Under scrutiny

Population health management uses wide-ranging data to understand what is driving outcomes across whole populations. With the *NHS long-term plan* suggesting all systems should be moving towards its adoption, Steve Brown asks what it is all about

The NHS is on a mission to move from a reactive system that responds to health problems to a proactive model focused on earlier detection and intervention, taking account of the wider determinants of health. Population health management (PHM) is how it hopes to make the change.

The approach gets plenty of attention in the *NHS long-term plan,* with multiple references to population health and the adoption of PHM solutions. These solutions would support integrated care systems to understand the areas of greatest health need and match services to meet them, the plan says. In fact, PHM capabilities are described as key capabilities of a mature integrated care system in the plan's implementation framework

According to NHS England, population health – perhaps self-explicably – is an approach aimed at improving the health of an entire population. It aims to improve the physical and mental health outcomes and wellbeing of people, while reducing health inequalities within and across a defined population. It also includes action to reduce the occurrence of ill health, including addressing the wider determinants of health. This is important, as some reports suggest just 20% of a population's health and wellbeing is linked to access to good-quality healthcare.

Tool for change

PHM is the tool that systems can use to deliver this, using historical and current data to understand what factors are driving poor outcomes in different population groups. This might help identify steps that could be taken to prevent conditions developing or worsening – primary secondary or tertiary prevention. It could even highlight the conditions that make people susceptible to poor health in the first place – air quality and housing, for example. Proactive models of care or other interventions can then be designed to improve these outcomes.

Techniques such as segmentation and stratification are often an important first step, enabling areas to focus on specific sections of the population and consider their different needs and outcomes.

At the beginning of 2019, NHS England ran a development programme with four accelerator systems in Leeds, Dorset, Lancashire and South Cumbria, and West Berkshire. The programme ran intensively for 20 weeks, supported by consultancy Optum, with the aim of giving systems analysis, support, coaching and workshops to help build the systems' PHM capability.

Leeds was not starting from scratch. 'Our journey started three to four years ago,' says Gina Davy, head of system integration at Leeds Clinical Commissioning Group. 'There was a real desire in Leeds across the health and care system to explore a different approach to commissioning and contracting on the basis of population health outcomes, and to deliver on our health and wellbeing strategy to be the best city for health and wellbeing, where people who are the poorest improve their health the fastest.'

Leeds was also building on a strong history of integration – with integrated neighbourhood teams, strong health and care partnership working – including a thriving voluntary and community sector and a linked data set already in place.

At the time, the city's three CCGs were also moving towards merger (which took place in April 2018) and had ambitions of adopting a more strategic approach to commissioning.

As part of this early work, Leeds had broken down its population into eight separate segments – enabling it to better focus on the different needs of different parts of the population. There are four overarching segments – end of life; people living with frailty; long-term conditions; and the healthy population. Long-term conditions and healthy segments are further broken down into three different age groups.

Leeds had also developed a linked data set incorporating data from different sectors, including primary care, acute, community, mental health and adult social care. The city had already been organised into 18 neighbourhoods or local care partnerships, each with populations of 30,000 to 50,000. Four of the most advanced LCPs – Pudsey, Garforth, Seacroft and Woodsley – were selected to be on the programme.

People living with frailty had been established as a clear focus for the city with an outcomes framework to support this. A clinical strategy group had also been set up to outline a high-level model for supporting this population. So, frailty was the obvious focus for the development programme. However, an actuarial model developed by Optum at the start of the development programme underlined this as a good choice.

Frailty challenge

The model showed that people living with frailty represented the biggest cost increase over the next three to four years proportional to the size of the population covered. (There are an estimated 32,000 people living with frailty across the city.)

According to Ms Davy, Leeds was determined that there would be a legacy

from the programme.

She says: 'We wanted to develop the capability to progress PHM when the programme was finished.'

Reflecting the partnership working in the city, the programme has been led by a team of people from across the CCG, public health, adult social care, the city-wide analytics team and with clinical leadership from the chair of the GP confederation. Workshops brought data analysts and finance leads together with the LCPs and representatives from the clinical strategy group. 'The data packs we looked at were very extensive and gave quite powerful information around specific local frail populations. And having this mix of people around the table meant the quality of the conversations – exploring and being curious – really enabled them to drill down on what made sense for them,' she says.

'Many of the practitioners were surprised by what the data showed them. And there was a feeling among the LCP leaders, when we evaluated at the end, that if they hadn't taken this approach, they would probably have gone down the road of someone's pet project, rather than what the data was showing them.'

Informed by various analytical tools – heat maps exploring the factors driving complexity and theographs showing how individual patients moved through various health services – different neighbourhoods selected different cohorts of people to focus on within the wider frailty segment.

