Digital health during the Covid-19 pandemic:

LEARNING LESSONS TO MAINTAIN MOMENTUM

“The old argument about whether it’s right to prioritise modern technology in the NHS and our care sector is over. The pandemic has proven beyond doubt that better tech is vital for the future success of our health and care service... Now we need to focus on how we can ‘bottle’ the progress we’ve made in the last few months.”

Matt Hancock, July 2020[1]

ACKNOWLEDGEMENTS

This report has been developed by the *Patient Coalition for AI, Data and Digital Tech in Health*, which aims to unite representatives from patient advocacy groups, Royal Colleges, medical charities, industry and other stakeholders committed to ensuring that patient interests lie at the heart of digital health policy and discussions.

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This document reflects the view of the *Patient Coalition on AI, Data and Digital Tech in Health* and may not reflect the individual views of every one of the organisations that contributed to its creation.

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FOREWORD

RACHEL POWER

CEO of the Patients Association and Chair of the Patient Coalition for AI, Data and Digital Tech in Health

The Patient Coalition for AI, Data and Digital Tech in Health has produced this report to improve our understanding of the role of digital health technology during the pandemic. In particular, given our focus on championing the patient perspective, this report focuses on shedding light on the patient experience of these technologies. We have drawn on in-depth research, a new patient survey and a collection of case studies of good practice in digital health technology to provide useful insights and policy recommendations. Our aim is to help ensure that the UK learns from the unique experience of the past year – both the good and the bad – so that we can continue to improve the implementation and uptake of digital health technology to the benefit of all patients.

While digital health technologies certainly hold incredible potential to improve the efficiency and effectiveness of health services to the benefits of patients and the NHS, this has not been the experience for all patients. Alongside examples where these technologies have helped improve care, there are also cases where patients have struggled with access or found that digital technology did not improve their care. Beyond telephone consultations, it seems we still have a long way to go before we can confidently say that patients across the UK are truly benefitting from the full potential of digital health technologies.

If we are serious about capitalising on the incredible potential value of these innovations to the benefit of all patients, we must learn from our pandemic experience. We need to ensure that digital policy better reflects patient priorities and this includes ensuring patients are more involved in the policymaking process. We also need to improve public understanding of these technologies – not just how they can be used to improve care but also the complexities of related issues like data-sharing. Ultimately, there is still much to be done to improve access to digital health so we can continue to move from pockets of progress and cases of good practice to widespread implementation and use.

As part of this process, we need to consider how the health system is designed and how it should continue to evolve if we are to make the most of digital health. Patients recognise the value of digital technologies but they also want to retain the choice to see a healthcare professional – an important aspect of healthcare that should not be lost. In our rush to embrace digital technology we need to ensure that patients still get the time and attention they need so healthcare is always something done ‘with’ patients rather than ‘to’ patients.

Over the past year, we have certainly seen the health service rapidly adapt to a difficult environment, including by embracing digital health technologies. While this has worked well for some, it has proven challenging for others and there are plenty of lessons to be learned as health services continue to evolve. We have an opportunity to build on this incredible momentum and leverage the value of digital health technologies to the benefit of patients and the NHS. Hopefully this report provides useful insights and recommendations to help support the ongoing process of digitisation and ensure that patient priorities and experience always lie at the heart of digital policy.

INTRODUCTION

The aim of this report is to provide policymakers and the NHS with recommendations for how to learn from the experience of digital health technology during the Covid-19 pandemic, both the positive and the negative. This is to help ensure that the UK can capitalise on the incredible potential of these technologies to the benefit of patients, the NHS and the UK economy.

Since March 2020, the NHS has been forced to rapidly adapt to the significant service pressures caused by Covid-19, reprioritising staff and resources to provide vital services at this difficult time. A key element of this urgent pandemic response has been the rapid implementation of digital health technology across the NHS, which has helped facilitate a significant step change in the way that health services are delivered in the UK. This includes working very quickly to free up space and capacity in acute hospitals, enable remote monitoring and communications, and reduce the risk of infection transmission in care settings.[2]

While the speed and scale of digitisation has generally been rapid, this has varied across the NHS and the rate of uptake is challenging to calculate based on the data available. While some Trusts organised online groups in a matter of days and weeks rather than the three to four years as originally planned, there have also been cases where the use of digital health technology has not been appropriate and instead worsened inequalities.[3] Ultimately, there is still limited academic evidence of the impact of digital technology on service quality and efficiency[4] beyond case studies of good practice.

Similarly, patient experience of digital health technology during the pandemic has been mixed. While parliamentarians have acknowledged that digital health technology has largely been welcomed as a positive innovation in circumstances where many medical services would otherwise be unable to meet the needs of patients,[5] research also shows patients did not always have a positive experience of digital technology in healthcare during the pandemic. Despite the large-scale celebration of the NHS over the spring and summer, emergency measures often came at a significant cost to patients. In fact, access to services became very difficult for some and many patients were left feeling unsupported, anxious and lonely.[6,7,8] Consequently, the relationship between patients and the NHS during the pandemic had actually been significantly disrupted in many ways.[9]

This is not to say that digital health technology has not also proven critical in many ways to providing vital services during this challenging time. At their best, these technologies provide tools to empower patients and provide them with more tailored, effective and efficient services. There are clearly still gaps and challenges to overcome as the system moves beyond pockets of good practice to provide diverse digital solutions to complex problems. The NHS has struggled to facilitate widespread and effective adoption of these tools so every patient has the opportunity to experience and benefit from digital health, and this systemic challenge has not been resolved over the past 10 months. Yet progress has been made and continuing the momentum that has evolved during the pandemic is crucial to the future of health services in the UK.

There is a risk that the progress made towards embracing digital health technology during the pandemic could be lost or slowed as the pandemic passes and the NHS reverts to its previous care models. It is important to learn from the pandemic experience – where digital health technologies have supported patients and the NHS, and where they have fallen short – in order to help ensure that the UK can continue to capitalise on the potential of these technologies in the future.

