



How data is set to transform the UK health system in 2021 and beyond

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A report by Health Tech Partners commissioned by



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About Health Tech Partners

Health Tech Partners is an integrated communications and market access consultancy which supports health tech innovations along their reimbursement journeys. Health Tech Partners brings together an experienced team combining expertise from the NHS, pharma, health tech and patient groups. Team members include Nicholas Lansman (Founder of the Health Tech Alliance), Sir Andrew Dillon (former Chief Executive of NICE) and Dame Barbara Hakin (former Deputy Chief Executive of NHS England).

More information on Health Tech Partners is available [here](#).

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Introduction

Health Tech Partners was commissioned by NetApp to produce a report on what 2021 holds for the NHS, with a particular focus on the increased and improved use of data. This report provides an overview of the policy context within which the health system finds itself at the beginning of 2021, including the unprecedented challenges posed by COVID-19. It then examines some of the potential benefits of improved data use before highlighting what lies ahead in 2021. It also provides an overview of the essential information organisations need to know as we enter 2021, and themes to be aware of in the area of data and healthcare. This report looks particularly closely at the situation in England, but also references progress and the state of play across the whole of the UK.

The NHS and data have had a rocky history together, with the scars of the failed care.data programme of the mid 2010s still prominent. In addition, the digitisation of the NHS has also suffered setbacks over the years, with the famous target of a 'paperless NHS by 2018' – as set out in the digital strategy of 2014 – having to be pushed back by six years¹. However, following the creation of NHSX in 2019, with a tech zealot in position as Secretary of State for Health, and due to the pressures placed on the health system by the COVID-19 crisis, developments in this area have arguably never taken place at such a great pace.

The state of play

The prevailing issue for the Government remains the desire to return to 'normality' after the impact of the coronavirus pandemic and ultimately deliver what policymakers still hope will be a broadly 'V-shaped' economic recovery.

Similarly, 2021 is a huge year for the health and social care system. The NHS will be tested in the

roll-out of its population-wide vaccination plan – regularly cited as the one key to unpick national and regional lockdowns. Moreover, the NHS will focus on dealing with the enormous patient backlog that has developed because of COVID-19. Indeed, NHS England data now shows that of the 4.4 million patients on their waiting list at the end of October 2020 nearly 163,000 of these had waited over 12 months for operations and procedures – some 100 times higher than before the start of the pandemic². However, away from COVID-19 there are a number of initiatives to keep an eye on:

- **The development of Integrated Care Systems (ICSs):** 2021 will see the acceleration of ICSs, which since 2018 have brought together local organisations to work more pragmatically and take collective responsibility for improving the health of the population they serve. The NHS and its partners will be moving to create ICSs everywhere by April 2021. This will be accompanied by legislation which will put ICSs on a statutory footing and likely take effect from April 2022.
- **The possible reorganisation of health innovation bodies:** A major reorganisation of the health system architecture could mean a rearranging of the deck chairs for national bodies and their approaches to digital transformation. A review was commissioned in summer 2020 to look at this very issue. If early rumours³ are to be believed, the review, when published, could propose the creation of an entirely new unit to drive digital transformation in the NHS.
- **Increased pressure on the NHS to up its game on digitisation:** Whilst 2020 did see the NHS make progress with digitisation, partly due to the pressures of COVID-19, it also saw increased scrutiny and criticism of its lack of progress in this area. The House of Common Public Accounts Committee published a report which was highly critical of the NHS' progress against its national ambitions. The report called for a new digital transformation implementation plan to be published and for NHS IT systems to be interoperable. With

¹ [Personalised health and care 2020](#) Department of Health and Social Care

² [Waiting time data October 2020](#) NHS England

³ [Government review proposes third tech unit alongside NHSX and Digital](#) Health Service Journal

growing political pressure, particularly given the current circumstances, it is likely that NHSX will publish updated digitisation plans⁴.

Untapped potential: the benefits of intelligent data use

The potential benefits to the health system from improved and more intelligent use of data are vast and span from making the NHS more efficient and cost-effective and improving patient outcomes, to enabling greater data-driven scientific advances to be made. Whilst some innovations and improvements will be able to be made based on openly available datasets, this will not be the case in all circumstances. The Government itself is increasingly aware of this and has indicated support for increasing the number of commercial arrangements⁵. This is seen as crucial to allowing NHS patients to benefit more from innovations which are enabled by better use of NHS data.

