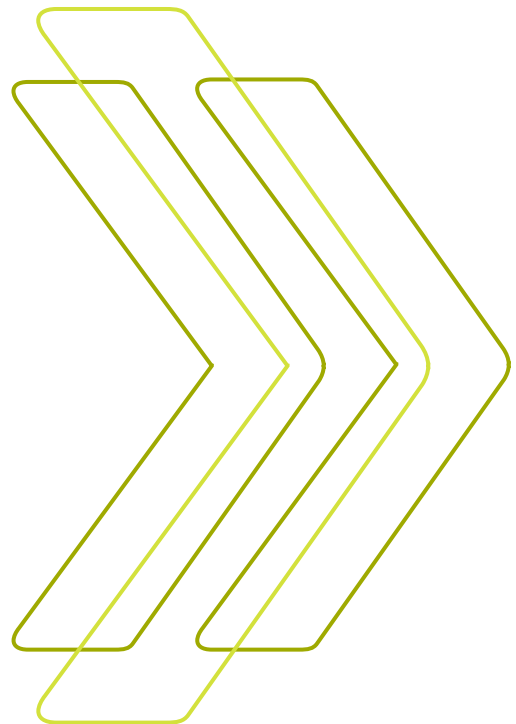


Understanding factors that enabled digital service change in general practice during the Covid-19 pandemic

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Executive summary

Covid-19 prompted rapid uptake of existing technologies to deliver patient care differently in general practice. Critical changes include almost universal access to video consultation platforms, a huge expansion in the use of telephone consultations and universal adoption of digital triage. A host of other supporting changes are also ongoing, including support for primary care clinicians to have wider remote access to clinical IT systems, messaging platforms and shared records with the rest of the system. In this rapid research we examine the following questions.

- What service changes have happened and which digital products and services were used?
- Which factors enabled these service changes?
- Can these factors be sustained outside of the Covid-19 pandemic response?
- What should be considered in moving to the next phase of pandemic response and post-recovery future?

Most of the digital tools employed in the rapid changes to services were already available and in use in some practices – but the uptake and adoption of tools has progressed at a scale and pace that in normal circumstances would be incredibly challenging, even with significant investment and support.

We found that general practice had been able to adapt relatively quickly due to a number of factors, often related to a streamlining of bureaucracy and processes that had existed pre-pandemic, combined with an increased tolerance for risk and a burning platform around safety which overrode some of the cultural barriers to change that had existed before the pandemic. Implementation was further supported by a rapid response from technology suppliers who in some cases were able to roll out solutions in a matter of days directly to practices, who were themselves able to bypass existing procurement processes to implement the tools they chose.

The transition was not entirely smooth and there are lessons to be learnt if the gains are to be sustained. For example, issues around infrastructure and

interoperability impeded both the speed and quality of implementation. Many of these issues pre-date the pandemic and will need to be addressed if policy ambitions are to be achieved. Procurement and information governance processes, which were streamlined and, in some cases, by-passed, will also need to be revisited. Key to ongoing and sustained innovation in this area will be the quality of local support to practices and health systems to support implementation, both in terms of supporting the introduction of the technology itself and in supporting the change management and system redesign at a practice level that is a prerequisite of successful digital change.

Key policy messages

- There is a strong desire for certainty, clarity and consistency of direction and funding for digital tools and hardware at national level.
- Procurement processes require review.
- Regional support should be focused on implementation rather than duplicating procurement processes.
- There needs to be clarity over long-term funding, including funding for infrastructure.
- Information governance processes and regulations need to be reviewed.
- Suppliers and national bodies should focus on increasing the interoperability of systems.
- There should be national and local investment in ongoing evaluation and optimisation of digital tools.
- Policy-makers will need a continued focus on digital exclusion.
- The role of digital technology in the management of long-term conditions needs more consideration and investment.

Key findings

- The primary care sector was able to adapt relatively quickly to digital working due to a number of factors, often related to a streamlining of bureaucracy and processes that had existed pre-pandemic, combined with an increased tolerance for risk.
- The 'burning platform' of needing to reduce the risk of Covid-19 transmission for both staff and patients safe helped overcome some of the cultural barriers to change that had previously existed at a practice level.
- Implementation was further supported by a rapid response from technology suppliers who in some cases were able to roll out solutions in a matter of days directly to practices, who were themselves able to bypass existing procurement processes to implement the tools they chose.
- Procurement and information governance processes, which were streamlined and, in some cases, by-passed, will need to be revisited. The role of clinical commissioning groups (CCGs) in procurement was raised by many interviewees, though there were differing opinions about whether systems should be procured across a wide area (to support consistent implementation) or should be more able to meet individual practice or primary care network (PCN) needs. Suppliers and frontline practices wanted less duplication and delay in procurement, using national frameworks to meet identified needs rather than repeating competition at CCG level.
- Issues around inadequate infrastructure and lack of interoperability of systems impeded both the speed and quality of implementation.
- Key to ongoing and sustained innovation in this area will be the quality of local support to practices and health systems to support implementation, both in terms of supporting the introduction the technology itself and in supporting the change management and system redesign at a practice level that is a prerequisite of successful digital change.

- Suppliers wanted increased speed and agility in funding and procurement processes in the development of funding to support investment in innovation.

