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ABSTRACT

Last year in England alone there were approximately 57 million failed attempts to book general practitioner appointments. The following article outlines the spectrum of solutions being proposed and championed by National Health Service (NHS) organisations with a view to providing new models of care in a cost-effective fashion. The intricacies and peculiarities of technology as an enabler in healthcare are explored, with reference in particular to agile iteration as a key methodology in this space.

Keywords: Tech, National Health Service (NHS), MedTech, healthcare, NHS Digital, new models of care, Five Year Forward View, telemedicine.

INTRODUCTION: WHAT CHANGE IS NEEDED IN THE NATIONAL HEALTH SERVICE?

This is a question that has been asked hundreds of times and has hundreds, if not thousands, of truly valid answers. While some of these are more nebulous and conceptual than concrete and measurable, ultimately where we must look is to policy change that has come from service-wide consultation and information gathering.

In January of 2015, National Health Service (NHS) England announced a new programme, the New Models of Care Programme, to focus on the design and implementation of new models of care in health and wellbeing.[1] It set itself the task under Samantha Jones, Director of the New Models of Care Programme, UK, of achieving the rapid change that was recognised as necessary in the NHS Five Year Forward View.[2] While the Five Year Forward View set out a clear view on what change should look like in the NHS, it is 'on the ground' implementation processes that will drive this view to be realised.

The head of NHS England, Mr Simon Stevens, outlined the progress to date at the recent Liverpool NHS Annual Conference but also highlighted the need for further progress in urgent care: "We need to redesign the way our urgent care system works. The current system is confusing the public. We have to do a better job of joining it up. We need to simplify the urgent care spaghetti so we can manage the demands being placed on us." Mr Stevens urged parts of the country to step forward as urgent care vanguards. Organisations and partnerships were asked to come forward and help the NHS to innovate, and 50 were chosen as part of a rigorous process of selection. Each vanguard is taking a lead on developing new care models as a blueprint for the NHS moving forwards.[3] Many are in Primary Care, because evidence shows that healthcare systems with a greater focus on Primary Care help to keep people healthier for longer.[3]

While vanguards are a fantastic step in the right direction, their setup process prevents the smaller scale innovators from getting involved. Thankfully, vanguards are not the only solution being proposed and championed; there is a multi-pronged approach to the change that needs to occur to relieve pressure on our urgent care system. The following is a non-exhaustive list of current avenues:

Academic Health Science Networks

The goal of Academic Health Science Networks (AHSNs) is to translate research into practice,

through the alignment of innovation, training and education, clinical research, and healthcare delivery. Billed as 'systems integrators', AHSNs have been established as small autonomous enterprises with a specific 5-year NHS England commitment. Where they differ from traditional delivery vehicles is their focus on return on investment, in keeping with lean economic principles described later in this article.

NICE Implementation Collaborative

The National Institute for Clinical Excellence (NICE) Implementation Collaborative (NIC) is a partnership between NICE, the NHS, and multiple key health organisations and patient bodies. The goal is to drive improved access to NICE-approved medicines and technologies, and the key element is that it does this in a timely fashion. Having multiple large organisations increases friction and decreases agility; the NIC plays an important role in 'redrawing the landscape' by identifying barriers and allowing the right people to collaborate on practical solutions.

Innovation Connect and Portal

Anyone who has worked at any modern tech giant will tell you that opening up access to innovation support to everyone is a vital part of gathering an adequate spectrum of ideas. Innovation Connect supports innovators with ideas that have a clearly defined need and clinical support, while the Innovation Portal allows anyone to share ideas and meet other people with similar interests and experience. This comes down to scientific principles; the higher the 'N' value for a particular experiment, the more likely you are to get a statistically significant result.