Many of the greatest benefits of improved data usage require interoperability between NHS organisations' IT systems. Indeed, the current lack of interoperability and the so-called siloing of data is widely criticised and cited as one of the biggest barriers in this area⁶. However, organisations across the health system are increasingly looking to adopt solutions which improve data management whilst avoiding the creation of silos. The creation and adoption of new standards will be of great importance in preventing this.

Currently, due to the widespread use of legacy systems many local NHS organisations are being held back in their use of cloud and are therefore missing out on the wide-ranging benefits that it can bring to patients and clinicians. Cloud-based technologies can provide a more efficient and cheaper alternative for

organisations such as NHS trusts, whilst also enabling the adoption of other processes and methodologies such as improved data sharing. These benefits are realised without any compromises to patient-confidentiality and security. Indeed, this was confirmed by NHS Digital in their 2018 guidance on off-shoring and the use of public cloud services⁷. With the shift to ICSs and sustainability and transformation partnerships (STPs) and the expectation that patient care will be planned and coordinated through these bodies, the need for better and more intelligently managed data solutions has never been greater.

Progress regarding more intelligent use of data is at varying stages across the constituent parts of the UK. In early 2020 Wales became the first nation in the UK to enable digitised patient information to be accessed by healthcare professionals across all health board organisational boundaries⁸. However, progress in England and Scotland is at a less advanced stage.

The potential for intelligent data usage and management to drive improvements to remote care, AI-based technologies and other potential use cases is considerable⁹. Purely looking at the AI-based data powered use cases, it is clear that enormous potential is still going untapped across the UK health system. Use cases which show some of the greatest potential benefit include:

- Image recognition - including the use of AI to review electronic patient records and the use of machine learning to support digital radiology
- Precision medicine – AI-powered personalised medicine can cut through large and unstructured data, resulting in patients receiving the most appropriate care.
- Genomics – Using AI to better analyse the data generated by genome sequencing to improve diagnosis.
- Operational efficiencies – The use of AI-powered algorithms to improve efficiency in processes including clinical coding and the

⁴ [Digital Transformation in the NHS](#) Public Accounts Committee

⁵ [Industrial Strategy Life Sciences Sector Deal 2](#) Department of Health and Social Care

⁶ [Digital Transformation in the NHS](#) Public Accounts Committee

⁷ [Off-shoring and the use of public cloud services](#) NHS Digital

⁸ [More than a million digital patient records shared between health boards in Wales](#) NHS Wales

⁹ [Artificial Intelligence: How to get it right](#) NHSX

tagging of clinical text (which enables the coding of clinical data in real time).

Case Study: The London Medical Imaging and AI Centre for Value-Based Healthcare at King's College London

A prominent example of how data-driven change is transforming the health system, particularly from the perspective of both improved operational efficiencies and improved patient outcomes, is provided by the work of the London Medical Imaging and AI Centre for Value-Based Healthcare at King's College London. This consortium of three major UK universities and four research hospitals gives a clear example of how a combination of technology, data-driven strategies and AI can transform collaboration and use of data across different hospitals to improve patient care¹⁰.

The AI Centre, which was launched as part of the Government's Industrial Strategy Challenge Fund and has received substantial funding from the Government, brings together universities and hospital trusts with multinational industry (including NetApp, Siemens NVIDIA, IBM and GSK) and SMEs to develop sophisticated AI-based algorithms (which rely on state-of-the-art data processing power) to develop new healthcare tools. The uses and benefits that these technologies are bringing are wide-ranging, and include the optimisation of triage and the targeting of resources to deliver significant cost savings to the NHS.

Furthermore, the AI Centre is developing and deploying a federated learning and interoperability platform to store, curate and analyse large volumes of clinical data securely, as well as an AI deployment engine to enable the integration of algorithms into clinical workflows. Additionally, through delivering new technology infrastructure to the hospital trusts through the use of a distributed machine learning approach to bring algorithms to the data the AI centre will provide hospitals with the capacity to analyse very large volumes of

clinical data whilst preserving local governance protocols.

2021 trends

The health system is at a critical juncture in 2021. It has survived multiple peaks of the COVID-19 pandemic but even before this, it faced huge challenges. In this section we examine the broader key challenges and opportunities the health system faces over the coming year and what this could mean for efforts to use data to improve the way that healthcare is delivered.