For example, people with moderate frailty, balance issues, sleep disturbance and nutritional deficits were the focus in Pudsey, while Garforth concentrated on the frail elderly with dementia living in care homes.

The groups then identified smaller lists of specific people with whom they could intervene – identified by running various search criteria on GP systems, because the linked data set used for population analysis could not be used to re-identify individuals.

Interventions were developed for these small lists – a triage and outreach service in Pudsey, for example, and multi-disciplinary team reviews carried out in the care home in Garforth.

Ms Davy says the LCPs had access to extensive data sets, but as the teams grew in confidence, they began enquiring about the possibility of linking further data sets – in particular from third sector, housing and other council services that are already working with

Pictured: Gina Davy (second from left) and the cross-organisational team leading the Leeds PHM programme

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local populations. As a result, Leeds applied to become a social care digital pathway site to explore how it can take this forward.

Fellow programme system Lancashire and South Cumbria (see box) is also impressed with the power of linked data. Senior responsible officer Sakthi Karunanithi was particularly taken with the mitigated and unmitigated actuarial modelling, which he thinks should be used by all health economies to guide priorities.

Not yet having all the data an area would want is no excuse for not starting work on PHM, says Dr Karunanithi. Areas should start with the linked data that is available, coupling this with local knowledge. Local teams made progress in areas they would not have been able to if they had waited for all data sources to be linked, he says.

Start of the journey

Both Leeds and Lancashire and South Cumbria see the work done so far as a first step. Dr Karunanithi believes the approach is promising and is excited by the potential. But he is also keen to stress that the system is at the start of a very long journey.

There are challenges ahead – capturing all the data relating to individuals' housing, employment and disabilities, alongside health and patient activation measures, is a demanding goal, with significant practical and governance issues to be addressed.

Dr Karunanithi also points out the need for upfront investment – many of the interventions are proactively seeking people who will benefit from support. Although this might lead to system savings downstream, the new service lines must be put in place first.

'We need to find a way to shift capacity locked in hospitals into the community,' he says. 'We aren't seeing a level of impact on acute services yet, with any released capacity being filled up. And the benefits of this approach aren't falling in the same place as the investment is going.' System leadership will be key to addressing this.

Back in Leeds, Ms Davy agrees. 'We are tracking the impact and building the mechanisms to understand the financial impact and outcomes at population level, but it is early days,' she says.

'PHM has been a brilliant experience in Leeds and it is getting great feedback, but it is currently at a really small scale – the mantra throughout the programme has been to think big and start small.'

Both systems highlight the need for new funding and payment arrangements to support

Not all about the data

Chorley neighbourhood team and Dr Karunanithi (inset)

Lancashire and South Cumbria is an integrated care system made up of five local health and care partnerships – four integrated care partnerships (ICPs) and one multi-speciality community provider (MCP). It has some of the poorest neighbourhoods in the country – Blackpool is the second most deprived local authority nationally. For NHS England's population health management development programme, one neighbourhood was selected from each ICP/MCP – based on the primary care networks emerging at the time.

Much like Leeds (see main article), the Lancashire and South Cumbria ICS had already laid the foundations for a PHM approach. Its ICS board had agreed a population health framework and it had an integrated care record system in place.

'This is really about whether you are ready for delivering personalised care,' says Sakthi Karunanithi, senior responsible officer for population health at the ICS. 'We'd already started work looking at preventing diabetes and addressing suicide risk in the community. But we were really just looking at the data globally. We lacked a robust methodology. What we've learnt in the 20 weeks has been eye-opening. We've realised the power of connected information.'

Each team was given freedom to focus on areas of particular relevance or concern in their own localities. This was informed by a number of analytical tools. Dr Karunanithi says the data is a crucial starting point, but only 10% of the approach is about data – you'll only see meaningful change if the right culture is in place.

In Chorley, the team wanted to focus on patients aged between 45 and 60 who were moderately frail and had had more than 10 primary care appointments. The challenge was to narrow this group further to maximise the benefit of any support provided.

The lightbulb moment came when the team realised that the council held data on people receiving assistance with bin collections, which could be used as an indicator of frail people with fewer social links.

In Blackpool, staff knew that people with mental health issues living in houses of multiple occupancy needed more support. But the difficulty has always been locating these people as the information is not stored in healthcare records – and when the NHS does encounter them they have often hit a crisis point.

Again, linking with council data helped identify these people, who were targeted with health coaching and signposting to other psychosocial services.

Lancashire and South Cumbria has profiled its population into three groups: normal risk; rising risk; and high risk. It has not yet assigned people to life stage segments – such as long-term conditions, healthy, or end of life – although it plans to undertake this further work.

