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The future of public services: digital patients

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#digitalpatients

Reform

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About this paper

Much has been made of the role technology can play in delivering more efficient, intelligent and citizen-centric public services. Digital services will be crucial to meeting the Prime Minister's vision of a 'smarter state'. To date, however, public services have barely scratched the surface of technology's potential. This paper is the third in a series looking at the transformative role technology will play in the future delivery of public services.

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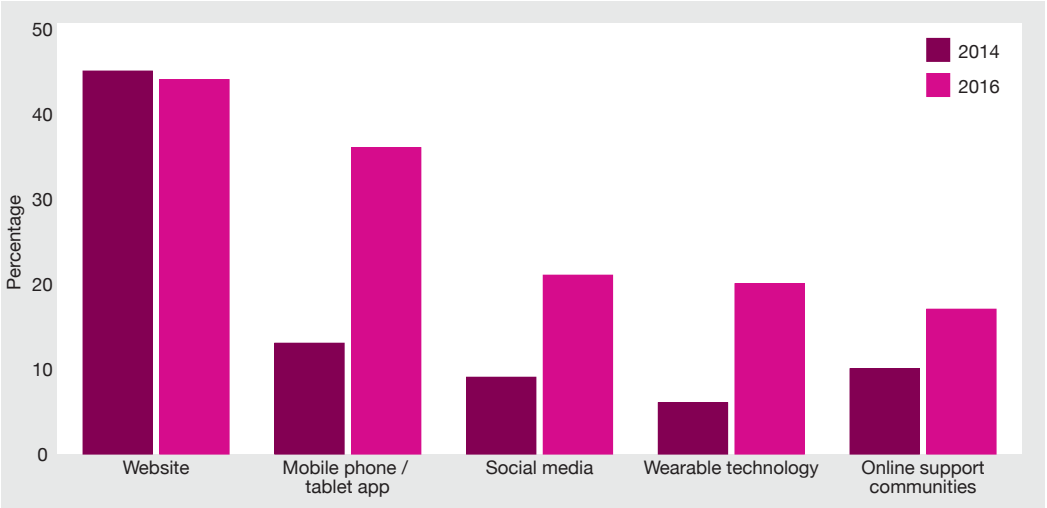
Expert patients

The information revolution is on the brink of transforming healthcare. Policymakers are using big data techniques to evaluate drugs more effectively, identify patterns in the prevalence of disease, and understand phenomena such as bed-blocking.[1] At the same time, personal attitudes towards healthcare are changing. The use of health apps in the UK more than doubled between 2014 and 2016; for wearables, usage tripled (see Figure 1).[2]

Figure 1: On the rise: UK consumers are using more digital products to manage their health



Source: Accenture, *Digital Consumer Health Engagement 2016 – Global Report*, 2016

This growth is easy to explain. Wearable devices can help diabetics monitor their glucose levels; symptom-tracking apps can improve asthmatics' understanding of their condition. The real-time information patients are now generating from their bodies would be almost unimaginable to clinicians working a couple of decades ago. Digitisation is rendering the invisible visible.[3]

For policymakers, these devices present an opportunity to improve NHS performance at a time when budgets are strained. Facing a £30 billion funding gap by 2020-21, the health service needs to deliver productivity gains more than twice the historic average.[4] Harnessing the "renewable energy" that could be unlocked by "boosting the critical role that patients play in their own health" is a key part of this plan.[5]

The gains from patient engagement can materialise in a number of ways. A randomised control trial in America found a diet- and exercise-monitoring device helped consumers lose an additional 3.9 kilograms over a 12 month period.[6] Given the annual cost of obesity to the NHS stands at £5 billion, even marginal improvements in patient behaviour can deliver meaningful savings.[7] More generally, those with low health literacy have poorer health, go to hospital more frequently, are less likely to adhere to prescribed treatments, experience more drug and treatment errors, and make less use of preventative services.[8] Apps and wearables are a vehicle through which the NHS can 'activate' these patients – improving outcomes and saving money in the process.

1 Peter Groves et al., *The 'Big Data' Revolution in Healthcare: Accelerating Value and Innovation*, 2013.
2 Accenture, *Digital Consumer Health Engagement 2016 – Global Report*, 2016.
3 Atul Gawande, 'The Reith Lectures 2014: Why Do Doctors Fail?', 2014.
4 NHS England, *Five Year Forward View*, 2014.
5 Ibid.
6 Bonnie Spring et al., 'Integrating Technology into Standard Weight Loss Treatment: A Randomized Controlled Trial', *JAMA Internal Medicine* 173, no. 2 (2013).
7 HM Government, '2010 to 2015 Government Policy: Obesity and Healthy Eating', 2015.
8 Cathy Corrie and Amy Finch, *Expert Patients* (*Reform*, 2015).

