REFORM

Health Conference 2018

Moving towards a transformed NHS

Wednesday 23 May 2018

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Agenda

08.00 – 08.25 Registration and breakfast

08.25 – 08.30 Welcome and introduction

Andrew Haldenby, Director, *Reform*

08.30 – 09.35 Speech & panel I: Implementing a comprehensive model for personalised care

James Sanderson, Director of Personalised Care at NHS England, will deliver a keynote speech on implementing a comprehensive model for personalised care. This will be explored further in an expert panel Q&A session.

Panellists

- James Sanderson, Director of Personalised Care, NHS England
- Baroness Cumberlege CBE DL, House of Lords
- Lucy Watts MBE, Patient Leader
- Andrew Haldenby, Director, *Reform* (chair)

09.35 – 10.35 Panel 2: Healthcare transformation through technology

This panel will consider how technological advances can support service transformation and what is needed to overcome current barriers to successful technology implementation.

Panellists

- Juliet Bauer, Chief Digital Officer, NHS England
- Dr Trishan Panch, Chief Medical Officer and Co-Founder, Wellframe
- Stephen Dorrell, Chair, NHS Confederation
- Dr Benedict Evans, Investment Director, InHealth Ventures
- Maisie Borrows, Senior Researcher, *Reform* (chair)

10.35 – 10.55 Coffee break

Refreshments will be served in the adjoining Brunel and Council rooms.

10.55 – 11.55

Panel 3: The role of data sharing in spreading innovation

This panel will showcase examples of best practice in hospital digitisation and data sharing and discuss the future role of data sharing in spreading successful innovation across care providers.

Panellists

- Will Smart, Chief Information Officer for Health and Social Care
- Dr Philip Xiu, Chief Medical Officer, Medicalchain
- Professor Daniel Ray, Director of Data Science, NHS Digital
- Dr Kristin-Anne Rutter, Partner, McKinsey & Company
- Eleonora Harwich, Head of Digital and Technological Innovation, *Reform* (chair)

11.55 – 12.55

Panel 4: The new NHS: a model for integrated, out-of-hospital care

This panel will set out leading examples of integrated, out-of-hospital care. It will explain how the current NHS reform proposals will deliver wholescale change and innovation across the service.

Panellists

- Dr Karen Kirkham, NHS GP and Assistant Clinical Chair, Dorset Clinical Commissioning Group
- Devika Wood, Founder and Director, Vida
- Luella Trickett, Senior Government Affairs and Public Policy Manager, Baxter Healthcare
- Chair: Daniel El-Gamry, Researcher, *Reform* (chair)

12:55 – 13:00

Closing remarks

Andrew Haldenby, Director, *Reform*

This conference is being held in partnership with InHealth Group, McKinsey & Company and Baxter Healthcare.

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Maisie Borrows
Senior Researcher, *Reform*
@maisieborrows
@reformthinktank

***Reform* comment:** Setting the agenda

Speaking in March this year, Jeremy Hunt rightly said that health and social care must be centred around the person. Personalisation of care is not new and there is strong evidence that it is the right thing to do; people stay at home, are healthier, more independent and need fewer hospital services. Progress, however, has been slow because of a lack of clarity on the best model. The Personalised Care Group at NHS England are working hard to speed this up. We are delighted to welcome James Sanderson, Director of Personalised Care at NHS England, to lay out his vision for a comprehensive model of Personalised Care, which will empower patients to take an active role in decisions over their care.

Personalisation will mean a complete overhaul of how care has traditionally been delivered. Technology can also be transformative. So far, the application of technology has largely focused on advanced diagnostic investigations, paperless notes and online booking systems. It can go much further. Automation and artificial intelligence, for example, have the potential to fundamentally change care delivery, enabling a Service that is more efficient, flexible and responsive. To get the most out of technology, NHS leaders need to determine how best to enable technology to lead to widespread innovation. The first panel will consider this and look at the current barriers that need to be overcome for successful service transformation.

The second panel will focus on the challenges and opportunities for data sharing in healthcare. The *Five Year Forward View's* objective of embracing the "information revolution" to transform care remains a priority for the NHS. Healthcare has seen some of the greatest expansion and application of data in the last few years and it has become clear that improved data sharing allows for better diagnosing, treatment and prevention. There are examples of best practice of data sharing across the Service and these should be showcased to enable the spread of successful innovation.

The final panel will set out leading examples of integrated, out-of-hospital care and understand how these can be adopted at a much wider scale and pace. A great deal of service transformation depends on initiatives such as Accountable Care Systems and Sustainability and Transformation Plans. These aim to overcome the most practical challenge the NHS currently faces, which is rebalancing activity between an overcrowded acute sector and care based at home and in other settings.