Financial pressures

The recent Spending Review announced an additional £3 billion¹¹ to support the NHS recovery from the impacts of COVID-19, earmarked to tackle the waiting lists for elective care and mental health services. The Health Foundation¹² estimate that there will be a funding shortfall for NHS England of around £6 billion next year pointing to the need to invest further to tackle longstanding staff shortages. Meanwhile, NHS Providers expect trusts to be dealing with the elective backlog and pressures on mental health services well into 2022.

The decision to hold a one-year rather than multi-year Spending Review means that NHS England and Improvement will need to outline its future spending needs to the Department of Health and Social Care once again next year. Indeed, multi-year capital funding settlements have long been requested to enable long term planning and the transformation of services. The current annual funding cycle makes it harder for trusts to think beyond the forthcoming year and into more ambitious digitisation and data initiatives.

The pressures of COVID-19 and the recovery of 'normal' care

COVID-19 has put untold pressures on patient care. Focusing on COVID-19 has meant that

¹⁰ [AI-enabled hospitals and AI Centre for Value Based Healthcare King's College London](#)

¹¹ [Spending Review 2020](#) HM Treasury

¹² [Spending Review leaves NHS England £6bn short net year](#) [The Health Foundation](#) The Health Foundation

other forms of care have inevitably suffered. Some patients in dire need of care have not visited A&Es nor have they made appointments with their GPs leading to a near collapse in referrals to treatment during the first peak of COVID-19. NHS England and Improvement outlined ambitious targets to reset 'normal' care after the first peak and these were partly achieved. However, the national picture is concerning. Prior to the pandemic, the waiting list had risen steadily from 3.3 million (at the end of 2015) to 4.4 million at the end of 2019. Meanwhile, from January to August 2020, 8.9 million new pathways were started – 4.7 million fewer than the 13.6 million started during the same period in the previous year. Taking 4.4 million and 4.7 million together makes the NHS Confederation's prediction¹³ of the NHS waiting list reaching 10 million by the end of 2020 look not so implausible after all.

2021 will see concerted efforts to bring waiting lists down to more manageable levels but official figures underestimate the 'hidden' patient backlog as individuals have been too fearful to get the treatment they need. The recovery of 'normal' care will be undertaken under the same strict infection prevention and control measures that have become a hallmark of 2020 meaning that the NHS's focus on alleviating waiting lists may continue for some years yet, even if a vaccine is successfully rolled out.

The workforce's desire for new ways of working

One of the remarkable things that has emerged out of the COVID-19 pandemic has been the manner in which the NHS workforce has been granted the autonomy to rapidly adopt and use digital technology. The NHS Long Term Plan outlined an ambition to allow all patients to have a right to online GP consultations and 'digital-first' primary care by 2023/24¹⁴. Prior to COVID-19, approximately 80%¹⁵ of GP appointments took place face-to-face but as of June 2020, this had fallen to just under half, with the same amount

taking place over the telephone. This is just one example of a myriad of changes that have taken place. They reflect a broader trend that has emerged – a desire from NHS staff to do things differently. As the health system moves ever closer to its ambition of Integrated Care Systems, it will be interesting to see how much of this collaboration and digitisation remains. Necessity forced the NHS to adapt the way it delivers services, and this was supported by national decision-making bodies. Positive changes around the flow of data and use of digital products will need to be accompanied by sufficient investment (finances, infrastructure and in training the workforce) to embed these changes. Indeed, many of the changes enacted due to the pandemic may need to be revisited and their impact on the workforce and patients reassessed. After all, research¹⁶ has shown that there is no one size fits all solution for remote appointments and there will be a need to ensure care is centred around individual patient need.

What to look out for in 2021

In this section of the report, we have highlighted the top data-related developments that the entire health sector should look out for in 2021.

The launch and implementation of a Data Strategy for Health and Social Care

The Department for Health and Social Care have confirmed that NHSX will launch and implement a Data Strategy for Health and Social Care in the coming months¹⁷. It is expected that the Strategy will attempt to build on the momentum and good practice shown during the COVID-19 crisis by building on the permissive approach to data sharing whilst also protecting patient confidentiality. DHSC has also stated that the Strategy will 'set out a vision on how the health system can share data effectively and

¹³ [Public reassurance needed over slow road to recovery for the NHS](#) NHS Confederation

¹⁴ [The NHS Long Term Plan](#) NHS England

¹⁵ [The impact of COVID-19 on the use of digital technology in the NHS](#) Nuffield Trust

¹⁶ [The Doctor will Zoom you now](#) Healthwatch

¹⁷ [Busting bureaucracy](#) Department of Health and Social Care

efficiently, for the benefit of better patient outcomes and to reduce burden in the system’.

