PUBLIC POLICY PROJECTS

INSIGHTS

The Digital Divide: Reducing inequalities for better health

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Contents

About

ABOUT PUBLIC POLICY PROJECTS

Public Policy Projects (PPP) is a global policy institute offering practical analysis and development across a range of sectors, including health, social care, life sciences, net-zero and climate change. At Public Policy Projects, we believe that good public policy is the essential foundation of an open, liberal society. Most public policy issues are complex and involve difficult choices and trade-offs. There is plenty of scope for honest disagreement about how to balance conflicting interests; it is the role of political leaders to make those choices and accept responsibility for the choices they make.

The mission of Public Policy Project is to learn both from our own experience and from the experience of others and to make contributions to the policy debate which address real world choices based on real-world evidence.

Foreword

Digital technology undoubtedly presents a significant opportunity to positively transform the delivery of health and care services in England and Wales. However, accelerating the transformation of health care through digital simultaneously carries the potential risk of widening the health inequality gaps that exist within our communities.

This report by PPP examines this 'digital divide' and provides a clear set of proposals about the steps we need to take, both nationally and locally, to ensure that the introduction of digital into patient and citizen pathways is done in a way that benefits all our communities, and especially those in most need of support.

Through the process of crafting this report, it has been a privilege to have heard many examples throughout the country where co-produced, thoughtful, and focused interventions are tackling this potential divide head on, with real impact as a result. They are trailblazers for the rest of us to follow, and many of the case studies that we heard are featured in this report. Thank you to all who gave their time to engage in our roundtables.

There is no doubt that digital is here to stay; the pandemic has demonstrated how rapidly the health service can move to digital channels to ensure the continuation of care delivery. But if we are to truly unlock the power of digital for all our communities, then we must always be watchful of the potential risk that the digital divide brings. And though technology will obviously be part of the change to come, much of what will truly make the difference will come from the way that we engage with our patients and citizens; building trust with communities is essential to the equation, as well as co-production and empowerment that creates good user experience of the new models of digital healthcare delivery.

Richard Stubbs
Chief Executive Officer of Yorkshire and Humber Academic Health Science Network

Recommendations

SUMMARY OF RECOMMENDATIONS

1) **The Department for Levelling Up, Housing and Communities should change the English indices of deprivation to encompass digital access and skills.** Not only does this acknowledge digital access as a significant determinant of deprivation and health, but could also improve the measurement and documentation of those who are not digitally engaged.

2) **Integrated Care Boards should be responsible for convening and supporting trusted staff in all public services, including health and care, to assess and support those who want to get online.** Support programmes should be context specific and tailored to the specific needs of a community, and should include walk in centres where individuals can go to for support regarding digital skills, confidence, and safety, alongside accessing connection and devices.

3) **Digital-by-default must operate in the context of the digital divide**. Both healthcare, and all other government services, must be equally accessible via digital and non-digital pathways. An approach of digital-by-default may lead to those who are not digitally engaged being at a disadvantage, which will only widen existing health inequalities. However, if done in a sensitive and thoughtful manner, digital-by-default may provide the space needed for the most in-need to access face-to-face services and care.

4) **NHS England should make Digital training mandatory for all health and care staff.** As healthcare becomes increasingly reliant on digital channels, it is imperative that all health and care staff are confident and comfortable to access online systems in order to provide the highest quality care. Training surrounding the digital divide, its impact on health, and how best to support patients to become digitally engaged should be incorporated into digital training. This will help to mitigate health inequalities exacerbated by the digital divide among both staff and patients.

5) **NHS England should update their Digital Technology Assessment Criteria (DTAC) to ensure that products and interventions are designed specifically tailored to the needs of those with additional accessibility requirements (particularly those with few digital skills, people with disabilities or long term health conditions, people over 70 years old, and people with English as a second language).** Good user experience should be a central component of all digital health interventions. If a product of service is not accessible for those with highest need, then they will only serve to exacerbate existing health inequalities.

6) **Integrated care systems should instil a culture of real-world evaluation for health interventions.** Data regarding both health, and its social determinants, should be collected before and after all interventions relating to the wider determinants of health to create an evidence base that can be used to inform action on population health inequalities.

7) **All should be given access to all their health and care data with summary analytics, and the information should be easily accessible within the NHS app.** This transparency will contribute to trust in the system and its outputs, and a fuller understanding of its purpose.

8) **New digital care pathways and other support services must be co-produced with the communities they serve.** End users must be involved at every stage of the design and implementation process, to ensure that products and services are appropriate and useable to anyone who may be impacted by them.

Introduction

The digital divide has a direct negative impact on health inequalities in England and Wales. The digital divide is a term used to describe the gap between those who are digitally enabled, and those who are not. Digital enablement means that people have the devices, connectivity, access, capability, motivation, support and participation to navigate online, and to use digital services.[1]

Digital access and skills confer great benefit to those who are engaged. The UN has recognised connectivity to digital technology as being able to support and advance all 17 of the Sustainable Development Goals; technology can "enhance connectivity, financial inclusion, access to trade and public services".[2, 3] Digital engagement has a significant impact on health, both directly and indirectly. Digital transformation in the NHS means that health services and information are available and accessible online. Online access also impacts all social determinants of health (SDOH) including but not limited to accessing education, employment, housing and finances. Therefore, those who are digitally excluded are at a marked health disadvantage.

Certain groups of people are more likely to be digitally excluded than others. According to the Good Things Foundation, groups most likely to be digitally excluded are: people over 70 years old, people with disabilities or long term health conditions, people living in low income households and people with a lower literacy rate or educational attainment.[4] There is a notable overlap between people at highest risk of health inequalities, and those who are digitally excluded. While there are several factors that perpetuate this trend, the digital divide can be seen to contribute significantly to existing health inequalities.

In recent years, and accelerated by the covid-19 pandemic, many public services including healthcare have been increasingly available via online channels. The pandemic has revealed huge inequalities when it comes to both digital access, and health.[5] If these inequalities in connectivity and access are not addressed, health inequalities will persist and are likely to be exacerbated.

Simultaneously the covid-19 pandemic has revealed the potential benefits of digital healthcare in terms of both the planning and the delivery of care. Increasing utilisation of digital and data allow us to keep more comprehensive records for patients, better monitor population health, and roll out innovative digital health treatments. New digital innovations, and the better use of data regarding both health and the SDOH, have the potential to accelerate the narrowing of the health inequalities gap.

Maximizing this opportunity will require digital connectivity to become an area of priority for all stakeholders. Digital innovations and data must also specifically target the reduction of health inequalities. This report makes a series of recommendations which, if implemented, will reduce the health inequalities exacerbated by the digital divide, and make more appropriate use of digital and data to target the health of those in underserved communities, and to identify the areas of greatest need in a population. It is acknowledged that these issues are prevalent across the devolved administrations. For focus and content, this report will focus on the health systems operating in England and Wales.

The roundtables gathered key stakeholders from across the NHS, public health experts, integrated care system (ICS) representatives, local authorities, charities, academia, and medical technology providers. This report: The Digital Divide: reducing inequalities for better health, follows on from Public Policy Projects' (PPP) previous health inequality work. In 2021, PPP and the Institute of Health Equity produced their report, *Addressing the National Syndemic: place-based problems and solutions to UK health inequality*, Chaired by Professor Sir Michael Marmot. This report aims to build upon that work, and focus on the health inequalities exacerbated by the digital divide.

Chapter One: Context

IMPACT OF THE PANDEMIC: DIGITISATION AND HEALTH INEQUALITIES

The pandemic has irrevocably changed life in several ways, accelerating what was an already inevitable shift towards a digital era. When the first UK lockdown was announced in March of 2020, work, school, socialising, health and wellbeing platforms, and many forms of entertainment, shifted online, becoming accessible for people inside their own homes. For many, daily internet usage increased, and many people began to regularly video call for the first time. [6]

Healthcare also accelerated its shift online, and the ways in which we access, receive, and interact with the management of our care changed with it. Due to the urgent need to reduce face-to-face interaction wherever possible, virtual consultations became commonplace, and healthcare professionals became largely accessible over the phone or via a screen. Hospitals were avoided where possible, to reduce contact with the virus itself, and so in-person contact with both primary and secondary care health professionals became rare.

Digital health technologies were utilised like never before. Although the adoption of digital health technologies was set out in the NHS Long Term Plan in 2019, the pandemic accelerated this adoption as it called for innovation, and the breaking of established barriers.[8] Alongside the virtual appointments came changes to information governance, allowing data sharing to identify patients at highest risk, facilitating the production of shared care records and the setup of virtual wards. The pandemic also saw a huge increase in engagement with the NHS App. In December 2021, three years after the NHS App was first launched, there were over 22 million NHS app users, 18 million of whom downloaded the app since the NHS COVID Pass was added in[9] May 2021. As of September 2022, there are 30 million downloads of the[10] NHS app. Although many have benefitted from new online services, this shift to digital meant that those who were not engaged online were left behind.