This report will begin by establishing the low level of digitisation that existed in England prior to the pandemic, alongside a limited public understanding of digital health. Drawing on a new patient survey and a series of case studies, this report then provides insights on the experience of digital health during the pandemic. The aim is to identify lessons and key principles that should help inform the future development and implementation of digital policy. These lessons and insights help inform a series of recommendations for how the Government and NHS can ensure the UK can continue to capitalise on the value of digital health technologies to the benefit of patients, the NHS and the economy.

WHAT WE KNOW:
DIGITAL HEALTH TECHNOLOGY BEFORE THE PANDEMIC

The digitisation of health services has been a key priority for the Government and the NHS over the past several years, and lies at the very heart of the long-term strategy for health services in the UK.[10] It has been the subject of a range of diverse programmes and pilots designed to facilitate the adoption and diffusion of digital health. There has also been significant research into evolving public perceptions of digital innovations and data as this digitisation process has continued over the years.

KEY POINTS TO CONSIDER REGARDING DIGITAL HEALTH PRIOR TO THE PANDEMIC INCLUDE:

1. England was starting from a relatively low level of digital engagement

Evidence suggests English patients were significantly less likely than patients elsewhere to use digital technologies to manage their health prior to the pandemic. By 2020, the use of mobile phone/tablet applications and wearable technology had fallen by about 15% since 2018 while 43% of patients said they were not using any digital tools to manage their health (highest of all countries surveyed including US, Australia and Norway).[11] In fact, research suggests only 4 in 10 would be willing to engage with technology in their healthcare experience.[12]

2. There was also limited awareness of the types and use of digital health technologies

Before Covid-19, just 12% of patients in England had received healthcare virtually.[13] Unsurprisingly then, when identifying different types of digital technology, patients were familiar with phones, watches and connected home tools, but most had never considered medical applications.[14]

3. The public demonstrated an interest in accessing health via digital routes

Qualitative research shows that there was optimism about new technology in healthcare as well as support for the use of new technology to augment and support clinicians, both for direct patient care and for wider efficiencies in the health system overall.[15] More broadly, 66% of English patients said they would consider using virtual care or digital therapeutics[16] and over 75% of the population were going online to find help with their care.[17]

4. Patients wanted digital health solutions to provide them with information

Research suggests the most popular types of apps were fitness, medical reference and wellbeing, which provide information and have limited other functions.[18] Patients also identified their top priorities for health apps including providing information on symptoms and medical condition, and facilitating examination of health records.[19]

5. Key barriers to embracing digital health persisted, including concerns over data sharing

It was clear that patients did not support sharing data solely for commercial purposes. While they may understand that commercial partnerships exist within the NHS to deliver services, and that these companies may need to use patient data, they saw patient data as belonging to the NHS and to be used for social good only.[20]

SURVEY: PERCEPTIONS OF DIGITAL HEALTH TECHNOLOGY DURING THE PANDEMIC

Given the significant impact of the pandemic on patients and the NHS, and the resulting rapid implementation of digital health technologies, the Coalition was keen to gain a deeper understanding of the impact of these technologies and how public perceptions of digital health may have changed over the course of the pandemic.

On November 06 2020, the Patients Association launched an online survey on behalf of this Coalition, focused on assessing perceptions and experiences of digital health technologies during the pandemic.[21] . In total, 162 people shared their opinions. The sample strongly reflects the experiences of older people with long term conditions: the majority of respondents identified as White British (**88%**) and female (**63%**). The majority (**84%**) were aged 55 or older with **40%** falling in the 65-74 age bracket. It should be noted that the online format of the survey is unlikely to have reached those without access to internet or technology, or with low computer literacy, and these groups will be underrepresented in the results. Some quotes from survey respondents have been minimally edited for clarity and language, but care has been taken to preserve the original meaning.

The sample size is too small on its own to provide rigorous insights that can be extrapolated to draw broad conclusions about public perceptions across the UK. However, the results broadly align with and reinforce the conclusions of larger patient surveys conducted during the pandemic. It therefore offers some useful anecdotal insights into how patients have engaged with digital health technologies during the pandemic as well as their key concerns and the support they need going forward.

KEY CONCLUSIONS INCLUDE:

1. Uptake of digital health technology remains limited

While about **81%** of respondents made use of telephone consultation services, take up of other digital health technologies was much lower: only **21%** used video consultations; **36%** used mobile phone apps; **4%** used remote monitoring devices; and 50% used online patient communication platforms.

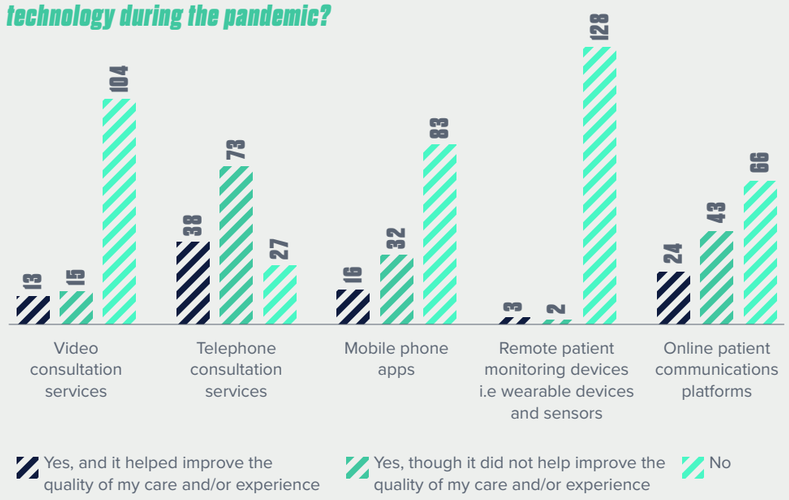
This reinforces the findings of a large Ipsos Mori survey which revealed that 67% of respondents had telephone consultations during the pandemic while only 18% used video or other online consultations and 5% used other online services or virtual agents like chatbots.[22] It also reflects the findings of a Patients Association survey which revealed a mix of opinions about how useful video and telephone consultations were during the pandemic while about 30% of respondents had not used online health services at all.[23]

2. Most of those who did use digital health technology did not feel it improved their care

Of those who used telephone consultation services, only **28%** thought it improved their care and/or experience. This was high in comparison to those who used video consultations (**10%**), mobile phone apps (**12%**), remote monitoring devices (**2%**) or online patient communications platforms (**18%**).

