Transforming healthcare by 2021

By Mark Leaning

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Foreword

At EMIS Group, we have one clear aim: to help people live longer, healthier lives. It is an ethos that of course we share with the NHS – which is now under unprecedented pressure to enable better, more streamlined healthcare for all, while making major cost efficiencies. Clinicians, resourceful as always, are finding new ways of working to deliver the care that is needed to millions of people in the UK.

Now more than ever, they and their patients need the right tools to support them. I could not put it better than the minister for life sciences, George Freeman MP, who said in January: “The urgency of that pressure on the system is actually in many ways the great opportunity for digital and health technology to show the power of what it can deliver.”

That is why I commissioned this white paper from Mark Leaning, an innovator and entrepreneur with a passion for transforming healthcare through technology. As CEO of the UK leader in connected health software and services, I wanted us to capture and assess the health IT landscape of 2016, and look forward to where it needs to be in five years. The publication of the white paper coincides with EMIS Health’s first integrated customer conference - bringing together leaders from every healthcare sector to showcase innovation and share ideas.

EMIS Health, in partnership with clinicians, has delivered much of the technology that is already being used to revolutionise care in the NHS. In doing that, we have learned a very important lesson – patients must be central to the process if we are to overcome the many obstacles in our path. Empowering patients to take greater control of their healthcare through technology is one of the great opportunities that lies ahead.

We are at a pivotal moment in the NHS, and I am proud that EMIS Group is leading the technology debate - and excited about our potential to support transformative change in the years to come.

Chris Spencer
Chief Executive
EMIS Group

Introduction

I was very pleased to be asked to undertake this project for EMIS Health, at a critical time for healthcare.

At the outset, as a health IT enthusiast, I had many ideas about the present state of healthcare IT and where we need to be in 2021. However, for balance or support, I interviewed a wide range of people, in addition to background reading. These included: a patient advocate, a GP, A&E consultant, product design specialist, hospital IT Director, CEO of a digital health start-up, a senior exec in a mobile phone company and the digital health lead for a CCG.

Frankly, the conversations brought me down to earth. For example, we’re not doing very well when it comes to delivering a truly connected health system in 2016. That’s bad for patient outcomes. In some cases, IT systems are drawing clinicians away from patient care, rather than enhancing it. On the plus side, those I interviewed unanimously agreed that the foundations are being put in place to make good progress over the next five years – and the four areas on which we need to focus.

Mark S Leaning
Visiting Professor
University College London
The view from 2016

Let’s start by reminding ourselves where we stand at the beginning of 2016. What is the state of the nation for healthcare IT? What are the challenges and the opportunities? There is no better place to start than with a patient’s own experience.

Peter’s story
52 year old Peter tore a leg muscle whilst playing football with the grandchildren and went to A&E. After examination and tests it turned out that it was - fortunately – only badly strained and nothing broken.

While in A&E he was given an anti-inflammatory medication. Unfortunately, Peter suffers from atrial fibrillation, has a prosthetic heart valve and takes the anticoagulant warfarin, which was overlooked – it was recorded in his medical records notes which were at his GP and also at a different local hospital but not accessible to the junior doctor involved in A&E.

As it was late and the A&E consultant had left for the day, no one questioned the effects of the anti-inflammatory medication or Peter’s medical history and, as Peter was new to Warfarin at that time, he did not challenge the doctor. As a result, his INR went through the roof and he had a bad bleed, which led to an emergency admission on the next day.

Things could have easily been far worse – combining anti-inflammatory drugs with warfarin can have fatal consequences. Had the A&E team had easy access to Peter’s medical record, the bleed could have been avoided – but this type of data access is still far from routine.

Despite the many advances that have been made in sharing patient data at the point of care, Peter’s story illustrates the sad fact that the vast majority of NHS patients are still experiencing disconnected healthcare – causing, at best, frustration, inconvenience and waste and, at worst, serious consequences.

Joining up patient care is the single biggest challenge facing the NHS in the next five years – and the healthcare IT community has a vital role to play. Best care requires best data – easily available, at the point of care.
Force Fields
So what are the factors that will influence the development of healthcare IT over the next five years? There are very strong force fields driving change in the NHS and the healthcare systems of all developed countries. Demand for care is rising relentlessly with an ageing population, the obesity and lifestyle epidemic, and the growth of long-term conditions. Healthcare expenditure can only rise so much as a percentage of GDP. Most healthcare systems have no spare money for innovation.