Meanwhile, it became increasingly apparent that gross health inequalities continue to persist in society. Health inequalities, as defined by the World Health Organisation (WHO), are "differences in health status or in the distribution of health resources between different population groups, arising from the social conditions in which people are born, grow, live, work and age".[11] In February 2020, prior to the announcement of the first lockdown in the UK, Michael Marmot and The Health Foundation published their report *Health Equity in England: The Marmot Review 10 Years On*, a follow up to Marmot's landmark study *Fair Society, Healthy Lives (The Marmot Review)* published in 2010.[12,13] Among the report's key messages are several noteworthy facts: that in the UK since 2010, life expectancy has stalled, the social gradient has become steeper, regional differences in life expectancy have tended to increase, there has been no decrease in mortality for people under 50, and the amount of time people spend in poor health has increased.[14]

As the Covid-19 pandemic unfolded in the UK, these persisting health inequalities came into sharp focus as some sections of society were more severely impacted by the virus than others.[15] Inequalities in outcomes were recorded in terms of socio-economic status, region, ethnicity, and gender. According to the Office of National Statistics (ONS), those living in the most deprived areas of England and Wales are approximately twice as likely to die after contracting the virus as people living elsewhere, and mortality rates for the virus were highest among males of Black ethnic background.[16, 17]

At the same time, the pandemic also changed how hospitals operated and how medical interventions were carried out: the emergency measures necessitated by the virus prompted the removal of certain barriers, and temporarily changed clinical acceptability thresholds.[18] Exceptional circumstances meant that data was collected and used in innovative ways to identify high risk individuals and groups, to better support them in the context of both the virus and the vaccination programme.[19] These new ways of working offer potential avenues to close the gap in terms of health inequalities, but we have not yet fully explored the potential of these solutions.

HEALTH INEQUALITIES, DATA, AND INTEGRATED CARE SYSTEMS

While the pandemic has accelerated digital transformation in the NHS, health systems in England and Wales have also undergone a substantial structural change. ICSs, given statutory footing in July 2022, are the new framework for the delivery of health and care services. Integrated care systems are partnerships which connect NHS organisations to local authorities and the wider community. They are statutory and accountable for planning care services and are designed to improve health and reduce inequalities within the populations they serve.[20] NHS England has set out the following as the core principles of ICSs:

 A] To improve outcomes in population health and healthcare
 B] To tackle inequalities in outcomes, experience and access
 C] To enhance productivity and value for money
 D] To help the NHS support broader social and economic development[21]

Enshrined in statutory footing by the Health and Social Care Act 2022, ICSs have an unwavering commitment and legal requirement to reduce health inequalities.[22] As ICSs develop and begin to operate in the ways they were intended, local authorities and the NHS should work in conjunction to address the SDOH to improve population health. This partnership should enable population health analysis to better target underserved groups, by connecting siloed datasets from across the SDOH. By bringing together information within the ICSs regarding health, social care, housing, environment, employment, welfare, recreation services and amenities, among other sectors, the contributing factors behind poor health in certain communities can be better understood and appropriate changes and interventions put in place. Furthermore, ICSs should also endeavour to reduce the digital divide given its clear impact on health inequalities. Failure to do both would be a breach of their commitment to reducing health inequalities.

DIGITAL INCLUSION: A 'SUPER SOCIAL DETERMINANT OF HEALTH'

In today's world, digital inclusion confers an increasing number of benefits to an individual, which, according to the Centre for Economics and Business, include earnings benefits (increased through digital skills), employability benefits, retail transaction benefits, communication benefits, and time savings.[23]

Digital access and skills have a significant impact on good health. Inequalities in digital access and literacy can impact an individual's ability to access health information and services, and to manage health and wellbeing. As mentioned, the pandemic prompted many aspects of life to move online, healthcare included. Access to health services, information and tools are now increasingly available via digital pathways. This move towards the digitisation of healthcare means that those who are not digitally enabled are at a health disadvantage, as they are unable to engage with these digital pathways.

Digital inclusion has implications on virtually every social determinant of health (SDOH) – the non-medical factors which influence health outcomes.[24] Digital inclusion has therefore been dubbed a "super social determinant of health"[25] given its direct impact on healthcare accessibility, but also its implications upon all other SDOH.   Digital literacies and internet connectivity impact employment applications, housing, and education, all of which contribute to health status and a future burden on healthcare services.

The relationship between digital inclusion, inequalities and health is undoubtedly complex. Researchers from The Nuffield Trust have identified trends which can be described as a 'digital inverse care law', an extension of Julian Tudor-Hart's inverse care law which describes that populations most in need of good medical and social care are the least likely to receive it.[26] The Nuffield Trust found that groups of patients likely to be in relatively good health (younger, white, highly educated, living in more affluent areas) are more likely than other patients to successfully navigate online access to care.[27] In other words, those who are most likely to need access to health care services, are the least likely to be able to access them. As digital services become more prevalent and normalised within healthcare, those most in need will find services ever harder to access unless direct action is taken.

Chapter Two: Recipients of Care

ENGAGING THOSE WHO ARE CURRENTLY OFFLINE

A participant of the roundtables described how in today's world, "reliable access to the internet has almost become a basic right". In order to tackle the digital divide and reduce its impact on health inequalities, steps must be taken to ensure that people who are currently offline have the tools and support to become digitally engaged and can reap the direct and indirect health benefits of digital access. This engagement is dual pronged. As mentioned, online access benefits health directly, by allowing patients to engage with their healthcare online, access health information, access virtual appointments and consultations, and by enabling patients to manage longer term conditions using digital heath technologies. However, given that digital engagement also impacts all other social determinants of health, greater usage of digital is likely to improve health overall. Therefore, reducing health inequalities associated with digital access and skill must focus both on getting patients digitally engaged generally, and becoming engaged more specifically with their online healthcare.

The key to tackling digital exclusion, as defined by one participant of a roundtable, means ensuring that "people have got the access they need, the skills they need, and the support they need to access the digital world". Digital inclusion is not simply about devices and connectivity, but also skill, confidence, and motivation-based barriers. The final piece of the jigsaw is around ensuring that digital skills come alongside health education, and an increased understanding of the importance of improved digital health literacy.

As identified by the Digital Poverty Alliance, digital exclusion as a problem will not go away on its own over time.[28] Concerted efforts must be made to encourage people to get online, particularly those in under-served communities who are already at a health disadvantage, who have the greatest opportunity for progress from improved digital access. Part of ensuring that the digital divide is narrowed, and more people can benefit from online access, is the proper recognition and recording of digital exclusion.
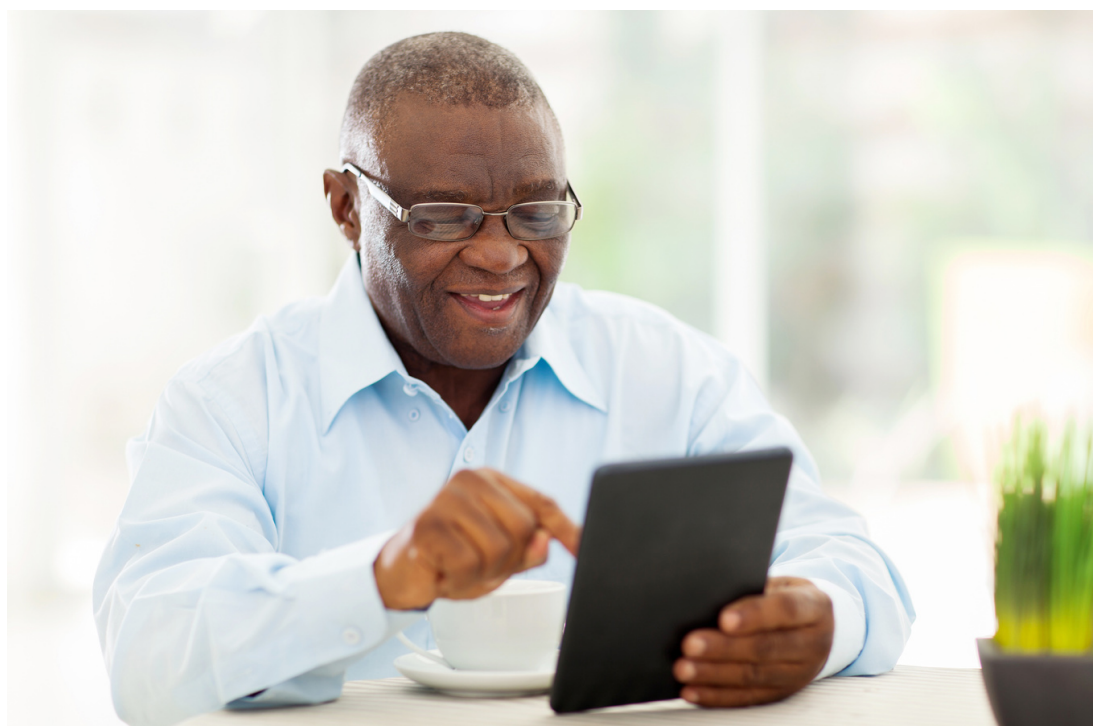
The most common measure of deprivation, used in many official data sources and wider studies, is the *English Indices of Deprivation* produced by Department for Levelling Up, Housing and Communities (formerly the Ministry of Housing, Communities and Local Government). This is updated periodically, and the latest set was produced in 2019.[29] The indices of deprivation comprise seven domains that contribute to deprivation: income, employment, education skills and training, health and disability, barriers to housing and services, and living environment. Each area gets a single score based on how well it does across these areas. Given that digital inclusion is a core component of a healthy and connected life, the indices should be updated to account for digital inclusion. Not only would this formally acknowledge digital access as a significant determinant of deprivation and health, but could also improve the measurement, documentation, and support for those who are not digitally engaged. The provision of digital access and skills feeds directly into the Levelling Up mission, and must be addressed in the Levelling Up agenda, as it must be ensured that all have equitable opportunity to access to good healthcare, public services, and receive the broad benefits which digital inclusion can offer.