Reform is thrilled to welcome such expert speakers and attendees today. As the NHS approaches its 70th birthday, the Prime Minister is expected to announce a multi-year funding settlement for the NHS later this year. This budget should be used to "fix the cracks not plaster over them".

> *A long-term budget must invest in services strategically and enable the opportunities spoken about in this conference to fully transform patient care.*

6. Speakers

Keynote and panel one

James Sanderson
Director of Personalised Care, NHS England
@JamesCSanderson
@NHSEngland

James joined NHS England in November 2015 and leads the delivery of a range of programmes that are helping to empower people to have greater choice and control over their care. This includes the Personal Health Budgets programme, Integrated Personal Commissioning, Self-Care, Patient Choice, Shared Decision Making, Social Prescribing, Maternity Pioneers and the National End of Life Care Programme. James was formerly Chief Executive and Accounting Officer for the Independent Living Fund, which supports disabled people in the UK to live independent lives through the provision of a form of personal budget.

Lucy Watts MBE
Patient Leader
@LucyAlexandria

Lucy is a 24-year-old Patient Leader with a progressive, life-limiting condition. It has caused multiple organ failure, physical disability and complex health needs. She dedicates her life to patient advocacy, both within the UK and globally. She also holds numerous roles in charities and organisations; co-leads research; undertakes paid consultancy and speaking engagements; founded a charity; set up an international palliative care patient and carer advocacy network and recently had a personal meeting with Dr Tedros, Director-General of the World Health Organisation, about global palliative care. She received an MBE for her charity work in 2016.

Baroness Cumberlege CBE DL
House of Lords
@JuliaCumberlege

Baroness Julia Cumberlege was Parliamentary Under-Secretary of State for Health from 1992 to 1997. She began her career as Lewes District Council Leader and Chair of Social Services for East Sussex. She chaired the Brighton District Health Authority and the South West Regional Health Authority before being appointed to the House of Lords in 1992. She has chaired working parties for the Royal College of Physicians, leading to the *Doctors in Society* (2005) and *Future Physicians: Changing Doctors in a Changing World* (2010) reports. She is a Patron of the National Childbirth Trust; Vice President of the Royal College of Midwives; Chair of the Independent Medicines and Medical Devices Safety Review (2018); Honorary Fellow of five Royal Colleges and is implementing a review of the National Maternity Services. She founded Cumberlege Connections in 2003 and Cumberlege Eden and Partners in 2013.

Andrew Haldenby
Director, *Reform*
@andrewhaldenby
@reformthinktank

Andrew Haldenby co-founded *Reform* in 2001 and became Director in May 2005. His previous organisations included the Confederation of British Industry, the Centre for Policy Studies and the Conservative Party (1995-97). There he became head of the political section of the Conservative Research Department, with responsibility for briefing the Shadow Cabinet and Leader for key media interviews and appearances. Andrew studied History at Cambridge (1990-1993) and has an MSc in Economics from Birkbeck College, University of London.

Panel two

Juliet Bauer
Chief Digital Officer, NHS England
@JulietBauer
@NHSEngland

Juliet leads all patient-facing digital technology projects for NHS England. This includes the transformation of the NHS Choices website and the development of digital experiences that will help people to manage life-long conditions. Prior to joining NHS England, Juliet led similar technology programmes at a range of businesses from start-ups to major media companies.

Dr Trishan Panch
Primary Care Physician, Co-Founder and Chief Medical Officer, Wellframe
@basslinetherapy
@Wellframe

Dr Panch co-founded Wellframe, a Boston-based health technology company that works with payors and medical device companies across the US and Europe. He founded and led the clinical, product, design, consumer experience and data science teams. He is strategy adviser to MIT Critical Data; serves on the Innovation Advisory Board of Boston Children's Hospital and is the recipient of Harvard's Public Health Innovator of the Year award. He is the holder of US Patent for a mobile-enabled method to monitor patient progress and improve patient compliance with care programs. He also teaches on graduate courses at Harvard and MIT. He was previously an NHS GP and studied Medicine at Imperial College.

Maisie Borrows
Senior Researcher, *Reform*
@maisieborrows
@reformthinktank

Maisie is a Senior Researcher at *Reform* and has a particular interest in health policy and digital public services. She has co-authored reports on creating a sustainable NHS workforce and delivering better value for money from the primary care estate. Before joining *Reform*, Maisie worked as a management consultant at PwC and specialised in improving efficiency in hospital trusts.

Stephen Dorrell
Chair, NHS Confederation
@stephen_dorrell
@nhsconfed

Stephen became Chair of the NHS Confederation in November 2015. He is also Chairman of Public Policy Projects and Laing Buisson, a healthcare market intelligence company. He was a Member of Parliament from 1979 to 2015 and a member of the government from 1987 to 1997, serving as a minister in the Treasury, the Department of Health and the Department of National Heritage. Between 2010 and 2014, Stephen was the first elected chair of the House of Commons Health Committee, developing the role of the Committee as an authoritative cross-party voice on health and care policy.