Key policy messages

- **There is a strong desire for certainty, clarity and consistency of direction and funding at national level:** GPs and suppliers want clarity and long-term certainty from national bodies over strategy, funding and implementation, particularly working with suppliers to support innovation, with clear messaging on what is likely to be required in the future, based on feedback from frontline practitioners.
- **Procurement processes require review:** there is a clear challenge to ensure that excess bureaucracy does not return to the system. While local areas will have different needs, interviewees felt national bodies such as NHSX can control standards setting minimum requirements for suppliers for products to be eligible for national funding and local providers can then select from among those suppliers with support from their local CCG or commissioning support unit (CSU).
- Regional support should be focused on **implementation rather than duplicating procurement processes:** we heard a clear desire that frontline GPs should be able to exercise informed choice over the technology that they implement, rather than having it imposed on them. Equally, suppliers did not want to duplicate effort unnecessarily at regional level if they had already met national standards. Much of the rapid implementation during the first phase of the pandemic was as a result of frontline practitioners making clear asks of suppliers, and supplier responsiveness in meeting those requirements. Frontline staff wanted more support for implementation, with better change management support in particular, and saw that as the key role of CCGs and CSUs.
- **There needs to be clarity over long-term funding, including funding for infrastructure:** practice staff expressed frustration with two main aspects of funding – a lack of clarity on the future of funding for selected systems and underinvestment in the hardware and infrastructure needed to support digital ways of working. Giving the sector more confidence in the resources at its disposal will allow practices and place-based organisations to think more strategically about their investment choices and move on from the repeated pilots currently typical in the sector. For any of the tools we have talked

about to be sustainable long-term, there needs to be a transformation of the quality of hardware and wi-fi available to general practice.

- **Information governance processes and regulations need to be reviewed:** the changes seen in the implementation of information governance regulations should be maintained. There was a perception that previous risk-averse behaviour from local information governance professionals was mitigated during the first phase of the pandemic because of rapid and clear guidance from national stakeholders.
- **Suppliers and national bodies should focus on increasing the interoperability of systems:** interoperability should be factored into the requirements of any tool used in primary care, including back-office and communication systems, with ongoing support to develop interoperability between primary and secondary care.
- **There should be national and local investment in ongoing evaluation and optimisation of digital tools:** the evaluation and optimisation of digital tools at a local level should be spread effectively throughout the system.
- **Policy-makers will need a continued focus on digital exclusion:** much more focus is needed to understand digital inclusion and exclusion, with local GPs and PCNs supported to understand the issues for their local populations. Socio-economic factors were of particular concern to our interviewees, including the cost of data provision. Lack of digital skills is likely to have significant impact on health inequalities in the future, compounded by wider health literacy and literacy skills.
- **The role of digital technology in the management of long-term conditions needs more consideration and investment:** current focus has been on changing existing processes into a digital format, whether back-office function or care delivery. In the longer term, digital technology will be used in more transformative ways, in particular in the management of long-term conditions and in the integration of care across place as integrated care systems (ICSs) are developed. National strategy and funding mechanisms will need to be developed to support innovation and large-scale roll-out for, for example, digital long-term conditions management.

1 Introduction

This rapid research was commissioned from The King's Fund by the Department of Health and Social Care through the Partnership for Responsive Policy Analysis and Research (PREPARE), a collaboration between The King's Fund and the University of York, to look at the factors that enabled rapid digital change in general practice during the first phase of the Covid-19 pandemic.

The NHS is widely perceived as having been slow to adopt digital technologies. The Covid-19 crisis triggered a set of service changes, supported by technology, across the NHS, but general practice experienced particularly widespread change with rapid uptake of existing technology to deliver patient care. Critical changes include almost universal access to video consultation platforms, a huge expansion in the use of telephone consultations and universal adoption of digital triage.

A host of other supporting changes are also ongoing, including support for primary care clinicians to have wider remote access to clinical IT systems, messaging platforms and shared records with the rest of the system. This is not new technology – most of these digital tools were already available and in use in some practices – but the uptake and adoption of tools has progressed at a scale and pace that in normal circumstances would be incredibly challenging, even with significant investment and support. In this project we examine:

- the service changes that have happened and which digital products and services have been used
- the factors that enabled these service changes
- whether these factors can be sustained outside the Covid-19 pandemic response
- what needs to be considered in moving to the next phase of pandemic response and post-recovery future.

We drew on the existing literature and our ongoing monitoring of national guidance, social media and grey literature. We interviewed 21 stakeholders

from across England, including frontline GPs, clinical commissioning group (CCG) and sustainability and transformation partnership (STP) clinical leads, representatives from regional and national bodies, and suppliers of digital tools to general practice.

Project overview

This research study was undertaken over a three-month period from June to August 2020 in order to provide timely input into the developing situation around Covid-19. During approximately the same period, The King's Fund was also commissioned by the Department of Health and Social Care to deliver a parallel project on staff experiences of remote working in general practice (Baird *et al* forthcoming). There are clearly overlaps between these projects, and the researchers worked across both projects, so while each project stands alone it may be useful for to consider their findings together.

Methodology

To answer our research questions (above), we drew on previous work by The King's Fund (Maguire *et al* 2018), which examined the successful implementation of digital change within the health and social care sector, together with work to understand the impact of technology on NHS estate (Wenzel 2019). In addition, we used our ongoing systematic monitoring of national guidance, social media and grey literature.