Consultation on changes to data legislation

DHSC is expected to consult on changes to primary and secondary legislation for data collection to harness beneficial changes as a result of COVID-19 process changes.

The convening of the Data Alliance Partnership

DHSC has confirmed that NHSX will convene a new Data Alliance Partnership in the coming months. This will bring together key bodies - such as the Care Quality Commission, NHS Business Services Authority, Public Health England and NICE – to agree principles on data collection, sharing and use to minimise the burden of data collection and processing. It is stated that the Data Alliance Partnership will ‘facilitate increased access to data by making aggregate/anonymised data accessible by default for legitimate purposes and within existing legislation. This will clearly mark a radical change in how data is collected and shared across the health system.

The development of the NHSX Centre for Improving Data Collaboration

2021 will see the NHSX Centre for Data Collaboration really develop. Established in November 2020, the Centre is tasked with providing specialist advice for health organisations which are entering into data partnerships and ensuring that these partnerships are aligned to DHSC’s five principles for data sharing. NHSX states that the Centre will ‘facilitate data partnerships in a manner that brings standardisation while allowing for local discretion and judgement’ and will not ‘act as a regulator or carry out an approvals process’. 2021 will be the year that sees the effectiveness of this new body.

The post-Brexit data protection regime

With the Brexit transition period having expired at the end of 2020, 2021 sees the beginning of a new data protection regime in the UK. On the end of the transition period, the UK incorporated a slightly amended version of the EU’s General Data Protection Regulation (GDPR) into UK domestic law. This essentially creates a ‘dual regime’ with the EU’s GDPR and the UK’s version

of GDPR. Organisations will therefore be adjusting to this new regime and will need to be aware of extra-territorial impact.

Conclusion: What questions should organisations ask themselves?

Given the unprecedented situation the health system - and indeed the entire country – will find itself in in 2021, it is unsurprising that innovative solutions and new ways of working are being explored by the NHS, its associated bodies and industry. As history has shown, it is often in times of the greatest adversity that the greatest advances, particularly technological ones, are made.

Given the challenges facing the UK health system and the more general policy context, it is clear that the constituent organisations within the NHS need to consider the following questions to ensure they are able to make the best use of their data:

What funding options are available to improve data management and usage?

Organisations should explore what funding is required to support digital transformation efforts, along with potential routes to secure this. NHS trusts, for example, may be eligible for the Global Digital Exemplar programme – a scheme run by NHSX to support high-performing digitally mature trusts. Some £385 million has already been provided by this scheme to 26 trusts across England. Whilst comparable schemes do not exist in the other UK nations considerable digitisation funding is still available.

What benefits can more intelligent data solutions bring?

The benefits of improved data management, storage and usage are varied and wide-ranging. Many NHS organisations see the significantly reduced IT costs that the cloud can bring as the most important benefit. However, the use of cloud services can also enable the development and deployment of other services at greater speed and less expense. Additionally, as

healthcare increasingly moves to technologies that require internet connectivity and interoperability, it is important that organisations move to the cloud to drive agility and ensure they are not left behind.

What solutions are appropriate for my organisation?

NHS guidance states that public cloud services (i.e. those where all cloud resources are operated by third-party cloud service providers and are delivered over the internet) 'offer the biggest potential benefits for the public sector'¹⁸. However, NHS organisations are also exploring hybrid solutions that combine the use of on-premises infrastructure or private cloud with public cloud.

The focus of 2021 for much of the health system will be the need to address the patient backlog and other consequences of the pandemic. In this context where great momentum is behind digitisation and tech in healthcare more general, it remains to be seen whether 2021 will be the year in which the NHS makes a great leap forward in its use of data. What is clear is that the time has arguably never been better for the NHS and its organisations to explore new and innovative data solutions which can help tackle the immense challenges of the year ahead.

¹⁸ [Off-shoring and the use of public cloud services](#) NHS Digital

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