

**Realising digital-first primary care**  
Shaping the future of UK healthcare

February 2020

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# Foreword

Welcome to our report *Realising digital-first primary care*. This is a companion report to our June 2019 publication, *Closing the digital gap: Shaping the future of UK healthcare*. While both reports highlight the potential of digital technologies to tackle some of healthcare's most intractable problems, this report focuses on the transformation needed to deliver the vision in the NHS Long Term Plan (LTP) for a digital-first, primary care health and care system.

The LTP emphasises that improving access to primary care services is a top priority for the NHS. The accepted view is that if primary care fails, the NHS fails. The reality is that general practice, the bedrock of the primary care system, is having to deliver more consultations than ever before.

Since 2013, numerous policy documents have been published, recognising the need to transform primary care and identifying the key role of digital technology in this transformation. However, there is also recognition that a critical first step is getting the basic digital architecture right and providing patients and clinicians with confidence that technology can and will improve access, address their care needs, and be easy to use. Furthermore, patients require assurance that their health data will be held securely and used appropriately.

To date, the method of funding primary care has meant that general practices have lacked the financial incentives to invest in essential digital technologies, such as virtual consultations, telehealth and point of care (POC) diagnostics. There is also a need to tackle interoperability of data between primary and secondary care systems and to overcome the historical resistance to data sharing, so that the LTP's ambition that that every patient should have the right to online primary care by 2021 can be realised.

The insights in this report are based on a deep dive into the UK survey and interview findings from our *Closing the digital gap* report, our 2019 Global Survey of Health Care consumers, an extensive literature review, and insights from Deloitte practitioners working across primary and integrated care systems.

This report highlights the key steps needed to speed up the adoption of technology, by patients, staff and the wider healthcare system, to improve patient access to, and engagement with, primary care services. It also provides an objective view of the current state of primary care digitalisation and the challenges facing staff in addressing the imbalance between demand and the capacity of primary care to meet that demand. The over-riding message is clear: if primary care is to survive and thrive it has to make the most of digital technology.

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# Executive summary

Primary care, more specifically general practice, has been the bedrock of the UK's health service since its inception. However, over the past decade, the pressures on general practice have grown year on year. Indeed, the sheer scale of the challenges around demand and capacity have left many general practitioners (GPs) with unmanageable workloads. In recognition of these challenges, NHS policy makers are looking to digital technologies to help bridge the gap between the demand for and supply of primary care services.

## The rationale for transforming primary care

Increasing demands resulted in general practices delivering 312 million appointments in 2019, the highest level yet, and four million more than the same period the previous year. GPs are also having to manage a larger proportion of patients with more complex conditions. Half of GPs feel unable to cope with their workload, more than a third have reduced their hours and another third have plans to do so. Moreover, fully qualified GPs are leaving the workforce faster than they can be replaced. Surgery closures between 2013 and 2019 have affected around two million patients, and, in 2019, the average waiting time for an appointment rose above two weeks. An emerging body of research suggests that digitalisation could help practices manage demand and improve capacity, with the potential to resolve between 40-60 per cent of patient requests without a face-to-face appointment.

As we demonstrated in our June 2019 report, *Closing the digital gap: Shaping the future of UK healthcare*, since 2013, successive health policies have acknowledged the need for the digital transformation of healthcare, including primary and community care. However progress has varied widely and has generally been slow.

In England, the January 2019 NHS Long Term Plan (LTP) committed an additional £4.5 billion over five years to establish a 'digital-first' primary care sector and expand community teams to work alongside new primary care networks of general practices. In return, it expects primary care to 'create joined-up systems and digital patient records, link genomic and clinical data, improve the use of apps, advanced technologies such as AI and establish digital first access routes'. Indeed, the LTP sees primary and community care services as critical in improving population health by establishing new preventative and personalised models of care.

More specifically, the LTP expects to increase patient access to primary care services via online platforms and digital devices, underpinned by new incentives, as part of a five-year framework for GP contract reform, agreed between NHS England and the British Medical Association's GP Committee. This includes providing additional funding of £1 billion for IT across five years, to enable both people and practices to benefit from the latest digital technologies.

## Digital-first general practice

When asked to describe the current state of digitalisation in the UK, our survey responses from the 500 clinicians working in general practice were predominantly negative. The most commonly used words were slow, expensive and challenging. The cost of technology, finding the right technologies and bureaucracy in healthcare were seen as the main challenges to digitalisation. The three technologies that GPs and practice nurses said they used most often are electronic health records (EHRs) (98 per cent), e-prescribing (75 per cent) and point of care diagnostics (41 per cent), the use of next generation technologies, such as AI, was mentioned by less than two per cent. Moreover, a stark finding was the low level of digital training, education and support in primary care.

While general practices have benefited from using EHRs for more than 20 years, the Royal College of GPs estimates that up to 80 per cent of practices could soon be using outdated IT systems. They also identified that the current method of funding has meant that practices have lacked the financial incentives to invest in the basic technologies needed for digital transformation (such as virtual consultations, telehealth and point of care diagnostics). Other challenges include the lack of interoperability within and between primary and secondary care and resistance to the idea of sharing data.

Research by NHS Digital in 2018 shows that access to digitally-enabled services depends on where patients live, which commissioner serves them and which general practice they live near. While people have been able to seek advice and support by telephone for many years, the past few years has seen an increase in independent and NHS-funded online primary care providers. These online providers aim to provide more cost effective, convenient and accessible to diagnosis, support and treatment. There is a growing body of evidence that these services are beginning to have a positive impact on helping practice staff manage their workloads more efficiently and cost-effectively.

Our *Closing the digital gap* report identified five key steps to help deliver digital transformation at scale. Arguably the biggest challenge for general practice is the need to enable data flow by establishing an efficient and effective IT and digital infrastructure, such as reliable network connectivity, data storage capacity, and accessible EHRs. NHS England intends to address the infrastructure challenges by the creation of the GP IT Futures Framework, providing a set of standards on which GP IT systems can be evaluated and purchased, aimed at stimulating an open, dynamic and competitive market for primary care IT system, and give GPs more choice.

General practices will increasingly deploy more diverse multi-disciplinary teams, trained in the use of SMART digital technologies. Data collected from these technologies will create more personalised care, as well as transform the management of chronic conditions.

### A digitally-enabled patient experience

While patient satisfaction with general practice has historically been high, over the past five years it has begun to decline as patients seeking an appointment face longer waiting times. Implemented effectively, digital services can improve the patient experience but to date awareness and use amongst patients remains low. The 2019 NHS England GP Patient Survey found that while some 40 per cent of patients are aware they can book appointments or request repeat prescriptions online only 14 per cent have used these services. Furthermore, our analysis of the percentage of appointments carried out remotely by telephone or online is extremely variable, ranging from four to 30 per cent.

Since 2016, most practices have provided patients' access to their Summary Care, yet in 2019 only 15 per cent were aware that their practice offers such access. This lack of awareness is limiting the NHS's ambition to digitally transform primary care. There is an urgent need for improved communication at the local, regional and national level to explain the NHS expectations and ambition for digitalisation and what this means for patients. Likewise, improving the education and understanding of citizens about their health, and supporting them digitally to maintain their well-being, disease prevention and management of long-term conditions could improve patient confidence and reduce the demand for appointments.

Ensuring quality of access to digital-first services is also a challenge. Although most people own a smart phone and/or an iPad, only 54 per cent of patients over 74 have internet access in their homes. As other technologies such as wearable devices become part of care management, providers need to ensure equity of access to healthcare technologies.

The Deloitte Global Survey of Health Care Consumers sheds light into the mixed feelings UK citizens have about trying new digital technologies and sharing health data with their doctors. Only 28 per cent of respondents have shared tracked health data with their doctor. Among those who did not, 58 per cent said they did not think their doctor would be interested, and 11 per cent wanted to keep the information private.

The national roll-out of the NHS App which aims to provide patients with access to NHS 111 and a digital channel to GP services (to order repeat prescriptions and book appointments) began in early 2019, is now increasing at pace. Future developments include choosing a pharmacy, electronic referral service integration, clinical trials and research registration, online consultations, and integrating health checks. While this should help people access digital services there is a need for providers and commissioners to raise awareness among their patients and explain the benefits of using the app.

### Driving integration through primary care networks

Our June 2019 report, *Closing the digital gap: Shaping the future of UK healthcare*, highlighted that healthcare was lagging well behind most other customer-facing industries in its adoption of digital

technologies, especially in relation to self-service access to services and improving the customer experience. The report identified a key challenge was the lack of transformation funding and the need to agree effective ways of sharing patient health information and achieve integrated services.

The LTP requires all general practices across England to form Primary Care Networks (PCNs), serving around 30-50,000 patients. Through a Network Agreement and a more integrated, joined-up way of working across the community, 13,000 networks have now formed. PCNs together with other providers and commissioners within a defined geography, are expected to form Integrated Care Systems (ICSs). The LTP expects PCNs to become the driver of population health management for their ICS, and every ICS will have a critical role in ensuring that PCNs feel supported and work in an integrated way.

Over the next five years, the move towards new preventative and personalised models of care and better management of chronic conditions will require uninterrupted data flows across PCNs and ICSs. Achieving a solid infrastructure and fluid interoperability of data across organisations and sectors is a priority if these initiatives are to have an impact on a national scale. Open application interfaces (APIs) and cloud technology are needed to help tackle access and interoperability issues.

### Looking at the future of primary care: genomics, AI and next generation digital technologies

Digital-first primary care will lead the transition to preventative and personalised medicine. It will also provide innovative ways of managing demand. At the same time, AI, genomics and digital technologies will shape the future of healthcare delivery. These technologies will provide increased accuracy and speed in diagnosis, while supporting GPs and other primary care staff in timely decision making. Feeding AI technology with health data in real time from wearables and other personalised information from longitudinal medical records will be key to improving the quality of care and the effective treatment of diseases.

The main changes that GPs will experience over the next five years, and which will drive the digital transformation of primary care, are:

- Access to longitudinal patient records, anytime and anywhere.
- Hospitals without walls with more care delivered in the community.
- Substitution of between 30 and 40 per cent of face-to-face consultations with virtual consultations.
- Patients with real-time data from wearables and other connected devices (internet of medical things) as well as an increasing number of patients who have had their genome sequenced.

## Rationale for, and policies encouraging digital-first primary care

### The NHS Long Term Plan for Primary Care

Every patient in England to have access to a digital-first primary care offer by:

# 2024:

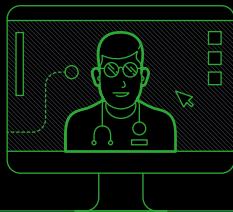


#### For Patients:

- Access to online consultations
- Order repeat prescriptions online
- Access to full GP records
- Access to primary care services through the NHS App

#### For Clinicians:

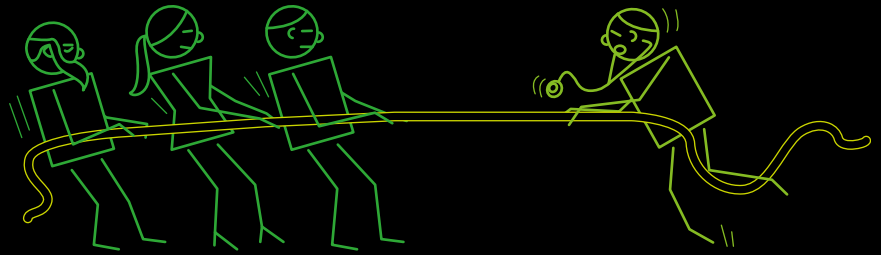
- Access to patient records stored in different IT systems
- Work with neighbouring practices to join-up care (PCNs)
- Multidisciplinary working: pharmacist, physiotherapists, paramedics, dermatologists



### Digitalisation can help reduce the imbalance between the demand for, and capacity in general practice

#### Increasing demand

#### Decreasing capacity



- **311 million appointments** between Dec 2018 and Nov 2019.
- **Increase in wait times.**
- **More patients per GP** (2,087 patients per GP) in 2019 – an extra 56 patients compared to 2018.
- More **complex cases (11% increase in patients over 75** registered with GP practices).
- RCGP estimates the NHS is **6,000 GPs shorter than what it needs.**
- **Over 450 GP surgeries have closed in the last five years** and this number is increasing year on year. **140 surgeries closed or merged in 2018 and 171 in 2019.**
- **Half of GPs feel unable to cope with their workload. A third have reduced their hours and a third plan to do so** within the next year.