> *Reliable access to the internet has almost become a basic human right, like access to water or electricity. You could almost argue that British citizens have a right to have access to the internet so they can access the services provided by government*

> *Digital exclusion is about access to devices, connectivity, and skills, but it is also about attitudes, confidence, and motivation-based barriers*

Recommendation 1
The Department for Levelling Up, Housing and Communities should change the English indices of deprivation to encompass digital access and skills. Not only does this acknowledge digital access as a significant determinant of deprivation and health, but could also improve the measurement and documentation of those who are not digitally engaged.

TRUST, RELATIONSHIPS, AND CO-PRODUCTION WITH COMMUNITIES

There should not be a 'one-size-fits-all' approach to getting individuals online and engaged with their healthcare digitally. There are multiple complex factors which when taken together, might mean that individuals choose to be offline, dependent on an individual's characteristics, priorities, and needs. Different options and approaches will be needed for them to begin to use online services, and motivation will range. While many people will benefit from learning digital skills, one contributor to the roundtables described that "for many people it is about having someone else that can use digital on their behalf to help manage health better".

Throughout the roundtables it became evident that establishing trust and building a relationship with individuals is a central aspect of encouraging people to get online and engaged with their healthcare digitally. To help people to become digitally engaged, we must meet people where they are, by connecting with them in their communities and gaining their trust.

Many organisations connected to the community can play a role in improving digital access and skills. Charities and the voluntary sector have typically been leading the way, often working alongside local authorities to target interventions in an area. Health professionals link workers also have an important role in getting people online. In order to build trust in digital services, the most trusted community leaders and services must be utilised.

Health and care staff are among the most trusted professionals in the country. According to the ONS, the NHS is the most trusted public service in the UK, trusted by 80 per cent of the population significantly higher than national government (35 per cent) or local government (42 per cent). This trust should be leveraged, and health and care staff should be properly trained and supported to encourage patients to become digitally able and literate. There are growing calls from ICS leaders for ICSs to come to act as conveners of broad public service provision beyond health. [30] ICS's should take an active role in convening services to reduce the digital divide, utilising both healthcare staff and other staff connected to the community.

Health professionals and those working in other public services who are trying to engage patients online should first try to build a rapport with their patients and focus on building a relationship. As identified in one of the roundtables, "building trust is about changing the culture of a community". Co-production with communities is central to this trust. By understanding what a community's needs are, we are most likely to be able to appeal to these needs and provide services and training that best meet them.

Digital support must then be designed specifically around these local community needs, and further tailored to the needs of each individual. What is essential is having a full understanding of the individuals and communities being reached, and providing digital support based on their unique requirements. As described by a participant of the roundtables, "some may need a device, some may need an internet connection, some may need to learn digital skills, and some may need a combination of these". Integrated Care Systems, and Integrated Care Boards should be responsible for convening the services necessary for engaging those currently offline. Support programmes should be context specific and tailored to the needs of a community. They should include walk-in centres where individuals can go to for support regarding digital skills, confidence, and safety, alongside accessing devices and internet connection.

"*Often, it was not about a lack of digital literacy, but a lack of trust. The relationship was not strong enough*"

Recommendation 2
Integrated Care Boards should be responsible for convening and supporting trusted staff in all public services, including health and care, to assess and support those who want to get online. Support programmes should be context specific and tailored to the specific needs of a community, and should include walk in centres where individuals can go to for support regarding digital skills, confidence, and safety, alongside accessing connection and devices.

The Good Things Foundation – 65 High Street

The Good Things Foundation (TGTF) aims to increase engagement and accessibility of digital technologies as they may or may not relate to health in local communities. Principally TGTF aims to address the digital divide, increasing data awareness, device access and digital inclusion for health.

TGTF has addressed this by setting up digital health hubs in local communities which aims to increase digital inclusion for health through addressing the following: - Accepting digital access and skills are a social determinant of health - Co-designing hubs including the input of communities who will access these hubs - Building trust and relationships with local communities - Increasing digital health literacy

These hubs are based in local environments accessible to those availing of the services provided such as in GP surgeries, libraries or civic society setting.

Digital Health Hubs can address health literacy through a variety of means: including increasing access to free online learning, finding trusted health information online, providing support to carry out online health transactions, finding trusted health, fitness and wellbeing apps in addition to other online support and signpost to local support and community activities. This endeavour is scalable, and can be adopted in all local communities. However, a standardised approach to facilitate scalability is not advisable as this initiative aims to provide individual communities with resources to suit their individual needs.

This endeavour is scalable, and can be adopted in all local communities. However, a standardised approach to facilitate scalability is not advisable as this initiative aims to provide individual communities with resources to suit their individual needs.

65 High Street in Nailsea Town, Bristol is an example of a successful digital health hub. This started by procuring a building and exploring what the community needs at a deeper level. It was essential to be mindful of the sensitivities associated with digital exclusion. When developing the hub, it was important to consider what individuals saw from the outside looking in, what was the first thing they saw when they entered the building, how the hub provided what the individuals needed and how they could be encouraged to return.

Essential to the process was quick and cost-effective set-up in addition to mobility of technology and furniture. The hub facilitated relaxed and comfortable discussion over a cup of tea, building trust and relationships with the community and learning more about what they need the hubs to provide for them. These hubs allowed individuals to engage with other members of their communities who were digitally excluded and improved their access to relevant trustworthy resources. This process allowed relationships between individuals and organisations to grow, facilitated volunteers to provide peer support and fostered a desire to collaborate and help others.

It is essential to provide volunteers the opportunity to try new things, to monitor what individuals are using the space for, to consider what changes need to be made and cheaply trial changes at a small scale to assess utility and effectiveness.

Solutions to digital exclusion in Hackney

Cultural Development Manager for Hackney Council, Petra Roberts, sought to address digital exclusion among older people in the Hackney area. Older people, and people with other protected characteristics including those of an ethnic minority background, are more likely to be digitally excluded. Though a good understanding of the community dynamics and characteristics of the groups they worked with, Petra and her team found context specific solutions to digital exclusion among older individuals in the borough. During the pandemic, Hackney Council found that younger people were desperate for data to use their devices for access to the internet. However, older people did not always have the skills, confidence, or motivation to use the internet. In Hackney, they found that by providing younger people with data, they would often go back to their families and work alongside older relatives and family friends, teaching and assisting them to use the internet. This increased digital participation allowed older people in Hackney to get online, book vaccination appointments and access online healthcare portals.

During lockdown, Hackney Council also found ways to engage individuals online via accessing online festival events.

After the Windrush scandal of 2017, Hackney Council has held Hackney's Windrush Festival annually, due to the high numbers of residents from Black Caribbean origin.

During Lockdown, it became evident that the virus would make the usual festival celebrations impossible, which previously had included a Windrush Tea Party, where more than 300 attendees would come together for music, dancing, and storytelling. While events could not take place in person, it was difficult for them to happen entirely online either, as many older people did not have good online skills and access. Instead, the festival included events on local radio, the commissioning of public artwork, and the creation of teaching resources for local schools.

Alongside these events, grants were issued to purchase tablets and laptops for older people, to access online events for the festival, including a jazz performance. After the festival, the devices which were funded are now being used to connect these people to loved ones via video calls, and for broader knowledge and entertainment, which without the festival may not have been possible.

MEETING PEOPLE WHERE THEY ARE

Digital participation exists in different forms. The digital divide is not binary, and there is not a neat distinction between populations who are completely offline, and populations who are proficient and engaged with all online channels. There is a spectrum of digital abilities, and people who use the internet and online services to varying degrees, and for different purposes. As such, those who experience digital inequality are not a homogeneous group. Some individuals can be defined as 'narrow users', which include people who use the internet for just a few services, and perhaps use a smartphone only.[31] As people engage with digital services to differing degrees, finding solutions to digital inequalities will demand approaches catered to the needs of different types of users.

Some people may have digital skills, or access to social media, but choose not to engage with their healthcare online. As one participant of the roundtables noticed, "there is the temptation to make the assumption that people in underserved communities don't have internet access, don't have a mobile phone, and don't use social media, but they actually often do". Where people choose not to engage with their healthcare digitally, overcoming this may mean going to where people are, using platforms they already use, including social media, to educate them about their health and the benefits of digital engagement. Social media provides a broad platform for healthcare professionals to educate a wide audience about ways to improve their health and to ensure that individuals from all communities are equipped with the right knowledge and skills to look after their health.

It is important that we consider the motivation for people to use technology, because there are lots of people who do online banking, use social media, but they choose not to do it for their health. A part of that is because we don't make it particularly easy for people to use it, and there is a lot of lack of trust in it.