Funding: Challenge Prizes and the Small Business Research Initiative

Arguably one of the world's most successful innovators, Elon Musk, whose founded companies include PayPal, Tesla Motors, and SpaceX, cites the basic psychology that has led to his success: "people respond to precedence, incentives, and superlatives." The NHS England Innovation Challenge Prize provides financial incentives to encourage, recognise, and reward key frontline ideas. The Small Business Research Initiative (SBRI), championed by the aforementioned AHSNs, provides another route of competition to address unmet health needs.

National Innovation Accelerator

The National Innovation Accelerator (NIA) is focussed on prevention, early intervention, and long-term condition management. Through support of Fellows to take innovations to NHS providers and commissioners, the NIA aims to deliver the commitments of the NHS Five Year Forward View.

Test Beds

Set up to help pioneer the use of interconnected devices for monitoring and data analysis, NHS test beds are allowing early evaluation of technologies in areas such as home monitoring, which many see as a key area for future development and potential cost-saving. The Internet of Things (IoT) element of this is particularly interesting; while the small agile nature of a test bed setup allows iteration on processes at the point of delivery, the NHS as a whole represents a key opportunity for scale where effective solutions are found.

Clinical Entrepreneur Programme

Involvement of frontline clinicians has long been seen as a key component to allowing the kind of problem-orientated solution testing that is needed. But, while allowing free rein on ideas and concepts for change allows a fast narrowing down of options, the true effect of each pain point is difficult to evaluate without a deep knowledge and experience of the multitude of processes involved. Doctors, who work in parallel process lines across specialties and rotate between trusts more frequently than many multidisciplinary team colleagues, see system after system and problem after problem. Recognising their role in problem identification is important but where the Clinical Entrepreneur Programme (CEnt) will make the biggest impact will be supporting doctors to implement and iterate their solutions to the wider health service.

HOW BIG IS THE PROBLEM?

In 2015 there were 57 million failed attempts to book general practitioner (GP) appointments in England alone.[4] The majority of these, on analysis of patient survey data, failed because of a lack of appointments on the day wanted and at the time requested.

Mr Stevens speaks of the "demands being placed on us"; his words echoed by the same patient survey data, which is the result of questions asked of nearly 1 million people each year showing a clear

rise in expectation of appointment immediacy year-on-year.[4] But even aside from the level of patient expectation, it is an objectively measurable numeric demand (more patients and more appointments per patient) that is increasing. The issue becomes more complicated when you look at factors such as administrative change and workforce alteration nationally.[5] But the effects of an overall increase in demand on GPs is clear to see, it was reported recently by the British Medical Association (BMA), relating particularly to the shortening appointment lengths as GPs try to cope with demand.[6] The BMA stated in no uncertain terms that the average 10 minutes per appointment that has become the norm is putting many complex patients in the UK at risk.[7]

HOW CAN TECHNOLOGY HELP?

Any communication system that still regularly uses faxes, in 2016, could benefit from today's technology. Unfortunately, this applies in both primary and secondary care settings across the country. And yet it is the fault of no individual when parts of a large organisation fall behind other industries in technology uptake; rather it is a function of in-agility and often resource focus in other areas. Healthcare, where the NHS has been at the forefront of increasing standards of clinical care inexorably since its inception, has its own 'unknown unknowns' such as new infectious disease outbreaks and avenues of costly treatment research. This is the reason management consultants have been called in to help manage trust-wide issues with MBA-style modelling.

But more than simple hardware upgrades, technology in this decade has brought with it a wave of logical thinking; where system design is widespread and iterations of architecture and protocol are commonplace. The agility of start-ups in the world-leading London tech scene is nothing new (after all, large corporations all generally began as small nimble companies) but their popularity and subsequent success is a testament to the 'lean' process that they nearly universally undergo to achieve success.

All of the above listed NHS England avenues for aiding urgent care point to lean processes as the optimum methodology. It is exactly for this reason that NHS England's Innovation team have set up the CEnt Fellowship, supporting front-line clinicians to take their ideas for innovation forwards, and iterate them to fit a marketplace that badly needs efficiency. Soon this fellowship will be extended to Allied Health Professionals, and ultimately to patients themselves. To paraphrase Sir Bruce Keogh, Medical Director of the NHS, at the CEnt opening event: in what other context would you make it difficult for your most involved and intelligent organisation members to innovate and lead change?