## General practice

Top 3 challenges in implementing digital technologies in primary care

Cost of technology  
**46%**



Finding the right technology  
**13%**



Bureaucracy  
**12%**



### According to our survey of 500 primary care clinicians

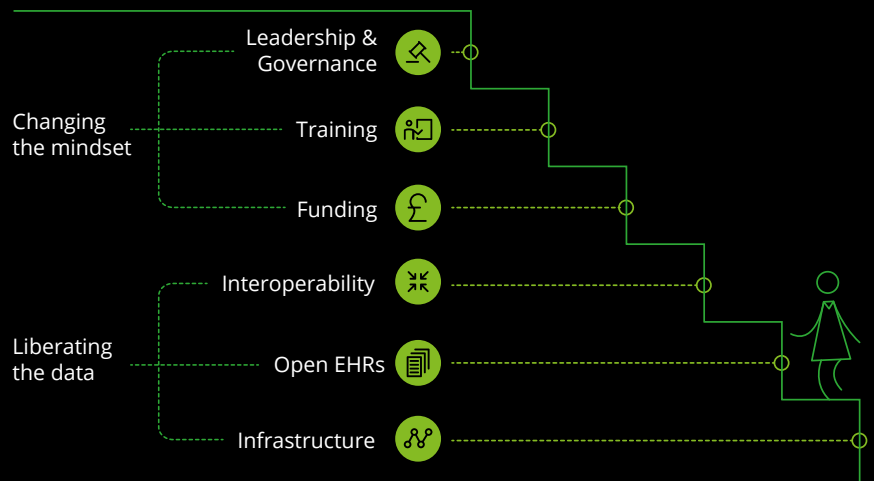


**29%** of GPs

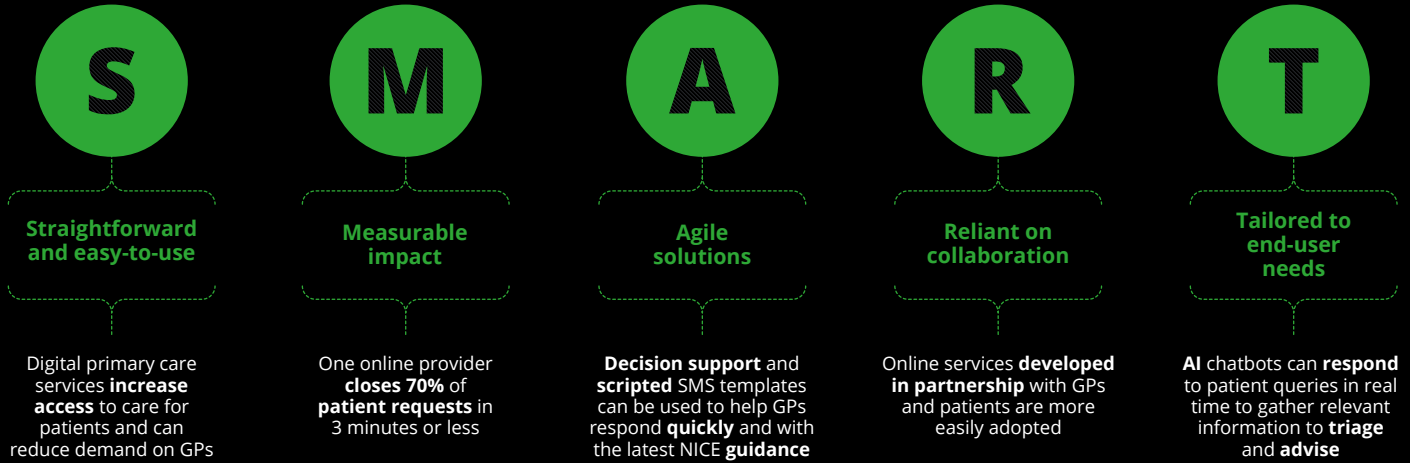
**22%** of primary care nurses

Have **not received** any **training** on digital technologies

### Key steps to providing a digital-first primary care



### SMART digital solutions transforming primary care today



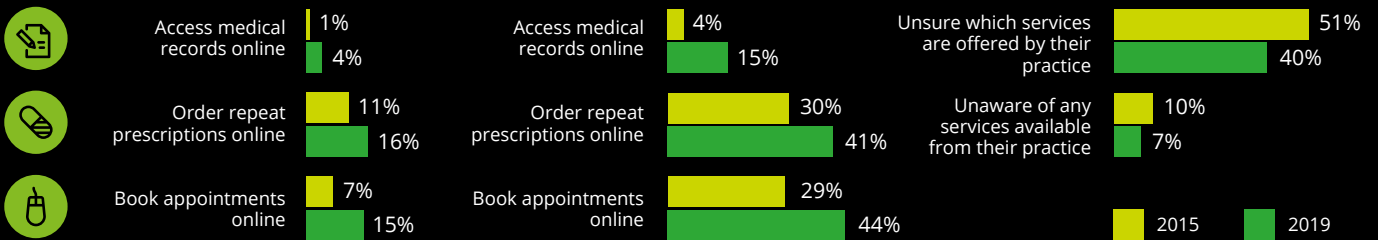
### A digitally-enabled patient experience

Use of online services is low but improving

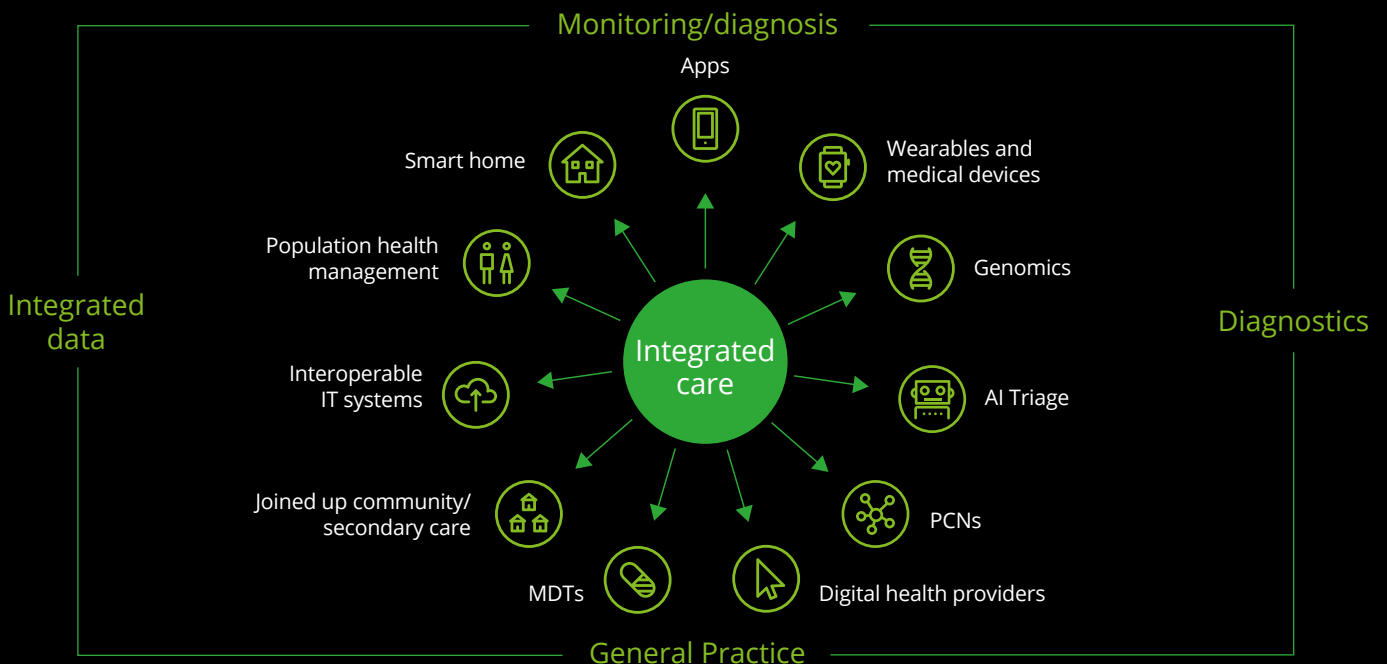
Patient awareness of online services is low...

...but slowly improving

% of patients aware they can...



### Digital-first, the future of new models of care



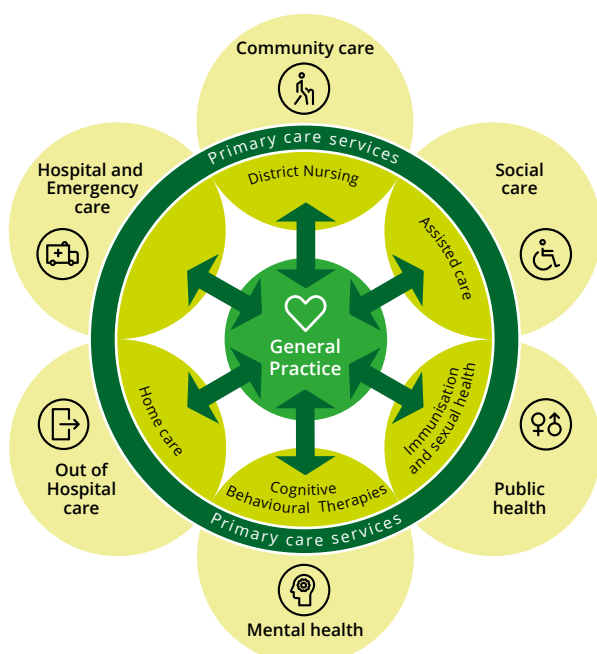
# 1. The rationale for transforming primary care

Numerous national and international reviews have demonstrated that a comprehensive and robust primary care system is key to a cost-effective, sustainable healthcare system. In the UK, all residents are entitled by law to access NHS healthcare, with the majority of patient contacts occurring in primary care.

Primary care, particularly general practice, has been the cornerstone of the NHS since its inception. Importantly, general practice is responsible for the health of its registered list of patients, maintaining each patient’s primary medical records, providing continuity of care close to people’s homes, and acting as the gatekeeper to, and navigator of, most other health and care services (see Figure 1).<sup>1</sup>

In addition to general practice, primary care includes, NHS 111, maternity, child and mental health services, and palliative care in patients’ homes. It also includes a range of public health interventions, such as adult and child immunisation programmes, smoking-cessation clinics and sexual health services. The traditional approach relies on face-to-face interaction with healthcare staff, mainly generalist professionals, such as district nurses and cognitive behavioural therapists, treating a wide range of physical, mental and social problems.<sup>2</sup>

**Figure 1. The primary care ecosystem with general practice at its heart**



Source: Deloitte LLP

General practice, and its capitation based funding model, is widely acknowledged as a key strength of the NHS. In 2016, we published a report *Primary care today and tomorrow: Adapting to survive*, which identified that primary care was in the midst of a turbulent political and financial landscape, with a range of funding, demand and capacity pressures. Funding of primary care had fallen well behind funding of hospitals, plans to recruit and train more staff were behind schedule and new ways of working were not being implemented at scale. Although a number of new care models and changes in working practices were being piloted, there was a lack of robust primary care performance data or clarity on how progress would be measured.

We concluded that the existing primary care model was at a tipping point and, while there were concerns about its sustainability, we identified a number of proactive steps to create a more robust model, involving collaboration, integration at scale, alternative ways of accessing services and more effective use of technology and supported self-care models.<sup>3</sup>

Since August 2018, NHS Digital has published monthly information on general practitioner (GP) appointments, to help improve understanding of capacity, utilisation, and numbers and types of consultations.<sup>4</sup> However, there remains a lack of comprehensive financial and performance data across other parts of primary care.

The traditional approach relies on face-to-face interaction with healthcare staff, mainly generalist professionals, such as district nurses and cognitive behavioural therapists, treating a wide range of physical, mental and social problems.



### Facts about general practice

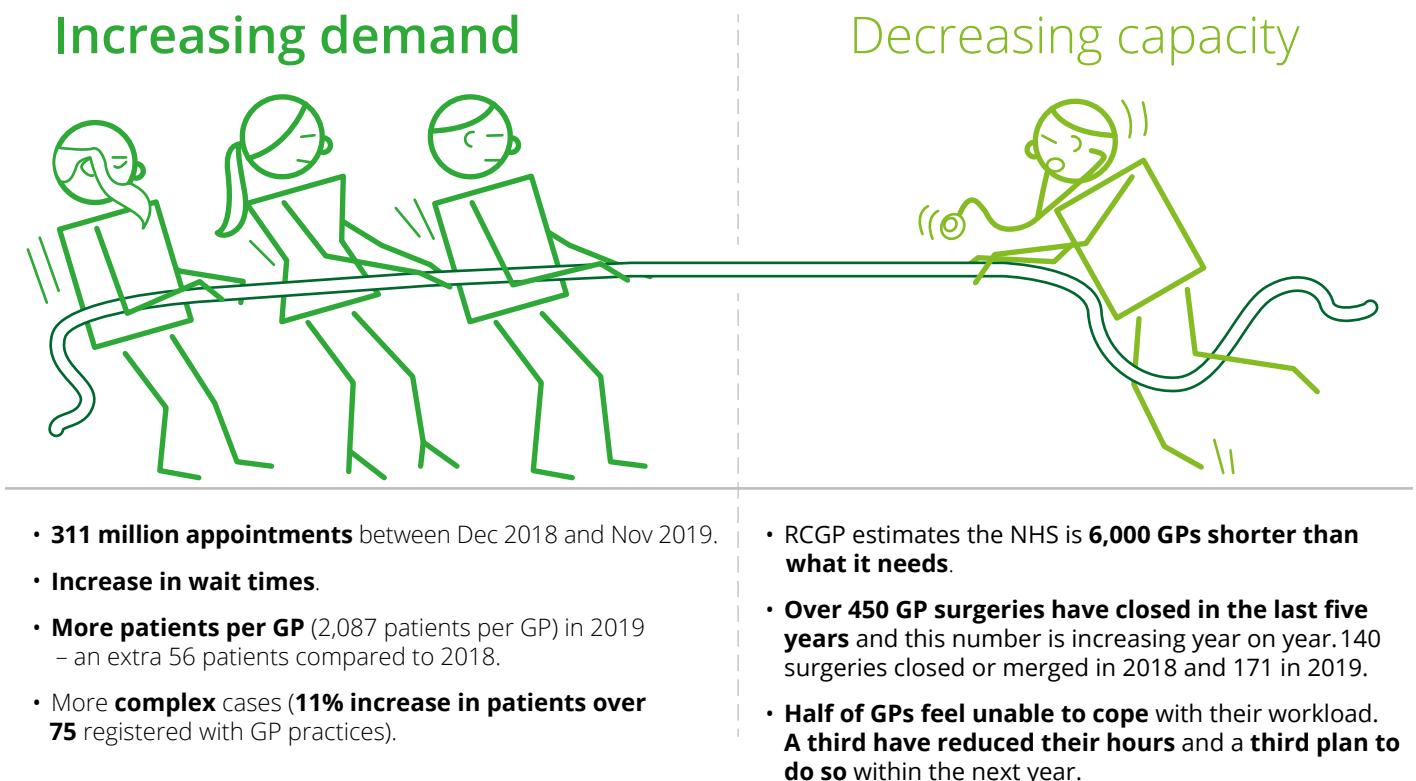
Over the past few years, challenges have continued to escalate in the face of dramatic increases in demand. At the same time the concerns over the supply of resources have increased. For example, while the number of GPs entering training have increased many of those qualifying are choosing to work part-time. Moreover, GPs and practice nurses have been retiring early, and a growing number of practices have been closing. This has led to a serious deterioration in the capacity of general practice to meet demand (see Figure 2).