We undertook 21 semi-structured interviews with stakeholders from across England, including frontline GPs, CCG and STP clinical leads, representatives from regional and national bodies and suppliers of digital tools to general practice.

The project was conducted with sensitivity to the pressures faced by many of our interviewees and, at all points, aimed to minimise its impact on frontline staff as much as possible. Recruitment of participants was done via a combination of social media (Twitter); contacts of the researchers; contacts of contacts; expressions of interest from engagement in stakeholder webinars; and recommendations from the Royal College of General Practitioners (RCGP), NHS England and NHS Improvement, NHSX and NHS Digital.

- 4 frontline GPs*
- 6 CCG and system leaders

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- 5 representatives from national bodies
- 6 representatives of suppliers of technology to general practice

** More than half of those we interviewed were frontline GPs but also held other roles (CCG clinical lead, supplier, STP lead, working for a national body). They drew on their multiple experiences for the interviews but to preserve anonymity we have mainly identified them by their main role in relation to this project. Suppliers included the two largest GP information system suppliers (EMIS and TPP) and accuRX.*

Interview content for this project was also supplemented by the interviews that were part of the parallel project examining staff experiences of remote working in general practice (Baird *et al* forthcoming). This additional insight into the views of frontline general practice staff was considered as part of the following synthesis. Coding and analysis of interview transcripts done using MAXQDA analysis software. Coding was undertaken by one researcher (BB) based on a coding framework derived from the interview schedule.

2 What were the key service changes?

Digital tools for patient triage and consultation

As a result of the first phase of the Covid-19 pandemic, general practice in England has undergone a rapid transformation in its use of digital technologies to deliver services to patients. While most digital tools were already available and in use in some practices, since the beginning of the pandemic almost all practices have implemented some form of remote consultation and triage, together with text-messaging services and electronic prescription services, if they were not already in use, and have taken further steps to improve their digital offer to patients.

- Total triage: in March 2020 NHS England and NHS Improvement advised practices to move to a total triage model (Kanani 2020), whereby all requests for care are first triaged by telephone or using an online tool. Various health tech suppliers have digital tools to support total triage including eConsult, AskmyGP and Footfall. Some larger practice groups have developed their own in-house tools.
- Mode of consultation*: almost all practices have introduced some form of remote consultation and have seen a rebalancing of the mode of consultation during the course of the first phase of the pandemic. National data found that pre-pandemic, in February 2020, 80 per cent of GP appointments were carried out face to face, with 14 per cent carried out on the phone and less than 1 per cent by video. At the height of the initial wave of the pandemic in April 2020 this had changed to 47 per cent face to face and 48 per cent telephone and by July 2020 was 50 per cent face to face and 45 per cent telephone. The data reports video consultations consistently comprise less than 0.5 per cent of consultations (NHS Digital 2020a).

**There are significant data quality issues with the nationally available data, and so these figures should be interpreted with caution. A survey by the RCGP of 500 practices found higher rates of telephone consultations, with 71 per cent telephone, 25 per cent face to face and around 4 per cent video in April 2020.*

E-prescribing

The government had published a commitment to national roll-out of the electronic prescription service (Department of Health and Social Care 2019) from November 2019, and this roll-out accelerated as a result of the pandemic. Data from June 2020 shows it was used for 88 per cent of prescription items, an increase from 75 per cent pre-pandemic (NHS Digital 2020b).

Our interviewees seemed confident that e-prescribing would continue to be a critical tool in general practice, given the time savings this approach offers to clinicians and patients, though consideration needs to be given to people less able to use a digital service.

The biggest enabler for the NHS in primary care, over the past three to six months has been the Electronic Prescription Service because that has essentially enabled one of the key parts of primary care, namely the prescription, to flow instantaneously between GPs and community pharmacy.

(Supplier)

EPS [Electronic Prescription Service] has been a fundamental part of the toolkit that's been available for GPs and for patients. We've seen a move from 75 per cent, to over 95 per cent of prescriptions go via EPS, and it's very uncommon for us now to see many paper prescriptions produced at all.

(Supplier)

However, a common finding from our research is that secondary care services are not using electronic prescribing and, therefore, there is a lack of interoperability between primary and secondary care.

[Secondary services] are doing these appointments and then saying 'Go see your GP and get this...' From my point of view, I'm finding that just disappointing they can't do EPS at present.

(GP/national body)

Remote meetings

During the first phase of the pandemic, many of our interviewees focused primarily on using remote access to provide services for patients, but the use

of digital communication tools for staff communication and practice meetings was also a key development over the initial pandemic period, with many practices using Zoom or MS Teams (other tools seemed to be used in much smaller numbers) to conduct regular meetings.

[In a] couple of weeks everything was transformed, and now everything is on Zoom and WhatsApp... We used to do fairly big [in-person meetings]... have 200 people in there, do PLT [protected learning time] for 18 practices. The use of Zoom, the remote access and the video consultations were probably just the biggest game changers.
(GP)

Some interviewees preferred different tools for different activities.