The new patient-clinician relationship

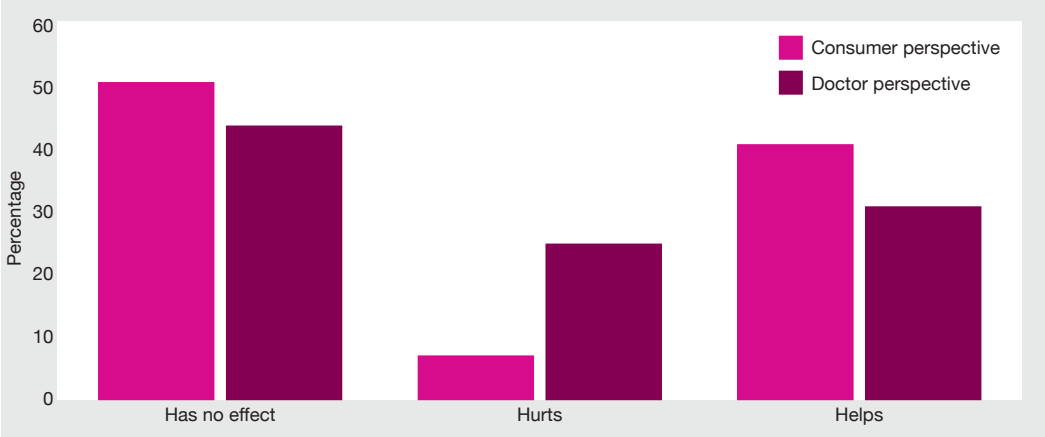
At present, however, digital products are not achieving their full potential. While 84 per cent of British citizens are willing to share wearable and app data with their doctor, fewer than half of users do so.[9] This is a missed opportunity. To fully capture the rewards of digital health products, consumers need to share the data they are generating with their care teams. A joint view will cut the time spent relaying information between patients and clinicians, give care teams a greater sense of how the patient is doing between consultations, and – particularly for those with chronic conditions – enrich conversations about how to ameliorate symptoms.

Until recently, the digital infrastructure to enable data sharing at scale did not exist. As of March 2016, however, GPs are required to give patients complete access to all coded information in their health record.[10] Awareness is currently low, yet this resource may fundamentally change the patient-clinician relationship.[11] Consumers could use their electronic health record to upload, for example, their vital signs in real time. Questions such as who has control over the 'gateway' to this information exchange have not yet been fully resolved, "but if we get this right," argues Beverley Bryant, Director of Digital Technology at NHS England, "electronic transaction of information will simply become the de facto way of interacting with the NHS."

Securing clinical leadership

Policymakers will need to overcome a series of challenges before this vision can be realised. The proportion of British citizens that say technology helps them understand their condition or medication has declined by 7 percentage points over the last two years – a trend replicated in Singapore, America and Australia.[12] According to David Champeaux, Managing Director of Healthcare Strategy at Accenture, this might reflect the deluge of information consumers are now faced with. "Presented in an uncurated way, user-captured raw data can sometimes create more confusion than clarity, limiting the value of products but also their sustained adoption." A patient measuring their heart rate, for example, might be alarmed by readings that would be dismissed by a seasoned cardiologist as statistical noise. Concerns regarding false positives may also explain why nearly as many doctors in the UK believe wearable devices will increase the cost of healthcare as those holding the contrary view (see Figure 2).[13]

Figure 2: Will wearable health devices reduce the cost of healthcare?



Source: Accenture, *Digital Consumer Health Engagement 2016 – Global Report*, 2016

9 Accenture, *Digital Consumer Health Engagement 2016 – Global Report*.
10 NHS England, *Patient Online Support and Resources Guide: Second Edition*, 2016.
11 Accenture, *Digital Consumer Health Engagement 2016 – Global Report*.
12 Ibid.
13 Ibid.

This scepticism is problematic. As the Scottish Government recently recognised, clinical leadership is absolutely essential to the adoption of technology and acceptance of associated change.[14] In Australia, for example, the clinical value of an electronic health record programme introduced in 2012 was curtailed by disappointing patient uptake.[15] In a review which prompted a reset of the programme, the Government concluded underperformance was related to insufficient consultation with practitioners.[16] Simply giving patients the opportunity to engage with their health is not enough – securing clinical leadership is also necessary.

Yet this is easier said than done. The clinical community has been resistant to giving patients complete access to their data, with just 22 per cent of UK doctors agreeing full disclosure should be granted compared to 81 per cent of consumers.[17] NHS England is using a number of tactics to keep doctors on board, including contractual levers, webinar support and an investment package contained in the recently published *GP Forward View*.[18] These are welcome steps, but policymakers will also need to address whether services are currently designed to take full advantage of digital opportunities. "Rather than viewing technology as point solutions, we need to design digital services into people's lives", argues Champeaux.