The Royal College of General Practitioners (RCGPs) estimates that the nation is at least 6,000 GPs short of what it needs.<sup>5</sup> A 2018 survey of 4,000 GPs, carried out by the University of Manchester, found that a large proportion of younger GPs expect to leave or change roles in the next five years. Half of GPs feel unable to cope with their workload. A third have reduced their hours and a third plan to do so within the next year.<sup>6</sup> GPs are also managing patients with increasingly complex conditions, and growing numbers of face-to-face consultations.<sup>7</sup> GPs across the UK report higher levels of stress and lower job satisfaction compared to primary care doctors in many other countries.<sup>8</sup>

This escalation in pressures is happening despite four years of political commitments, promoted in the April 2016 General Practice Five Year Forward View (GPFV) which included increased funding (an extra £2.4 billion a year by 2020/21), a commitment to increase the number of GP training places, and expand multi-professional recruitment initiatives.<sup>9</sup>

Since 2007, the NHS in England has conducted an annual national survey asking patients what they think about their general practice. The proportion of patients reporting a good or very good experience of GP services fell from 88 per cent in 2011-12 to 83 per cent in 2018-19.<sup>10</sup>

**Figure 2. Digitalisation can help reduce the imbalance between the demand for, and capacity in general practice**



Source: Deloitte LLP

### Shaping the future of primary care in the UK

Our June 2019 report, *Closing the digital gap: Shaping the future of UK healthcare*, highlighted that healthcare was lagging well behind most other customer-facing industries in its adoption of digital technologies, especially in relation to self-service access and improving the customer experience, and identified digital transformation as a solution to the challenges currently facing healthcare providers. Our report highlighted that the ambition of the NHS Long Term Plan (LTP), published in January 2019, is for a digital NHS to be a national priority and that all providers should have advanced to a core level of digitalisation by 2024.<sup>11</sup>

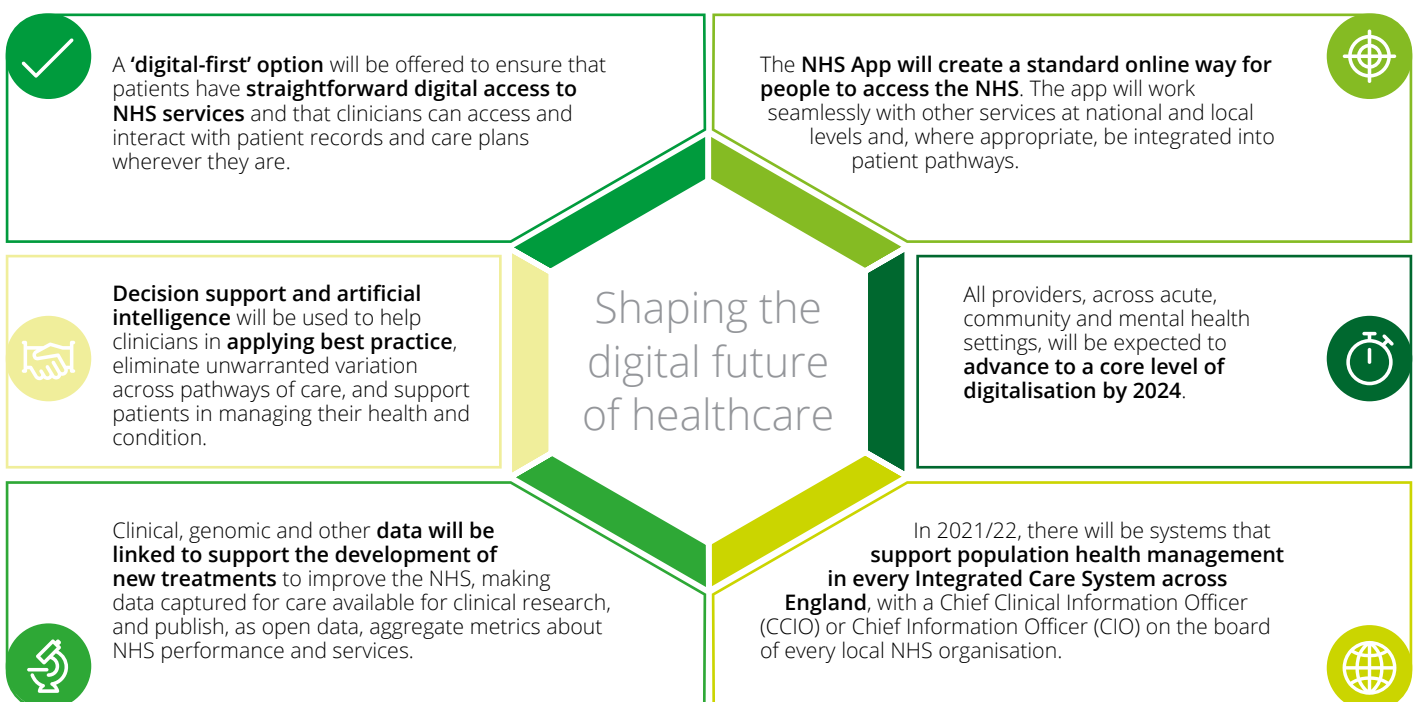
The LTP promised an additional £4.5 billion for primary care and community care providers, who are seen as critical in driving new preventative and personalised models of care. In return for the additional funding, NHS England (NHSE) expects all GP practices to become part of new primary care networks (PCNs), covering 30,000 to 50,000 patients. In addition, all providers and commissioners will become part of an integrated care system (ICS) based around population health and prevention. PCNs are seen as the 'building blocks' of ICSs, with expanded community teams working alongside them. Importantly, the LTP sees digital transformation of primary care as essential (see Figure 3).<sup>12</sup>

The LTP expects to increase patient access to primary care services via online platforms and digital devices, underpinned by new incentives in a five-year framework for GP contract reform agreed between NHSE and the British Medical Association's GP Committee. This includes providing additional funding of £1 billion for IT across five years, to enable both people and practices to benefit from the latest digital technologies. Agreed milestones include all practices offering repeat prescriptions electronically from April 2019, all patients having digital access to their full medical records from 2020, and the right to digital-first primary care, including text-based and video consultations, by 2021.<sup>13</sup>

The expectation is that in the future general practices will deploy more multi-disciplinary teams (MTDs) supported by a wide range of new and existing technologies and digital services, as part of the digital transformation of healthcare and the implementation of new models of primary care. A critical enabler of transformation is the need for smooth exchange of patient data.

In February 2020, an update to the GP contract agreement (2020-21-2023-24) was published. It includes 'a renewed focus on improving access, including a new GP Access Improvement Programme, focused on cutting the longest waits for routine

Figure 3. Key objectives for a digitally enabled NHS



Source: Deloitte LLP

appointments; more staff to provide 50 million more appointments. At least £30 million of the £150 million PCN Investment and Impact Fund in 2021-22 is expected to be spent on improved access for patients, rising to at least £100 million of the £300 million Fund in 2023-24.<sup>14</sup>

### Improving primary care in the devolved UK countries

Wales, Scotland and Northern Ireland have similar objectives for developing a digital-first primary care system with a focus of new models of general practice.

- Wales:** The Welsh Strategic Programme for Primary Care, published in November 2018, established a key role for GP practices in disease prevention and promoting health self-management. It stresses the importance of moving into a social model of care and improving access to services.<sup>15</sup> The Welsh government established the National Primary Care Fund in 2015-16 to encourage innovation and improvement. In 2016-17 there was £41 million in the Fund, including £10 million for clusters of practices established by the Welsh health boards as a way of transforming primary care.<sup>16</sup> Clusters are groups of GPs working with other health and care professionals to plan and provide services locally. There are 64 cluster networks across Wales, each serving populations of between 30,000 and 100,000 patients.<sup>17</sup>
- Scotland:** Healthcare Improvement Scotland's *Driving and supporting improvement in primary care: 2016-2020*, acknowledged the importance of integration and the urgency of improving quality and access to care.<sup>18</sup> A key feature of its 2016 GP contract was an obligation to become part of a geographical quality cluster. The success of these clusters has varied, depending on the variability in the health needs of the population linked to the differences in the geographical coverage. In 2017-18, the Scottish Government invested £72 million in primary care services through the Primary Care Transformation Fund, to improve recruitment and retention of GPs and the expansion of the capacity and capability of digitally enabled multi-disciplinary teams (MDTs).<sup>19</sup> Since their introduction in 2016, GP Clusters have developed at their own pace. In 2019, there were around 147 GP Clusters across Scotland. A Cluster Quality Lead survey carried out by Health Improvement Scotland in June 2018 indicated that the variation in development was 'wider than anticipated or is helpful'. In June 2019, the Scottish Government Primary Care Division issued national guidance to address the unwarranted variation, support improvement and provide a baseline for all GP Clusters.
- Northern Ireland:** In Northern Ireland, Quality 2020 is a ten-year strategy to protect and improve quality in health and social care. It highlights the importance of integrated care and technologies to improve efficiency.<sup>20</sup> A key development initiative, started in 2018, is the creation of MDTs around general practice. Two pilot sites, the County Down and County Londonderry (GP Federations covering 75,000 and 200,000 patients respectively) will pilot the use of MDTs involving practice-based physiotherapists, mental health specialists and social workers, working alongside doctors and nurses to meet more effectively the needs of the local population. This model includes significant investment in additional nursing specialist roles, such as health visiting and district nursing.<sup>21</sup> In 2018, the Northern Ireland Health and Social Care Board launched the Encompass programme, a health and social care initiative to introduce a digital integrated care record.<sup>22</sup> In July 2019, the Board confirmed its intention to award the contract for this digital care record to Epic, contingent on approval of the business case.<sup>23</sup> In December 2019, an extra payment of £2.2m was invested to enable GPs to offer additional consultations with patients during the winter period.<sup>24</sup>

### About this report

While we recognise the potential of digital technologies to transform many aspects of healthcare, which we highlight in our *Closing the digital gap* report, this report is focused on how digital technologies are helping to deliver a primary care system. In particular, we examine the impact of digital technology on improving access to general practice, improving the patient experience and the future role of primary care in delivering integrated care, based around population health management (PHM). Our research methodology comprises:

- responses from 400 primary care clinicians that participated in our survey of 1500 clinicians across the UK conducted for our 2019 *Closing the digital gap* report;
- interviews with 65 key stakeholders;
- new research based on responses from 4,165 UK respondents to Deloitte's Global Survey of Health Care Consumers, which gathered information on their experiences and attitudes towards their healthcare, and their appetite for digital innovation;
- detailed analysis of the NHSE annual GP Patient Survey (2013-2019); and
- extensive literature review.

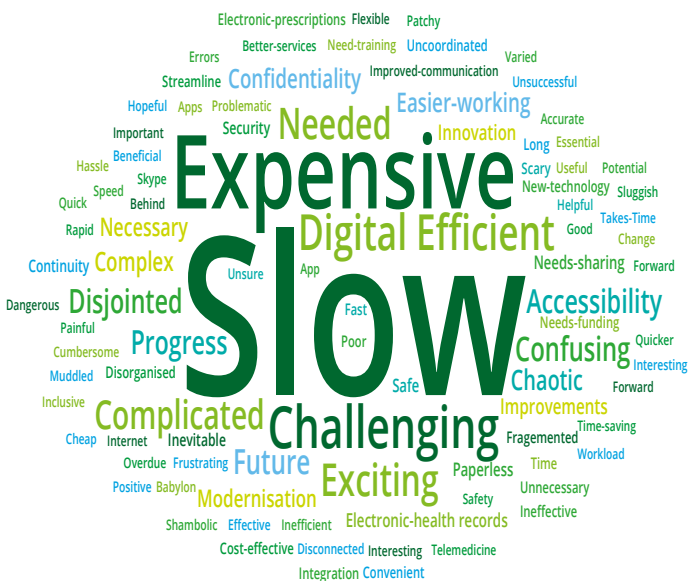
## 2. Digital-first general practice

The NHS GPFV and LTP have identified that digitalisation could help GPs manage their workloads more effectively, by reducing demand for face-to-face consultations, equipping staff with more efficient and effective models of care. For example, NHSE estimates that e-consultations can resolve 40 to 60 per cent of patient problems without the need for a face-to-face GP appointment.<sup>25</sup>

Last year we conducted a survey of 1,500 clinicians across the four UK regions and all sectors of care, to investigate the status of digital transformation from the workforce perspective. The overarching results were published in our June 2019 report *Closing the digital gap: Shaping the future of UK healthcare*.

We asked what three words come to mind when thinking about the NHS's journey towards digitalisation. The top three responses from some 500 primary care frontline staff (240 GPs and 260 practice nurses) were 'slow', 'expensive', and 'challenging' (see Figure 4). Six out of ten primary care respondents believe it will take more than ten years to achieve a fully digital healthcare system.