Taken alongside a number of more comprehensive studies, it is clear that patient experience of digital health technologies during the pandemic has been mixed. For example, in primary care, some patients have found digital services to be “amazing” and have called for a “digital by default” approach to communication,[24] while other patients struggled to understand how to book appointments using new digital triage systems or were not able to book appointments that met their needs . Clearly there remain strong barriers to the effective implementation and uptake of digital health technology across the UK.

Have you used any of the following types of digital technology during the pandemic?



“The technology inconvenient to use when patients have multiple conditions”

“Online symptom reporting is NOT user (patient) friendly - I worked in IT & I find it awkward to navigate!”

“Length of time taken to respond, lack of human contact, lack of empathy and care for elderly patients”

“Can be confusing as to what bit I use for what”

“Any technology used by the health service terrifies me. I have wasted so much time in the past fiddling with it and finding it does not work that I have now given up”

“Online systems need to be easier to navigate”

"Digital technology is essential and inevitable"

"Digital technology is essential to disseminate information swiftly and efficiently"

"Used properly, it could make life easier"

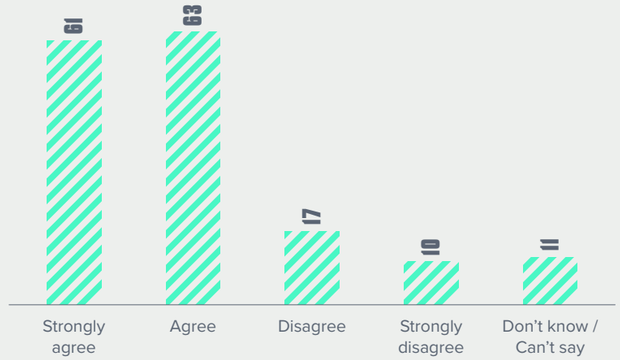
"[It is important] If properly incorporated with and enhances the human touch"

3. People strongly believe in the value of digital health technology

77% of respondents agreed to some extent that digital health technology is important to the NHS's ability to respond to the pandemic and similarly **73%** agreed it is important to the future of health services in the UK.

This aligns well with recent survey findings which showed that, if given the choice, most patients would choose virtual for basic care services, and even for specialty care. They "definitely" or "probably" would receive health and wellness advisories (58%) and remote monitoring of ongoing health issues through at-home devices (52%), and nearly half (52%) would choose virtual for routine appointments. Some are also open to receiving diagnoses virtually — 37% for illnesses, diseases and disorders and 38% for appointments with medical specialists for diagnosis or acute care.[26]

To what extent to you agree that digital health technology is important to the future of health services in the UK?

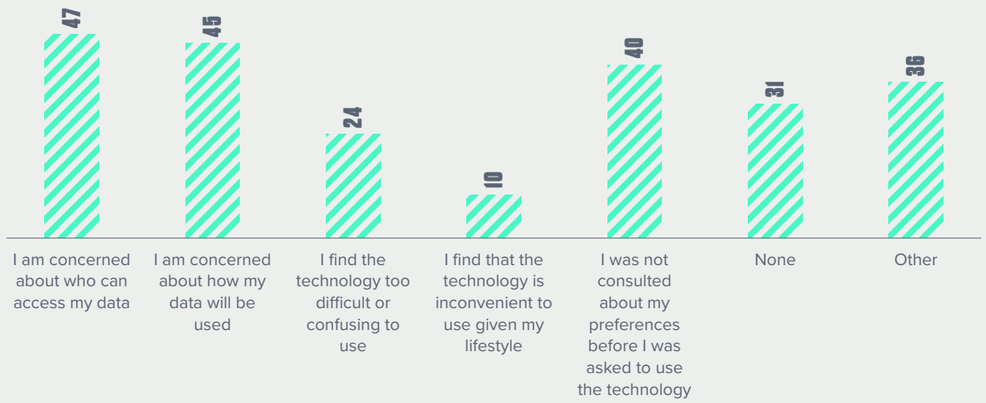


4. There are still significant concerns about using digital health, particularly around data collection and sharing

In particular, the survey revealed that **35%** of respondents are concerned about who could access their data and **34%** also expressed concerns about how that data will be used.

This reflects the well-established understanding that "most people support sharing patient data for individual care and a high proportion of people support sharing patient data for research where there is public benefit" but people generally "do not trust commercial entities" when it comes to using patient data.[27] In fact, a recent study showed about 95% of people were not willing to share their medical data with commercial industries by late 2018.[28]

What concerns do you have, if any, about using digital health technology? (Please choose any/all that apply)

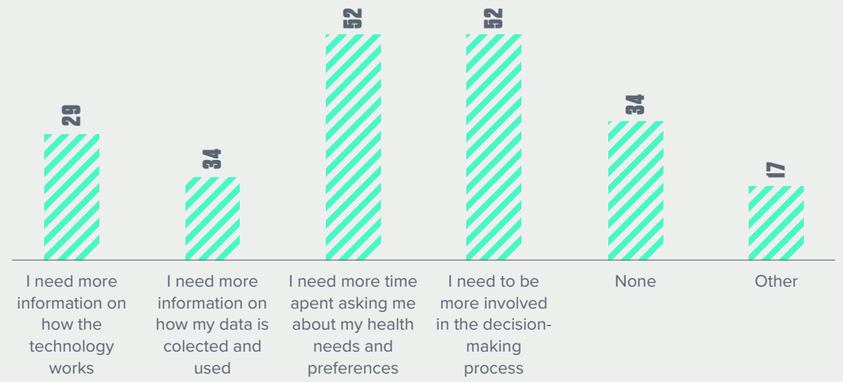


5. Patients want to be more involved in their health and care

30% of respondents expressed a concern that they are not consulted about their preferences before being asked to use digital health technology. Furthermore, about **40%** want more time spent asking them about their health needs and preferences, as well as greater patient involvement in the decision-making process.