WHY THE UBER MODEL DOES NOT WORK FOR HEALTHCARE

As people see the 'uberification' of various industries, those on the fringes of healthcare begin to rub their hands and dream of the kinds of figures that healthcare generates in revenue. The next big tech unicorn, it is speculated, will come from digital health. Deloitte predicts 35% compound annual growth rate in what it calls 'mHealth' in the UK, while other industry onlookers predict even higher expansion. "What is not to like?" they ask. "Doctors on demand, to your door, whenever you need. How can it be a bad thing?"

There is of course much to be said for increased patient autonomy and using technology as an enabler for that is inherently a good thing for healthcare and patient empowerment. But when it comes down to extension of another industry's model, medicine is not the simple carriage of a person from one place to another, and doctors are not constantly circulating and simply in need of efficient redirection by a consumer-based service. Healthcare professionals as a whole already function in a relatively economical way in the community for face-to-face interactions; patients attend their surgeries (when well enough to do so) and the doctor sees far more patients this way than if he or she were forced to do house calls for all of those patients.

This is not to downplay the inefficiencies of a 'localised' system (immobile resource scaling and potential condition cross-contamination) where aspects could be delocalised. The above taxi driving analogy however would be more accurate if it were extended so that each person who wanted a taxi was unsure where they wanted to get it to, was unsure of the urgency, and in fact could only vaguely describe where they were presently located.

The solution, therefore, is not about shuttling doctors to their patients, on demand. It is about finding where it has been inefficient for a relatively fit and well patient to attend their GP, only to be

asked a few simple questions and sent on their way (occasionally clutching a signed piece of paper that will take a while to transform into treatment, normally at another institution altogether). It is about streamlining that interaction, such that GPs' time is opened up to dealing with those who need extensive history taking and examination; the elderly and those with chronic, poorly controlled conditions.

The NHS New Models of Care is about exactly that; the need for change has been recognised in the Five Year Forward View, and the various approaches outlined above are the lean methodologies for speeding up the process. Rather than being 'unfocussed', a widespread lean approach allows the kind of quantitative and qualitative testing and hypothesis acceptance and rejection that clinicians are very familiar with. The rapid iteration of these results is the part that needs to be focussed upon if we are to achieve significant change in such a large organisation; we should test safely until the optimum change is seen, and then provide evidence of safe, effective impact at scale.

The peculiarities of medicine that have kept it at a distance from innovators in the past are beginning to melt away. A decade ago, streamlining consultations based on likely clinical simplicity may have been perceived as too disruptive to be a working model. To extend the taxi analogy, it would be akin to trying to predict which taxi hailer is likely to want the shortest ride ahead of time. Now however, we have the technology provided by search engines and electronic patient records that gives demographic information and allows prediction to become a health-needs foresight.

CONCLUSION

In the 'big data' age, we are able to predict health outcomes in ways not thought possible in the past. The NHS New Models of Care, alongside complicit bodies like the Information Commissioner's Office (ICO) and the UK Department of Health, will allow innovation that safely keeps patient data under the watchful eye of appropriate informational and clinical governance. The 'crown jewel' of the welfare state has a unique standpoint on the health of a nation, just as Twitter (San Francisco, California, USA) has a unique standpoint of the security situation at the Olympics as it unfolds. The key is harnessing this in a safe and responsible manner. Our NHS, in this sense, represents a key opportunity to move human health forwards. The recognition of the need for guidance and directed strategy in this respect, from the very upper echelons of the world's fifth largest employer, is the first step on the road to bringing about the change that is needed. And in this author's humble opinion, it is just a matter of time before healthcare has its own 'Uber' model.

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