**Figure 4. Current state of healthcare digitisation in general practice**



Survey question: "What are the top three words that come to mind when thinking of the UK's journey towards digitisation?" (responses from GPs and practice nurses)

Source: Deloitte research

GPs identified the three main challenges to digitalisation as the cost of technology (46.3 per cent), finding the right technologies (12.9 per cent) and bureaucracy in healthcare (12.5 per cent). The three technologies that GPs and practice nurses said they used most often are electronic health records (EHRs) (98 per cent), e-prescribing (75 per cent) and point of care diagnostics (41 per cent) (see Figure 5).

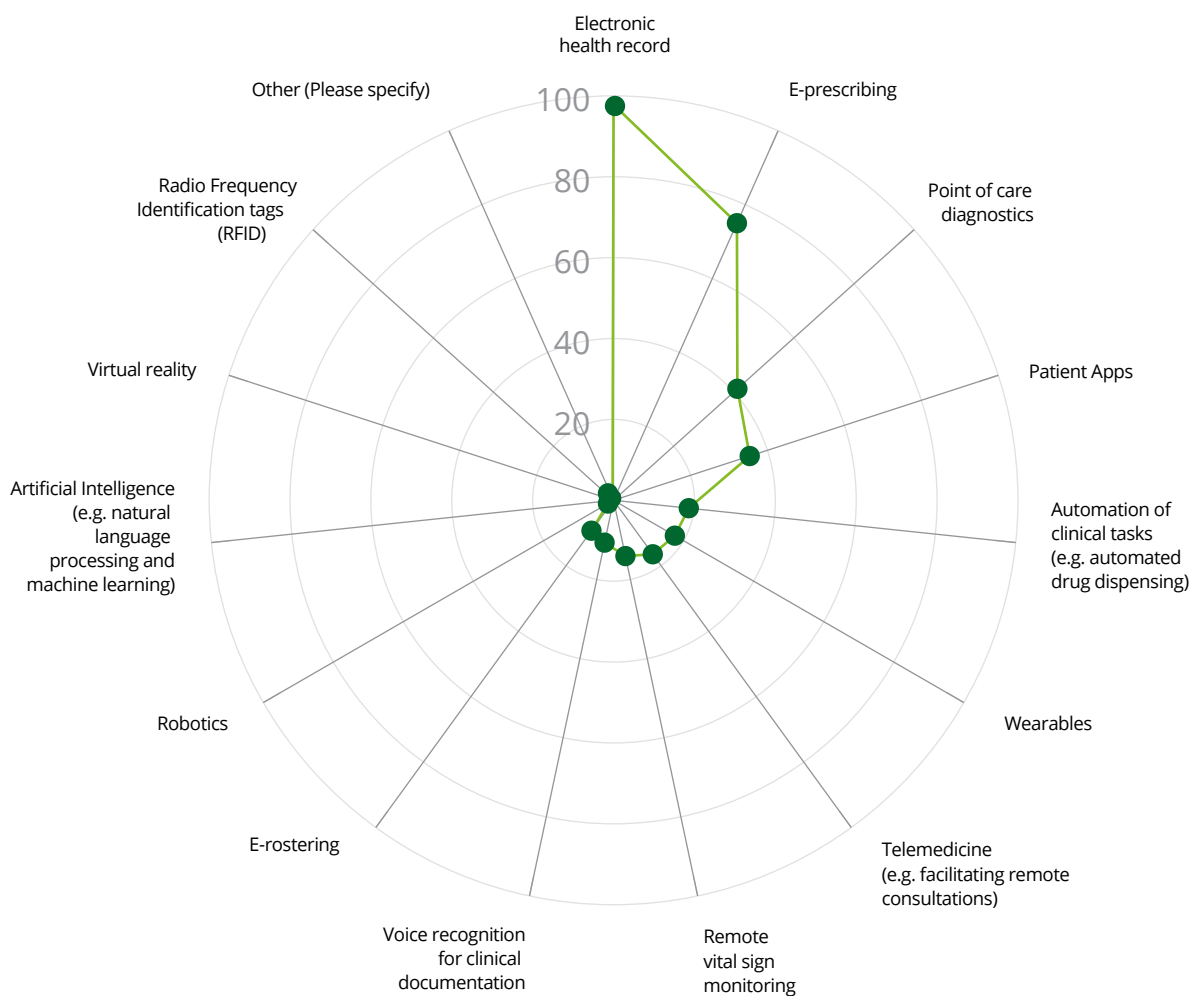
They indicated that these technologies are helping to improve their efficiency and effectiveness, and the safety of care. Next generation technologies, such as AI-enabled digital health solutions, were used by less than two per cent of primary care staff.

Indeed, a stark finding from our staff survey was that general practice staff felt the least equipped or trained to use technologies in their daily work. Some 28.7 per cent of GPs and 21.5 per cent of nurses said they had not received any training, compared to 10.5 per cent of hospital doctors and 11.2 per cent of hospital nurses.

Results from our stakeholder interviewees, commenting on primary care indicated that the top three challenges to achieving digitalisation are funding (29 per cent), leadership (14 per cent) and interoperability of data and systems (14 per cent). The other main challenges identified are the low level of digital literacy among patients and lack of staff training.

Our results reinforce the finding of the *'Topol review: Preparing the healthcare workforce to deliver the digital future'*, published in February 2019. This independent review, chaired by Dr Eric Topol and delivered by Health Education England, 'explores how to prepare the healthcare workforce, through education and training, to deliver the digital future'. The review emphasised that all staff will need digital and genomics literacy, and that developing the necessary skills, attitudes and behaviours will require fundamental changes in the education and training of the workforce.<sup>26</sup>

Figure 5. Digital technologies most often used in general practice



Survey question: "Which of the following digital technologies do you use to support care delivery? (use all that apply)"

Note: Responses for AI, VR and RFID are all 1.2%, 1.0%, 0.8% respectively

Source: Deloitte research

The three technologies that GPs and practice nurses said they used most often are electronic health records (98 per cent), e-prescribing (75 per cent), and point of care diagnostics (41 per cent).

### Increase in online access and consultation services in GP practices

GP practices have provided advice and support through telephone consultations for many years. However, over the past few years, there has been an increase in the number and types of independent and NHS-funded online primary care providers, aimed at improving access to diagnosis, support and treatment. These providers have seen an opportunity to help address the imbalance between demand and supply of resources in primary care by being more accessible and convenient for patients than face-to-face consultations. Generally, online consultations can be provided at a lower cost to the wider health system. Today, one of most well-known digital primary care providers is Babylon's GP at Hand (see Case study 1).<sup>27</sup>

In addition to this example, there are an increasing number of other types of NHS funded online consultation services aimed at supporting general practices to improve access to services and tackle their workload pressures. Some systems connect patients to GPs directly, in real time or asynchronously to improve clinician's ability to respond more efficiently as part of their daily work schedule. Other systems simply allow patients to send web forms or requests through to an online platform, allowing the practice to triage the information and respond accordingly. Currently the largest of these online platforms is eConsult (see Case study 2).

#### Case study 1. Babylon's GP at Hand is a digital-first NHS funded general practice service

##### About the service

Babylon's GP at Hand (GPaH) is a digital-first, NHS funded general practice service that provides registered patients with a range of general medical and online services.<sup>28</sup> Eligible patients can submit queries to an AI-based symptom checker (available 24/7). The Symptom Checker can help users better understand worrying symptoms and direct them where best to seek further advice from healthcare professionals. It gives fast outcomes and provides suggestions for next steps, by identifying related risk factors from the symptoms and information entered by a user. If a virtual consultation is required a healthcare professional can provide advice, email prescriptions or fitness for work notes, and, where indicated, referrals. Patients can also opt to book a digital appointment directly, without using the Symptom Checker.

The GPaH service currently operates from seven clinics in London and in 2019 opened an eighth in Birmingham. NHS Hammersmith and Fulham clinical commissioning group (CCG), working closely with Birmingham and Solihull CCG for the Birmingham service, have commissioned the services through a General Medical Services (GMS) contract. Patients can register for the GPaH service as long as they work or live within 40 minutes of one of its sites.<sup>29</sup> GPaH has around 75,000 registered patients, 40 per cent of appointments are out of hours and weekend appointments.<sup>30,31</sup>

##### Outcomes for patients

Performance metrics indicate that 39 per cent of patients were able to book an online appointment with a GP within 30 minutes and 89 per cent within six hours;<sup>32</sup> and a face-to-face appointment within a few days.<sup>33</sup> An independent evaluation of GPaH (in which 1,452 GPaH patients returned a completed survey), concluded that GPaH patients are generally younger, healthy and potentially more affluent than patients at the average London or national practice, and have chosen to use the service for reasons of convenience and quick access. Video or telephone consultations are by far the most frequently used aspect of the service. Fifty-five per cent of registered patients have used the online symptom checker, 85 per cent rated their overall experience of GPaH as 'good' and 70 per cent said the quality of care they received at GPaH was better than their previous practice. Before joining GPaH patients were using A&E 20 per cent more than expected, while 12 months later they were using it seven per cent less than expected.<sup>34</sup>

##### Outcomes for general practice staff

GPs taking part in qualitative interviews, as part of an independent review of GPaH, felt that their workload was managed more efficiently than in other practices where they worked and mentioned better work-life balance and the benefits of GPaH's comprehensive audit and training programmes.<sup>35</sup>

## Case study 2. eConsult is an online consultation platform providing patient access to their own general practice

### About the service

eConsult provides patients with a suite of online services through their practice's own website or the NHS app.<sup>36</sup> eConsult is working with 1,182 general practices, covering over 11 million patients across the UK.<sup>37</sup> It operates a licensing model based on patient capitation. Most practices have used central funding, such as funding provided as part of the GPFV.<sup>38</sup>

### Outcomes for patients

eConsult enables patients to consult with their own GP by completing a structured history online that is summarised for rapid clinician processing, and sent for review by the practice. This includes a symptom-specific web-form, which responds in real time, tailoring each question to the patient's demographics and previous answers. High risk symptoms are red flagged and a few patients are routed to more urgent care where clinically appropriate. The majority go through to the practice allowing clinicians to triage patients into those that the doctor determines need face-to-face appointments, and those that can be dealt with remotely including video or telephone appointments.<sup>39</sup> Patients get a same or next working day response. Research shows that 70 per cent of requests are closed without the need for a face-to-face appointment, and on average take 3 minutes rather than the normal 10 minutes.

Examples include:

- Hedge End Medical Centre, which is saving the equivalent of 72 appointments per week, estimated savings of £65,000.
- Stonehaven medical group, a semi-rural practice, which has seen a 38 per cent drop in requests for same day appointments.

### Outcomes for general practice staff

Increasingly eHubs are being used to aggregate the processing of eConsults across groups of practices, such as a PCNs, using home-based GPs, nurses and pharmacists. The eHub model, established in 2017 as a remote way of supporting online consultations for the Hurley Group of practices, now deals with over 1,000 online consultations a week using a dedicated central online team of GPs, pharmacists and nurse practitioners who process consultations across the group's sites. The eHub is able to respond readily to varying demand on practices. It uses an RCGP derived competency framework and training and supervision programme. Remote closure rates of eConsults increase from around 60-70 per cent to 87 per cent after eHub training.<sup>40</sup> As well as increasing efficiency, this way of working is proving popular with both patients and clinicians, and the eHub has a waiting list of clinicians wishing to work for them.

Over the past few years, there has been an increase in the number and types of independent and NHS-funded online primary care providers, aimed at improving access to diagnosis, support and treatment. These providers have seen an opportunity to help address the imbalance between demand and supply of resources in primary care by being more accessible and convenient for patients than face-to-face consultations.

### The Care Quality Commission's inspection of independent online primary care services (2017-2018)

Digital healthcare providers, like any service providing a regulated activity, are required by law (as defined by Health and Social Care Act 2008 (Regulated Activities) Regulations 2014) to register with the Care Quality Commission (CQC).<sup>45</sup> The CQC has acknowledged the need to support the development of new digital models of care delivery, and in 2016 it launched an inspection programme to provide the public with information to enable them to make informed choices about such providers.

In March 2018, the CQC published an overview report on its full programme of inspections of 35 digital providers. It highlighted the variations in the types and methods of services provided. Some were providing questionnaire-based consultations, others real-time video interactions. Few included an option for a physical examination. Providers also varied in terms of their size and scale, such as in the number of employees, and the numbers of consultations carried out and prescriptions issued.

The CQC inspection, as for all its inspections, focused on five key questions: are services safe, effective, caring, responsive and well-led. The performance rating was highest for caring (97 per cent of the providers were judged to be meeting the regulations around being caring); followed by responsiveness to patients' needs (90 per cent were judged to be meeting regulation standards). Concerns and areas for improvement were mostly around delivering safe and effective care, and leadership.<sup>46</sup>

Since the 2018 report, 19 out of 35 of the above online primary care providers had a follow-up inspection.<sup>47</sup> Moreover, the CQC's 2019 State of the State report acknowledges the growing role of digital innovation and recognises that as changes to services are fast-moving and are evolving at pace, the way it regulates needs to evolve alongside technological progress. The most significant change seen through its regulatory work is the provision of online and telephone appointments.<sup>48</sup>

### Access to online consultations is dependent on where people live

Research by NHS Digital in 2018 showed a wide variation between CCGs in the use of remote appointments, including telephone, video and online. Almost half of CCGs had commissioned no video consultation facilities, while others provided a significant proportion of remote consultations. Some CCGs report conducting nearly one in three appointments remotely, whilst in others the number is as few as one in twenty-five.<sup>41</sup>

A 2019 report by the Social Market Foundation revealed that whether individuals receive a digitally-enabled service depends on where they live, which commissioner serves them, which general practice they live near and which hospital they use. It recommended that levelling out the variations without suffocating innovation should be a priority, including promoting digital access among individuals with long-term conditions, social prescribing to support development of digital skills, and prescribing devices and wearables where there is a clear health need but individuals cannot afford them.<sup>42</sup> We consider that these findings demonstrate the need for a concerted effort to ensure that all patients have access to digital-first services wherever they live and regardless of whoever process the online consultation.