Healthcare is very labour intensive, with staff accounting for a large proportion of the costs. According to the ONS, productivity in other areas of the economy has risen 2-3% per year over the last 15 years. For healthcare it appears to be just less than 1% per year. We can’t simply keep throwing in more practitioners to cope with the growing demand. It’s time for new solutions. In short, reducing demand and improving productivity.

In the 2014 “Five Year Forward View”, Simon Stevens and NHS England laid out an ambitious manifesto for re-engineering the NHS to meet the future challenges. This was indeed a welcome change of tone. The key areas include an emphasis on prevention of disease, greater control for patients, breaking down barriers in the way care is delivered, the development of multi-speciality community providers taking care out of hospital, and the integration of urgent and emergency care. Laid on top of these changes, in England we have the impact of regional devolution. First Manchester, Liverpool, now London and others to follow. General practice is under stress, GPs are ageing and retiring with insufficient new GPs entering the profession. The changing landscape includes GP federations and online providers like Babylon and PushDoctor.

Now to the elephant in the room. The internet. It really does change everything. It is the strongest force field and in my view, it’s only impacted on the edges of healthcare so far. We don’t yet have the equivalent of mobile phone banking for health. And now it’s about to change healthcare very dramatically. The increasing use of healthcare apps and wearable devices to capture data about an individual’s health has the potential to create data overload for clinicians. Will we find the needle in the haystack?

Citizen-driven healthcare
The internet is enabling a seismic change in how patients engage with their own healthcare – and creating new expectations and demands. NHS England has recognised the importance of using technology to empower patients to play a more active role in their own care - and by 31 March 2016 every patient should have access to their full medical record online, a significant milestone.

So what is the view from 2016?
Patient care is still fragmented and major change is needed – underpinned by radical new ways of working if the NHS is to survive its daunting budget deficit and £20 billion efficiency savings target. In my view, it is time for the healthcare IT industry to step up and become an agent for change, a partner with clinicians and citizens in re-engineering health and healthcare. Smart technology can revolutionise healthcare – it’s time to unleash that potential.
Where must we be in five years?
NHS England has set a clear direction of travel with its own Five Year Forward View – and, while detailed plans may differ, aspirations for healthcare in Scotland, Wales and Northern Ireland are broadly aligned with this. Overarching aspirations for all health services are to deliver:

- **Care that is seamlessly integrated** - providing a smooth experience for the patient and the most efficient use of pressured health service resources
- **Secure, reliable data** - to underpin safe and efficient care – with data following the patient and not trapped in silos
- **Knowledgeable and empowered patients** - who can actively contribute to the management of their own health and prevention.

How do we get there?
Four clear themes emerged from my research.

1. It’s time to trust the patient – and mean it.
2. Let’s get serious about interoperability.
3. Let’s make our systems more user-friendly.
4. Let’s foster a culture of innovation and entrepreneurship.
It’s time to trust the patient – and mean it

For too long, we have paid lip service to the role of the patient in their own care - yet who knows their own condition better than the patient? And who ‘owns’ a patient’s data if not the patient themselves? In my opinion, patients are the greatest untapped resource in helping to re-engineer healthcare and our healthcare IT systems.

The seeds are already sown to take some major steps forward, but there is still a long way to go.

From April 2016, all GPs will offer their patients online access to their records, including information on medication, allergies, illnesses, immunisations and test results. The expectation is that this will enable all of us to become partners with GPs and other clinical practitioners in our own care. It will be vital for people with long term conditions, giving them the knowledge at their fingertips to help improve their health.

NHS England Chief Executive, Simon Stevens, has just announced seven test bed sites for innovation in technology that will help patients stay well and monitor their conditions themselves at home, while avoiding unnecessary GP and hospital visits.

Imagine the cost savings if just a fraction of the 3.3 million people diagnosed with diabetes in England (currently costing the NHS £10bn a year) could manage more of their monitoring from home – sending blood test results straight to their GP via technology like EMIS Health’s Personal Health Record instead of visiting the surgery – and receiving medication and lifestyle advice electronically?

The benefits are not just financial. For a patient like Peter – at risk of stroke due to suffering from hypertension and atrial fibrillation – apps and online solutions enable informed self-management and safer care. Peter can monitor his INR level and BP at home, getting advice from his app and sharing the data with his GP. Smart systems mean that data is also available in hospital – preventing potentially fatal mistakes when different clinicians look after him.

