ehealth 2.0:
How health systems can
gain a leadership role in
digital health

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"Health systems around the world clearly recognise the potential of digital health; over the past decade, they have invested heavily in national ehealth programs. Most, however, have delivered only a modest return as measured by higher care quality, greater efficiency, or better patient outcomes. In some cases, ehealth projects such as the National Program for IT in UK have been cancelled because of significant cost overruns and delays.[1] Such ambitious IT initiatives – with a clear focus on the IT support for clinical professionals – are typically beyond the core mission of healthcare systems, which also often struggle with legacy systems that impede data integration."

Meanwhile, the advent of smartphones, cloud computing, and global connectivity has created a universe of consumers accustomed to checking bank balances, making purchases, and watching movies on their phones. Increasingly, those consumers wonder why health systems cannot provide similar innovative digital health services. Innovative digital health companies would appear to be best positioned to meet this demand by developing digital health applications. Such digital innovation is in their DNA; after all, they have attracted billions of dollars in venture capital, and they have the flexibility to design applications that cater directly to patient groups. Thus far, however, digital health companies have been impeded by a lack of access to health data along with uncertainty about how to distribute the economic benefits generated by those apps.

As system leaders struggle to unlock the full potential of technology in healthcare, they must answer three fundamental questions:

1. Who should pay for digital health applications and services?

2. What evidence of effectiveness should be required to justify reimbursement?

3. What conditions must be in place to provide start-ups that develop successful health applications with a sustainable business model?

We believe the solution is to promote collaboration among providers and digital health companies by enabling the exchange of health data —a vital enabler of more efficient care delivery. To drive technology advancement and adoption, each national or federal health system should create an open innovation platform that holds healthcare data (beginning with highly-standardised claims records), provides API[2]-enabled data access, and provides common technical IT services such as identity, access or consent management. This health data-fuelled platform would serve as the basis for an ecosystem of digital health services innovation by certified third parties and could be steered by the respective health system.

Such a data platform could revolutionise health service use and delivery and also help health systems bend the cost curve.[3] To pave the way for this development, stakeholders must address how benefits are distributed and keep four foundational principles in mind.

The potential impact of technology on healthcare systems

High-quality, sustainable healthcare depends on IT-enabled services and a digital platform, but healthcare systems are still unclear on where to focus their investment, what technologies provide the greatest benefits for patients and healthcare providers, and the return on investment. In 2014, McKinsey did considerable research into the economic value of digital technologies in healthcare and how health system leaders can make the most informed decisions for digitising their healthcare

1 'The National Programme for IT in the NHS', A Case History. O. Campion-Awwad at al, Feb 2014, University of Cambridge
2 API: Application Programmable Interface
3 'IT could save NHS £13.7b a year': Kelsey, DigitalHealth.net

system. After reviewing more than 600 scientific papers and research articles, we now have a database of evidence for all technologies that can have an economic benefit on a healthcare system across various settings of care. The selected technologies demonstrate that they can improve efficiency in supply and reduce demand for healthcare services among patients.

The evidence shows that implementing technologies like patient self-services, the use of digital channels instead of direct physician interaction, or patient self-management solutions, can produce net economic benefits of 7 to 11 percent of total healthcare spending. Over this past year, McKinsey has applied this approach to 3 developed countries in Europe and NA with mature healthcare systems, with the process customised to each country's local technologies, business cases, and evidence. The results were consistent with the original analysis. However, after reviewing the evidence available and successful cases of IT implementation in the most advanced healthcare systems, we believe that a greater impact can be achieved through a coordinated and joint effort. This would involve the interconnection of all digital health stakeholders through an open innovation platform.