Other devolved UK countries are adopting similar digital-first approaches to primary care. However, progress is also fragmented. The implications of practices being in very different starting places is now a crucial consideration in making investment decisions. In Scotland for example, in addition to eConsult (see Case study 2), two other initiatives show different approaches to addressing this issue:

- NHS Scotland has procured 'Attend Anywhere' (often referred to as NHS Near Me), a web-based video consulting platform. Its use has initially been focused on outpatient appointments, however, early service development has taken place in a number of general practices primarily located in three health boards: NHS Grampian, NHS Lanarkshire and NHS Highland. Patients are booked for a video consultation using the practice's existing process and the patient is given the website address for the practice's video waiting area. The patient enters the virtual waiting area using a video enabled device. This alerts the clinician that the patient has arrived, and the clinician then connects the video call. Various members of the participating practice MDT have used the service. The main advantages of using video consultation include: improving access for patients who find it difficult to attend due to work, health or rurality, providing a substitute for home visits, enabling clinicians to work remotely and reducing the environmental impact by reducing travel. Early evaluation results show high levels of clinician and patient satisfaction.<sup>43</sup>

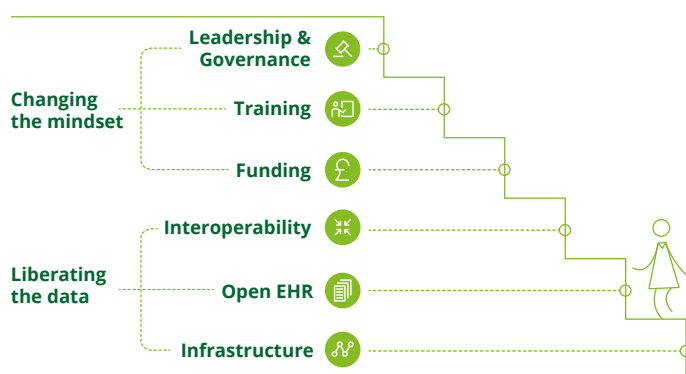


- While randomised trials show that telemonitoring improves blood pressure (BP) control, it has been difficult to implement it at scale. This is partly due to a lack of integration with routine working practices in primary care. NHS Lothian have developed a system which extracts data that patients have texted to a third party server, which is then compiled into a report summarising the data in graphical and tabular form and, averages the last five readings, to give clarity as to whether targets have been achieved. This is sent through DOCMAN, the normal data handling system in general practice, at one, three and six monthly intervals, for clinicians, to view in their routine mail. Over 70 practices (60 per cent) in Lothian have taken part with more than 3,000 patients now using telemonitoring. Average BP fell in the telemonitored group, particularly among those that were initially uncontrolled. In the following year, face-to-face appointments reduced by 18 per cent and total appointment time fell by 16 minutes. This system has been developed into a national integrated reporting solution developed with National Services Scotland (NSS), enabling BP recordings to be automatically integrated into the GP system. The National Scale-Up BP programme is a key priority with 11 of the 14 health boards currently participating.<sup>44</sup>

### Solutions for delivering a digital-first primary care

In our *Closing the digital gap* report we identified five key steps required to help deliver a digital transformation at scale. These steps apply equally to general practice (see Figure 6).

**Figure 6. Key steps to achieve a digital-first general practice**



Source: Deloitte LLP

General practices require a solid infrastructure for reliable network connectivity, interoperability and data storage capacity. Interoperability and accessible EHRs will allow a seamless data flow internally and externally to patients, NHS organisations and providers. Developments in relation to 5G network and cloud computing should help achieve infrastructure targets and interoperability.<sup>49</sup>

The October 2019 GP IT Futures Framework is intended to help address the challenges of the inadequate primary care infrastructure including providing a set of standards on which GP IT systems can be evaluated and purchased. The framework lists 73 suppliers, offering a range of booking, referral and prescription services, as well as patient information storage and consultation recording systems, with roll-out commencing from 1 January 2020.<sup>50</sup> It aims to simplify the provision of GP IT systems in England, stimulate an open, dynamic and competitive market for primary care IT system, and give GPs more choice.<sup>51</sup>

We consider that a change in the mindset of general practice staff to enable a digital-first purpose is essential to accelerate transformation. Dedicated financial resources will be required for training and also to invest in the infrastructure and accelerate the adoption of basic digital technologies (such as virtual consultations, telehealth and point of care (POC) diagnostics) as well as next generation ones (such as genomics and AI).

A 2019 report by the Social Market Foundation revealed that whether individuals receive a digitally-enabled service depends on where they live, which commissioner serves them, which general practice they live near and which hospital they use.

### Solutions for online general practice service providers

While the use of innovative technologies varies widely across the NHS, these have the potential to be disruptive if adopted at scale. Indeed, these are essential for delivering new models of care, including PHM. As shown in our *Closing the digital gap* report the adoption of technologies depends on digital providers being able to demonstrate that their technologies meet a number of ‘SMART’ characteristics. These apply equally to online GP services, see Figure 7. Examples of online GP services that are helping to improve outcomes for both clinicians and patients are presented in Figure 8.

**Figure 7. The SMART characteristic of scalable digital technologies**



Source: Deloitte LLP

Figure 8. Six good practice examples of online GP services

### Example 1. askmyGP is a digital workflow consultation service making it easier for patients to get help from their own GP

#### About the service

askmyGP is a digital workflow and consultation system that enables patients to describe their problem to their GP through a web-chat, creating a medical history, and choose how they want their response to be dealt with, e.g. by email, telephone, video or face-to-face appointment.<sup>52</sup> The system is used by practices across the UK with a combined list size of 777,205. Sixty-three per cent of patient requests in askmyGP practices are now dealt with online. Over one million patient requests have been managed by GP practices using askmyGP since September 2018.<sup>53</sup> askmyGP is being used as part of the Intensive Support Scheme (ISS), a programme that is being undertaken by Bristol, North Somerset and South Gloucestershire CCG aimed at improving sustainability of primary care.<sup>54</sup>

#### Outcomes for patients

Patients request a clinician by name or practitioners can assign themselves as the patient's regular clinician, thereby improving continuity of care. Requests are sorted at the practice and assigned to doctors or other appropriate

members of the team. askmyGP also provides a self-care search tool that interprets and retrieves relevant information from the NHS website, to ensure patients receive up-to-date information. In the first quarter of 2019, patient contact preferences were audited by askmyGP: 47 per cent chose a phone consultation; 25 per cent preferred face-to-face appointments; 28 per cent wanted to be contacted via text and only 0.1 per cent chose video consultations. Every week askmyGP receives feedback from around 500 patients.

#### Outcomes for general practice staff

62 per cent of askmyGP patient requests are resolved with a message or telephone call, improving efficiency and saving time in the practice.<sup>55</sup> Since these methods of resolution are faster than a face-to-face appointment, this means that more time is available for those patients who need it most. Wider efficiencies in the practice such as reduced demand on the telephones, or reduced pressure on clinicians' time can be translated into savings, or improving sustainability and healthier work life balance.

### Example 2. Docly, a software powered online consultation service aimed at enhancing GP workforce capacity

#### About the service

Docly is a 7 day-a-week, digital-first consultation service available to patients registered with a participating provider. Docly has contracted with eight GP surgeries to date (seven in Leicester and one in London), operating as a subcontracted NHS service. It employs GPs and other healthcare professionals who use software powered by algorithms to triage, diagnose and treat patients. Docly GP's update the patient medical record in real-time. Docly's technology platform, including Docly's original private Swedish service has now been used for more than 800,000 consultations ranging from minor conditions to chronic disease management.<sup>56</sup>

#### Outcomes for patients

The Docly pre-consultation data collection tools enable patients to take as long as they need to complete a symptom-specific web or app based form which responds in real time by tailoring each question to the patient's previous answer. The questions are informed by NICE guidelines, and responses are automatically triaged. The pre-consultation tools were developed with input from patient groups and GPs. Patients are diagnosed and primarily managed online (including providing prescriptions, self-care advice or a referral to physical examination). The median age of users is

currently 44. The Docly platform allows patients to access their health records and share images with their consulting GP. Patient feedback is overwhelmingly positive. The Docly service improves access to care, the average time to attend to a patient's submission is 36 minutes.<sup>57</sup>

#### Outcomes for general practice staff

Docly's main role is providing workforce capacity to underdoctored practices, it also provides GPs working for it with NICE-informed decision support options, using scripted response templates helping the GP to benefit from up-to-date training and NICE guidance.<sup>58</sup> GPs provide advice on suitable treatment, arrange prescriptions or refer to secondary care services, face-to-face appointments, or diagnostic testing. The patient-clinician communication takes place asynchronously, however the GP can initiate phone or video calls if required. Sites are at different stages of adoption. Docly expects to handle 10-25 per cent of GP consultations. Docly hopes to enable doctors to continue working no matter what stage of career they are in and protect against 'burnout'.<sup>59</sup> Docly enables partner practices to determine how best to use its existing workforce, for example, by increasing the length of appointments for more complex conditions, in line with the RCGP's 'Fit for the Future'.<sup>60</sup>

### Example 3. Doctorlink uses AI-based Symptom Assessment for triaging and diagnosing patients

#### About the service

Doctorlink is a platform that acts as a digital gateway, connecting patients to primary care services.<sup>61</sup> Combining Bayesian logic with AI-powered machine learning for triage and diagnosis the Symptom Assessment tool is available 24/7.<sup>62</sup> Headquartered in London, it launched in 2017 and currently has contracts with 42 CCGs, and is available to more than 10 million NHS patients across 1,350 GP practices.<sup>63</sup> Its symptom assessment covers 95 per cent of presenting conditions and is indemnified with clinical governance and third-party independent auditing.

#### Outcomes for patients

Patients provide their information through a series of one-click responses to symptom-based questions. Triage outcomes are processed according to clinical need to help patients get the right level of care (such as NHS self-care information or are advised to seek support from pharmacy, dentistry or A&E services).<sup>64</sup> Patients can also manage appointment bookings and repeat prescriptions. Results show a 35 per cent reduction in same day appointments. If the tool advises a clinical consultation, the patient can request an appointment slot appropriate to their assessment

outcome (same day face-to-face, telephone, or video consultation with GP or nurse practitioner, or appointment within 48 hours).<sup>65</sup>

#### Outcomes for general practice staff

Doctorlink has reduced demand for appointments by over a fifth, 22 per cent of patient requests are redirected to self-care or to other local services. Practices receive a copy of consultation outcomes. Rigorous clinical governance ensures all symptom assessments are in line with the latest guidelines, and subject to review and approval by an independent team of up to 25 GPs and specialists. Results show a 35 per cent reduction in the need for same day appointments. One example is Portland Medical Centre (PMC) in Croydon, which has used Doctorlink since October 2018. Over a third of patients have registered for the service, and 23 per cent of patient requests have been re-routed to alternative care options. Over 40 per cent of patients have accessed clinical advice outside of standard opening hours, alleviating strains on the time and resource of clinicians. The practice has seen a 30 per cent reduction in calls every week.<sup>66</sup>

### Example 4. Patient Access connecting health services for better patient care

#### About the service

Patient Access is an EMIS Group digital platform that allows patients to make use of a range of local health services, including access to GP, pharmacy and health professionals online or through an app on smart phones or tablets. Practices and pharmacies have the option of choosing which of these services are made available to patients.<sup>67</sup>

#### Outcomes for patients

Patients can book face-to-face or remote appointments with GPs, pharmacists or allied health professionals. Patients can ask the practice a question, manage repeat prescriptions, or select from a range of local pharmacy services to receive help on specific conditions (e.g. NHS smoking cessation, vaccinations). Patients can be granted access to their medical records and share selected information through the app (e.g. if abroad or at an out of hours practice). General medical advice and healthy living tips are also available as is information on locally available NHS self-referral services such as talking therapies and antenatal care.<sup>68</sup>

#### Outcomes for general practice staff

Patient Access' online triage service has been shown to reduce face-to-face appointments by up to 33 per cent,

with a 20 per cent reduction in calls to surgeries using this service. In addition, by being able to book and cancel appointments online and use two-way messaging between practices and patients, users attend the appointments more frequently and are able to cancel when required.

In the last six months of 2019, 3.3 million GP appointments were booked and 10.5 million repeat prescriptions issued via Patient Access. This represents a 12 per cent increase in appointment bookings and 18 per cent increase in repeat prescriptions issued compared to the same period in 2018. Patient Access recently launched a new service enabling people to book an appointment directly with local health providers to help relieve pressure on busy GP practices.