These findings reflect well-established trends where NHS England has acknowledged that national surveys show over 40% of people want to be more involved in decisions about their care, and similarly 40% of people living with long-term conditions want more support to manage their health and wellbeing on a day-to-day basis.[29]

What support do you need, if any, to overcome your concern(s)?



"It must not replace face to face but be an option"

"Mixed feelings. Patients should retain choice"

"Patients still need the option for conventional means as an alternative to new tech"

"I don't have a lot of concerns personally but think that it is important to have a range of options available to patients so they can express a preference for what they would prefer"

6. People also want the choice to use tech rather than tech replacing clinicians

Despite the fact that **73%** of respondents agree or strongly agree that digital health technology is important to the future of health services, there is clear support for ensuring people have a range of options. The healthcare professional is still seen as a vital part of health services and technology should support them rather than replace them.

Organisations like the Patients Association and Mind recently reached similar conclusions in their research. They agreed that the diversity of patient needs and preferences ensures factors such as access to technology, comfort using technology and patient environment will vary and a patient should have the ability to choose how they would like to access health services.[30,31]

"Concern regarding others not being able to use digital health technology e.g. elderly, those who do not have access to the technology"

"Technology is only as good as access to it. When it works, fine, when it doesn't people are left stranded"

"It's really useful to have it available as long as it doesn't permanently replace face to face appointments and that people without the skills or access to tech are not disadvantaged in any way"

"The Department of Health must work out how to make this accessible to everyone".

"So much more is learned by face-to-face contact I worry that digital consultations are a poor substitute and disenfranchise those without digital access"

7. Digital health technology should be used to the benefit of all patients

Throughout the survey, patients expressed concerns regarding the need to ensure the accessibility of digital health technologies. It is important to remember that '11 million people in the UK (20% of the population) lack basic digital skills, or do not use digital technology at all. They are likely to be older, less educated and in poorer health than the rest of the population. Thus, many of the people who could most benefit from digital services are the least likely to be online.'[32]

This reflects the findings of a recent report which emphasised that remote consultations will not work for everyone, including many disabled people, who are less likely to have access to the internet than non-disabled people, those in rural areas without reliable connectivity, those with poor digital literacy, and those who lack the privacy necessary for sensitive conversations with health professionals.[33]

CASE STUDIES: LEARNING FROM GOOD PRACTICE DURING THE PANDEMIC

It has been widely acknowledged that, in an effort to address the exceptional service pressures caused by the pandemic, healthcare professionals across the UK have rapidly adopted or expanded the use of digital health technologies. In many cases, these technologies have not only allowed NHS staff to continue providing vital services but they have helped improve patient experience, save resources and reduce workforce pressures.

To help demonstrate the incredible potential of digital health technologies to improve health services and to help capture key lessons learned during the pandemic, 10 case studies have been gathered and assessed (see Appendix 1 for full details) which comprise good practice examples of digital innovation during the pandemic. These should not be taken to suggest that all patients had a similar experience with digital health technology but simply as case studies of where digital health technology has worked well to the benefit of patients and the NHS. Broadly, the key learnings across all of these case studies are that effective digital approaches tol healthcare need to:

1. Respond directly to patient needs

A key reason for the success of digital health technologies is that they were developed and implemented specifically to address a key patient service need, for example, facilitating consultations, supporting symptoms management or accelerating safe triage. Effective digital technology is something done 'with' patients rather than 'to' patients and these technologies were not introduced simply for the sake of digitising an aspect of the patient pathway.

CASE STUDY 1: DIGITAL CONSULTATION SERVICES FOR PARKINSON'S DISEASE[34]

The challenge – The Parkinson's service at Northumbria Healthcare NHS Foundation Trust could no longer run physical clinics during the pandemic as non-urgent appointments and operations were postponed. This was problematic because they receive about 60 new referrals every month and rely on seeing patients to assess them properly.

The solution – Patients were given the option of being assessed by clinicians via video call and over the phone, either alone or with a relative or friend. This technology was used across the Trust for hospital and community services throughout Northumberland and North Tyneside.

The results – Before the pandemic, only 10% to 20% of outpatient appointments at Northumbria Healthcare NHS Foundation Trust were done digitally. By April and May, this increased dramatically to 70%, equating to almost 11,000 appointments. Waiting times fell from three to four months pre-COVID, to just two weeks, with the technology saving patients travelling more than 60,000 miles to appointments. Importantly, non-attendance rates declined and 98% of patients who used the technology said they would use it again.

2. Ensure technology is easy to use

Whether it is technology to support clinical decision-making, remote monitoring or communication, a key aspect of success is the ease with which it can be implemented, accessed and used. In the best cases, the technology in question also leverages existing infrastructure and can be implemented rapidly with minimal disruption or need for training.

3. Embrace convenience and flexibility

In order to effectively support patients and meet complex needs and preferences, digital health technologies must be offered as a choice alongside other routes to engage with the health service. They cannot be imposed as a 'one-size-fits-all' solution without considering critical issues including how a patient accesses the health service and what support they need.

4. Maintain the human aspect of healthcare

While patients may have become more accustomed to virtual services, the best digital health technologies do not undermine or remove the patient-clinician relationship. Instead, they strengthen that relationship by, for example, improving communications or patient education.

5. Support clinicians

As the implementation of digital health technologies accelerates, the most effective tools work to support NHS staff and facilitate health services rather than simply replacing staff or creating additional responsibilities. Digital health should be used as a tool to reduce pressures on healthcare professionals and to ensure patients can receive the support they need beyond their usual care settings.