Personalisation is the other big theme here. In other walks of life, we are used to customising our online and mobile experience and we have more choice of how we live and work. For Mike Short, VP of R&D at Telefonica, one of the world’s largest mobile providers, personalisation is set to be a big driving force in healthcare. He said: “Personalisation of healthcare is going to be demand-led – citizens will drive it”. It’s happening now through patient support groups - which are very good at websites and apps, where as health professionals often struggle to understand how do this sort of personalisation.

This is a huge area of opportunity for healthcare IT companies who, I believe, should engage more closely with patients and patient groups. An established company like EMIS Health is perfectly positioned for this, having established an enviable position of trust for handling health data in the UK – and it is already offering a wide range of patient solutions via its patient.info website. Citizens may be more cautious of Google, Microsoft and Apple when it comes to their personal and sensitive health data.

Alongside this is the matter of privacy, which becomes paramount in the mobile world. “Privacy should be in the DNA of healthcare and healthtech”, said Mike Short.
The shift to patient driven healthcare needs more than clever IT – it needs new clinical care models to emerge and be safe, it needs clinical behavioral change, a change in how revenue flows around the NHS, governance over good and bad apps, device assurance and (biggest of all) public engagement and clear messaging.

Dr Shaun O’Hanlon
Chief Medical Officer, EMIS Health
Let’s get serious about interoperability

Joined-up patient care needs joined-up data - and interoperability of systems is essential to achieve this. There has been plenty of talk about interoperability in recent years and, at last, we are starting to see things happening.

Open APIs - a mechanism to allow other systems to request and exchange data - are clearly the way forward. A commitment to Open APIs is now a requirement for any IT supplier bidding for work via frameworks such as GP Systems of Choice (GPSOC) or the LPP Community, Children’s and Mental Health Framework. This is also the case for central sources of cash, like the Prime Minister’s Challenge Fund or the Integrated Digital Care Fund, which has awarded £240m for innovative health tech projects in the last two years.

I really think that standards for healthcare should be international, not national - like banking. So for me, open APIs must be based on standards such as FHIR and SNOMED CT. I hope NHS policy makers agree.

A serious commitment to interoperability also means that companies need to set aside commercial differences and look at the bigger picture - the software should never be the reason for not integrating healthcare.

However, interoperability isn’t a magic pill. What do you do with the data when it gets to the other end? Systems design needs to reflect that each individual system is part of an ecology of systems. I believe that there will be an increasingly important role for algorithms and automation within system design - ensuring that information captured in one system can be quickly shared and utilised within another, reducing the burden on clinicians and empowering patients. Local health communities also need to architect the arrangement of healthtech systems in new designs of healthcare services. This is a much more difficult challenge than most realise and, again, the healthcare IT industry needs to actively engage with them and help.

In my view, the GP record is central to all of this, as it is the closest we have to a cradle-to-grave record. We do need to think of it differently – not as the GP’s data – but as the patient’s data and the best we have as the truth about a patient’s health. Others disagree with me, and say that portals are the way to go. Most of the portals I’ve seen lack an evolved longitudinal health record, and that seems to me a critical gap.

“By 2021, our goal is that practitioners will have access to what they need in an easy usable way, whether by mobile, app or computer.

Kate Warriner
Healthy Liverpool Digital Lead
Healthy Liverpool Digital Care and Innovation Programme

“Confirming medication and history for a pre-op assessment which previously could have taken four hours, was done with direct access to the GP record and took 100 seconds.”

Dr Phil Kozcan
GP and Chief Clinical Information Officer
North East London NHS Foundation Trust
Let’s make our systems more user-friendly

Systems must be user-friendly – whether they are for clinicians or patients – otherwise healthcare IT will never realise its potential. Interestingly, giving clinicians usable IT was the number one priority for our patient Peter, who recognised the pivotal role of technology in his care.

While there are examples of excellent, user-friendly systems around, the experience of NHS staff is not good generally – and there is clear room for improvement.

We should listen to and involve clinicians like accident and emergency consultant Dr Barbara Cleaver, who said “I just want a system that is intuitive, fast, with a touchscreen and voice recognition so that it really helps the front-end clinician, and I can spend more time on patient care”.

It doesn’t seem that much to ask. For Rowena Vestey, a product designer at the Design Council, the solution is to collaborate from the start with the end user. She said: “In this sort of design process you have to understand and be as close to your customers and users as you can, to create a culture of communication and collaboration.” When it comes to patient apps and online solutions, Rowena says these “should be no harder to use than a light switch”.

It is a challenge, but it could not be expressed more clearly.

We have to remember that we are no longer designing technology for an existing healthcare system. We’re designing it as an agent of change, to find new ways of delivering healthcare – and that means being bold.