New features planned for 2020 include the ability for GPs to make direct referrals to pharmacy and health services, medication tracking, connection of multiple data sources for an extended patient health record, further supply integration outside of pharmacy services and integration into all national clinical systems to ensure availability for all practices outside of EMIS Web as part of the NHS IT Futures framework.<sup>69</sup>

**Example 5. LIVI lets patients see a GP by video in minutes on their mobile or tablet****About the service**

LIVI is a digital extension to existing GP practices allowing PCNs and local GP practices to offer seven days-a-week, app-based video consultation services. The LIVI app is free to download and patients can see a LIVI employed GP by video within 20-30 minutes or book an appointment up to seven days ahead. LIVI works with a range of NHS partners including GP federations, CCGs and STPs to provide additional clinical capacity via a smartphone or tablet.<sup>70</sup> In December 2019, LIVI 1 services were available to over 250 GP surgeries across 5 regions in England,<sup>71</sup> providing access to over 2.8 million patients in the UK.<sup>72</sup>

**Outcomes for patients**

Patients can receive an online diagnosis, can obtain a fit note, prescription, and view a history of their sessions. If required

patients are referred to their registered GP or to a secondary care service. Patient's meeting notes are not stored on the app, but are owned by their GP and added to their NHS medical record to view through the NHS App. The average online patient rating is 4.9 out of 5.<sup>73</sup>

**Outcomes for general practice staff**

Ninety per cent of LIVI appointments are able to replace physical appointments. LIVI GPs are GMC registered and work part-time with LIVI and part-time with their local physical GP surgery. 92 per cent of LIVI GPs value the flexible working LIVI offers giving high GP satisfaction and a net promoter score (NPS) of +50.<sup>74</sup> Two thirds of surveyed LIVI GPs say they input 20 per cent or more three clinical hours per week as a result of working flexibly.

**Example 6. Push Doctor is investing in patient safety culture, staff training and innovation****About the service**

Push Doctor is an online medical consultation service allowing patients to book same day 10 minute video or text chat consultations with their GP from 7am to 8pm seven days a week.<sup>75</sup> This free NHS service is an additional service to normal GP services and is available to patients through participating practices. Push Doctor also offers a private fee for consultation service. The CQC rated Push Doctor as 'good' in all areas in a May 2019 inspection.<sup>76</sup> Push Doctor employs GPs directly and has a partnership with Urban Health and 13 primary care networks, covering 13 practices and 88,000 patients in the Birmingham area. It also has a partnership with super-practice Modality which covers surgeries in Yorkshire, the Midlands, London and the South East.

**Outcomes for patients**

Appointments are available for adults and children. Patients are able to obtain quick access to advice and support and can book chosen day appointments should they wish. Patients can share images with their GPs and GPs can provide fitness to work notes and referral letters. Push Doctor accesses patient information from NHS GP records.<sup>77</sup> Currently, Push Doctor has a NPS of around 60/70. The average NHS cost for an appointment is around £30. A General Practice can add

Push Doctor appointments for around £20, which can help the practice to offer more appointments to patients.

**Outcomes for general practice staff**

The CQC judged the Push Doctor leadership team as facilitating an outstanding patient safety culture by investing in staff training and development, encouraging team work and innovation, listening to patient feedback and implementing a continuous quality improvement audit programme. It has established comprehensive systems for monitoring service delivery, with 10 per cent of all GP consultations reviewed monthly. GP feedback has been generally positive and GPs report the service has helped their professional development as well as service improvement.<sup>78</sup> Push Doctor's 'virtual locum service' enables GPs to add more appointments quickly, which can help to enable GP's to access funding for extended access contracts which can sometimes be difficult to staff. The Push Doctor platform enables GPs to work remotely which can help with recruitment and retention of GPs where flexible working is important.

## 3. A digitally-enabled patient experience

A key ambition of the NHS LTP is to improve the patient experience. As almost everyone's first contact with health services is through their registered general practice, improving their patient experience is crucial. In 2018-19, around 53 per cent of consultations were with a GP and 44 per cent with other practice staff; 83 per cent were face-to-face, 14 per cent by telephone and less than one per cent by video or online. Moreover only 43 per cent of appointments were for the same day: 20 per cent waited two to seven days, and 13.5 per cent eight to 14 days.<sup>79</sup>

A specific expectation in the LTP is that from 2019 NHS 111 should be able to book patient appointments directly with GPs, as well as refer people to community pharmacies. Moreover by 2024 all patients should have the option of a digital-first primary care consultation.

### Current patient national experience of general practice online services

The results of the 2019 NHSE GP Patient Survey, conducted by Ipsos MORI on 770,000 people, show that patient awareness and use of GP online services remains low.<sup>81</sup>

Overall, some 44 per cent of respondents said they knew they could book appointments online, 41 per cent knew that they could request repeated prescriptions remotely, and 15 and 16 per cent of patients respectively had used these options in the past 12 months. While patients have been able to access their Summary Care Record in most surgeries since 2016, the 2019 survey found that only 15 per cent of respondents were aware that their general practice offers this access, and only four per cent said they had logged in to see them. This suggests that the visibility of this service is very low and has failed to resonate with patients.

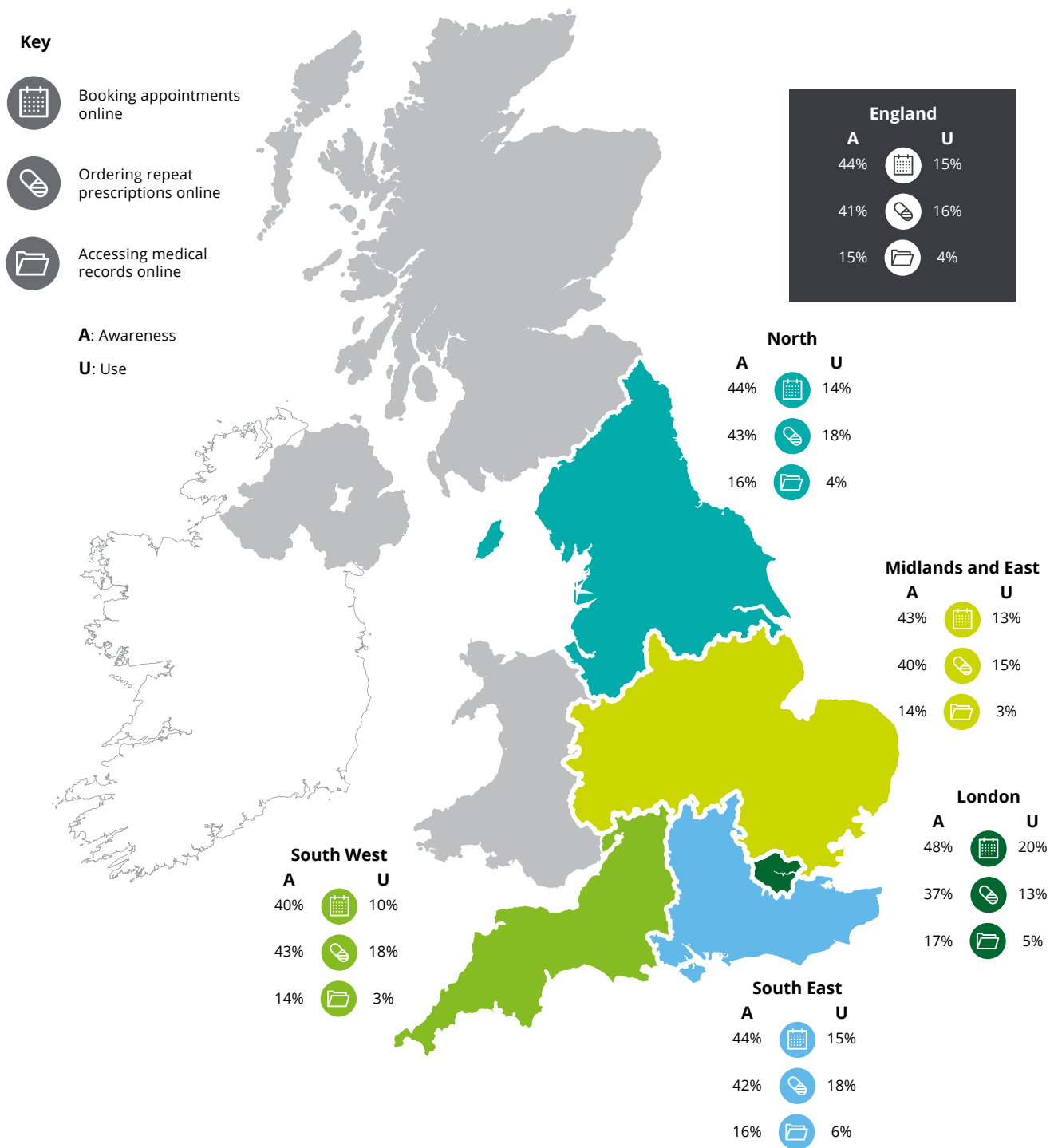
Except for England, none of the devolved nations in the UK currently asks patients about access to online or digital services.

Three quarters of patients reported not using any of the online services listed, and around seven per cent of patients said that they had no awareness of any of the online services listed.<sup>82</sup> Seven out of ten patients who tried to contact primary care services found it easier to get through to their practice by phone, while one in five could not access it or found it 'closed'.<sup>83</sup>

54 per cent of survey respondents said they have a GP they prefer to see, but only half managed to see the doctor they requested. There are concerns that the use of online services will exacerbate this problem. There is also evidence that people make trade-offs between access and continuity based on the perceived severity of their symptoms. For example, older patients are likely to wait longer for continuity, while parents tend to want rapid access for children. A number of our case examples show that it is possible through more effective use of AI-enabled triaging systems to address these competing requirements.

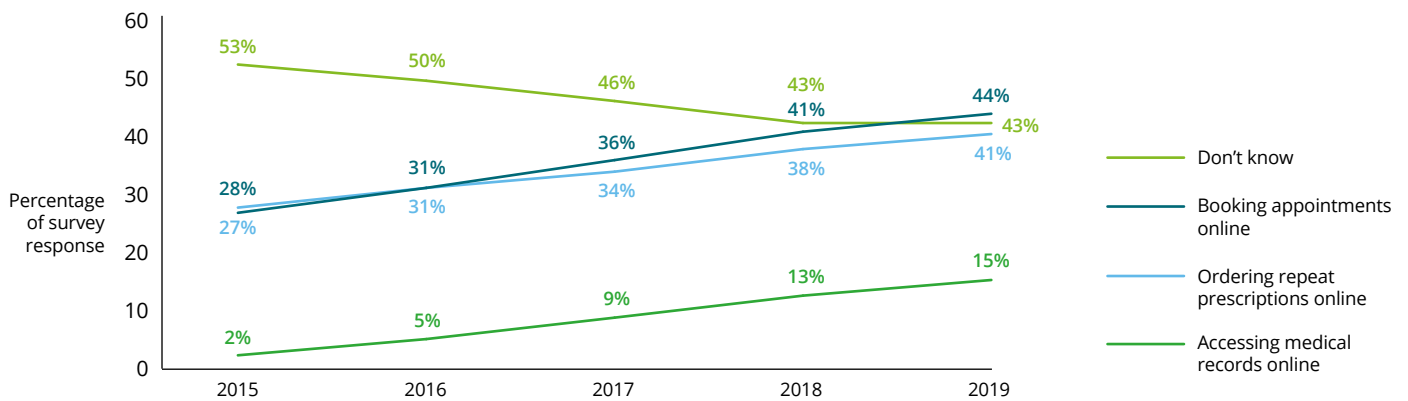
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Figure 9. National GP Patient Survey of awareness and use of online GP services by region



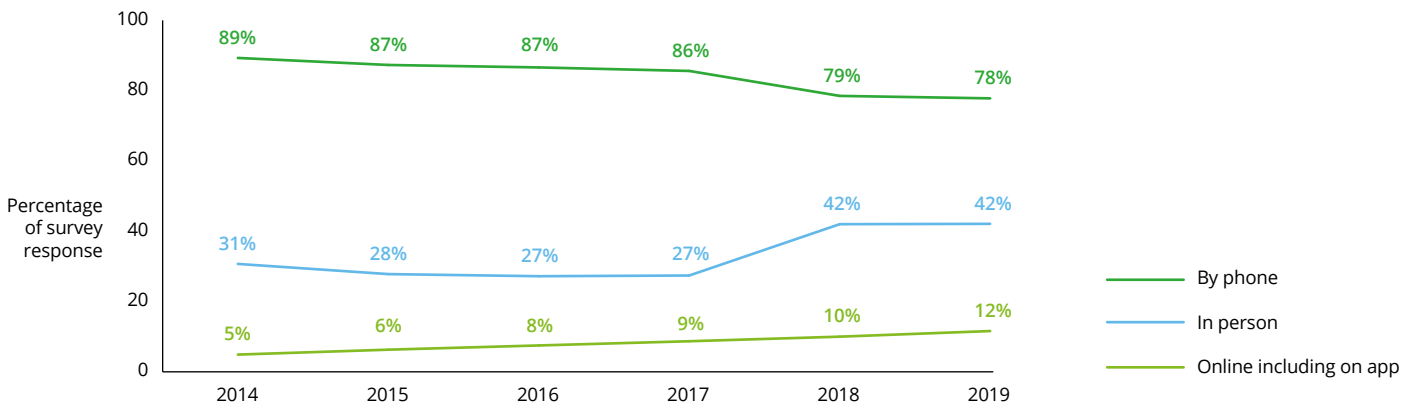
Source: Deloitte analysis

**Figure 10. Awareness of online GP services**



GP Patient Survey question: "As far as you know, which of the following online services does your general practice offer? (Patients can tick all boxes that apply)"  
 Source: Deloitte analysis

**Figure 11. Trends in the use of GP appointment booking methods**



GP Patient Survey question: "In the past 12 months have you booked any general practice appointments in any of the following ways? (patients can tick all boxes that apply)"  
 Source: Deloitte analysis

**Trends on awareness and use of online GP services**

Our analysis of both awareness and use of online GP services over the past five years shows an improving trend. Awareness of online appointment booking rose from 27 per cent in 2015 to 44 per cent in 2019, and ordering repeat prescriptions increased from 28 per cent in 2015 to 41 per cent in 2019 (see Figure 10). The increase has been consistent across all age groups. Use of bookings by phone fell by 11 per cent, in person booking increased by 11 per cent and online booking (including apps) increased by seven per cent. Meanwhile, over the past five years, trends in use of online services increased from 5 to 12 per cent and appointment bookings by phone decreased from 89 to 78 per cent. Following a small decrease in the percentage of people booking appointments in person, from 31 per cent in 2014 to 27 per cent in 2017, there was a

sharp increase to 42 per cent in 2018, with the same percentage recorded in 2019 (Figure 11). Responses to the survey saying it wasn't easy to get through by phone increased from 26.7 per cent in 2015 to 31.7 per cent in 2019.

