The NHS at 75: A point of reflection for service design, anticipating demand, and the urgency of intelligence.

Dr Mark Ratnarajah, practising NHS paediatrician and UK managing director for C2-Ai considers the role of technology in providing a new understanding of patient risk, and what this means for services as the NHS turns 75.

75 is a significant milestone. What are your personal thoughts and feelings about the NHS turning 75?

When I first started working in the NHS nearly three decades ago, typical days involved quite long hours in hospitals and other healthcare organisations. There was a sense of camaraderie and a shared purpose in what we did. This was recaptured during the pandemic where people went much further than the extra mile and were doing things that were definitely outside of their comfort zone.

But of course, that's very difficult to sustain in an environment where pervasive demands are seeing increased volumes of work against reductions in living conditions for many healthcare professionals.

The NHS is a remarkable institution to work for. But right now, it also finds itself in a challenging position. 75 years is a point of reflection to consider what we want the NHS to do and achieve. We should ask what our roles are as citizens, and as healthcare professionals, to ensure we have a health service able to support not just us, but patients for the next 75 years.

There is no easy answer to the big questions being raised, but I think there is a recognition that what has happened in the past can't be sustained in the same way.

Part of this means thinking about care models. Already an NHS based around bricks and mortar, where there is a clearly defined separation between social care, primary care, secondary care and other settings, is becoming something of the past. Boundaries are starting to blur, particularly when we are talking about patients with chronic illnesses and multi morbidities: where they have various touch points.

Pathways and the delivery of care are developing, with services reorientating around the patient as the core focus, rather than the hospital.

The pandemic was a good example of where we moved into new models of care delivery using telemetry, video consultation and alternative modalities for therapy.

There has been a greater bio-psycho-social approach to care for patients – with the emphasis being more than just about the physical need, taking the social, healthcare and resilience of the patient into greater consideration.

As the NHS turns 75, record waiting lists have seen this requirement brought into focus, and solutions delivered. For example, we have seen fascinating work in the NHS around prehabilitation, using technology to help surgeons find previously hidden high-risk patients early, so that they can be targeted with individualised support to help them to wait well. In essence, the NHS has sought and utilised new intelligence to gear multi-disciplinary and transdisciplinary services from across an integrated care footprint around an anticipatory pathway, in a way that works for individuals at scale.

This has been about moving from a waiting list to a preparation list as one small aspect of a continuum of care that you know straddles chronic disease management, population health, and personalised healthcare, to respond to changing patient needs.

This can be more cost effective and reduce pressures on the system, but it also means patients getting the best service possible, in line with the original purpose of the NHS.

How has the advancement of health technology and digital health transformed the NHS and what changes have you witnessed firsthand?

The biggest thing for me is not about trying to create new data systems, or smart phone apps, for example.

It is about using information that we already gather in a much more effective and immediately beneficial way.

There is a lot of conversation around interoperability, and often that has connotations around the responsibilities of big tech. But the real opportunity is to adjust that conversation to make sure that people have access to the intelligence to recognise individual patient needs, at the time that they need it, and that such recognition is conveyed across the people that need to know.

A better understanding of each patient's risks can help to build pre-emptive pathways. We are seeing this already, where proactive action is having a significant impact on how waiting lists are managed.

Recently we have seen entire regions using augmented intelligence to risk stratify their waiting lists – gaining an understanding of the risks facing each and every patient on the waiting list. NHS organisations that have pioneered here have been able to deliver a faster clearing of their elective backlog, reduced A&E attendances and reduced pressures on ICU, and have saved as much as 125 bed days for every 1,000 patients on their list. In addition, busy surgeons, who are saving around five minutes per triage, have been highly positive about releasing time to focus on performing surgery.

The understanding of individualised risk, at scale, for patients is important so that healthcare systems can change how they manage demand. We need to be able to educate, predict, prevent, and manage on a forward-looking basis, in order to mitigate that demand and address unmet need, to help the NHS to remain sustainable.

What technologies do you envision as game-changers for the NHS in its next 75 years?

There is real opportunity to learn from exemplars and to scale innovation at pace, so that we don't re-create postcode lotteries where some health systems that have embraced innovation can create effective anticipatory models of care, and others lack the resources to make this happen.

Forecasting technology for the next 75 years, given sudden and significant changes that happen in healthcare, can be dangerous. Covid-19, for example, didn't exist five years ago. But what can be a game-changer is for the NHS to be able to better learn from examples where things work well, in order to adopt best practice quickly to create resilience in healthcare.

More immediately, having the technology to understand the risks and needs of a population, and the pathways, therapies, treatments, and medicines that can work for specific patient groups in a population, could lead to substantial changes in current approaches.

Presently, healthcare is often designed around the needs of average patients. But in reality, there is no average patient. Technology applied to waiting lists has demonstrated a new ability to understand in detail every patient's risks, and the required action to avoid that risk leading to harm. The principles behind this are now widely transferrable and could create entirely new thinking for the future NHS built a new paradigm of personalised health.

Areas such as genomics, personalised diagnostic tests and personalised therapeutic interventions for cancer, are creating excitement. But the first step to targeting these approaches comes down to an emerging understanding of individualised patient risk at scale.

The NHS is of course facing significant challenges. In your opinion, what are the greatest hurdles to overcome, and how can the NHS effectively tackle these challenges? Where might health technology and digital health fit into this?

Technology has an important role in helping the NHS to pre-empt and manage demand, as well as supply. This requires a detailed forward view of what is coming – at the patient level, and the population level. This will allow services to be configured across regions – with high acuity patients prioritised and treated in the right settings. Patients with greater resilience can also be targeted and treated in the most appropriate setting. Doing this effectively can help to prevent patients worsening as they wait for treatment, as many have been since the pandemic.

There has been a concerning increase in patients dying or presenting as an emergency in A&E while on waiting lists. Prioritising patients based on their clinical need has been an important solution in some parts of the country, and the opportunity is now to scale the underpinning technology so that similar pathways can be developed in other areas.

Preparing healthcare services to cope with increasing demand has been in focus. But with resources limited, and workforce pressures continuing, mitigating demand through informed anticipatory pathways is now just as important.