Hiyos GP Practice – Use of Social Media for Engagement

Hiyos is a GP Practice with over 14,000 patients and approximately 30 staff, known also as FirstCare – approaching health differently.

1. It encourages patients to focus on wellness, take greater ownership of their health, and to have positive feelings towards healthcare experiences.
2. It tries to make patients' experiences as personalised and as tailored as possible
3. It's committed to delivering care in a socially responsible way, striving to follow the principles of a net zero NHS.

Hiyos GP Practice also explores the unique ability of digital and social media to reach patients outside of a clinical environment via their project Hiyos Live, increasing the accessibility of medical information. Facebook, Twitter, YouTube and TikTok were all trialled as media suitable for the dissemination of this health information, however most traction was seen on TikTok. Hiyos Live aims at providing online webinar and social media content to reach those at highest risk of health inequalities. Hiyos Live researched into the increasing significance of health inequalities in the areas of employment, families and the environment, using Professor Marmot's reports. Hiyos Live tries to make a difference to health outcomes in North-West London by addressing health inequalities in these areas.

The aim of this initiative was to reach under-served groups and make medical information and advice more accessible to them, via the channels available to them already. One way this was approached was by addressing topics that are proxy markers for health inequalities, such as free school meals. The premise behind this initiative is to seek patients rather than waiting for them to reach out, reaching those individuals who are more likely to find medical information inaccessible and are more impacted by health inequalities.

This account shares information on screening, symptom relief, fun human biology facts in addition to filming 'A Day in the Life' videos, showing viewers what a typical day looks like for doctors, nurses, pharmacists and physiotherapists in addition to non-clinical managerial staff.

By increasing the number of people who engage with this content, the reach and impact of this form of community engagement will scale up. This can be done through increasing the media platforms used to share information or increasing the practice's followers on a given platform. The account @nhshiyos now has over 4,000 followers. This initiative has garnered 120,000 on a single video in addition to engaging 1,100 attendees for one live stream on TikTok. This initiative has also given rise to a Metaverse surgery which aims to host virtual events, with one focused on increasing mental health awareness attracting over 1,000 attendees.

DIGITAL BY DEFAULT: THE IMPORTANCE OF ALTERNATIVE ROUTES

While there are many benefits to being digitally engaged, digital should be one accessible pathway to healthcare, not the only available option. People should not be forced to be online, and if healthcare and other government services are to be 'digital-by-default', as laid out in the government's digital strategy, this is likely to only exacerbate existing health inequalities.[32] As healthcare becomes increasingly digitised, non-digital pathways to accessing healthcare must be maintained equitably, so that people of all, or no, digital abilities can access high quality care. Tackling the digital divide means ensuring that people have the right support in place, either to engage with their healthcare online, or to be supported to find other appropriate channels to engaging with their health.

For some, being online may be more risky than beneficial. Those without good experience or knowledge of navigating the internet and using online services may be susceptible to scams, viruses or absorbing misinformation. Part of encouraging people to get online also means recognising when this may not be practical or safe, and people's wishes to stay offline must be respected. Part of a strategy to engage people online means assessing who may be most vulnerable online, and providing safer options for those at highest risk where necessary.

As identified in the roundtables, "a lack of human touch can be a significant barrier to digital healthcare uptake", and some may find the lack of human contact off-putting. Pushing people down a digital or app-based route may simply not be appropriate. Contact with trusted health professionals remains a key component of care, playing a role in reducing loneliness and its associated impacts. It is essential that the human elements of care remain at the forefront, particularly for underserved populations who are at higher risk of physical and mental illness and comorbidities.

The digital-by-default strategy aims to achieve "services which are so straightforward and convenient that those who can use digital services will choose to do so, while those who can't are not excluded".[33] For the digital-by-default strategy to best support population health and reduce health inequalities, the strategy and those who carry it out must acknowledge that those who are least likely to be able to use online services are among the most in need in the population. Therefore the importance of high quality non-digital pathways remains of critical importance, and extra support should be in place for individuals accessing services via non-digital pathways. Non-digital services must therefore be used proactively, as opportunities for staff to support individuals who access them, in terms of issues directly and indirectly related to good health. Staff should also use this contact to assess digital access, to encourage the use of digital and refer to support services if appropriate.

> "Healthcare services must open up multiple channels of engagement in order to ensure equitable access to services"

> "It's not about removing options, but providing support and choice... and not forcing people to be digital"

Recommendation 3
Digital-by-default must operate in the context of the digital divide. Both healthcare, and all other government services, must be equally accessible via digital and non-digital pathways. A policy of digital-by-default may lead to those who are not digitally engaged being at a disadvantage, which will only widen existing health inequalities. However, if done in a sensitive and thoughtful manner, digital-by-default may provide the space needed for the most in-need to access face-to-face services and care.

Wirral Council's outstanding approach to reducing digital exclusion

Wirral Council have made steady progress to support people to live healthier, equal lives in Wirral. The impacts of COVID-19 were huge and were not felt equally. The pandemic exposed and exacerbated longstanding inequalities, with those living in deprived areas suffering from worse mental health, and exclusion from the opportunities the internet and new technology provide, compared to those living in better-off areas. These differences are a significant health challenge in Wirral. They impact the quality of people's lives; the way residents use services and how individuals and the economy prosper.

Digital Grant

A grant through the Contain Outbreak Management Fund (COMF) has been allocated by the government for several grassroots community projects. £1 million has been earmarked to support innovative digital solutions in the community, voluntary and faith (CVF) sector targeted at groups at higher risk of digital exclusion. The CVF sector plays a hugely important role in Wirral, providing a wide range of activities and services to residents that improve health and wellbeing and contribute to the local economy. The sector has been critical to the response to the pandemic. Organisations based within the heart of local communities are well trusted and respected by residents who may not want to access help elsewhere. These organisations understand the needs and issues affecting local residents and understand where the money will be most effective in helping residents. Initiatives aim to pass on the basic skills and confidence to Wirral residents who, through digital enablement, could lead healthier lives.

Projects include:
One Wirral CIC ·

- Pick-'n'-Mix Digital Inclusion Support: Opportunities for organisations to support their community to be more digitally enabled.
- Community Champions - Pass it On: This will see our Community Champions supporting people to be digital buddies.

- Intergenerational Support: Younger people supporting older   people to better understand IT.
- Improve Access to Connectivity: A business-led initiative to help residents better access WiFi.
- Kit Recycling: Working with apprentices to recycle and reuse 2nd hand equipment.

One Wirral CIC

BETTER LIVES
BETTER COMMUNITIES

- PUBLIC & PRIVATE SECTOR
- COMMISSIONERS
- GRASSROOTS GROUPS
- VOLUNTEERS
- SERVICE USERS

Springboard - Health Junction/Wired

The project is aimed at people aged 18 plus who are housebound, carers or have limited mobility and/access to online support at home. The project has developed, configured, and will maintain 100 devices which will be made available for the target audience. The devices will offer information and content that will be personalised to each user.

Wirral On-line Together - Age UK

This project enables any resident, aged 18+ who is digitally excluded in any way, to access support, and includes a bespoke digital skills action plan to ensure that digital needs and aspirations are identified, as well as a choice of:

One-to-one support to achieve digital objectives. · Access to a range of ICT classes and courses delivered in a range of venues across Wirral. · Access to a range of 'Techy Tea parties' where people can access help with a wide range of digital devices, including mobile phones, remote controls, tablets, computers etc.

Why is their approach working? ·

- **Speed** – made decisions quickly and got funding out to the CVF sector as quickly as possible. The approach has received positive feedback from the sector, with this quick turnaround allowing them to start progressing projects straightaway and make an impact as quickly as possible (Direct award approach). ·
- **Embedded officers** – allow oversight in terms of the funder (WBC) but also builds trust in the relationship allowing the partners to highlight any issues or changes to the original plan as soon as they occur. It has allowed more flexibility and an agile working process to meet the changes in landscape over this year (cost of living). ·
- **Principle of continuous improvements** – The Council wanted these projects to be a pilot to test demand and the ideas highlighted by the CVF. By funding the trial of these plans, they can evaluate the impact and success and make amendments as the project progresses. Overall strategic objectives were decided before the projects started, but there was flexibility in how they would reach them.
    - **Partner-led strategic coordination amongst projects** – for there to be sustainability, partners needed to own and collaborate on the projects. ·
    - **Evaluation** – human-based approach to evaluation, conducted externally to ensure an objective report on the impact these projects have had.
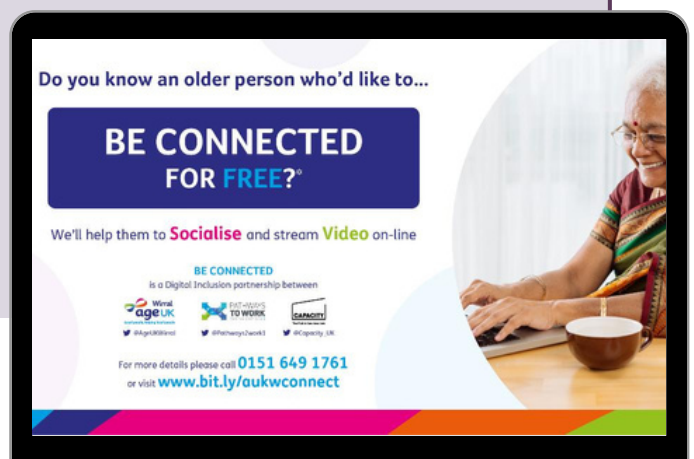
Alongside individual project support, Wirral Council have also encouraged collaboration across projects. Part of the digital inclusion initiative is to encourage collaboration across all the projects, including the sharing of lessons learnt, best practice and to work together on opportunities to ensure the sustainability of the activities being funded.