The low patient awareness and use of digital services is limiting the NHS's ambition to improve access to primary care services. It is also a critical barrier to meeting the milestones in the NHS LTP. Yet patients using online GP services are more likely to rate overall general practice experience as 'very good' compared to those who have no access to online services. Fifty per cent of patients who order repeat prescriptions online rate their general practice as 'very good', compared to only 44 per cent who said they cannot access online services but who rated their services as very good.<sup>84</sup>



Increasing the visibility, awareness and use of online medical records is critical for the future of healthcare. Improving the education and understanding of citizens about their health, in terms of maintaining well-being, disease prevention and management of long-term conditions could accelerate the healthcare transformation. Among the respondents of the national GP Patient Survey, 60 per cent were patients suffering from a long-term condition but only 39 per cent had spoken with a professional to discuss how to manage it. Digital health technology that triages all appointment requests before assigning them could make the process easier.

### Improving digital inclusion and equality of access

Data from the Office of National Statistics in 2018 found that broadband connection speeds for average home use was available to 99 per cent of premises in urban England and 85 per cent in rural England, and that access to the internet at home varied with age (more than 90 per cent of people aged under 55 had internet access in 2017, compared with 53 per cent of people aged over 74). In the previous decade the proportion of individuals using the internet for health-related activities had increased from 24 to 54 per cent.<sup>85</sup> Inadequate access undermines the potential for using the online services effectively.

In February 2019 the *Topol review: Preparing the healthcare workforce to deliver the digital future* stressed that whilst technology has the potential to reduce health inequalities, there is a significant risk that it could also exacerbate them. The review recognised that a range of social determinants affect health outcomes, and recommended that digital health technologies should consider how health technologies will affect equity and equality of access and not reinforce inequalities. It noted the work of the Widening Digital Participation programme, where the NHS collaborates with a charitable organisation has been successful in reducing health inequalities, engaging with groups at risk of poor physical and mental health, and increasing digital inclusion.<sup>86</sup>

The May 2019 Social Market Foundation report *National Health Servers: delivering digital health for all* acknowledged that access to technology, such as wearables and smart scales can improve health outcomes but should not be limited by a person's ability to pay. The report argued that there are huge opportunities for using digital technologies to improve disease prevention and digital management of long-term conditions, and to keep patients out of hospitals, but that access to technology needs to be fair and equal. Moreover, if personal technologies are to become a primary delivery channel for improving health outcomes, the NHS needs to address the risk that only those who can afford the latest devices are able to benefit.<sup>87</sup>

### Patient appetite for greater digital engagement

Between May and June 2019, the Deloitte US Center for Health Solutions conducted a Global Consumer survey, to understand consumers' experiences and attitudes to health, healthcare and their appetite for digital innovation.<sup>88</sup> Key insights from the 4,165 UK respondents were:

- Those who had used digital health technologies in the past 12 months, including websites, apps, medical devices and fitness monitors, did so to measure fitness and health improvement (37 per cent), monitor blood sugar, blood pressure (21 per cent), receive alerts or reminders to take medication (15 per cent), measure, record or send data about medication (11 per cent), and order a repeat prescription (38 per cent).
- Only 28 per cent have shared tracked health information with their doctor. Among those who did not, 58 per cent said they did not think their doctor would be interested, 28 per cent did not have a regular doctor, and 11 per cent wanted to keep the information private.
- In the UK, 48 per cent believed they should own their own health data, 41 per cent that their doctor or hospital should, three per cent the national government, one per cent local government and seven per cent did not know.
- 17 per cent had received a virtual visit with a doctor or other healthcare practitioners, and 69 per cent of these would be happy to choose a virtual visit again.<sup>89</sup>

**Figure 12. Consumer health survey: UK responses about the use of health technologies**

Q. Technology is changing the way health care is delivered. How willing would you be to try the following?



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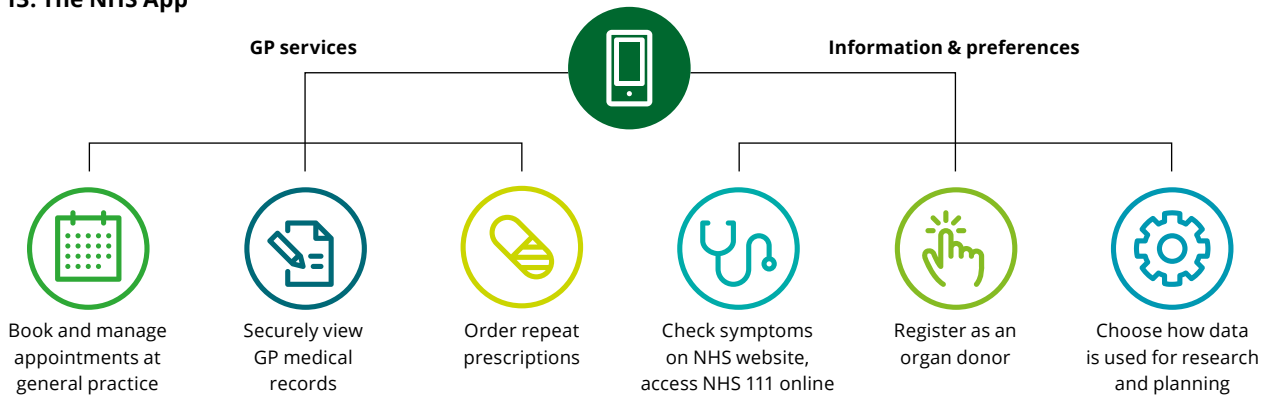
Source: Deloitte research

The consumer survey provided mixed results about the willingness of individuals to try using digital technologies (see Figure 12). The findings can help healthcare providers understand where they should focus if they are to improve digital adoption, and they suggest that over the next five years the percentage of people willing to interact online with the healthcare system will increase substantially.

**Improving patient engagement through the roll-out of the NHS App**

The NHS LTP highlighted the roll-out of the NHS App as an important step towards engaging citizens digitally in their own healthcare. Registered patients can book appointments and order repeat prescriptions online, view their GP medical record securely, and register as organ donors. Future developments include choosing a pharmacy, electronic referral service integration, clinical trials and research registration, online consultations, and integrating health checks (see Figure 13).

Figure 13. The NHS App



The NHS App enables patients to access a range of NHS services on their smartphone or tablet. These include the ability to check symptoms, register as an organ donor and choose how their data is used. If the patient's general practice is connected to the app, patients can book and manage GP appointments, order repeat prescriptions and view their GP medical records.

Source: Deloitte LLP

The NHS App also links to Fitbit and Apple watches, and can collect data on the health status of each user. Ultimately the NHS App is intended to provide patients with online access to primary and remote consultations, including built-in support for GP video and voice calls. Following a successful pilot across 30 practices in England, in January 2019 NHS Digital began rolling out the NHS App. All general practices using TTP or EMIS systems as IT suppliers (95 per cent of the total) are currently able to use the app.<sup>90</sup>

**The future patient experience: extending the adoption of advanced digital health technologies**

As the primary healthcare landscape continues to evolve, new and innovative ways to improve the patient experience are emerging. For example, pharmacy-to-home video links can connect patients to primary care clinicians to monitor medication compliance and provide medication advice. This allows patients to receive care at home and build relationships with their pharmacists who know their medication history. Initial trials found medication adherence rose from 55 to 97 per cent.<sup>91</sup>

Primary care consultations will increasingly be integrated with AI technologies, to support patients in managing their health and well-being and help clinical decision making. For example, digital voice assistants (DVA) use AI to interpret natural language and simulate human conversation. By 2020, half of all internet searches are expected to be made through voice-assisted technology.<sup>92</sup> DVAs have the potential to bring healthcare out of the clinic and into patient's homes.

Current NHS examples include:

- Access to healthcare advice: a collaboration between NHSX and Amazon enables the Alexa assistant to access information from the NHS Choices website to provide responses about symptoms and treatments of common illnesses such as flu and chickenpox.<sup>93</sup> Google Assistant, Amazon Alexa and Apple's Siri are increasingly able respond to questions on brand name medications and generics.<sup>84</sup>
- Medication adherence: a pilot project in Stoke-on-Trent, part of the STP's digital workstream, distributed DVAs (Alexa Echo Show plus WiFi if needed) to 50 patients with health or dependency needs. Patients were taught to set medication reminders, as well as reminders for hospital and GP appointments. Preliminary findings suggest the voice assistant improved adherence to medication and appointments and also helped to alleviate loneliness.<sup>95</sup>
- Mental health triage: bots such as the MhtBot can analyse text and voice inputs to detect mental health state. The plan is for this open-source software to be built into the Improving Access to Psychological Therapies (IAPT) pathway and triage process.<sup>96,97</sup>

Patient benefit should remain the driving force behind the use of advanced digital technologies. The focus should be on improving people's digital and health literacy and enhancing their experience and outcomes.

## 4. Driving integration through primary care networks

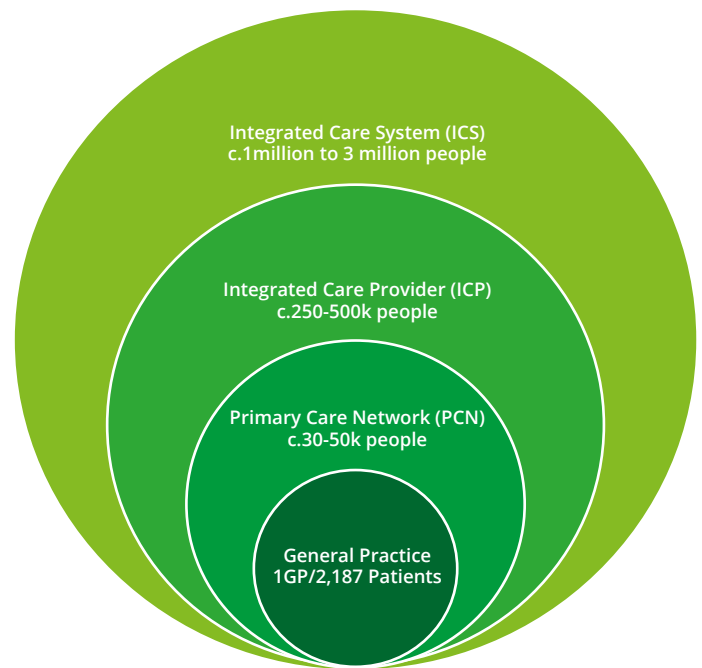
Since July 2019, all general practices in England have formed part of one of 1,250 or so PCNs in line with the Long Term Plan's ambition to develop integrated health and care. A key aim of PCNs is to stabilise the GP partnership model and ensure it is sustainable, in line with the recommendations in the independent GP Partnership review published in January 2019.<sup>98</sup>

While there have been many other attempts to encourage greater cooperation between practices, it is the first time that real terms funding for primary and community health services is guaranteed to grow at a faster rate than that of the overall NHS budget. However, some technical issues still need to be addressed, including data sharing, interoperability and funding of clinical systems, complexities around financial liabilities and the capacity of primary care premises to host an enlarged workforce.<sup>99</sup>

All PCNs have a legally binding Network Agreement that sets out the collective rights and obligations of the general practices in the network, as well as how the network will collaborate with other primary care, community and voluntary care stakeholders. From April 2020, collaboration arrangements with other local care organisations will be a key requirement of every Network Agreement. Discussions around the purpose and functions of PCNs are still evolving.<sup>100</sup>

The Network Agreement also includes a patient data sharing requirement to support data flow across health and care sectors using interoperable electronic health care record systems and advanced digital technologies such as AI and genomics. This in turn is intended to support the provision of safe and effective patient care across general practices and other organisations. The LTP expects PCNs to become the delivery units of all integrated care systems (ICSs), and every ICS will have a critical role in ensuring that PCNs feel supported and work in an integrated way (see Figure 14).

**Figure 14. The Integrated Care System landscape and the relationship with the new primary care network system**



Source: Deloitte LLP

Some specific actions by the NHS to allow a seamless data flow are already taking place. For example, through GP Connect, clinical staff will be able share and view patient medical records anytime and anywhere, even if generated by different IT systems.