Digitising quality assurance

This task will be made easier if clinicians are confident the products consumers want to use are worthwhile. Regulating the rapidly growing mobile health market – which already stands at $13.7 billion globally and is forecast to grow by 34 per cent annually over the coming parliament – has been a difficult task.[19] NHS England's initial response was to set up the Health Apps Library, a portal to review and recommend products against a defined set of criteria, but the site was closed in the wake of evidence that there were "systematic gaps in compliance with data protection principles".[20] In its place, NHS England and the National Information Board has set in train a new endorsement model, whereby apps need to pass a more vigorous, four-stage process – including an independent impact-evaluation – after which they will gain an 'NHS kitemark'.[21]

In a welcome moment of candour, Deputy Director of Digital at NHS England Diarmaid Crean admitted there is a 50 per cent chance even this new framework will fail.[22] The challenge stems from the fact that the digital economy is highly fluid. New products emerge, change the market, and then are usurped in a short space of time. If the four-stage process cannot respond to this dynamic environment, NHS England may end up accrediting products that have been rendered obsolete.

An alternative to this command and control approach would be to move towards a purer model of open peer review.[23] Trip Advisor is a testament to the power of these techniques, which are being applied to increasingly complex fields. The Faculty of 1,000 Group gives biomedical researchers the opportunity to publish papers online provided a set of minimum standards are reached. Instead of the traditional model whereby independent referees anonymously offer feedback, papers – and the underlying raw data – are critiqued on a voluntary and transparent basis by the network of academics.[24]

14 NHS Scotland, *eHealth Strategy 2014-2017*, 2015.
15 Krister Partel, *Towards Better Implementation: Australia's My Health Record*, 2015.
16 Department of Health, *Review of the Personally Controlled Electronic Health Record*, 2013.
17 Accenture, *Digital Consumer Health Engagement 2016 – Global Report*.
18 NHS England, *GP Forward View*, 2016.
19 P&S Market Research, *Global mHealth Market Size, Share, Development, Growth and Demand Forecast to 2022*, 2016.
20 Kit Huckvale et al., 'Unaddressed Privacy Risks in Accredited Health and Wellness Apps: A Cross-Sectional Systematic Assessment', *BMC Medicine* 13, no. 214 (2015).
21 National Information Board, *Enable Me to Make the Right Health and Care Choices: Providing Citizens with Access to an Assessed Set of NHS and Social Care 'Apps'*, 2015.
22 digitalhealth.net, 'App Endorsement: 50% Chance of Success', November 11, 2015.
23 The current four stage process does include a crowd-source stage. National Information Board, *Enable Me to Make the Right Health and Care Choices: Providing Citizens with Access to an Assessed Set of NHS and Social Care "Apps,"* 2015.
24 F1000, 'Why Publish on F1000Research?', 23 May 2016.

Whether a given article is taken seriously by the community will ultimately depend on the number and content of these peer reviews, but the flexibility of the platform creates a faster, more accountable and open feedback loop.

If these techniques are sufficiently rigorous for academia, there is little reason why NHS England could not apply a similar approach to apps and wearable devices as clinicians and consumers seek out which products to use. “It is time the NHS adopts the collaborative and open business models, as well as the technologies, of the digital economy,” argues Champeaux. After all, consumers may place greater trust in the wisdom of crowds than the judgement of officials.

The emerging digital patient

As in other sectors, the use of digital products raises concerns about exclusion. The emergence of digital patients could exacerbate inequalities in life expectancy, which have started to increase for the first time since 1870.[25] While three quarters of UK adults now own a smartphone, those most likely to gain from health interventions – low income earners and older people – are least likely to own a device.[26] For this reason, NHS England has rightly made widening digital participation a priority. An initiative with the Tinder Foundation has already made contact with more than 235,000 individuals, and raised awareness about online tools such as NHS choices.[27]

Provided policymakers retain a firm focus on these pitfalls, the opportunity to extend the digital health agenda is significant. Analytics and decision support will strengthen the capability of apps and wearable devices over the coming decades, cutting out the anxiety and false positives that many fear will be the result of digitisation. Such tools could notify care teams when concerning readings emerge. Patients with recurrent symptoms could be sent information about treatment options.

Yet the real growth will be in the use of behavioural science to design digital health solutions. Health professionals have an increasingly precise understanding of physiology, but what drives patient behaviour is less well understood. The digital patient might offer a means of correcting this imbalance. The forthcoming explosion of data will give care teams an insight into which apps or devices succeed in changing the daily habits of consumers. Care plans could become behaviourally, as well as medically, personalised. Given the potential wellbeing and cost efficiencies such a transformation would deliver, policymakers must continue to focus on securing the future of digital patient initiatives.

25 Les Mayhew and David Smith, *An Investigation into Inequalities in Adult Lifespan*, 2016.
26 Deloitte, *Mobile Consumer 2015: The UK cut: Game of Phones,* 2015; We are Apps, *UK Mobile Devices Usage and Demographic Roundup*, 2013.
27 Tinder Foundation and NHS England, *Improving Digital Health Skills in Communities*, 2016.

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