This recommendation may seem radical given the failure of so many public ehealth projects. We believe, however, that it is the necessary precondition for the digital health market to work. Creating such an open innovation platform won't be easy from either a technical or regulatory standpoint, and it will require close cooperation among a range of stakeholders. However, the potential benefits justify the effort. For example, the National Health Service England's Director of Patients and Information, Tim Kelsey, said that investment in electronic health records, digital services, and data could save the NHS £8.3 billion to £13.7 billion out of a £127 billion forecasted healthcare budget by 2020–21, or 6.5 to 10.8 percent of total healthcare spending.[4]

The promise of apps

Digital health applications are mobile applications that enable people to track, manage, and improve their health, achieve wellness goals, interact with their health system, and lead better and more productive lives. Most are quite sophisticated technologically, easy to use, and smartly designed, creating a compelling user experience. The problem is that, to date, the individual players in the digital health ecosystem have gone their own way in developing solutions. Numerous start-ups—7,600 worldwide, by one estimate, most supported by venture capital[5]—have been developing smartphone apps, wearable devices, and other digital applications to better manage and measure health. Overall, venture capital firms invested EUR 6.1 billion globally in digital health in 2014[6] and are set to spend at a similar level in 2015. Further, consumer demand for digital health applications appears to be strong: our latest survey[7] shows, for example, that 70 percent of patients (aged 18–65) would be interested in digitally monitoring their health data; another cross-country survey from Ericsson reveals that 71 percent of consumers (mobile phone owners across 49 countries) are interested in quantifying their health and lifestyle behaviour.[8]

But who should pay?

Although the technology is there, most companies developing today's digital health applications lack proof that their apps produce a long-term improvement in user health, leading to economic benefits to health systems. The absence of such evidence complicates a fundamental question: "Who should pay for the applications?"

One option would be to have users pay. This option might not seem unreasonable in a world where many mobile apps are free or extremely inexpensive. But most inexpensive apps have "premium" versions which cost considerably more to access the most desirable features. Meanwhile, many wearable devices are pricey. Asking users to shoulder the cost of these applications could restrict the market to those willing and able to pay—a segment which might not include the users who would benefit most. Another option would be to provide the applications for free if users share data with the developer. This approach, however, raises privacy concerns and other data-sharing issues. Some successful examples include

4 'NHS IT needs £8 billion – McKinsey', Digital Health Intelligence, 12 November 2015
5 Venture capitalists invested more than $6.9 billion in the digital health market in 2014 alone (Startup Health Insights, 2015. Mid-year report)
6 Rock Health, Digital Health Funding Database, 2014
7 McKinsey 'Patient attitude to digital' Survey, UK, 2014
8 'The impact of the internet on consumer attitudes to health and fitness', An Ericsson Consumer Insight Summary Report, March 2015

patients who share data with companies such as Flatiron Health or patientslikeme, making a conscious contribution to research and discovery of new life-saving treatments and drugs.

A third option would be to have health systems (or the payors within them) reimburse the digital health services provided by the applications and make them available to appropriate patients. Although this approach is congruent with the philosophies underpinning most European health systems, it is viable only if developers can prove that their applications achieve the desired goals. Are enough patients willing to use the application—and continue to use it regularly? Even more importantly, does the application's use result in better health? To gain this proof, developers need the support of the very health systems demanding it. Health systems—not application developers—have the expertise to measure patients' health status and measure changes over time, i.e., measure health outcomes. Without this information, developers will find it difficult, if not impossible, to get the evidence needed to justify their application's cost.[9]

One solution could be to introduce a "value-based digital health" reimbursement model: since health systems hold the data needed to measure outcomes, why not use this information to measure the outcomes of digital health services? If cost reductions and/or quality improvements can be found in the data, the benefits can be shared with the digital health solution providers. This approach would resolve issues for both sides: digital health service developers can create sustainable business models while payors avoid the risk of investing in innovations which don't deliver tangible value.

Securing the right data
Given the poor results of most electronic patient records (EPR) projects thus far, it's unlikely that developers will be able to link their data directly to patient records any time soon. There is a viable alternative: the claims data kept by payors. Admittedly, this data is less detailed than patient records, but it contains sufficient information to allow health systems to measure a digital application's effectiveness—and

hence the appropriate reimbursement. Consistency is another advantage. Even in countries with multiple payors, claims records are standardised enough that adapting them to a common form is far less complex than merging records from thousands of providers into a single EPR.