CASE STUDY 2: VIRTUAL SELF-REFERRAL TO PREVENT TYPE 2 DIABETES[35]

The challenge – There are more than 12 million people at increased risk of type 2 diabetes in the UK, but the reduction in routine screening during the pandemic has meant that the number of people being referred into the NHS Diabetes Prevention Programme has dropped. As a result, many people have not been able to get the help they need to reduce their risk of type 2 diabetes.

The solution – The NHS Diabetes Prevention Programme (DPP) launched an online self-referral route via Diabetes UK 'Know Your Risk' tool allowing people who may be at risk of developing type 2 diabetes to determine their particular level of risk. If a person was found to be at moderate or high risk of developing type 2 diabetes, they were signposted to another digital tool, which allows people to search using their post code to find their local provider and sign up to the NHS Diabetes Prevention Programme.

The outcome – As of 28th September 2020, over 335,000 people had used the Diabetes UK 'Know Your Risk' tool since the end of July, which represents a 564% increase compared to two months previously. The NHS DPP has capacity to support 5,000 people every week and offers a digital stream, meaning access to the programme has been able to continue during the pandemic.

RECOMMENDATIONS

When implemented effectively, digital health technologies have proved vital to the response of UK health services to the pandemic; helping to provide vital services, save resources and reduce workforce pressures. While it has largely been welcomed as a positive innovation in circumstances where many medical services would otherwise be unable to meet the needs of patients, it is also true that patient experience of digital health technology has varied during the pandemic.

The case studies cited in this report help demonstrate the incredible potential of digital health technologies to improve services for patients and the NHS, which can be secured when they are developed and implemented effectively. Yet it is clear that digital solutions are not always the appropriate tools to deliver health services and have even helped facilitate inequalities particularly where levels of digital access and literacy amongst patients differ.[36]

The UK must build on the progress made to digitise the NHS during the pandemic rather than reverting to pre-Covid service models. In order to do so, there are important lessons to be learned from the successes and failures of implementing digital health technology in the NHS, particularly from case studies of good practice that have helped facilitate service improvements. This will help ensure that the UK can continue to capitalise on the incredible potential of digital health technologies to the benefit of patients, the NHS and the UK economy.

Moving forward, the Government should:

1. ENSURE DIGITAL POLICY REFLECTS PATIENT PRIORITIES

As digital policy continues to evolve rapidly in response to the pace of technological innovation, it is important to ensure that policymaking and implementation are ultimately driven by and focused on meeting patient needs and expectations.

2. INVOLVE PATIENTS IN THE POLICYMAKING PROCESS

In order to help ensure that patient priorities lie at the heart of digital health policy, greater effort should be made to involve patients throughout the policymaking process, from development and implementation through to evaluation and monitoring.

3. EDUCATE PEOPLE ABOUT THE VALUE OF DIGITAL HEALTH TECHNOLOGY

Given the limited uptake and understanding of digital health technology prior to the pandemic, there is a need for greater outreach and engagement to address this gap in order to help encourage people to make better use of digital innovations.

4. MAKE DIGITAL HEALTH TECHNOLOGY ACCESSIBLE TO ALL

Digital health technology has been a vital part of the NHS response to the Covid-19 pandemic but uptake and use has not been consistent across all age groups and geographies. Moving forward, there is a need to ensure that access to these transformative and life-saving technologies continues to expand across the country.

5. ENSURE THERE ARE CLEAR REGULATIONS FOR THE COLLECTION, SHARING AND USE OF PATIENT DATA

People remain overwhelmingly concerned with who can access their data and how it will be used. They need to be assured that their data and privacy are being safeguarded by strong information governance laws.

Moving forward, the NHS should:

1. EXAMINE THE PUBLIC EXPERIENCE OF DIGITAL HEALTH DURING THE PANDEMIC

Given the speed of the response to the pandemic, there was little opportunity for public involvement in policy development and implementation. It is vital to understand the public perspective on digital health to help inform future service provision.

2. ENSURE PATIENTS HAVE A CHOICE

While digital health technology has incredible potential to improve patient outcomes and experience, there is still a clear desire to maintain non-digital healthcare solutions and retain the connection between patients and healthcare professionals. Innovations should supplement that relationship, not replace it.

3. GIVE PATIENTS MORE TIME AND CONTROL OVER THEIR HEALTH AND CARE

While there is broad appreciation of the importance and value of digital health technology, there is also a clear public desire for more involvement in decision-making and more communication with healthcare professionals. This includes a more extensive discussion of health needs and service preferences.

4. REASSURE PATIENTS THAT THEIR DATA IS SAFE

Where patients are encouraged to use digital health technology which requires collecting and sharing their data, there remains a clear need to maintain a high level of transparency and ensure patients understand the processes involved, how their data will be collected and used, and the considerable benefits to their health and the health of others.

5. CONTINUE TO STRENGTHEN AND PUBLICISE DIGITAL ASSURANCE

As the use of digital health technology continues to increase, the NHS must ensure that people feel confident that digital products have been rigorously reviewed and are considered safe for patient use in all key regards.

Appendix 1:

CASE STUDIES OF DIGITAL HEALTH TECHNOLOGY DURING THE PANDEMIC

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The NHS DPP has capacity to support 5,000 people every week and offers a digital stream, meaning access to the programme has been able to continue during the pandemic.

CASE STUDY 3: SELF-MANAGEMENT APPS FOR ASTHMA AND COPD[37]

The challenge – People with asthma and COPD are particularly at risk of developing Covid-19 but could not secure appointments as easily during the pandemic. However, monitoring these conditions was vital as their situation could quickly deteriorate with fatal consequences without appropriate support.

The solution – Designed and supported by internal experts, NHS Wales launched self-management apps for asthma and COPD that included vital details such as medications, triggers and advice. They also allowed patients to log important results and information, and provided videos and articles delivered by their experts.