Teams is quite good for collaborative working, Zoom is better if you want to have 30, 40 people on the call and do webinars, and things like that.
(Chief Executive, GP Federation)

Staff-to-staff interactions have not attracted as much attention in the debate around the use of digital technology over recent years, but they form so much of the day-to-day work of GPs, as both clinicians and business owners, that this kind of transformation could have a significant impact on the day-to-day working life of primary care staff. Our research into factors enabling remote working (Baird *et al* forthcoming) has more detail about the use of these tools to support multi-disciplinary and cross-organisational working during the first phase of the pandemic.

Support for care homes

Although there appears to be a small number of key tools used by practices for video consultations or back-office functions, there is a jigsaw of different tools used in the care home sector.

Practices reported the benefit new digital tools had had on their ability to offer care to care homes and helped streamline the processes for supporting patients in this setting.

For instance, our care home delivery has become much more seamless.... We've produced a standardised process by which the care

homes can access us. It's all digital, supplying the care homes with the tools that they need in order to be able to access stuff appropriately.
(GP)

Some interviewees also clearly noted the practical benefits remote tools can offer for clinicians undertaking care home visits.

I think care home visits are potentially different, because you are seeing a greater volume of patients there, and access to records is very helpful. If you're doing a ward round at a care home, being able to sit at your desk with all the [records] and make entries straight away is easier than wandering round the care home with limited technology or having to make paper notes and re-enter them afterwards.
(GP and regional/national digital adviser)

Back-office tools

With the move to remote working, practices also needed to move some processes to a digital format to ensure continuity of service. This pushed practices towards greater implementation of digital records and digitisation of paperwork that previously could not be integrated into main patient record systems used by GPs. Primary care has typically held more records digitally than other sectors in the health service (Honeyman *et al* 2016) but shifts in regulatory and back-office process have allowed some of the remaining regular paper-based processes to move to a more convenient digital format.

Another aspect is the digitisation of documents, so medical certificates, we now sign digitally and then text the patients via accuRx. The same with private referrals, the same with all sorts of documents. Anything that we can digitise and send by text, we do, and also digitising the cremation forms has been useful, so that that self-populates. I know there's a bit of work going on with the CCG to think about digitising the death certificates, the MCCD [medical certificate of cause of death].
(GP)

In our parallel study into remote working (Baird *et al* forthcoming), we found that administrative staff had often been less able to work remotely because of the amount of paper processing that needed to be managed, often documents from secondary care services that would then be scanned in to the patient record to be digitally stored.

Data sharing

Historically, the health system has had a very inconsistent picture of how data protection regulations are interpreted (Maguire *et al* 2018). In part, this has developed from a lack of understanding of regulations across many health leaders, meaning that individual dissenting voices could often sway decision-making as well as a lack of clarity from national bodies, including regulators, such as the ICO (Information Commissioner's Office).

As social distancing regulations were first announced, the Secretary of State for Health and Social Care also published new guidelines (Department of Health and Social Care 2020) for the use of patient data which altered existing Control of Patient Information (COPI) regulations that permitted more freedom in how data was shared across organisations. This had particular implications for the connection between the primary and secondary care sectors, which, in many areas, have previously struggled to bring their records together.

The COPI notices have powered the full summary care record to be populated in GP Connect, so records can now be shared much more freely, all within patient consent and all that kind of stuff, so patients can actually get better care... wherever they touch the NHS, through the record sharing initiatives. The other thing about the COPI notices, they'd enabled some very innovative research programmes to kick off.
(Supplier)

The change in guidelines has made leaders in general practice more confident about the actions they can take with patient data, which has resulted in a new level of access to information for many clinicians. These guidelines are due for review in March 2021. Interviewees were clear that they would be very unwilling to go back to the previous position on data sharing.

3 Factors affecting change

National strategy

The NHS Long Term Plan (NHS England 2019) set out the ambition for all patients in England to have the right to access digital consultations from their GP. The primary care (GP) digital services operating model (NHS England and NHS Improvement 2020) sets the framework and guidance for CCGs on their obligations towards providing IT and technology support to general practice and provides the overall strategy for achieving the goals set out in the NHS Long Term Plan.

Other key sources of guidance for commissioners and GPs include:

- *Investment and evolution* (NHS England and British Medical Association 2020) set out the ambitions more generally around use of digital in general practice
- the digital primary care maturity assurance tool (NHS England undated a) for CCGs, GPs, and NHS England national and regional teams to use to review current levels of digital maturity across general practice against the requirements outlined within the GP IT Operating Model (NHS England and NHS Improvement 2019).

Key sources of guidance for suppliers include:

- NHS digital, data and technology standards, which have recently been consulted on (NHS Digital 2020d) and, when published, will aim to help developers understand what's expected of them, and speed up and streamline how health technologies are reviewed and commissioned for use in the NHS
- the National Institute for Health and Care Excellence (NICE) has created an evidence standards framework for digital health technologies (NICE 2020) to make it easier for innovators and commissioners to understand what good levels of evidence for digital health care technologies look like
- NHS Digital and NHSX have published developer tools including the NHS developer network and NHS digital service manual (NHS Digital

and NHSX undated) to help support the design and construction of digital tools.

Perceptions of national strategy before the first phase of the pandemic

Interviewees described frustration with national bodies, seeing them as slow-moving and bureaucratic compared to their needs as clinicians and businesses. This view was particularly prevalent among the smaller suppliers and frontline staff we spoke to.