Linking application developers' data with claims records would require an open but highly secure IT platform that both sides could use. The platform would have to restrict access to claims records to accredited digital application developers—and limit that access to only the records developers really need. Payors would have access to the developers' data about the frequency and duration of application use, as well as the results achieved. In all cases, patients would have to give consent to who could see and use their data.

Four principles guiding platform design
Creating such an IT platform will require close cooperation from multiple stakeholders in each country. We believe that the likelihood of success will rise dramatically if each player focuses on what it does best. As health systems consider the best approach to building an open innovation platform, leaders must focus on four essential principles:

1. **Privacy of patient records**. The security of patient records must be a top priority. The IT platform must have strong data protection measures in place to minimise the risk of a data breach and allow individuals to determine who can see their records. Many patients are concerned about the confidentiality of their medical records, and some may not want application developers to have access to those records. However, the popularity of online communities such as patientslikeme.com suggests that some patients would be willing to share their data if they thought it would provide a near-term benefit.

2. **Regulatory changes.** In general, regulations have not caught up with today's digital world, and this is particularly true in healthcare. Few countries other than the US[10] have passed laws governing the use and privacy

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9 This is analogous to current practice in the pharmaceutical and medical device industries. Companies must collaborate with health systems to conduct the clinical trials needed for approval of their products

of patient-identifiable data. Countries differ significantly in how they view such issues as online consultations with doctors and whether patients can voluntarily share data with their doctors through channels less secure than traditional EPR systems. National governments have yet to address such questions as whether the developers of a mobile app designed to increase medication adherence should be required to report side effects, as pharmaceutical companies are. Ideally, most European countries would agree on a similar set of rules.

3. Reimbursement changes. If health systems are to pay for successful digital applications, they should adopt innovative payment models based on the value delivered and not the activity provided. If, for example, a mobile app is shown to improve a patient's ability to manage diabetes with less medication, the developers should be paid based on the system's savings. However, changing the method of reimbursement may require regulatory changes. Initially, it will be easier to prove the value of applications that produce immediate savings compared with ones that provide only long-term benefits. The appropriate reimbursement for this latter type of application may have to be approximated. Over time, however, as more data is contributed by payors and application developers and aggregated in the open IT platform, it will be easier for countries to perform scientifically-robust, risk-adjusted measurements of outcomes achieved. And, as the platform proves its worth, providers may come to believe that they should not be left out of the effort.

4. Ownership of the platform. The owner of an open innovation platform such as the one we have described must be an organisation that understands healthcare delivery and the need to protect sensitive patient data, is trusted by patients, can collaborate with regulators, and can drive payment innovation forward. For this reason, we believe that the owner should be the national health system or a national payor in each country. Our research shows that patients trust public institutions with their personal

health data: in a survey conducted in the United Kingdom, 71 percent of the more than 1,000 participants said they would be comfortable sharing personal health information with the National Health Service.[11]

For the open innovation platform to succeed, however, the owner must fulfil the role of an ecosystem manager which is able to attract, certify, and manage a community of innovators and operate a technical platform loaded with sensitive data. This role would require a dramatic step up for most health systems, and new capabilities would be needed. However, examples exist of public institutions that have been able to take on this role successfully: the UK government has launched its "g-cloud marketplace" solution, which has established a cloud-based marketplace between vendors and public service buyers. The project is considered a full success.

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Health systems must begin developing open innovation platforms to enable payors and digital health application developers to share data. With appropriate patient privacy safeguards and regulatory changes, these platforms will enable health systems to offer patients innovative ways to improve their health while avoiding wasting money on ineffective applications. Many digital health applications will no doubt fail, but time to market will be accelerated for applications that succeed, and their developers will enjoy a more sustainable business model. The ideal result would be a digital health partnership in which the end result is better than anything the stakeholders could have developed separately. This approach would make digital health innovation the first innovation in healthcare that is not leading to higher cost, but to a more efficient and effective health system.

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10   The US passed the Health Insurance Portability and Accountability Act (HIPAA) in 1996 and updated it in 2013. Among its other features, HIPAA contains clauses governing the privacy of individually identifiable health information and the security of electronic health information
11   McKinsey Survey 'Patient attitudes to digital technologies', UK, 2014