The lead partners in each project meet on a fortnightly basis with colleagues from the Council to discuss progress and future activities. They also take part in the Digital Enablement and Choice meeting run by NHS commissioners locally. Key pillars of the digital inclusion initiative are:

1. **Branding and Communications**
Wirral Council have developed an overall Digital Inclusion branding – TechKnow to be used across all digital inclusion projects as a trusted kitemark. TechKnow projects are designed to empower people to 'do digital' their own way. It's a community collective, ready to help people navigate the world of technology, in a way that works for them.

2. **Digital Champions**
Each partner will recruit volunteers, 'Digital Champions', to signpost residents to appropriate digital sessions and provide digital buddies, digital drop-in sessions and 1:1 tutoring. The project is also liaising with the Public Health Community Champions team to promote and recruit these volunteer roles. One Wirral has recruited a P/T Volunteer Co-Ordinator to provide support in liaising all volunteers across the projects.

3. **Training courses**
Wirral Lifelong Learning (WLL) Services are providing training sessions for all Digital Champions, which include a mandatory course covering basic teaching skills and digital knowledge, as well as safeguarding and GDPR, and a 10-hour Digital Champions course, which is intended to become a qualification for all volunteers to use to further their career opportunities if appropriate.

4. **Heatmap**
The team are working with the Cheshire East Digital Group and Wirral Intelligence Services to create a heatmap of digital need and services across the Wirral. This map will be a way to signpost people to services and resources in their area, demonstrate demand for future digital inclusion funding proposals and highlight any gaps in provision. ·

Wirral Council believes that local leaders should work collaboratively to fund digital inclusion projects in the community, and that collaboration across regions to share lessons and opportunities will be essential to achieving this. Wirral Council are providing through these projects the evidence our partners require, to show the demand across services and the need in the Borough for future funding applications/requests. Full evaluation of projects is currently underway, with a rapid learning review taking place to look at the impact made so far and provide evidence for future funding from the 23/24 budget.

Chapter Three: Providers of Care

HEALTH AND CARE STAFF

To ensure that patients are well supported to become digitally engaged, it is essential that health and care staff are fully equipped to recognise what patients may need in the first place. Firstly, to benefit from digital technologies health and care staff must themselves be digitally literate, and be able to confidently use and make the most of digital tools used to improve patient care, including the patient portal and shared care record. It must be recognised that for health and care staff, too, the digital divide exists, meaning that some staff are less digitally able than others.

Roundtable contributors identified that if staff are comfortable with the use of digital tools and understand the importance of being digitally enabled in terms of patient health, then they are more likely to recommend support to their patients. Digital training involving the importance of digital skills and access for good health should be provided for all health and care staff (including social care professionals, who work closely with older people at higher risk of digital exclusion). In conjunction with this, health and care staff must be well educated in the benefits of data sharing from datasets spanning the social determinants of health. Staff being uncomfortable with digital tools may result in incomplete, or poor-quality data, which impacts the usability of data.

The need to support a digitally enabled workforce has been highlighted in the NHS England Transformation Directorate , however there is currently no mandatory digital health training for health and care professionals.[34] Digital training is provided by Health Education England, however critics have noted that the training which is offered is rarely available.[35, 36]
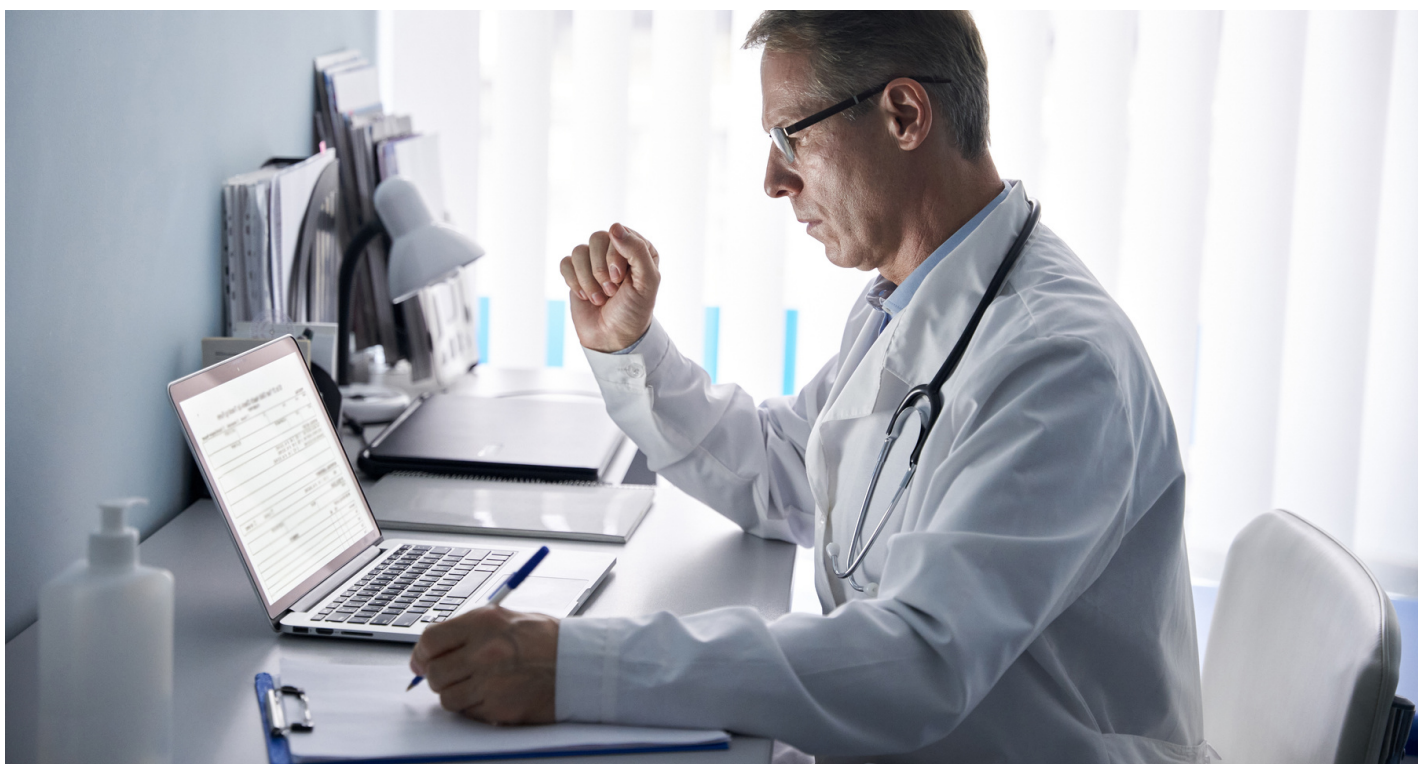
In March 2022, the Digital Health Academy was launched by The Organisation for the Review of Care and Health Apps (ORCHA), to serve as the 'UK's first digital health training programme for all NHS frontline staff'.[37] The service is free for all NHS and social care staff, and is designed for frontline staff who want to use and recommend digital health tools, but lack the knowledge to do so safely. The Digital Health Academy is a promising step in the right direction. All healthcare staff must be encouraged and incentivised to access and utilise the Digital Health Academy courses, so that all staff and patients can benefit from digital health technologies. Furthermore, training surrounding the digital divide, its impact on health, and how best to support patients to become digitally engaged should be offered and be made mandatory for health and care staff.

Recommendation 4
NHS England should make Digital training mandatory for all health and care staff. As healthcare becomes increasingly reliant on digital channels, it is imperative that all health and care staff are confident and comfortable to access online systems in order to provide the highest quality care. Staff must be encouraged and resourced to undertake such training. Training surrounding the digital divide, its impact on health, and how best to support patients to become digitally engaged should be incorporated into digital training. This will help to mitigate health inequalities exacerbated by the digital divide among both staff and patients.

USER EXPERIENCE AND ACCESSIBILITY

Good user experience (UX) is essential to the proper uptake of technologies designed to support and improve health. UX describes the useability and accessibility of a digital product or service. If we fail to make products which are useable and accessible, then we prohibit whole sections of the population from using them. In the context of the digital divide, we know that if a product or service provides poor user experience and is challenging to use, then those most at risk of being subject to health inequalities will also be least likely to be able to use it. Conversely, if all products and services are designed with good user experience and accessibility at the centre, a broad range of people will be more likely to use them, are more people will be able to reap their benefits.