[National bodies] are under-resourced and they're poorly organised internally, so the bureaucracy, there's just no clear operating model, I can see, within NHS Digital. They actually reflect a lot of the middle management across the health system, which is, 'It is so much safer for us to say no than for us to actually try and identify what the opportunity is here for patients or health care professionals and work [out] a way of getting to that point instead. If I just say no and take no risk, nothing bad will happen', except... the technology doesn't get adopted as a consequence.

(Supplier)

Other interviewees were confused by what they saw as conflicting and sometimes missing guidance on some topics, as well as a lack of strategic oversight and direction regarding the future of digital tools in primary care.

It's hard to think strategically about where we're going to go. Are we encouraging patients to sign up to the NHS app when this doesn't do everything we want at the moment? I've held fire on that in my practice and we're not encouraging patients to do any of that, we're using more old-fashioned technology because we don't really know what the future holds.

(GP/STP clinical lead)

In part, this seems to reflect that most interviewees were particularly focused on the role of NHS Digital, with some confusion about what NHSX was responsible for. Few clinical interviewees seemed to have an expectation that NHSX would lead the creation of digital strategy nationally and seemed to believe that NHS Digital would continue to provide this function.

Changes to perception of national strategy during the first phase of the pandemic

Where many interviewees had talked about the lack of impetus from national bodies before the pandemic, some had much more positive thoughts on the speed of response and flexibility displayed by NHS Digital and NHSX during the first phase of the pandemic, particularly in the early stages of the implementation of remote access technologies.

You did see much more of a shift towards net benefit and people appreciating that the duty to share actually really did matter. And that just saying no to things wasn't necessarily the ethical thing to do... because so many CCGs said, 'You don't have ISO27001, you haven't been approved by NHS Digital,' etc, and NHSX... did that very quickly, to be fair, and we were very grateful for that.

(Supplier)

They released some guidance saying that clinicians can use their phone for video consultation and they can even use Facetime or a WhatsApp call. They released that generic guidance and that helped us address any concerns raised by CCGs.

(Supplier)

Not all interviewees were as positive, however, with some clinicians continuing to have concerns about the speed of guidance around a variety of topics. This was reportedly a particular problem regarding safeguarding concerns related to images and care of children with good practice being shared among frontline staff on WhatsApp groups in the absence of official guidance.

Broadly, there seemed to be more distance between local care providers and national bodies than between national bodies and suppliers. For the standards and guidelines made by national bodies in the future to continue to be relevant to the needs of a constantly adapting service, NHSX, as policy-maker, and NHS Digital, as standards monitor and support provider, need to keep a consistent link to frontline experience. Below, we highlight what interviewees thought this might look like.

Future role of national bodies

There was a large degree of overlap between respondents on what they felt national bodies needed to do to support both frontline services and the

market for digital tools in primary care. Key asks for national bodies that emerged include:

- expert advice on the pros and cons of different systems

NHSX or an arm's length body or an organisation like ORCHA (Organisation for the Review of Care and Health Apps) [should] undertake an assessment of all these tools that have been recently deployed that would give us a kind of RAG rating on whether they are deemed to be fit for purpose as a bare minimum and then where they contribute best gains. And that to me would be a hugely valuable contribution from central authorities so that we would have confidence that if we selected any of these tools, or continue to reselect them as the case may be, that we would be on a sure footing from an information governance and clinical efficacy point of view.

(GP/national body adviser)

- clarity on the future of financial support for implementing approved systems

I'm quite interested in how the NHS purchases IT... they don't make the most of their at-scale purchasing power at all, but they make it into a delay tactic for trying to progress anything, basically. By saying there's a framework and you have to choose from one of those suppliers, so we haven't managed to negotiate you a better price from any of these framework suppliers, but we've put layers and layers of bureaucracy around which ones you can use, it seems very perverse to me.

(Chief Executive, GP Federation)

- empower practices/federations/places to make their own choices from a range of suppliers following an assessment process, even if some practices choose to make larger changes than others

I think there needs to be a system of investment, an approach to investing and supporting practices in taking those steps. I think there needs to be some looking at how these things are funded and some reassurance for practices that if they embrace a certain approach, that's going to be funded going forward.

(GP partner)

- improved speed of response and a reduction in duplication of effort once a tool has proven it meets required standards

You basically have centralised frameworks to deal with assurance, and then you have a CCG that essentially makes you go through something quite similar in a relatively unstructured and inconsistent way. So, you may have to fill in forms and go through security assurance, etc, in different formats with different questions across 200 CCGs. It's a waste of everyone's time in terms of system efficiencies and a terrible way to do it. If you empower the centre to set standards and do what it's good at – it's got the budget anyway – and let users take what they need, everyone wins really. So, I think they are moving towards that.

(Supplier)

- flexibility of approach while maintaining clear communication on future expectations of the standards tools must meet

I think enforcing one size fits all on everybody will fail in general practice, because general practice has always prided itself on trying to fit itself to its local community... I think there is a challenge of having some clear standards that suppliers and suchlike have to meet but also allowing flexibility for people to introduce the technology in slightly different ways.

(GP)

Funding

Interviewees suggested that the current structure of funding for primary care technology was too focused on short-term pilots and that these did not sufficiently encourage the replication and spread of systems and tools.