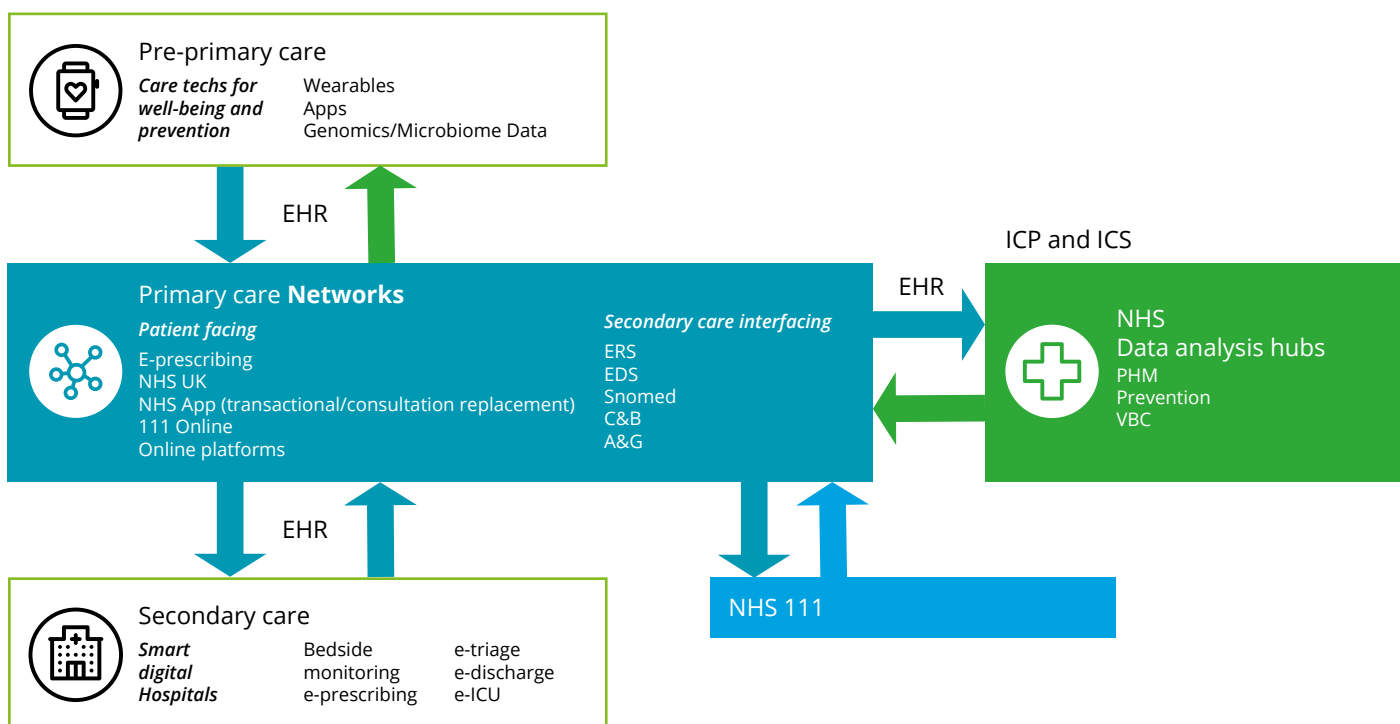
PCNs have an active role in promoting patients' adoption of digital solutions and in delivering preventive and personalised PHM. PCNs are also expected to work together to improve health in care homes, improve early cancer diagnosis, and target health inequalities. The management of PCN is expected to be funded by directed enhanced services payments that will reach £1.8 billion by 2023-24. As part of the PCN, general practices will receive funding through a single contract. The GP Quality and Outcomes Framework includes changes to the current incentives and indicators, in line with the GP network strategy, tailored to outcomes such as reducing unnecessary A&E attendances, elective care activity, medicines management optimisation and population health improvements. ICSs are expected to have a clear plan for primary care, focused on improving population health.<sup>101</sup>

Over the next five years, the move towards new preventative and personalised models of care and better management of chronic conditions will require uninterrupted data flows across PCNs and ICSs. Achieving a solid infrastructure and fluid interoperability of data across organisations and sectors is a priority if these initiatives are to have an impact on a national scale (see Figure 15).

Some specific actions by the NHS to allow a seamless data flow are already taking place. For example, through GP Connect, clinical staff will be able share and view patient medical records anytime and anywhere, even if generated by different IT systems.<sup>102</sup> Local Health and Care Record Exemplars (LHCRES) were also created to enable the safe and secure sharing of an individual's health and care information as they move between different parts of the NHS and social care.<sup>103</sup> Two case studies on the development of LHCRES are included in our *Closing the Digital Gap* report.<sup>104</sup>

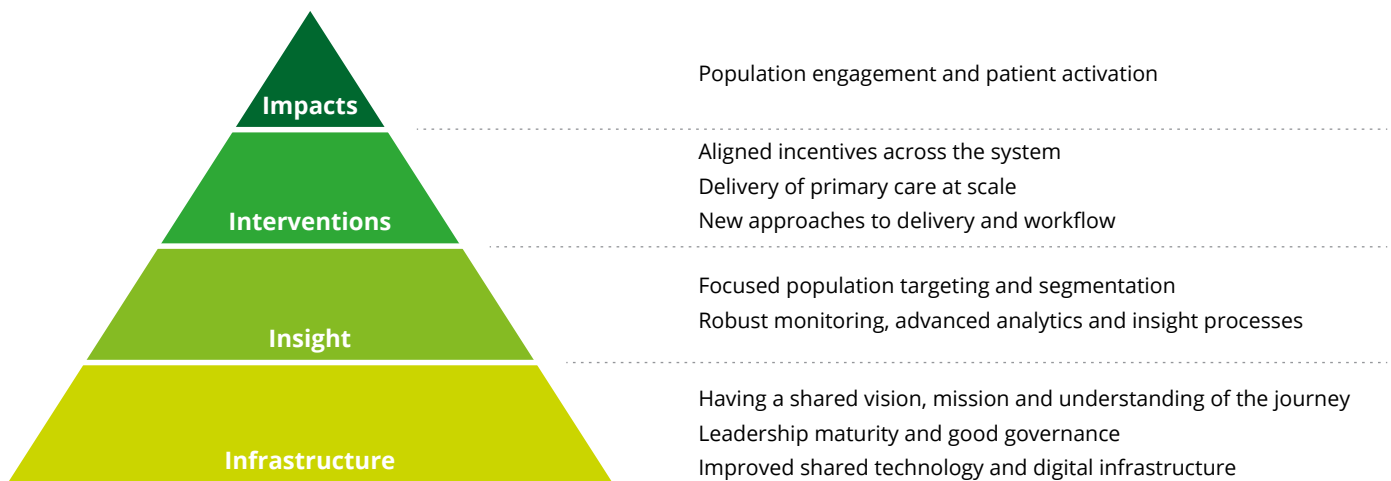
Delivering the vision of a digital-first primary care system requires all practices to be digitally mature. While NHSE has developed a Digital Primary Care Maturity Assurance module to provide a user friendly mechanism to review current levels of digital maturity across general practices, the outcome of this is still to be published. We believe that the assessment of primary care digital maturity should include not only the adoption of innovation but also the effectiveness of new workflows for data sharing and delivering new models of care.

Figure 15. Primary care led patient data flows



Source: Deloitte LLP

**Figure 16. The key building blocks and critical success factors for PHM**



Source: Deloitte LLP

**The future role of PCNs and ICSs in delivering new models of care**

In the next few years open application program interfaces (APIs) and cloud technology will help tackle the challenge of interoperability by placing critical IT infrastructure in offsite data centres, where data can be pooled, accessed and shared securely. In 2018 NHS Digital issued national guidance approving the use of cloud services for storing patient information. This included a framework for assessing and managing risk, establishing standards for how data should be stored and used, and identifying the considerations to apply when selecting a supplier.<sup>105</sup>

As noted, the LTP expects every commissioner and provider to be part of an ICS by 2021 and to adopt PHM as the best way to deliver the ‘quadruple aims’ of healthcare. Our March 2019 report *The transition to integrated care. Population health management in England* highlights the challenges and opportunities facing the NHS in establishing a PHM approach and identifies four building blocks – infrastructure, insights, impact and intervention (see Figure 16).<sup>106</sup>

A key requirement for PHM is an understanding of the importance of data analytics for everything from strategic planning to clinical decision making. As healthcare enters a period of rapid innovation, there will be numerous opportunities to utilise data effectively. Initial steps include introducing population health demand modelling to help identify long-term resource requirements, and investing in ways to reduce the prevalence and cost of managing complex long-term conditions. Population health demand models can help quantify the strategic importance of preventative medicine and shape system priorities.

ICSs will need to determine the benefits of investing in specialist analytics technology from suppliers who are developing innovative algorithms and software that can inject new levels of insight into health systems. These technologies can help identify and manage high-risk patients, and can single out inefficient pathways or gaps in care, and highlight patients who would benefit from preventative intervention.<sup>107</sup>

The National Association of Primary Care has developed a PHM approach as part of its Primary Care Home programme. This care model, which is the basis of the PCN model, has over 200 sites across England and covers 17 per cent of the population. The approach is based on a matrix based on different needs and models of care which identifies three distinct population groups:

- Generally healthy population.
- Population with long-term conditions.
- Ageing and frail population.

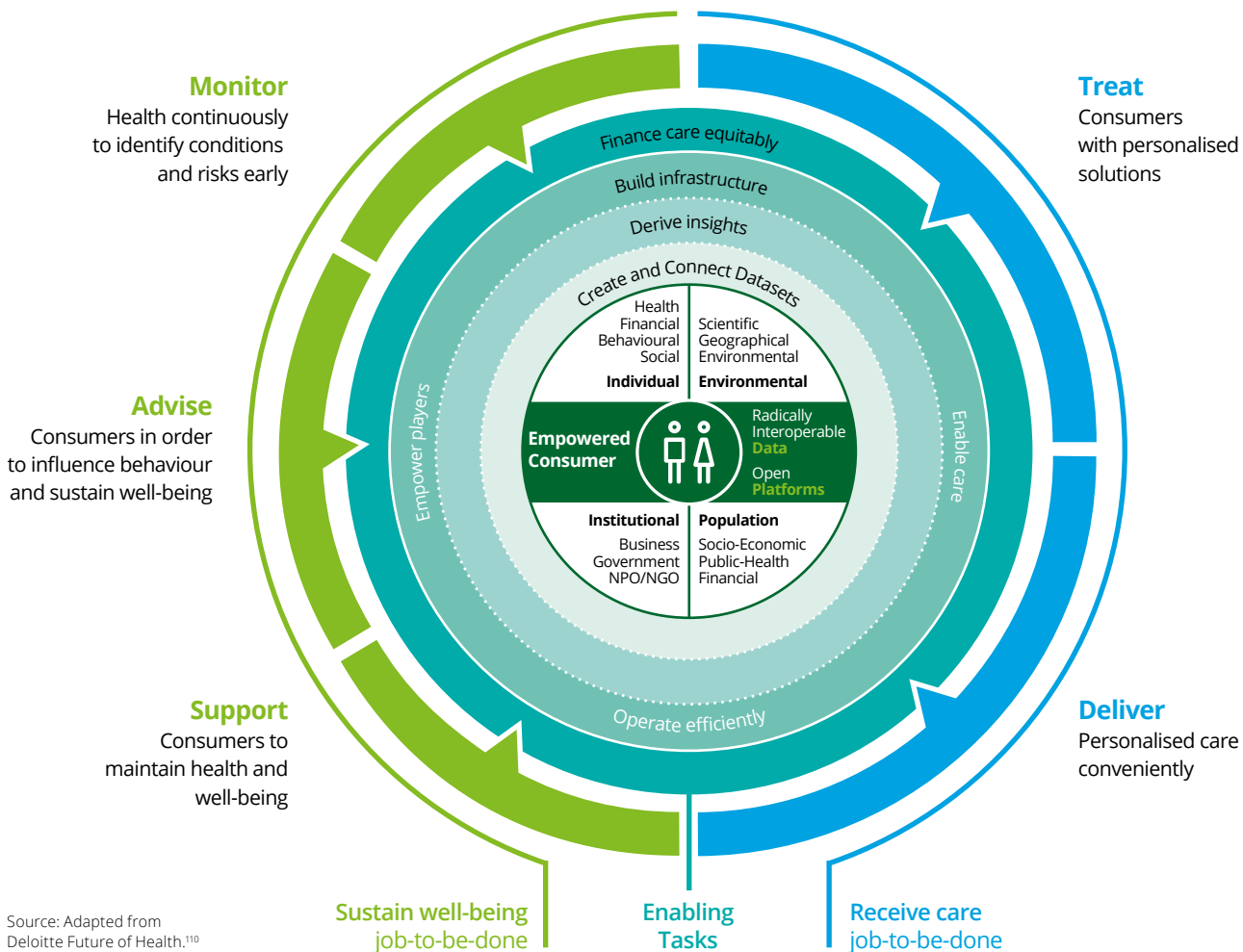
Preventative care enabled by wearables, genomics, AI and digital technologies are expected to help address the needs of these three segments in a timely manner by identifying areas of risk and enabling early intervention.<sup>108</sup>

**Looking at the future of primary care: genomics, AI and next generation digital technologies**

NHSE sees primary care as the future setting for whole-genome screening, carried out by specially-trained practice nurses supported by GPs and consultant geneticists. In 2020, a pilot will commence pioneering genomic screening of samples collected at a London general practice. The entire genetic code of 1,000 UK individuals, including both patients and healthy subjects, will be sequenced and analysed to assess the feasibility of testing for faulty genes that increase the risk of cancer and heart disease. Researchers hope to determine whether whole-genome sequencing in a healthy population can have a significant impact on people’s health by helping diagnose cancer, heart disease and other illnesses much earlier. The identification of ‘actionable gene alterations’ could help support lifestyle improvements, undertake specific screening, and in some cases be offered targeted treatments.<sup>109</sup>

Genomics, well-being and health related apps that generate vast amounts of health data and insights will be key system disruptors. These technologies will become more precise, affordable and compatible with different interoperable IT systems, speeding up adoption by larger segments of the population. They will also be embedded progressively state-of-the-art with AI algorithms and technologies, which will be crucial for PHM and new models of care. Programmes and initiatives to promote and support collaborations between the primary care sector, medtech industry and academia will also be important for primary care’s digitally-enabled future (see Figure 17).

**Figure 17. The future of primary care led healthcare**



Source: Adapted from Deloitte Future of Health.<sup>110</sup>

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