Good UX tends to mean that products are inclusive for those who may find engaging with technologies difficult, including individuals with disabilities and learning difficulties, and other individuals who are less digitally literate. To be accessible and useable for all users, products and services should be meaningful and predictable, available to assistive technology, and responsive to users' system settings. Complexity of products tends to cause people to disengage with their health management, and therefore poor user experience alienates those in greatest need of services.

Products must also have good UX for staff who use them, and we must develop tools that make life easier and more effective for healthcare staff, which can mean staff are more readily accepting of new, digital services. Getting basics right before adopting and implementing more complex products and services will be essential. When basic problems with technology persist, it can lead to high levels of dissatisfaction.[38] In a healthcare context, this can create a reluctance to engage with digital change, and burnout among health and care staff.[39]

For good UX to be achieved, products and services must be co-produced with end users. Currently, small subsets of end users are involved in selecting and trialling new digital tools, meaning that only a small subset of user priorities drive technology development.[40] Services and products must be co-produced specifically with the users they are trying to serve, at every stage, from data collection, design, manufacture, to implementation. Ensuring that the stakeholder perspective is present at every stage of the process means that these people will not be left behind, and that products and services can be designed well for the people they are intended for.

The NHS has set out its intentions to build on the success of the NHS App's popularity during Covid and establish it as the "digital front door of the NHS".[41] To ensure that everyone can benefit from the new digital front door, roundtables participants emphasised that the app must be simple, user-friendly, and engaging.

The success of the NHS App thus far was largely driven by the NHS Covid Pass, which was introduced to allow for safer travel and mixing at events. However, one participant noted that individuals in under-served communities may be less likely to participate in these kinds of activities, and therefore have less of an inventive to download the NHS App. Other incentives to encourage people to engage with the NHS App may be required if it is to become a central portal for accessing healthcare, or we risk leaving behind certain groups who may benefit from its services. One contributor in the roundtables suggested that the NHS App could "learn from gaming technologies or social media which keep a user motivated and interested to stay engaged, so that they can get the maximum benefit of what the App has to share". It is possible that gamification could be applied to long-term management for activities such as medication adherence and daily recording and data, to help users reach specific goals.

Contributors to the roundtables also noted that many GP websites "fail to pass basic accessibility requirements", meaning that accessing primary care digitally is a challenge. NHS England has recently[42] released guidance for 'creating a highly usable and accessible GP website for patients'. The guidelines are comprehensive and prioritise good user experience for patients and staff. GP surgeries must be fully supported to update their websites and digital services by technology professionals, so as not to burden GP services themselves.

Recommendation 5
NHS England should update their Digital Technology Assessment Criteria (DTAC) to ensure that products and interventions are designed specifically tailored to the needs of those with additional accessibility requirements (particularly those with few digital skills, people with disabilities or long term health conditions, people over 70 years old, and people with English as a second language). Good user experience should be a central component of all digital health interventions. If a product of service is not accessible for those with highest need, then they will only serve to exacerbate existing health inequalities.

Cerner - Healthcare portals

Cerner is a leading provider of digital information systems and services used across healthcare systems to enable health and care professionals to deliver better health outcomes to individuals and communities.

In order to benefit from personalised and person-centric models of healthcare, people need equitable access to their healthcare information. It is well known that health and care systems are complex and difficult to navigate, even for the most experienced users. Opening 24/7 digital access to the healthcare record enables people to interact with their care team and their healthcare information. Access to integrated healthcare data is just as important to healthcare consumers as it is to healthcare professionals. It allows individuals to play a greater role in their own care. As with all innovation, healthcare user portals also carry the risk of creating conditions for inequalities to occur with the introduction of unintended new access barriers, for example for people who lack digital access, skills, or reduced physical or cognitive ability.[43]

Healthcare user portals give people access to their information within a healthcare organisation or group of organisations. The functionality enables the user to retrieve information such as appointments and discharge letters. It also allows them to enter data, like appointment changes, requests for care, medication, vital signs, and pre-procedure checklists.

Government policy is to drive people to consumer-facing health applications to improve access to healthcare.[44]

Based on peoples' experiences of other industries consumer applications, expectations are high. However, healthcare portals are in early development and far behind industries such as banking and retail. In these sectors, data analysis, large scale change, and the subsequent transformation of consumer engagement.

On the back of healthcare organisation's implementation of electronic patient records (EPRs), first generation healthcare user portals have emerged in the market, enabling people to access their records. Healthcare portal development is a fast-moving area, driven by a clear purpose that emerged during the COVID-19 pandemic: of the three-years-old NHS App's 22 million users, 18 million registered after the NHS COVID Pass was added in May 2021.[45] Where there is a clear purpose, people engage and when they subsequently experience value, their engagement is then sustained.

Similar to the NHS App uptake numbers, early adopter engagement is comparable in local healthcare portal adoption (Figure 1). This opens the opportunity for local healthcare organisations to use patient engagement intelligence to gain a deeper understanding of local issues. This, alongside usage behaviours with the opportunity for a targeted local response, will help to address local digital access inequity and ensure health inequalities are not further exacerbated.

St George's University Hospitals NHS Foundation Trust healthcare portal registration statics		Kingston Hospital NHS Foundation Trust healthcare portal registration statics	
Go-live date	24 February 22	**Go-live date**	8 August 2022
Data reporting period	24 February 29 August 22	**Data reporting period**	8 August - 4 September 22
Uptake volume	73,429	**Uptake volume**	12,818
Percentage of invited	60.9%	**Percentage of invited**	49.8%
Average no. logins per person	2	**Average no. logins per person**	Too early
% of registered patients choose paper-free option (indicator of continued use)	75%	**% of registered patients choose paper-free option (indicator of continued use)**	72%

While ensuring accessibility to healthcare is addressed, other social digital access needs are known and also need to be considered and addressed. The Good Things Foundation has identified issues and barriers which exacerbate digital inequalities and healthcare provision. These include households without internet access, a lack of foundation-level digital skills,[66] difficulty affording internet access, and low levels of digital engagement.

It is critical for these issues[67] to be addressed to ensure non-health specific barriers are removed or reduced.

While ways to fix them are somewhat beyond the sole control of healthcare providers and suppliers, portal user experience design is firmly within their boundary of control.

The person-centric, personalised and outcomes-based model creates more focus on healthcare providers to provide easily accessible ways for patients to engage in their own care and become effective healthcare partners.[48] Simply giving access to the healthcare portal is not enough – it is essential that technology is humanised, regardless of user ability. This includes helping people to overcome potential barriers, such as language and literacy within a multicultural society, and neurodiversity, which covers brain function and behavioural traits that impact how people interact, learn, and process information, as well as physical disabilities.

Despite being at the embryonic stages of digital engagement, it is important to implement first-generation portals with a focused effort. It is vital that they are created with purpose, incorporate the impact of portal usage into care coordination and workflow design, and align patients' and providers' needs, for example people with long term conditions where multiple interactions occur between patient and healthcare professionals.

In their research into the subject, Park et al. concluded that, "There exists a lack of match in the patient portal market in the sense that patients who benefit the most from using patient portals are not actively adopting patient portals."[49] While early adopters are important, inclusive adoption[50] is the critical goal and where UX needs to become a new clinical speciality in healthcare. Alongside other digital tools, healthcare portals give healthcare organisations great depth in understanding their consumers and how active they are in their healthcare.

Technology	Insight	Opportunity
Organisation core EPR, e.g., GP, acute, mental health, social care, community	Population accessing healthcare services by organisation mapped to characteristics, e.g., deprivation and ethnicity	Utilise of data from EPR and healthcare portal data to understand consumer healthcare engagement behaviours to create the UX feedback loops to drive engagement and technology design
Access to EPR via healthcare user portal	Behaviours of portal users, registration, return user and interactions	

Using portal usage data puts healthcare organisations in a place where they can shift their patient engagement intelligence into a new era, akin to banking and retail.

Park et al. note that inclusive engagement gives an understanding of how "unique needs and usage habits of different patient populations can contribute to a better and user-friendly design of the portal that can cater its service and functionality to patients' various tastes and preferences." [51]

While first-generation consumer portals are implemented, the learning both from healthcare and other industries is forming the future of digital healthcare consumer engagement in supporting fair access to healthcare. The retail industry is a strong example of how brand, data, and engagement has been utilised to build market engagement and expand the customer base through incentivisation and personalisation. Where customers sign up for digital incentives [52] based on rewards, with personalised offerings for members providing the greatest engagement. In healthcare, those with digital access barriers could have personalised digital incentives, such as a mobile data subscription.

Healthcare organisations and portal developers can take learnings from other industries and translate it for the healthcare redesign process to augment the therapeutic relationship, driving inclusion, personalisation, and improved healthcare outcomes for all.

LAYERING DATASETS FOR A HOLISTIC UNDERSTANDING OF HEALTH INEQUALITIES

Providers of care must also harness the power of digital and data to be proactive about targeting and reducing health inequalities. Reducing health inequalities at a population level requires considering the SDOH in conjunction with health outcomes. Every person and body connected to an integrated care system must be aligned around a single purpose, with a shared understanding of the factors which influence a person's health. ICSs should have a purpose-built, modern infrastructure, in which they can begin to look at data flow applications and create intelligent insights to formulate the most appropriate interventions.