“We need to think differently, there’s no use asking people in the current system. As Henry Ford said, ‘If I had asked people what they wanted, they would have said faster horses’.

Malcolm Senior
Director of Informatics
Taunton and Somerset NHS Foundation Trust
Let’s foster a culture of innovation and entrepreneurship

While there is no doubt the NHS wants and needs innovation, it’s not good at adopting new technology. By the nature of their day jobs, most decision makers in the NHS are risk averse. Front-end clinicians don’t like change, unless they can see clear, proven benefits. The processes are terribly slow and over-complicated.

It’s tough for any company, but especially the new ones with great new products to sell to the NHS. “At least give it a try and see how it works”, is the plea of all start-up CEOs. “OK, but we are overspent, so we can’t actually pay you.” And so another start-up with little to no money starts sponsoring the NHS.

There are signs of improvement. The Five Year Forward View sets a new tone that is carried forward in the recent planning guidelines. Devolution has allowed some regions to emerge as innovators. I am encouraged that NHS England has appointed Professor Tony Young, a surgeon, as National Clinical Director for Innovation. Not before time, 100 doctors will be appointed to a “clinical entrepreneurs programme”. This will extend to nurses next year, and to citizens the year after. It is quite simple: innovation needs to come from the people who will use the technology – in collaboration with managers, healthcare IT companies and policy makers.

According to Harvard professor Clayton M. Christensen, technology disruption is as much about changing business models as it is about new technology. I believe that we need new business models for the healthcare IT industry – models that involve more collaborative design processes and that allow larger and smaller companies to team up together and with healthcare providers to share some of the risk of transformation from piloting to scaling-up and delivering outcomes at the population level.

By opening up their systems for interoperability, established companies and healthcare innovators can foster an ecosystem of new solutions and new companies – to fill in the gaps and create fresh solutions. This is similar to the way that Google and Microsoft have created communities of interest.

Investment is another challenge to be overcome. There is a massive investment funding gap for early stage UK healthtech companies, compounded by the lengthy process for gaining NHS contracts.

Experienced and successful UK companies like EMIS Group have a vital role to play in both incubating new ideas - and investing.

“The challenges we face as a national health system are piled high. By encouraging economic growth and becoming early adopters of the latest innovations, we can rise to the challenge and help transform patient care and experience.”

Professor Tony Young
National Clinical Director for Innovation
NHS England
Peter’s story in 2021

In concluding this white paper, let’s return to where we started - the patient - and consider what life might be like for Peter in 2021 if health technology moves forward as we hope it will.

Following a hospital in-patient stay, Peter is fitted with a lightweight MoMe wearable device on discharge. There is concern that he may have a cardiac arrhythmia and MoMe will detect that. Peter learns more about what all this means via a learning app, part of the health app suite his primary care practice offered him, and agrees to share the data with the practice in his patient health record.

A few days in, Peter gets a notification from the app that atrial fibrillation has been detected and he should arrange a visit to the practice. He sends a secure message to his nurse, who was also notified and gives him a quick video call for reassurance, arrange an appointment and to explain next steps. At the practice a diagnosis of atrial fibrillation is confirmed and he is also found to be hypertensive.

Peter discusses his options with his GP and decides to take a direct oral anticoagulant, and to self-manage his hypertension medication, as he’s good at taking his medication in the right dosage and at the right time. (For the 50% or so of patients who are not, smart pill bottles and mobile apps provide prompts through all of their connected devices until they take their drugs). Peter is supplied with a smart watch that can monitor his blood pressure, heart rate and blood oxygen saturation levels, so he can track his progress, adjust treatment and share his results with the practice. He joins a social media support group on Patient.info and starts taking more exercise.

When he is scheduled for an oral surgical procedure, the hospital sends him a message recognising the medications he’s on and how his anticoagulant treatment will be managed when he is admitted, and asking him if he is happy with the approach. He messages that he is. All goes according to plan and there are no complications like bleeds or transient ischemic attacks (TIAs). The hospital sends an electronic discharge note to Peter’s GP within minutes of him leaving. Peter gets on with life and continues to self-manage his condition with occasional visits and econsultations with his GP and nurse.

*There’s no new technology in this story. But it’s incredibly more connected than today.* The patient is really at the heart of it – and “activated”. When they are at the heart of it, we can focus on delivering good outcomes. Clinicians focus their care where it is most needed. It’s safer. Fewer bad things happen. We can do it all today. Let’s make it so.