Dr Benedict Evans
Investment Director, InHealth Group
@InHealthGroup

Benedict leads InHealth Ventures, the venture investment fund launched by InHealth in 2016. InHealth Ventures invests in early stage health-tech and services companies attempting to solve some of the major challenges facing the NHS and broader UK health system. Ben studied medicine at University College London and subsequently undertook core surgical training in the East of England Deanery. In 2010 he joined McKinsey and Company, working in the healthcare practice in London and the US through to 2014. He has experience at several early stage ventures spanning medical devices and clinical analytics. Prior to joining InHealth, Ben was Associate Director of Transformation at St. George's University Hospitals NHS Foundation Trust.

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Panel three

Will Smart
Chief Information Officer for Health and Social Care
@nhscio

A joint appointment between NHS England and NHS Improvement, Will is tasked with providing strategic leadership across the whole of the NHS to ensure that the opportunities that digital technologies offer are fully exploited to improve the experience of patients and carers in their interactions with health and social care; the outcomes for patients; and improved efficiencies in how care is delivered. Prior to this, Will was Chief Information Officer at the Royal Free London NHS Foundation Trust. He first worked in the NHS in Wales and Northern Ireland during his university placement year, before taking up an analytics role at St. Mary's NHS Trust in London. He has also worked as a management consultant focusing on IT strategy, service transformation, major IT service and contract reviews and outsourcing.

Professor Daniel Ray
Director of Data Science, NHS Digital
@NHSDigital

Daniel is responsible for developing NHS Digital's data science capability. He is also the product owner of the new national data services platform; head of profession of data management and is responsible for all technical data and product delivery for the £50m Information and Analytics Directorate. He was previously Director of Informatics at University Hospital Birmingham, where he transformed the health informatics service, set up a quality outcomes research unit and developed a patient portal. He also set-up commercial analytics businesses in England and overseas and has worked in commissioning in the NHS, private sector and numerous acute hospitals. He is an honorary professor of health informatics at UCL's Farr Institute of Health Informatics.

Dr Philip Xiu
Chief Medical Officer, Medicalchain
@medical_chain

Philip is Chief Medical Officer for Medicalchain.com which uses blockchain technology to securely store health records and maintain a single version of the truth, allowing patients to have a copy of their own health record. He is also the Editor-in-Chief of Elsevier UK's Order Sets platform. He is particularly interested in the application of evidence-based medicine to the digital health space, applications for blockchain technology in healthcare and use of technology to advance diagnosis and management of diseases. He has a first-class honours degree in Medicine from the University of Cambridge.

Dr Kristin-Anne Rutter
Partner, Mckinsey & Company
@McKinsey

For the past ten years, Kristin-Anne has worked at Mckinsey & Company with healthcare providers in Europe and Australia on strategy and operational improvements to deliver higher-quality care for patients. In recent years, she has spearheaded thinking on how connectivity, automation and the use of data can transform how care is delivered. She works with small and large technology companies, looking to bring innovations into the market as well as supporting payors and providers to better utilise existing technologies and incorporate new digital opportunities. She worked as a doctor in Iceland for 25 years and is a trustee for Marie Stopes International.

Eleonora Harwich
Head of Digital and Technological Innovation, *Reform*
@EleHrwch
@reformthinktank

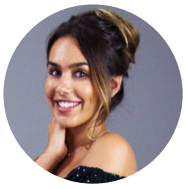
Eleonora joined *Reform* in June 2015. Her work focuses on how technology innovations can help deliver public service reforms. She has particular interest in the public-sector applications of artificial intelligence (AI) and has recently published a paper on AI in the NHS. She is a member of the AI Programme advisory board for the Kent, Surrey, Sussex Academic Health Science Network and a member of the advisory board for Blockchain Live. She is also the London Hub Lead for One HealthTech, a volunteer-led network that seeks to promote diversity in healthtech.

Panel four

Dr Karen Kirkham
NHS GP and Assistant Clinical Chair, Dorset Clinical Commissioning Group
@karen_kirkham2
@DorsetCCG

Karen has been a GP for 25 years and is now senior partner in a large practice. She is also Assistant Clinical Chair at Dorset Clinical Commissioning Group and Locality Clinical Chair for Weymouth and Portland. She is part of the Senior Leader Team in Dorset for the Sustainability and Transformation Plan and is the Clinical Lead for the Dorset Integrated Care System. She has recently been appointed as a National Clinical Advisor for Primary Care with the NHS England Transformation team.