All the funding has been coming through as pots of money to do X, Y and Z, which is great, but what happens is people then come up with X, Y and Z to do, and then they try and do them and they do them in lots of different places.

(CCG clinical lead)

The amount of money made available for it is good enough to do a small-scale pilot, not good enough to fund something that's going to be sustained in the NHS long term.

(Supplier)

One interviewee also suggested that proving productivity savings or clinical benefit was challenging, particularly with short pilots, which made longer-term large-scale investment less palatable.

What we need the public sector to be able to do is to recognise when those pilots show that this is an invest-to-save [opportunity]. Or gets comfortable with the idea that spending money on digital stuff is as clinically credible as buying more nurses if you can prove the outcomes and be able to do that quickly... It was one of my hopes for the AHSNs [academic health science networks] really. And we've got a really good AHSN in [region] but it's still not able to create that.
(GP/CCG chair)

There are a number of ongoing national funding programmes to support innovation, for example, the Small Business Research Initiative for Healthcare (SBRI), the NHS Innovation Accelerator (NIA) and the Innovation and Technology Payment (ITP) programme but suppliers, in particular, felt that the timescales for national bodies to identify need and create a funding scheme was hampering rapid innovation.

CCGs also face challenges to their role as a funder of digital change due wider financial issues in the system. In recent years, the NHS has been reliant on significant underspends in the commissioning sector to ensure that the overall NHS budget remains balanced against overspending in the acute provider sector. Funding for digital programmes, which is not ring-fenced, has been one of the areas of spending held back (Heather 2019) and uncertainty about CCG budgets has also meant a lack of confidence in investment.

The current situation is that my CCG only has any knowledge of its budget until 31 July this year [2020], and I believe that's the same for everyone because they're all being held centrally... I've got no confidence that that bit of it is going to be easily fixed.
(GP/CCG chair)

Suppliers were concerned that their ability to invest in health technology would diminish if there was no clear route for long-term funding.

Investment in of all kinds in health tech will run out if there is no realistic route to revenue-generation when you actually solve users' needs.
(Supplier)

Again, the lack of speed in developing and rolling out funds for innovation meant that some suppliers felt they were building tools that met the needs of

national funding pots, rather than being able to respond in an agile way to unmet needs they were hearing from the front line.

Unfortunately, we are starting to have to build things that are not the highest marginal value for the system... because there's a disproportionately large amount of money available [for that particular tool] from NHS Digital... Despite NHS England saying there's funding for [innovative products] it's just not arrived and it's going to get allocated to the CCGs so we'll never see it.

(Supplier)

Procurement

Securing excellence in primary care (GP) digital services (NHS England and NHS Improvement 2019) sets out the commissioning framework for general practice digital services. There are different levels at which digital services are currently commissioned, for example:

- national level: summary care records; electronic prescribing system; NHSmail; GP2GP record transfer
- system (CCG) level: clinical information systems; patient facing systems; infrastructure, equipment and support
- practice level: clinical information systems; patient facing systems; business systems (eg, websites, dispensing, other business systems).

There are a number of key procurement frameworks for primary care technology.

- The GP IT Futures Framework (NHS Digital 2020c) procurement awards contracts to supply IT systems. Approved suppliers are added to a Digital Buying Catalogue, which acts as a digital marketplace for GP IT solutions allowing buyers to search for and compare solutions that will meet their need.
- The Dynamic Purchasing System (DPS) Framework (NHS England undated b), established pre-Covid-19 as part of the National Procurement and Commercial Hub, contains a list of accredited digital suppliers to support the Online Consultations initiative.
- Health Systems Support Framework (HSSF) (NHS England undated c) helps NHS organisations and integrated care systems get best value for

money when buying new digital services, software and infrastructure. Includes 10 lots that suppliers can make a bid to be included in to provide services to NHS organisations. Lots include medicines optimisation and tools to support system planning, although it has limited use in general practice.

Our interviewees across both the clinical practitioner and system supplier groups typically described the situation around procurement before the pandemic with frustration and confusion. CCG-led commissioning processes were often criticised, with little scope for adaptation to individual practices' needs and difficult conditions for less-established companies to win business even when they matched all the required conditions they had been asked to meet. Separation of the buyer (CCG or CSU) from the end user created frustrations and inefficiencies.

The other challenge is that who chooses the software is typically local health bodies, like the CCG, who have no sense of what users need... so you've got people buying the software [who] don't ever use it or have never ever worked in the environment in which the user would use it.
(Supplier)

It's not the case that you're doing a procurement, you're saying what you want and the suppliers will tailor... [and] they'll say, okay, we'll give you exactly what you want. They're basically saying, here's our product.
(GP/STP clinical lead)

Commissioning processes are not uniform across England. Local dynamics play out very differently across regions and can depend on a number of things – the variability in the demographics of the populations being served; the knowledge local leaders have about the range of products available; and the quality of feedback between commissioners and key stakeholders.

We heard differing views about the benefits of system-wide procurement, with some preferring this approach to aid consistent implementation and make integration with records systems in other sectors easier, and also may leverage the purchasing power offered by a larger system. We previously saw this dynamic play out in Liverpool (Maguire *et al* 2018), with the CCG mandating the use of the same record provider across care organisations

where possible. This made joining records much easier but required sustained investment and strong local clinical leadership.