However, it has done some work on exploring how it can measure the impact of changes – adopting a patient activation measure across all of its primary care network areas.

future developments – especially as systems look to address the wider determinants of health. 'Population health cannot be improved just by health services acting on their own,' says Dr Karunanithi. 'While we don't have pooled budgets yet, we do have partner agencies working closely with our GPs and neighbourhood teams in aligning their resources to support the individual's need.

'We are exploring various ways, including pooled budgets, as we further develop our population health programme.'

And there is recognition that the current payment mechanisms – with separate contracts for different providers, some based on block arrangements and others linked to activity – do not align with PHM.

'We need to create the conditions and incentives for providers to make PHM the best way for providers and commissioners to work together to achieve improved outcomes,' says Ms Davy.

Leeds' aspiration is to move towards contracting for population outcomes, with a network of providers given a defined budget for delivering these outcomes.

'This will create the opportunities for providers to shift resources to areas, services and support that address the wider determinants of health such as housing,' says Ms Davy.

"PHM is getting great feedback – the mantra throughout the programme has been to think big and start small"
Gina Davy, Leeds CCG

The city is not there yet, although its next wave of LCPs participating in the programme will include representatives from other sectors such as housing around the table.

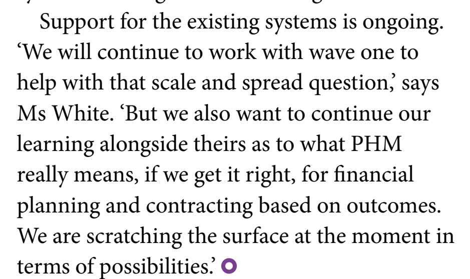
Jacquie White, NHS England's director of system development, says that scaling up will be about avoiding reinventing the wheel. This means disseminating good practice – for example, via a new PHM Academy – but it will also mean systems looking at sharing experience and approaches across different neighbourhoods.

She adds that it will also involve careful consideration of what should be undertaken or commissioned at system, place and neighbourhood levels.

Some systems, for example, are already pulling together organisation-level teams to set up system analytics functions to support care model design at all three levels. She acknowledges that there are constraints currently in the financial framework, but thinks there are existing levers that systems could be helped to use more effectively.

'How can we support systems to leverage the opportunities they've got with section 75 agreements and pooling budgets, for example?' she asks. She suggests there are particular opportunities for supporting cross-sector work to address the wider determinants of health.

Looking ahead



Ms White believes that the four systems have worked at pace, with the programme exceeding expectations despite initial ambitions being high. A second wave of the programme is already under way, with more than 10 further systems starting over the coming three months.

Support for the existing systems is ongoing. 'We will continue to work with wave one to help with that scale and spread question,' says Ms White. 'But we also want to continue our learning alongside theirs as to what PHM really means, if we get it right, for financial planning and contracting based on outcomes. We are scratching the surface at the moment in terms of possibilities.'

Acute responsibility

Acute trusts may traditionally have focused on simply treating the people referred to them or turning up at accident and emergency departments.

But increasingly they are thinking beyond this and looking to understand their own role in improving the health of local populations.

Angela Bartley, deputy director of public health at the Royal Free London NHS Foundation Trust, says acute trusts are turning their attention to population health, which has perhaps previously been seen more as a commissioning function.

'As we are starting to think more as a system, it's right that we should ask about our role in improving the health of the population,' she says. 'How should we be working differently to enable other people to improve the care they give? How can we prevent people coming here in the first place or coming back?'

She says the trust has run public health programmes in the past around smoking cessation, immunisations and getting people back to work, but it is looking to move beyond this, setting up a population health committee.

This committee includes the trust's chief executive, medical director and chairman and is chaired by non-executive and former King's Fund chief executive Chris Ham.

The committee's membership is an indicator of how seriously the trust takes this work. All the trust's work on integrated care systems and clinical pathway redesign is taken through it.

The trust is taking a particular interest in its role in addressing inequalities.

Analysis of various patient pathways by the index of multiple deprivation (an index that ranks neighbourhoods in terms of relative deprivation) revealed a startling fact. 'Everything we looked at had a sharper gradient for those who were the most deprived,' says Ms Bartley.

'They were much more likely to not turn up for their first outpatient appointment – so immediately not even on the pathway of care. They were also more likely to be readmitted.'

There is not a simple answer to this and more analysis is needed. But the board has asked to receive health inequalities data in future alongside the performance data on cancer and waiting times.

The answers may lie outside the NHS. Children may end up on the trust's wheezy child pathway, but the cause or exacerbating factor may be pollution or living in a house with smoking parents.

These issues will need a system response, but the Royal Free – and acute trusts in general – have a key part to play in this.