Devika Wood
Founder and Director, Vida
@DevikaWood
*@vidaofficial_*



Devika founded Vida in May 2016. Vida delivers affordable and quality care in the UK and builds technology to work with social services to raise standards in the care industry, develop a scalable care model and professionalise the care industry. Her passion to innovate and disrupt in the care industry came from being a young carer for her grandmother for 12 years, which has seen her win industry recognised awards for Vida and be featured on the Forbes 30 under 30 list in 2018 for healthcare and science. Devika began her career at Google and then went on to become a cancer research scientist at Imperial College London where she achieved a master's degree in Public Health. She also worked on the development of two UK health tech start-ups– Babylon and Medefer.

Luella Trickett
Government Affairs and Public Policy Manager, UK, Baxter Healthcare
@baxter_intl

Luella, originally a qualified pharmacist, has worked in the private healthcare sector for over 20 years. She has held commercial roles at Baxter Healthcare with responsibility for a range of product portfolios, including pharmaceutical and medical devices, across the UK, Europe, Middle East and Africa. In 2012, she spent nine months on secondment to the Department of Health as the Industry Liaison for the NHS Procurement Review, engaging with the Life Sciences sector and Government to facilitate sharing of ideas. For the past five years, Luella has led on the government affair and public policy activities at Baxter, with a keen interest in the adoption and diffusion of innovation in the NHS.

Daniel El-Gamry
Researcher, *Reform*
@ElGamryD
@reformthinktank

Daniel El-Gamry is a Researcher at *Reform* and has an interest in the long-term sustainability of public services, particularly in welfare and the NHS. He co-authored a report on delivering better value for money from the primary care estate and is currently writing a report on how technology can help disadvantaged pupils at school. Daniel has a Master's degree in International Relations from the London School of Economics and Political Science.

Implementing a comprehensive model for personalised care

James Sanderson
Director of Personalised Care, NHS England
@JamesCSanderson
@NHSEngland

Personalised care can deliver a new relationship between people and the NHS. It is vital in supporting the NHS and social care to address many of the demographic, financial, and operational challenges we see in the system today.

70% of the health service budget is being spent on people with long-term conditions, often with complex needs.

Yet sometimes the assets that people themselves bring to their care are overlooked as part of the support process. Personalised care can significantly contribute to NHS England's triple aim of improving people's health and wellbeing, providing better care and getting greater value out of the public pound, as set out in the *Next Steps on the Five Year Forward View*. Whilst there are some excellent examples across the country of a shift towards a person-centred approach to service delivery, fragmentation of various initiatives and a lack of clarity regarding the optimum delivery models has hampered progress.

2018 has already seen the Secretary of State for Health and Social Care describe whole person, integrated care and the ability for individuals and families to direct the care they receive and autonomy to lead the lives they want, as two principles essential to the future of health and social care in England.

This is why the Personalised Care Group in NHS England is working hard to launch a Comprehensive Model for Personalised Care.

There are six key enablers which support the comprehensive model; Integrated Personal Commissioning, Personal health budgets, Social prescribing, Person centred care and support planning/ shared decision making, Patient choice, and Patient activation.

Each enabler provides a unique mechanism for ensuring that people are seen as experts of their own condition and partners in their care, rather than passive recipients of services. They enable people of all ages, and their carers, regardless of condition, to manage their physical and mental health and wellbeing and make informed choices and decisions when their health changes, including at the end of life.

Visit our website (www.england.nhs.uk/personalised-health-and-care/) to find out more about the programmes of work in the Personalised Care Group and how they are providing the foundations of a universal model of personalised care for the whole country.

> *Personalised care can significantly contribute to NHS England's triple aim of improving people's health and wellbeing, providing better care and getting greater value out of the public pound*

How to empower patients to take control of their health outcomes

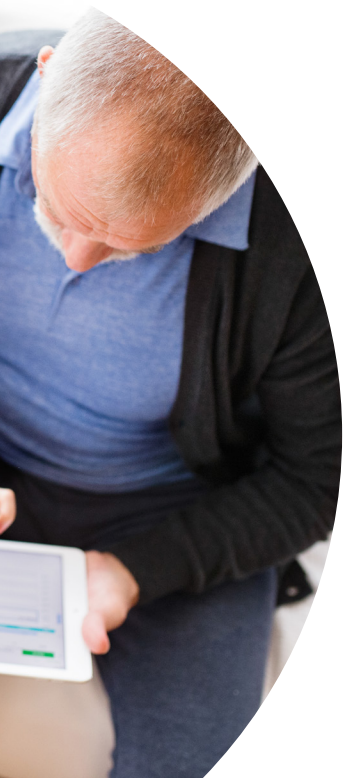
Lucy Watts MBE
Patient Leader
@LucyAlexandria

Personalised healthcare and giving patients choice is a vital part of healthcare today. Patients have the right to choose who cares for them – not just in direct NHS healthcare, but also through the Continuing Healthcare (CHC) funding that patients like me, with primary health needs, receive to fund care in the home. Patients have the right to have their healthcare built around their unique needs and wishes, enabling them to live the lives they want to lead.