This contrasts with those who preferred a more local procurement which allows individual practices/networks/federations to implement products best suited to the needs of their population. For example, in practices which covered populations with levels of literacy, whether in English or other languages, some of the existing digital triage tools were felt to be too complex and inappropriate, while they might be well suited to a neighbouring practice.

There's a bit of a tension between having a whole CCG or a whole STP area on one product. [This] means that CCGs are better able to support, and they can share training sessions and share best practice with that product. But also, giving choice to practices and making sure that practices have a product that meets all of their needs.
(GP/CCG clinical lead)

There is no clear right or wrong answer here, and the dynamic that plays out at the regional level is likely to be linked to a number of factors. We have, however, seen a significant shift in procurement practices over the first phase of the pandemic which will affect longer-term decision-making around digital tools in primary care.

Procurement during the first phase of the pandemic

Specific routes for the procurement of technology were rolled out during the first phase of the pandemic to support general practice to roll-out digital triage and video consultation in particular.

- Dynamic Purchasing System (DPS) Framework ran a rapid procurement in response to Covid-19. CCGs/STPs can now request a supplier for digital triage or video consultations and will be allocated a random supplier within their chosen lot through this route.
- Some suppliers have also been fast-tracked for approval under the GP IT Futures/Digital Care Services Framework for video consultation. CCGs can procure from these suppliers directly and receive national funding for charges incurred. This offers an alternative to the route offered to the DPS Framework
- NHSX, NHS England and NHS Improvement, and NHS Business Services Authority (NHSBSA) have also rapidly procured and deployed

a large number of laptops, smartcard readers, and other peripherals for use with remote working. Procurement details for these have not been published.

Other rapid procurement initiatives during the first phase of the pandemic include:

- an open invite on the NHS Digital website that suppliers can use to offer their support in response to Covid-19
- NHS Digital and NHSX working directly with telecoms providers to negotiate offers to get more care homes and care providers connected to the internet during Covid-19
- NHSX received video devices such as the Facebook Portal for use in care homes, hospitals and other locations. (NB: These are thought to be goodwill donations from the suppliers involved.)
- Rapid roll-out of Microsoft Teams to all NHSmail accounts including general practice. This is not a new procurement for the Covid-19 pandemic but broadly represents a fast-tracked, large-scale roll-out of an existing contract.

One of the key findings of our research was that practices themselves were the key drivers of change and were able to react much more rapidly than national bodies and CCGs. As a result, some of our interviewees felt that user and patient needs were transmitted to the supplier community in an undiluted way and suppliers were able to react rapidly, supporting not just the provision of services during the pandemic, but progress towards long-term system goals.

One of the most common phrases repeated by our interviewees was 'necessity is the mother of innovation', with frontline staff describing the urgency of the need to implement remote access to care as a watershed moment for how they used digital technology.

Typically, respondents either implemented systems without a formal procurement process, or where commissioners did get involved, it was light touch, with the proviso that these decisions would be reviewed when there was more time to do so. AccuRx was not the only free software, but our interviewees suggested that the key reason it was implemented in so many practices was that it was free, together with the fact that it was already

integrated into other practice systems and did not require complex installation, making it a quick and easy option to implement.

Well, accuRx is free, so that was a big thing. Well the availability of them... making their online tool freely available very quickly... just making it easy, so practices didn't have to go out to the market, work out which product was the right one for them, they just basically had to say, 'Yes, I'll go with that one'.

(Chief executive, GP Federation)

Many interviewees already had access to other systems through a prior CCG procurement which hadn't been used:

What we've found is that most CCGs had got tools in place, they just weren't utilising them as well as they could have done... There'd been quite a lot of local procurement around online triage for the past two years, so a lot of CCGs, rather than new procurement, [were] picking stuff they'd bought off the shelf, [but] hadn't necessarily implemented in a complete way.

(Supplier)

Future procurement

There was a universal desire across our interviews to see more of the decision-making in procurement shift towards practices and primary care networks (PCNs) that could lead on purchasing from nationally approved suppliers to ensure solutions best suit their needs. During the first phase of the pandemic, national guidance and procurement were complemented by providers being enabled to take action to re-design their services and many interviewees wanted to see this continue.

There was significant debate about the role of local commissioners in procurement. Commissioners clearly have a key role in ensuring accountability for public spending.

Hardly any CCGs have actually procured accuRx. Practices have installed it and [are] using it, but it wasn't necessarily part of the CCG local strategy. And it also hadn't gone through a proper procurement process in a lot of instances. Which means that now CCGs are in a place where they still have to go through a proper procurement process, they still have to go through an options appraisal and see

what's the best option for them, and that might not come out with accuRx as the answer. CCGs have to do that, they have to take that approach, they can't go ahead and carry on using accuRx if they're going to pay for it.

(AHSN)

However, several interviewees felt that CCGs lacked the required expertise to act as an effective broker or intermediary between the specific needs of general practices and the companies offering a diverse and complex range of solutions. They were concerned that the needs of the commissioner could take precedence over the needs of the end user, with the result that the technology does not meet frontline needs and so is not used.