Via ICSs, and their statutory duty to reduce health inequalities, the NHS has laudable ambitions to improve health outcomes, especially through their CORE20PLUS5 strategy.[53] As a partnership between local authorities and NHS services, ICSs possess a wealth of data pertaining to health and care, as well as the SDOHs. The social determinants of health account for up to 80 per cent of an individual's health status, having a greater influence than healthcare, behaviour and genetics combined.[54] The layering of these datasets will be key in identifying areas of key need within an ICS.

As a participant of the roundtables stated, "the key word linked to public health management is 'prevention'". By collecting data regarding health, and SDOHs, we will be able to identify the demands and needs of a population. This information can be used proactively to prevent poorer health outcomes in the most vulnerable by ensuring that interventions are targeted to where they are needed most.

During the COVID-19 vaccination programme, a shared dataset between local authorities, primary care, and secondary trusts was created, specifically for identifying and supporting the clinically extremely vulnerable. The programme and its accompanying data analysis was a huge success, and this success must be built upon moving forward. There is an opportunity through ICSs to unify this data , and to enable health and social care services to deliver better outcomes for patients.

Within ICS footprints, there is a wealth of available information pertaining to a person's health and influencing factors. Where local authorities tend to deal in geographical data, the NHS tends to deal in personal data, and increasingly in cohort data. Within the health and care systems is data from GP records. Taken together this represents an invaluable repository of data, containing links between primary, secondary, community, mental health, and social care data.

However, health records can contain some form of bias, or not include certain sections of the population, and therefore using these records alone can perpetuate inequalities. Individuals from underserved communities are among the least likely to be represented in GP data, and therefore other datasets and methods of data collection should be utilised.

Other datasets, often held by local authorities, can be used as a proxy to identify the greatest areas of need in an area, including data regarding pupil premium funding (an indicator of lower income), assisted bin collection (an indicator of someone living alone with little, or no, support), those who speak English as a second language, and housing conditions.[55] Other data regarding the SDOH is available, including but not limited to housing, education, employment, transport and travel, environment, police and crime, business development, economic information, climate, creative arts, communities, and nature.

When appropriate, this data can be layered with health and care data to identify which areas of a population in the greatest need. Collecting further data on the social determinants of health, and using this to inform health strategies would also be beneficial. As one participant of the roundtables stated, "this will require cross-sector working, coordination, cooperation, and information sharing between different departments across the local authority and the ICS, which is not a million miles away".

Roundtable contributors were particularly vocal about the use of data regarding housing and living environments, with one saying: "I find it mind-blowing that the NHS is still not regularly using data from housing... we know that housing is one of the biggest determinants of health, but why is that not routinely linked to patient data to better understand this in a wider context?".

Data should be collected before and after interventions in an area relating to the wider determinants of health. For example, by measuring the levels of respiratory illness and exacerbation before and after retrofitting programmes, we could measure the benefits of such a scheme. Similarly, in terms of employment, we should measure the mental wellbeing of individuals before and after they enter stable, well-paid employment. Funding for programmes and health interventions requires good evidence prior to implementation, and so we must be proactive in collective data for interventions regarding the social determinants of health.

Connecting these data sources is key. One participant of the roundtables explained that "GP records are not equipped for being enriched with further data, and so the GP record becomes the minimum viable product of what we could be achieving with all the data, being used reactively and not preventatively". To integrate all available information, ICSs and healthcare service providers should maximise the interoperability of datasets, so that their accessibility and usability can be expanded, and that integrated care records can be created. Data collection, analysis, interpretation, and intervention implementation must be a reactive and dynamic process. Within ICSs, the potential exists to measure the benefits and drawbacks of every intervention, creating an iterative process of constant evaluation and learning. Linking and properly using already available data will be key to this.

> *For me, the key word that is linked to public health management is prevention*

> *We should layer these datasets and build a holistic picture of risk factors to best understand and address health inequalities*

"Once we have the data in the right context, we are able to see the demands and needs, and then we can plan ahead to protect people's health"

Recommendation 6
Integrated care systems should instil a culture of real-world evaluation for health interventions. Data should be collected before and after all interventions relating to the wider determinants of health, to create an evidence base that can be used to inform action on population health inequalities.

TPP - improved analysis of the health of undeserved populations

TPP – improved analysis of the health of underserved populations TPP is a world-leading health tech company. They provide next generation, cloud-based clinical systems and electronic medical records to hospitals, mental health, primary care, and beyond. TPP deliver secure, high-performance systems, with the most advanced functionality in the world. Over 8,000 organisations and 250,000 staff worldwide trust TPP's solutions every day. The company's ethos is clear – to help health providers deliver care more efficiently, enhance safety, improve outcomes, and provide the best experience for clinicians and patients.

In the UK, it is well established that substantial differences exist in vaccine uptake relating to socioeconomic status, gender, ethnic group, geographic location and religious belief. These differences are evidenced by both national childhood, and seasonal, vaccination programmes.

The Covid-19 vaccination programme was launched in England on 8th December 2020. Limited information was available on vaccine coverage in detailed demographic and clinical subgroups. Having this information was vital to ensure that the programme provided equitable protection against the virus in every subgroup, regardless of social-economic status, ethnicity, or health status. It was also vital to ensure that care home residents and people working in the health and social care sector received equitable protection. TPP sought to address this information problem by providing near real-time, detailed vaccine uptake data across England, with unparalleled analysis into detailed clinical and demographic subgroups. TPP sought to provide the NHS and the government with key information for the first 100 days of the programme, to highlight where targeted activity was required to ensure equitable protection for all.

At the very start of the pandemic, TPP collaborated with Prof Ben Goldacre's team at the University of Oxford and the London School of Hygiene and Tropical Medicine, to build the OpenSAFELY platform, working on behalf of NHS England. OpenSAFELY is a new secure analytics platform for electronic patient records to deliver urgent academic and operational research.

Analyses run securely across millions of fully-coded, pseudonymised electronic patient records, with linked primary care and secondary care data. OpenSAFELY-TPP covers over 40 per cent of the entire population. For the vaccine programme, the collaborative used OpenSAFELY to deploy a near real-time data-monitoring framework for vaccine coverage, using publicly auditable methods and secure in situ processing. It covered vaccines administered in hospitals, primary care centres, GP surgeries, care homes, community pharmacies and mass vaccination centres. The collaborative was able to provide the NHS, the government and appropriate agencies with regular detailed reports on vaccine uptake, as the programme expanded over the first 100 days.

The analysis showed immediately that uptake gaps were opening up. The chance of vaccination was significantly lower for people living in deprived areas, those from ethnic minority groups, those with chronic neurological conditions (including learning disabilities), and those with severe mental illness. The NHS, government, and communities themselves introduced targeted measures to address these gaps. These included providing vaccinations at places of worship, webinars held by community leaders to tackle misinformation, and targeted funding for groups with a remit for tackling health inequalities. The OpenSAFELY platform could track the uptake progress throughout, to see if the gaps were closing or if additional targeted measures were required.

The key strengths of the initiative are already the scale, detail, completeness, and timeliness of the underlying EHR. The analysis was executed across the full dataset of all raw, pseudonymised, single-event-level clinical events for the millions of patients registered with a GP. This includes data on all tests, treatments, diagnostic events, and other salient clinical and demographic information. It was achieved by developing and deploying data management and data analysis software inside the TPP infrastructure, where the patient data already resides. As a consequence of this, OpenSAFELY can deliver insights into health service activity and clinical outcomes in near real time. This is at the core of the platform's flexibility and scalability. With the appropriate permissions in place, it can securely extend to cover analysis far beyond the pandemic response, into the elective backlog and the other key NHS priorities.

The initiative, analysis, and outcomes have been published in a peer-reviewed journal, namely Trends and clinical characteristics of COVID-19 vaccine recipients, The OpenSAFELY Collaborative, Br J Gen Pract 2021; DOI: https://doi.org/10.3399/BJGP.2021.0376

The flexibility and scalability of the platform is evidenced by the research and analytic outputs, including over 30 published papers, including in both Nature and the Lancet. It remains the world's largest platform for Covid-19 EHR analysis. More details are available at www.opensafely.org/research

DATA INTERPRETATION, CO-PRODUCTION AND BUILDING TRUST

It has been noted that until the Covid-19 pandemic, ethnicity data was not recorded on death certificates in England and Wales (despite being recorded in Scotland for ten years).[56] This lack of data capture meant that ethnic health inequalities were not adequately recognised, and increased risks to BAME individuals were not recorded or mitigated.

To maximise the use of the data available within ICS and local authority footprints, it must be ensured that data is appropriately analysed in its correct context, as although there is currently a huge amount of data available, "finding a collective and accurate interpretation can be hard to come by". Quantitative data on its own lacks meaning, so should be contextualised with the qualitative information provided by the communities which the data is collected from. To do this, data must first be shared with individuals and communities in an appropriate and accessible manner, for datasets to be completed. As a participant of the roundtables suggested, "data should be shared with underserved communities because it is the truth... although it might dishearten some people, it does inspire others to take action, and those are the people we want to reach. As long as there is a divide between the services and the communities, then we will not be able to realise the full potential of interventions, as data sharing helps to raise awareness and break down barriers". The sharing of data not only increases transparency but may also increase motivation for behaviour change.