However, an essential part of achieving truly personalised healthcare is supporting patients to take responsibility for their health and wellbeing. Taking responsibility for health is not an innate ability that every patient has. Yet unlocking this in patients will transform their healthcare. I often say that patients cannot be helped if they don't take at least some responsibility for their health. Doctors may give a treatment plan, but it's up to the patient to carry that out, so we become the masters of our own health. Patients must also be prepared to use all resources available to them to manage their health, outside of just the treatment delivered by healthcare professionals. This takes support and guidance, a skill that needs to be nurtured over time. I'm also a big believer that we need to teach children to take control over their health, where possible, so that when they transition into adult services, it's not a huge shock when they are expected to take control.

I benefit from patient choice and take responsibility for my own health and achieving my health-related outcomes. I'm 24 years old and I have a life-limiting condition that has caused physical disability and complex health needs. I have an amazing medical team that I've been able to choose for myself, who deliver personalised care tailored to my unique needs, including prioritising my quality of life, and who have supported and empowered me to take responsibility for my health. Without this personalised support and shared responsibility, I would not be able to live the life I want to lead. I also receive CHC funding for my homecare, which I previously received through a Personal Health Budget (PHB) but, due to a change in circumstances, had to go back to an agency-provided package. This loss of control has been devastating to me, but I will be transitioning back over to a PHB in the coming months so that I can regain control over my health, who I employ to care for me, and how I use that funding to achieve my desired health and life outcomes.

Patient choice begins with patients being empowered to take control. This is a skill that needs to be nurtured. Once achieved, the possibilities are endless.



> *Patients have the right to have their healthcare built around their unique needs and wishes, enabling them to live the lives they want to lead.*

12.

Healthcare transformation through technology

Dr Trishan Panch
Primary Care Physician,
Co-Founder and Chief Medical Officer, Wellframe
@basslinetherapy @Wellframe

Having practised clinically in the UK and then built a digital health company working with private and public insurers across the US and Europe on technology enabled chronic disease management, I believe the issue of what constitutes healthcare transformation through technology requires further definition. Healthcare transformation through technology is commonly thought to be distinct from transformation otherwise – real people doing real things differently. However, I believe that this dichotomy is false and unhelpful. In fact, all health systems are a rich lattice of intersecting processes with related information flows. Each process exists along a continuum from an entirely bespoke and reactive interaction between two people – a patient and a clinician meeting at a point in time to solve a known or unknown problem – to industrial scale personalised and adaptive processes enabled by machine learning with distinct stages in between these two poles.

I have learned that the secret of enabling transformation through technology involves not just identifying the processes to improve but also seeing such transformation as an extension of existing process engineering. This means appreciating that (in the chronic disease management context) the patient is the producer of their own health and we (as operatives of the health system) are the suppliers of the raw materials for the production and building of an information system intentionally and proactively, rather than as an afterthought.

We are in the swell of a powerful wave of transformation with an industrial revolution of information processing exploding about us. Embracing this energy will require clinicians to work effectively with engineers and data scientists on problems that matter, not just problems that are interesting or available, and all to commit to rebuilding the system from the patient's point of view. The vision should be a health system that is proactive, personalised and adaptive at national scale, but still feels intuitively like care. What is needed is the leadership, models of collaborative working and incentive structure to do so. This is the real transformation.

> *The vision should be a health system that is proactive, personalised and adaptive at national scale, but still feels intuitively like care*

Juliet Bauer
Chief Digital Officer,
NHS England
@JulietBauer @NHSEngland

The digital NHS

The £4.7 billion digital transformation of the health and care system will see huge improvements to the quality of care and convenience of services for patients. It will also enable us to meet the increasing demand for services set out in the *Five Year Forward View*.

The work I am leading covers all patient-facing parts of this transformation; empowering people to take control of their health and care through secure online access to clinicians, personalised health information and digital tools and advice.

We've already made great progress. Free Wi-Fi is now available in GP practices across the country and will be rolled out to secondary care providers by the end of the year. 14 million patients are registered for GP online services and NHS Choices now works better on mobile than ever before.

We've launched pilots of an NHS app that will give patients a single point of access to local and national digital health services. Our 'NHS Apps' library now features 47 trusted apps to help people manage and improve their health across a variety of conditions from diabetes to mental health. Visits to the library have more than tripled since its launched.

