinical Commissioning Group his graph demonstrates the need to intervene early (1) to save resources. Saved resources is the area between the blue and dotted green lines.



What is the best intervention?

For high-utilisation individuals, it is likely to be a combination of care coordination and clinical coaching. Increasing their understanding of their conditions and understanding when, where and how to access the healthcare system. An RCT[xviii] of AI supported identification and nurse-led telephone-based, case management intervention demonstrated 30% reductions in A&E and outpatient attendances and subsequent bed days.

This individual intervention may be cost-effective but is very labour intensive per individual. A previously quoted study talked about aligning the patient with the system. However, if there are many patients who are not aligned, then should we not consider realigning the system with the patients?

Using artificial intelligence to identify the individuals means that we can then start to identify cohorts of patients who are high intensity users with similar characteristics. We can then look at how we can redesign the system to respond to these cohorts of high- frequency attenders. For example, one stop clinics for those with multiple conditions or combined physical and mental health clinics with joint decision making across the traditional medical specialties.

Should we still be encouraging case management of the highest 0.01% of the population or should we use artificial intelligence to identify a broader population at a much earlier stage and then use clinical coaching and system redesign?

About HN

HN is a healthcare company that delivers AI guided case-finding, remote monitoring, clinical coaching and virtual ward solutions to the NHS.

Since our UK launch in 2015, we have developed into an award-winning NHS partner and, from March 2020, have been supported by the NHS Innovation Accelerator to scale nationally.

We provide practical applications of population health management, going beyond just identifying high-cost, high-need patients and actually intervening to support them to improve their health outcomes and reduce their care consumption. hn-company.co.uk

About Professor Matthew Cooke

Matthew was formerly the urgent and emergency care 'tsar' for the UK Government, most known for his introduction of the four-hour target. He is also an experienced A&E physician, featuring twice on HSJ's annual "top 100 clinical leaders". His leadership roles have included National Director for NHS 111 and Chief Clinical Officer at Capgemini. @MatthewCooke

Contact

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