The results – Dr Simon Barry, Respiratory Consultant and National Clinical Lead for Wales said: *"The Healthhub apps will help us transform patient self-management for conditions such as Asthma and COPD. These apps will help patients have a greater understanding of their condition and will be an invaluable resource for us as clinicians, to offer our patients."*

CASE STUDY 4: VIRTUAL INTENSIVE CARE UNIT (ICU) SUPPORT[38]

The challenge – During the height of the pandemic in April 2020, the Royal Brompton Hospital site was caring for four times as many critically ill patients (70) as its usual ICU capacity (18 beds). To adapt, additional frontline workers were redeployed to support critically ill patients and there was an increased need for rapid communication between healthcare professionals across different parts of the hospital.

The solution – The Royal Brompton and Harefield Hospitals deployed digital technology – webcams, virtual conferencing and hand-held devices – which enabled clinicians to see all relevant real-time data for each patient. For example, a junior member of staff could stand within a patient's bed space on a video call to another clinician, showing both the patient and the ventilator screen to aid in decision-making, while also being in continuous communication with both the bedside nurse and the junior doctor.

The outcome – The new technologies allowed senior healthcare professionals to communicate across many levels within the hospital as if they were at the bedside alongside the junior staff. By relying on existing infrastructure, the costs incurred by staff were negligible and the technologies were implemented in a matter of days using hardware and software with which staff were already familiar.

Initial hesitance of those less familiar with the technology was quickly replaced with enthusiasm and, in the vast majority of cases, staff were actively seeking implementation at the earliest opportunity.

CASE STUDY 5:
GRASP TOOL TO SUPPORT THE MANAGEMENT OF POORLY CONTROLLED ASTHMA/COPD[39]

The challenge – Evidence suggests that there are an estimated 3.7 million people with COPD in the UK, yet only 900,000 people have been diagnosed. Opportunities for early diagnosis of COPD are frequently missed in primary care even before the pandemic reduced the opportunities for regular visits to healthcare professionals. As patients with COPD are vulnerable to viral respiratory tract infections, and COPD is generally a disease that affects the elderly, there was also a concern that COPD patients have an increased risk of acquiring Covid-19.

The solution – The MISSION programme piloted a new model of asthma care across Wessex using a digital tool called GRASP, which interrogates GP records across Clinical Commissioning Groups in Wessex based on a set of codes created by the user. Details examined include ED visits, hospital admissions, medications and asthma triggers.

The outcome – This simple search tool allowed practices to identify patients with the greatest clinical need and provide an assessment that reduced their risk of requiring unscheduled care, while helping to save a significant amount of time, money and inconvenience to patients in the longer term. The programme found that proactively identifying high-risk asthma patients and reducing the length of time before uncontrolled asthma is recognised reduces health costs and improves patient experience.

CASE STUDY 6:
VIRTUAL GROUP CLINICS (VGCS)[40]

The challenge – The pandemic has forced many patients with long term conditions into isolation without their usual support networks. During a pandemic, long-term condition management places additional demands on community services and many patients that have suffered from Covid-19 also face a particularly long and complex recovery.

The solution – Group consultations have long been considered a valuable tool for maintaining health for groups of patients such as those living with a long-term condition and a national programme has been exploring the use of virtual group clinics. During the pandemic, nurses at participating practices have driven the expansion of virtual consultations to offer a safe way to continue to support their patients.

The outcome – Initial feedback from the programme indicates that the virtual group clinic offers comparable benefits to face-to-face group consultations, while helping to minimise the transmission of infection. The virtual model allows a variety of health professionals and leading clinics to see more patients and spend longer with each one. Many patients greatly value the opportunity of facilitated peer support, spending more time with their clinician and making connections with others who share their condition.

As teams master these methods, they report that they save time compared to one-to-one videos with nurses and other clinicians, and are able to review up to eight times as many people in an hour of clinic time.

1. Full list of 57 seats can be found in Annex 3

CASE STUDY 7:
NATIONAL COVID-19 CHEST IMAGE DATABASE (NCCID)[41]

The challenge – As the pandemic evolves, a national understanding of the imaging features is required to guide future management, national protocols, and to assist clinicians to more accurately identify and diagnose episodes of COVID-19 infection.

The solution – NCCID is a centralised UK database of X-Ray, CT and MRI images and other relevant information pertaining to patients with suspected COVID-19 from hospitals across the country. It has been created to enable the development and validation of automated analysis technologies that may prove effective in supporting COVID-19 care pathways, and to accelerate research projects to better understand the disease.

The outcome – The data has the potential to enable faster patient assessment in A&E, save Radiologists' time, increase the safety and consistency of care across the country, and ultimately save lives. There are currently 18 NHS Trusts registered for the data site and while the outcomes have yet to be determined, it is expected that the data will be used to support key activities including the validation of AI products; the development of image processing software; and teaching resources for radiologists.

CASE STUDY 8:
VIRTUAL PODIATRY SERVICE IN SCOTLAND[42]

The challenge – Diabetes foot problems are the most common causes of diabetes-related hospital admissions in the UK, and are usually preceded by serious foot infections. Consequently, timely action is crucial. However, those in shielding categories, care homes and wards during the pandemic presented a particular service challenge due to the need for physical distancing and access limitations.

The solution – This challenge provided a unique opportunity to test the utility of video assisted consultations in the delivery of wound management. Due to previous poor uptake, referrals were initially telephone triaged by foot protection podiatrists and the subsequent rapid spread and scale up of virtual consultations required clinicians to embrace new learning and ways of working quickly.

The outcome – By June 2020, over 16,000 'Near Me' consultations were being delivered each week across NHS Scotland, a staggering 5,000% increase within 4 months. The average number of referrals to the podiatry service per month pre-COVID-19 was 3,486, of which around 3.5% were new foot wounds. By May 29, 2020, 6 days after the lockdown, 33% of referrals were for new foot wounds.