Soon we will publish guidance to help local organisations ensure that systems which bring together patients' information in one place are high-quality and connectable. And we'll begin testing a single system for verifying the identity of those requesting access to digital health records and services.

Excellence in digital services cannot be achieved in isolation. We are currently building an open and connectable platform that will make it easy for innovative developers to plug their technology into our single, joined-up NHS app and start making a difference to patients.

We are also supporting developers inside and outside of the health and care system through the Health Developer Network to improve the standard of digital apps for patients. This involves working closely with Chief Information Officers and Chief Clinical Information Officers to ensure the best digital services for their unique patient populations.

As part of our work to transform 'NHS Choices' into an improved site known as nhs.uk, we are working with the public, clinicians and health organisations to better understand their needs. As a result we have already produced, and begun testing of, tailored content for those experiencing mental health problems, which will help them make more informed decisions about their health.

Across all of these tools and services we are working in an agile way - reviewing, revising and adjusting as we go - in order to help the best developments go further, faster, so that patients can benefit sooner.

The digital NHS that will result from this transformation will mean that patients receive a more personalised experience, with convenient advice, support and care uniquely tailored to each person. Services will appear more joined-up and patients will understand how to, and be empowered to, navigate between them to get to the care they need.

That's a really exciting future for the health and care system and the people it serves, and I'm delighted to be leading us there.

The digital NHS that will result from this transformation will mean that patients receive a more personalised experience, with convenient advice, support and care uniquely tailored to each person.

14.

Healthcare transformation through technology

Dr Benedict Evans
Investment Director,
InHealth Ventures
@InHealthGroup

Innovations that have driven the digital revolution such as mobile, cloud and machine learning (ML), are increasingly discussed as having the potential to transform healthcare. Thanks to constraints including regulation, novel payment models and long, complex sales cycles, their impact has not matched the hype. Beyond these structural challenges, however, lies a deeper test for early stage businesses – engaging users at scale. Clinicians and managers in systems such as the NHS are incredibly busy and don't have the time for technology solutions that require excess time to on-board and use. Unfortunately, due to a heavy emphasis on regulatory compliance, sales and technical performance, too many solutions rolled out in healthcare over the last ten years have not spent enough time focused on the end-user. The result is a generation of customers, particularly on the clinical side, who are reluctant to embrace new technologies.

Clearly, work must be done to create a more streamlined process for tech companies selling into the NHS, but an equally important driver for successfully scaling a new technology in any health system, is that a company is relentlessly customer-focused. First health-tech companies need to identify a painful problem for doctor, manager, or patient and develop an approach that addresses it. Second, design is key to optimising user experience, in terms of the product and how it fits into existing workflows. Third, the impact of a new product or service, whether financial, experiential, or quality-related, must be felt relatively quickly and by the end-user, rather than an indirect stakeholder. Once there is a clear fit between product and market, the company can focus on growth.

From its inception 25 years ago, InHealth's goal has been to support the NHS by providing innovative solutions covering disease prevention, diagnosis and pathways management. In 2016, InHealth set up InHealth Ventures (IHV) as an extension of this mission. IHV invests in early stage health-tech and services companies attempting to solve some of the major challenges facing the NHS. We work with founding teams around early product and customer development, ensuring the end-user's experience is a priority. When the time comes to scale, we make use of InHealth's experience as a longstanding partner to the NHS.

InHealth's aspiration is to play a major part in how healthcare adopts and benefits from technology. IHV portfolio companies include Laudio, which reduces clinical staff turnover and improves administrative productivity by automating workforce analytics; Luma Health, which drives patient experience and quality outcomes by automating communication between clinician and patient; and Kheiron Medical Technologies whose goal is to augment radiology reporting by applying best-in-class deep-learning algorithms. These start-ups have several attributes in common: distinctive healthcare knowledge, a mission to reduce the cost of healthcare delivery by solving critical problems, but most of all, a fixation on exceptional product design, to delight and engage users in a sustained way. We believe these qualities will be crucial in bridging the gap between potential and reality over the next decade.

Work must be done to create a more streamlined process for tech companies selling into the NHS, but an equally important driver for successfully scaling a new technology in any health system, is that a company is relentlessly customer-focused

The role of data sharing in spreading innovation

Dr Philip Xiu
Chief Medical Officer,
Medicalchain
@medical_chain

The medical consultation, in recent decades, has adapted quite significantly in light of technological advances.

What has changed is the profound role that technology plays within the patient-doctor relationship. In today's world, doctors have a computer at their desk that acts much like their digital assistant for which they constantly refer to.

Simply put, technological integration within medical infrastructures has enabled the treatment of many more patients with increased efficiency whilst simultaneously decreasing the number of missed, misdiagnosed and misunderstood diseases. Truly this is a great feat.