The importance of co-production with communities cannot be underestimated; community engagement is essential for making use of existing datasets. Data analysis and interpretation must then happen at a local level, meaning that interventions are tailored to the specific needs of the community, so interventions are likely to look different in different areas. Analysis must be conducted in a manner that is inclusive of people and communities who often find themselves at the margins to ensure that interventions are appropriate for those at highest risk of health inequalities.

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Trust can be built via transparency, collaboration, and a clear purpose. The purpose of data collection and new interventions must be shared and explained fully to communities we work alongside. Once individuals experience the benefits of data sharing and collaborative interpretation, trust is likely to be built by the providers of these services. Increased trust in the system is likely to increase use of services more generally, therefore co-production is likely to incentivise those who are typically mistrustful of the health system to engage with these services. This process of data sharing and nurturing trust, if carried out sensitively and correctly, is also likely to increase engagement and uptake with digital health services.

Research by The Nuffield Trust has shown that in other European countries considered to have made good progress in terms of digital healthcare, one of the strongest factors contributing to success is a higher level of general trust in government, and confidence in its use of data.[57] According to research conducted by the Office of National Statistics in 2022, the UK generally has low trust in national government. The research finds that in the UK, 35 per cent of the population expressed trust in the national government, which is lower than the OECD average of 41 per cent.[58]

Trust in local government is reported to be marginally higher, at 42 per cent. In the UK, trust in public services is higher than in government, with the NHS having the highest level of trust of all public services, at 80 per cent. While this is encouraging, as ICSs are partnerships between health services and local government, there is the risk that when data sharing is involved, lower trust in central and local government may impact communities' ability and willingness to share and interpret data, and engage with digital healthcare more generally. Where possible, ICSs and governments must nurture trust by explaining processes, being consistently transparent, and ultimately delivering positive outcomes for those most in need.

" *It is not about doing things for underserved communities, which perpetuated a paternalistic mindset. It is about working alongside them to ensure best health outcomes.* "

" *Sharing data with communities in an appropriate way will help to complete the datasets* "

Data should be shared with communities because this builds trust. Although it might dishearten some people, it inspires others, and those are the ones you want to reach.

Recommendation 7
All should be given access to all their health and care data with summary analytics, and the information should be easily accessible within the NHS app. This will contribute to trust in the system and its outputs, and a fuller understanding of its purpose.

Recommendation 8
New digital care pathways, health interventions and other support services must be co-produced with the communities they serve. End users must be involved at every stage of the design and implementation process, to ensure that products and services are appropriate and useable to anyone who may be impacted by them.

DIGITAL HEALTH INNOVATIONS AND UNDERSERVED COMMUNITIES

Digital healthcare, if utilised in areas of greatest need, could accelerate the closure of the health inequalities gap. By using technologically enabled care creating more 'self service' capability, care capacity can be increased, and healthcare services can become more sustainable and efficient. If healthcare services overall can be improved via technological innovation, more time and resources can be freed up to care for those receiving services.

Currently, as identified by a member of the roundtables, it tends to be those living in the most affluent areas (often where people are most likely to be in good health), who benefit most from digital innovation in healthcare, as "digital innovations tend to be trialled in the wealthiest regions". The result of this is that new technologies intended to improve health are rolled out in areas which already have better health outcomes, and where there is the least need. To reduce health inequalities and proactively use digital to achieve this, those in underserved communities should be prioritised for novel digital health innovations, which may include being given priority to use passive technology and wearables.

Technological and digital health innovations should be designed around the needs of disadvantaged groups. As a roundtable member stated, "If interventions are not accessible to the least affluent in society, then they serve to increase health inequalities".

Innovative health treatment and data collection should be prioritised among the least affluent

Encouraging patients to use digital tools for healthcare improvement at StowHealth

StowHealth is a large practice of 20,000 patients and is part of a super partnership of practices called Suffolk Primary Care. It provides General Medical Services to its population.

With Hypertension being a very common long-term condition, efficient, high quality methods of managing it in the practice setting is essential to ensure the best outcomes for patients whilst reducing the workload on staff. The inclusion of patients in their goal setting and condition management helps them and the practice team achieve the best outcome for the individual. Target achievements are then set by the individual and not the system leading to higher overall outturn.

At StowHealth, patients are encouraged to use at home blood pressure machines and waiting room machines, do the self-reporting, and to understand what this means for their health. This has meant that patients are more likely to take responsibility for their health and manage their condition. This gets much better results than relying on clinicians alone to measure and manage high blood pressure and hypertension. By encouraging self-monitoring and management, both patient and doctor time is saved and hospital visits are reduced.

This initiative has helped to drive a change in the way long term conditions are managed by the practice with patients. Changes to the skill mix of the practice assessing patients long term conditions, how this is managed holistically, recorded and signed off clinically has made it much more efficient for patients and practice staff alike and outcomes optimised and personalised.

Radar Healthcare – Four Seasons Health Care Group

Radar Healthcare believes in making a difference. Combining digital innovation with hands-on experience in healthcare environments characterises their strategies. When Four Seasons Health Care Group first started their journey with Radar Healthcare in 2020, using data to share learnings was something which was going to be valuable for everyone across the organisation. With a tailored system from Radar Healthcare, they have become extremely focused on exactly what information they need and have set up specific dashboards relating to this which has streamlined their reporting.

With Radar Healthcare's **Builder Licence**, partners can adapt their system to satisfy the nuanced working styles and business structures that exist in the healthcare industry.

Using the tools available in Radar Healthcare, James Robson, Change Delivery Director at Four Seasons Health Care Group, and his team created dashboards that suited their nationwide business and reports that drill down into the finest details of their individual homes. Overall, they were able to make a product that served their whole organisation with the opportunity to develop the system as the needs of the organisation grew.

Having confidence in data allows for proactive decisions at FSHC Group
With this data at their fingertips, it has also helped to evolve how data is used within the organisation. Before, time was spent locating specific information for meetings. Now, it enables staff to really think about their data and understand what it means rather than spending time wondering how to get hold of it.

Radar Healthcare's Analytics module gives back time to users by providing easy-to-read graphs consisting of accurate data, allowing for KPIs and objectives to be measured quickly and reacted to swiftly.

Accessible data for all
Four Seasons Health Care Group is looking into automation and workflows to make sure their home managers across the country are receiving the same documents and producing the same reports, ensuring cohesion and community is encouraged as the business develops further. But for now, they have seen strong results with more detailed insights through reporting and analytics. James Robson, Head of Delivery and Change at Four Seasons Health Care Group said, "It's great we're making data more accessible for different people across our organisation and the feedback is positive. It's great to think within 12 months from starting the implementation process we have a set of settled dashboards which we can continue to refine as we evolve."

Staff have engaged well with the system and can instantly demonstrate to regulators and commissioners that their care home is achieving the high-quality standard it should be or exactly how improvements have been made since a previous visit.

James Robson reported that **"we can actually focus on the crucial points and find the hotspots where we need to drive that improvement"**. He added that their health and safety meetings are now dedicated to actioning strategies instead of making sense of multiple datasets.

Mr Robson added: **"One of the great things about the Builder Licence – and it sounds trivial – but it's when you build the boards, and you can add a text widget that allows us to put context to the dashboards. This way, the people who aren't analysts can look at these graphs and we can save them time by explaining what they mean, and it also gives them confidence in the data as well."**

Conclusion

To reduce the health inequalities brought to our attention during the Covid-19 pandemic, concerted effort must be made to reduce the digital divide and its impacts on health. As healthcare services and tools become increasingly reliant on digital channels, digital skills have become central to the management of health. Simultaneously, digital access and skills impact upon all the SDOH, and therefore digital competence confers benefit to individuals across a broad range of non-medical factors which influence health outcomes (including housing, employment, education, and financial factors). The digital enablement of the population, where appropriate, must be a priority to ensure that no one is left behind and health inequalities are reduced.

In order to achieve improved digital access for better health, digital access must first be recognised as a significant determinant of deprivation and health. To address this gap, measurement and documentation of those who are not digitally engaged must be improved. ICSs should convene and support staff in health, care, and other public services to provide digital support to communities, tailored specifically to the needs of the individuals in an area. It must be recognised that while digital access and skills can improve health status it may not be appropriate or safe for everyone to be online, and therefore all government services, healthcare included, must be provided at a high level via offline channels.

Digital transformation in the NHS has the potential to improve population health and reduce persisting health inequalities. For all to be able to benefit from digital healthcare, the health and care workforce must be adequately trained to competently utilise online systems and digital health innovations alongside the proper collecting of healthcare data. Both healthcare data, and data regarding the SDOH available within local authorities should be utilised to target the root causes of health inequalities within an area. To make best use of this data, it must be interpreted by the communities it was collected from, and co-production should be a core component of data analysis and resulting community health interventions. To achieve this, all should be given access to their data within the NHS app. For everyone benefit from potential digital health solutions, all products and interventions must be designed tailored to the needs of those with additional accessibility requirements, with good user experience at the centre.

For these ambitions to be achieved, all within the ICS must be united around the same purpose of using digital technology to reduce inequalities and improve population health overall.

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