CASE STUDY 9:
HANDHELD DEVICES AND TRACKING SOFTWARE TO SUPPORT INFECTION PREVENTION[43]

The challenge – Covid-19 saw many nurses redeployed, sometimes to several different wards across Gateshead Health NHS Foundation Trust, in order to flexibly meet the exceptional demand for care. This made keeping track of who is where, and when, increasingly important and was a significant part of effective infection prevention and control if patients or colleagues test positive for Covid-19.

The solution – The electronic patient record system was adapted to support updated infection prevention and control practices. Nurses and other staff access the system via handheld devices and used it to record a range of details including observations and clinical measures. The system also linked into a bed mapping system so staff could quickly obtain information such as patients who have been nursed in the same ward or bay as another Covid-19 positive patient. The hand-held mobile devices were easy to carry around and there were larger tablet-sized devices that allowed more detailed viewing and were normally used for ward rounds or viewing additional detailed documentation.

The outcome – The devices enabled staff to overview and monitor patients remotely and minimise patient contact with clinicians who were not directly caring for individuals. It also facilitated communication across multi-disciplinary teams with data feeding into one portal. Staff could see the patients they were responsible for before they started their shift and patient data was updated at the bedside after each contact to reduce risk of errors and help to track assessments, monitor wellness and support rapid response.

CASE STUDY 10:
SUPPORTING PATIENTS TO SELF-MONITOR IN THE COMMUNITY[44]

The challenge – With many vulnerable patients with long term conditions required to shield during the pandemic, the difficulty was ensuring these patients still had access to the same level of care they required.

The solution – Patients with long-term conditions were provided with internet-connected equipment to support self-monitoring of key health indicators and movement. Data was sent to nursing teams via the smart home assistant device and an application was used to display trends. Nurses supported patients to understand the relevant information and how to respond. Smart devices with a screen were also provided, allowing nurses and patients to see each other during consultations and enabled nurses to support and reassure patients, for example, by supporting, assessing and observing self-administration of insulin.

The outcome – This approach helped keep many vulnerable patients safe by reducing face-to-face contact and supported the identification and stratification of which patients required different levels of assessment by a community nurse. Closer monitoring and discussions with nurses also supported patients to safely increase their knowledge and understanding of their health condition – helping them to self-care while making them more aware of subtle but relevant changes in their observations which may require further advice, help or support.

CASE STUDY 11:
VIRTUAL CLINICS TO MANAGE TRANS-ISCHAEMIC ATTACK[45]

The Challenge - A Trans-Ischaemic Attack (TIA) is a clear warning sign that a person is at risk of having a stroke. In fact more than one in 12 people who have had a TIA go on to have a stroke within a week. While people with a suspected TIA are supposed to be referred to a specialist for assessment and investigation within 24 hours of the onset of symptom, many specialist TIA clinics were forced to reduce face-to-face services as a result of Covid-19.

The Solution - East Kent University Hospitals FT introduced a virtual clinic to triage suspected TIA patients. During the virtual consultation, a consultant will explore a patient's medical and drug history and health records to answer any concerns and provide reassurance. The consultant concludes the call by setting out next steps, including their investigation and treatment plan and discussing any issues resulting from the diagnosis.

The Outcome - The virtual clinic was able to triage about 60 patients in the first month. This allowed patients to be filtered out at each stage of the process and referrals requiring a subsequent face-to-face consultation were reduced by 30 to 40%. This helped reduce the risk of contracting Covid-19 and limit the spread of the disease in a clinic setting.

REFERENCES

1. Matt Hancock, How technology helped shape the pandemic response, July 2020. Available at: https://healthtech.blog.gov.uk/2020/07/30/how-technology-helped-shape-the-pandemic-response. Accessed: December 2020.

2. Rachel Hutchings, The impact of Covid-19 on the use of digital technology in the NHS, August 2020. Available at: https://www.nuffieldtrust.org.uk/research/the-impact-of-covid-19-on-the-use-of-digital-technology-in-the-nhs. Accessed: December 2020.

3. House of Commons Health and Social Care Committee. Delivering core NHS and care services during the pandemic and beyond. October 2020. Available at: https://publications.parliament.uk/pa/cm5801/cmselect/cmhealth/320/32002.htm. Accessed: December 2020

4. Sarah Nickson, Alex Thomas, Erenie Mullens-Burgess, Decision making in a crisis: First responses to the coronavirus pandemic, Institute for Government, August 2020.Available at: www.instituteforgovernment.org.uk/sites/default/files/publications/decision-making-crisis.pdf. Accessed: December 2020.

5. House of Commons Health and Social Care Committee, 2020.

6. The Patients Association, Pandemic Patient Experience UK: Patient experience of health, care and other support during the COVID-19 pandemic, September 2020. Available at: https://www.patients-association.org.uk/Handlers/Download.ashx?IDMF=2fdaa424-8248-4743-a4d5-fe1d3f403d20. Accessed December 2020.

7. Nick Davies et al, Performance Tracker 2020: How public services have coped with coronavirus, Institute for Government, August 2020. Available at www.instituteforgovernment.org.uk/performance-tracker. Accessed: December 2020.

8. House of Commons Education Committee, 'Oral evidence: The impact of Covid-19 on education and children's services, HC 254', 17 June 2020. Available at: https://committees.parliament.uk/oralevidence/527/pdf. Accessed December 2020.

9. The Patients Association, 2020.

10. NHS England, The NHS Long Term Plan, January 2019. Available at: https://www.longtermplan.nhs.uk/publication/nhs-long-term-plan. Accessed: November 2020.

11. Ashish Goel, Sustaining the growth of digital health, September 2020. Available at: https://www.accenture.com/gb-en/insights/health/england-patient-survey. Accessed: December 2020

PWC, Shaping the future of healthcare, 2020. Available at: https://www.pwc.co.uk/industries/healthcare/patients-voice.html. Accessed: December 2020.