However, it is imperative to recognise that the technological benefits that have been afforded to us are the consequences of effective and proper use of data. Large centralised patient databases have arisen as a pragmatic answer to modern national health systems. However such healthcare data is stored in distinct "silos" which are governed by different gatekeepers. Doctors can't often get access to different data silos easily, and patients usually have poor access to their own health records. The argument is that we own our bodies, and should thereby be self-governing over each-and-every time our data is utilised.

Patients' data has immense significance, as it enables the possibility for analytical methods to uncover patterns in how our health commonly fails us, enabling continuous improvement in how we self-manage, predict and treat disease.

There are recent cryptographic solutions to these problems in the form of what is known as a blockchain.

A blockchain is a database that, instead of being held by one institution, is distributed across a network of computers that each keep an identical version of the truth (also known as a ledger). A defining feature of blockchain technology is that it enables the individual to have complete cryptographically secure ownership and sovereignty of their data. At a fundamental level this is using technology to empower the individual. As a result, in order to update your health record on the database, each node on the network has to agree by a consensus mechanism, meaning that the requirement to trust any one institution to use your data begins to erode away.

One major advantage of blockchain technology for patients and the health system they engage with, is that it improves the quality of consultations which in turn leads to more accurate diagnoses, planned investigations and eventual treatment plans. It is also important to engage and empower patients with their own medical information so that they can be involved in their own healthcare decisions. By giving them the ability to view their records in their own time, this will facilitate their understanding of their health needs and involve them more in the health pathway.

Such a paradigm shift of data control is seismic in how we conceive of healthcare by having a truly "patient-centred" approach. This is an exciting space that Medicalchain is spearheading the development of.

We are at the forefront of developing methods to integrate this technology into our modern healthcare system. As the NHS becomes increasingly challenged on many fronts, this will likely not be an elective decision, but a necessity.

Such a paradigm shift of data control is seismic in how we conceive of healthcare by having a truly "patient-centred" approach. This is an exciting space that Medicalchain is spearheading the development of.

16.

Dr Kristin-Anne Rutter
Partner, McKinsey & Company
@McKinsey

Data in healthcare

Data is playing a bigger role than ever in healthcare. The amount of data available has exploded and the cost of storing and processing it has collapsed. Analytical techniques and artificial intelligence (AI) can reveal patterns and generate insights that were previously undetectable or unusable.

This data revolution creates the possibility of diagnosing and treating disease much more accurately and cheaply. Today, our understanding of the biology of disease is relatively limited and research evolves slowly. However, by bringing together information about lifestyle, pathology, genetics, and interventions, we will dramatically accelerate the cycle of discovery and application. Even with current treatments, using data to detect, understand and act on variations in care or to detect illness earlier could prevent over 100,000 deaths per year in England.

Healthcare costs are rising, and in many countries they exceed 10 per cent of GDP. To become more cost-effective, healthcare systems need to establish what works and what doesn't, and encourage the right lifestyles, right care, and right provider.

Data can help make this possible:

- Sixteen hospitals combined data from staff rotas, theatre systems, and patient records to better understand operating theatre utilization. Analysis of the data enabled the hospitals to implement scheduling changes that increased the accuracy of operating times by 13 per cent and improved utilization by 12 per cent.
- A&E patients with sepsis have a 5 per cent mortality risk. Machine learning can be used to accurately identify patients with sepsis in A&E using data from Electronic Health Records. This approach has greater predictive performance than other clinical decision rules-based models .
- Predictive risk algorithms can be used by clinical research organisations to select sites most likely to recruit eligible participants and meet trial milestones on time. This has led to 15 per cent faster enrolment, 10 per cent lower costs for patient visits, and 40 per cent better targeting. This is expected to reduce the cost of getting a new medicine from phase I to launch by around 30 per cent, with better patient safety and trial quality.

Health systems everywhere will benefit from having more data as records are digitised and from diagnostic tests and wearables. The UK, though, is particularly well positioned. UK Biobank, cancer registries, and Genomics England are examples of globally-leading initiatives which position the UK as a hub for precision medicine, particularly in rare diseases and cancer. Our single health system is largely digitised, and NHS Digital is in the process of integrating patient records.

Capturing these benefits requires thoughtful leadership. Leaders must manage privacy concerns, keep data secure, and handle potential liabilities around the results of analysis. They must also overcome the barriers to making full use of data (in how information is structured, stored and understood) so that we can truly gain insights and act on them. If we do so, the benefits will be immense.

Leaders must manage privacy concerns, keep data secure, and handle potential liabilities around the results of analysis

The new NHS: a model for integrated, out-of-hospital care

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As the NHS approaches its 70th anniversary there is an increasing sense of urgency around the need for transformation. Financial pressures, workforce numbers, low morale, fragmentation of services and a social care in crisis indicate that we have a duty to transform and shape a modern NHS to be the best system in the world.

Four years ago, the *Five Year Forward View* – a visionary document setting out the challenge, but skilfully avoiding a top-down approach to solutions – marked the start of a transformation journey for many of us. In Dorset, we took an inclusive, clinically-led approach to a whole system clinical services review across acute, community and primary care. This, with the inclusion of the local authority and public health bodies, underpinned the Sustainability and Transformation Plan as we moved into the formation of a new Integrated Care System.

Before we can think about reducing the flows into acute care, and better support overstretched hospitals, we need to fundamentally transform community care and develop an integrated support offer. This should maintain and grow high quality, safe, responsive care by collaborative multidisciplinary teams of community and primary care across physical and mental health who understand the needs of their local populations. This means agreement as a system to support a resource flow into the community and primary sector. It also means developing new relationships with the local authorities and a renewed approach to preventative care.

General practice is the bedrock of the NHS. Without it the NHS fails. This foundation needs strengthening with investment and security, allowing an agile and innovative response to develop alongside community teams.

Bringing together health and care to work to common goals and outcomes requires a sustained approach to organisational development, development of trusting relationships and motivating the workforce to develop new skills within these new teams. Continuity of care should be maintained as a core feature.

Population health analytics, enabling both a strategic view on health cost and outcomes and a view on specific population needs at practice level, is a key enabler to identifying where resources are needed and where transformation can take place and be measured.

Technology advances can accelerate joined-up care. Digital reform is core and central to change, and should not be regarded as an "add-on." An integrated care record is fundamental for each system.

Out-of-hospital care can be transformed at pace by giving teams permission to help shape services locally. This will enable them to find the right solutions for local communities with the Primary Care Home model, which should be the fundamental building block upon which the rest of the system can be built.

One size doesn't fit all, and a fundamental change to allowing an organic bottom-up approach reaps rewards for the system and the local area.

Where we see the best examples, the workforce stabilises, the outcomes improve for patients and the joy of work comes back into the lives of the amazing staff who sustain the NHS.

Before we can think about reducing the flows into acute care, and better support overstretched hospitals, we need to fundamentally transform community care and develop an integrated support offer.

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Working collaboratively to drive new models of care

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It is well known that the NHS faces a number of challenges in meeting the growing demand for healthcare within its available resources. With life expectancy increasing, the rising trend in prevalence of co-morbidities, and the expanding expectations of the public for convenient and personal care, NHS costs are becoming unmanageable and the pressure to reduce costs is ever growing. Demand is rising at a rate of 4 per cent, whilst current funding growth remains at just 1 per cent. In order to achieve the £22 billion efficiency savings of the *NHS Five Year Forward View* by 2020, the momentum to drive new models of care must gain pace.

The Accountable Care Systems (ACSs) play a key role in delivering the changes necessary for a sustainable future for the NHS. Implementing these, however, can only be achieved if the government, the NHS, the third sector, industry and patients can shift their thinking and work collaboratively.

The radical changes required to ensure the NHS remains a world-leading organisation can only be made if, at the same time as the commissioning of new care pathways, we have the courage to de-commission services that are no longer fit for purpose in order to free up capacity.

Out of hospital care offers significant opportunities to both generate efficiency savings and improve quality and safety of care. Home therapies can empower patients to take control of their own treatment, drawing on clinical and other support to assist their choices. However, budgetary silos between different NHS organisations and local government often act as a barrier to enabling increased out of hospital care.

A joined-up, system-wide budgeting model must permit long term settlements for new treatment pathways whose benefits may be realised in the longer term but require an initial investment. This can only be achieved where the ACSs are accompanied with an appropriate payment system and there is alignment between commissioning and provider incentives.

Baxter is a leading supplier of products and services to the NHS, supporting patients at all stages from hospital admission to managing a long term condition at home. There are evident examples of how Baxter can help the NHS deliver the out of hospital care agenda set out in the *Five Year Forward View* and articulated in many ACSs. An outpatient parenteral antimicrobial therapy (OPAT) service we set up in partnership with St. George's NHS Healthcare Trust to enable a carefully selected group of patients to receive intravenous antibiotics at home has saved the hospital up to 2,700 bed days. OPAT allows patients to continue their treatment at home or can completely eliminate the need for hospitalisation. Baxter provides the home delivery of medication as well as the nurses to infuse the drug as often as required.

Home dialysis is another incremental innovation that offers patients better clinical outcomes and improved quality of life. Baxter's cloud-based communication platform that connects home dialysis devices to Renal Units enables clinicians to monitor their patients daily. This simple technology is a step change in innovation and has the potential to increase both patients' and clinicians' confidence and reduce avoidable and costly hospital visits.

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