12. Accenture, Sustaining the growth of digital health, 2020. Available at: https://www.accenture.com/_acnmedia/PDF-134/Accenture-Patient-Survey-Eng-2020.pdf#zoom=40. Accessed: November 2020.

13. Sarah Castell et al, Future data-driven technologies and the implications for use of patient data: Dialogue with public, patients and healthcare professionals, November 2018. Available: https://acmedsci.ac.uk/file-download/6616969. Accessed: December 2020.

14. Sarah Castell et al, November 2018.

15. Accenture, Consumers in England reveal the future of healthcare, 2019. Available at: https://www.accenture.com/_acnmedia/PDF-98/Accenture-2019-Digital-Health-Consumer-Survey-ENG.pdf#zoom=40. Accessed: December 2020

16. Deloitte, Connected health: How digital technology is transforming health and social care, 2015. Available at: https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/life-sciences-health-care/deloitte-uk-connected-health.pdf. Accessed: December 2020.

17. Deloitte, 2015.

18. Deloitte, 2015.

19. Sarah Castell et al, November 2018.

20. The Patients Association, Digital technology in the coronavirus pandemic: YouGov survey results. Available at: https://www.patients-association.org.uk/Handlers/Download.ashx?IDMF=e194b833-13b2-4cfd-8002-3502e86d06cb. Accessed January 2021.

21. IBM, Emerging stronger and smarter: A three-stage strategy to help clear the NHS backlog and build operational, September, 2020. Available at: https://www.ibm.com/blogs/think/uk-en/emerging-stronger-and-smarter-a-three-stage-strategy-to-help-clear-the-nhs-backlog-and-build-operational-resilience-post-lockdown/#_ftn1. Accessed December 2020.

22. The Patients Association, 2020.

23. The Patients Association, 2020.

24. Nick Davies et al, Performance Tracker 2020: How public services have coped with coronavirus, Institute for Government, August 2020. Available at www.instituteforgovernment.org.uk/performance-tracker. Accessed: December 2020.

25. Accenture, 2020.

26. Understanding Patient Data, Public attitudes to patient data use: a summary of existing research, 2018. Available at: https://understandingpatientdata.org.uk/sites/default/files/2018-08/Public%20attitudes%20key%20themes_0.pdf. Accessed: December 2020.

27. Justine Alford, Public trust in health data sharing has sharply declined, survey reveals, July 2020. Available at: https://www.imperial.ac.uk/news/200436/public-trust-health-data-sharing-sharply. Accessed: December 2020.

28. NHS, Making the care for a more personalised care approach. Available at: https://www.england.nhs.uk/personalisedcare/making-the-case-for-a-more-personalised-care-approach. Accessed: December 2020.

29. The Patients Association, 2020.

30. House of Commons Health and Social Care Committee, 2020.

31. NHS Digital, Digital inclusion guide for health and social care. Edited: July 2020. Available at: https://digital.nhs.uk/about-nhs-digital/our-work/digital-inclusion. Accessed: December 2020.

32. The Patients Association, 2020.

33. House of Commons Health and Social Care Committee, 2020.

34. NHS Northumbria Healthcare, Major benefits for patients as Northumbria embraces virtual technology during COVID-19, June 2020. Available at: https://www.northumbria.nhs.uk/major-benefits-for-patients-as-northumbria-embraces-virtual-technology-during-covid-19. Accessed: December 2020.

35. Diabetes UK, We've partnered with NHS England to get you faster support with preventing type 2 diabetes, July 2020. Available at: https://www.diabetes.org.uk/about_us/news/know-your-risk-update. Accessed: December 2020.

36. House of Commons Health and Social Care Committee, 2020.

37. Health hub, Official NHS Wales self-management apps to support people living with asthma or COPD. Available at: https://healthhub.wales/#elementor-action%3Aaction%3Dpopup%3Aclose%26settings%3DeyJkb19ub3Rfc2hvd19hZ2FpbiI6InllcyJ9. Accessed: November 2020.

38. Adam Igra et al, Rapid deployment of virtual ICU support during the COVID-19 pandemic, October 2020. Available at: https://www.rcpjournals.org/content/futurehosp/7/3/181. Accessed: December 2020.

39. Wessex Academic Health Science Network, West Hampshire Clinical Commissioning Group, National Institute for Healthcare Research Collaboration for Leadership in Applied Health Research and Care (Wessex), Evaluation of case finding for COPD/asthma and management of poorly controlled asthma/COPD project, 2020. Available at: https://wessexahsn.org.uk/img/projects/WHCCGWAHSNevaluation300415final%20(4).pdf. Accessed: November 2020.

40. NHS England, Virtual Group Clinics in Primary Care. Available at: https://www.england.nhs.uk/nursingmidwifery/shared-governance-and-collective-leadership/nursing-covid-19-catalogue-of-change/virtual-group-clinics-vgcs-in-primary-care Accessed: December 2020.

41. NHSX, National COVID-19 Chest Image Database (NCCID). Available at: https://nhsx.github.io/covid-chest-imaging-database Accessed: December 2020.

42. Catherine Exposito et al, COVID-19 as a catalyst for change: virtual foot protection, November 2020. Available at: https://www.diabetesonthenet.com/journals/issue/625/article-details/covid-19-catalyst-change-virtual-foot-protection. Accessed: December 2020.

43. NHS England, Supporting infection prevention and control through technology, 2020. Available at: https://www.england.nhs.uk/nursingmidwifery/shared-governance-and-collective-leadership/nursing-covid-19-catalogue-of-change/supporting-infection-prevention-and-control-through-technology Accessed: December 2020.

44. NHS England, 2020.

45. Prof. Gary A Ford et al, Adapting stroke services during the COVID-19 pandemic: an implementation guide, May 2020. Available at: https://www.basp.org/wp-content/uploads/2020/05/Adapting-stroke-services-in-the-COVID-19-pandemic-May-2020-1.pdf. Accessed: 15 January 2020