For critical software for GP practices, GP practices [need] to pick what they want, because they're best placed to know what they need, and for NHS centrally to hold the budget, and also to hold the standards. Because it takes a lot of the burden, in terms of the setting, safety and quality, off bodies who just aren't equipped to do that.

(Supplier)

Given the significant progress made towards the NHS Long Term Plan goals for technology made during the first phase of the pandemic, questions could be raised about whether the original procurement process, which focused on CCG procurement, was in fact a block to achieving these goals. Several interviewees felt that for critical applications, procurement should happen at a national level (as happened for video and online consultation during the first phase of the pandemic). Payment should be made to suppliers when providers choose to use the platform, using a small number of outcome measures including user satisfaction. CCGs and CSUs could then focus their efforts on helping clinicians understand whether the options presented to them meet these needs and are a good fit for their practice and population.

Suppliers certainly wanted commissioners and national bodies to rethink the demands placed on them to meet bureaucratic processes around standards and frameworks, and felt a centralised approach could minimise bureaucracy:

We're supposed to go on a catalogue of things that you can buy. I've lost count of the forms we've filled in... They told us what the price would be rather than [telling us], these are the products, these are the features, this is why it works, this is all the services we offer, and this

is our price.

(Supplier)

The challenge we had was those requirements were so overly prescribed and defined and they're built around the existing incumbent suppliers... [They're] not based on user need... [but] around the incumbent suppliers. You've got outdated and pointless requirements that exclude innovation.

(Supplier)

That dashboard that I've just shown you...those are not the metrics coming out of NHS England and NHS Digital... In true NHS style, across 18 CCGs, I'm being asked for 18 different styles of metrics. And that's a big problem for people like us.

(Supplier)

Frontline staff, newer suppliers and those from national bodies were positive about the disruption to the market.

[Incumbent] suppliers do not build products around user needs and they often have to be nudged or forced through procurement requirements to do appointments management or to integrate with some other system because they seem to not have the impetus to actually design products people like.

(Supplier)

What we need is a competitive environment. And a competitive environment thrives on openness of evidence. We've got a whole website suite of performance data and lots of people who will put their own evidence into the public domain. And everybody should have that, every buyer should have access to that kind of information from every supplier, but they don't. And, in fact, if you look at all those approved on the NHS EPS Covid-19 emergency tender, there is no evidence about the performance of any of them.

(Supplier)

Interviewees seemed to believe that much of this monopoly stemmed from the historical spread of technology through the market leading to a handful of record providers establishing themselves as dominant players. In addition, the bureaucracy involved in procuring funding was perceived as possibly being too

close to feedback from existing large market shareholders, creating significant barriers to entry.

Hardware

There have been longstanding concerns that the digital infrastructure, particularly hardware, for clinicians in primary care is inadequate. This ongoing problem was reflected in responses from interviewees.

My biggest bugbear, like almost every other GP I talk to, every other clinician, is that the system is so slow. I can't even Google something quickly on most days... You essentially have to arrive at 8.15 to be ready at 8:30 for your first patient, that's how long it takes you to load up the stuff. And if it crashes once, you're going to be late.
(GP)

At the beginning of the pandemic, interviewees described a scramble to find enough devices to move away from their office-based working patterns.

At the start of Covid, I heard... [where] there weren't enough laptops to go round, and the GPs made sure they had them and the nurses didn't. I have heard about nurses being furloughed, potentially again because of inability to have access to remote working.
(Nurse/national body adviser)

We struggled at the beginning because not many of the computers in practice have webcams.
(GP)

Comments on national webinars and chat forums for GPs echoed these struggles, particularly a lack of clarity on who has responsibility the provision of hardware and IT support for general practice. Some practices had invested their own funds in hardware to enable staff to work remotely and, in some cases, for their local care homes. Others had been supported by the CCG, though our parallel project on remote working (Baird *et al* forthcoming) found that CCG supply was often variable and usually restricted to GPs rather than other members of the practice team.

Interviewees felt that to continue to increase the rate of video consultations, support more remote multidisciplinary team meetings, and use online triage systems more effectively, there needed to be significant improvement to the

quality of hardware used by practices as well as an improvement to the wi-fi available within their estate.

I think there's a hardware perspective. If you're going to [move] to video consultations, then you need the hardware to facilitate that. I don't know many surgeries that will have had webcams or inbuilt monitor cams at the drop of a hat. So, embracing the new digital age doesn't just mean for us, embracing the software, it really means embracing the hardware as well.

(GP)

We had, at one point, six clinicians working remotely, one doctor and four nurses and a health care assistant and we wanted to involve them in clinical meetings. We ended up just having to get them Facetime on normal mobile phones and holding them up in a clinical meeting, because we couldn't get the conference, we couldn't get it to work, either because of wi-fi or lack of technology.

(Nurse/national body adviser)

Interviewees did not see these issues as insurmountable, with most respondents focused on solving basic issues and being excited by the possibilities solutions offered if they were implemented.

There's definitely a hardware issue. If people continue to work from home which I think they might now because I think we've proved that it can work... In a standard practice if you've got 20 or 25 clinicians, then that's a lot of hardware that you're going to need... and hardware needs to be good... It needs to be really good hardware that's robust and up to date and fast, that's when it works.

(GP)

These issues did not exist solely on the clinician side. There were multiple issues with extending the offer of remote consultations to care homes.

Within the surgeries, the wi-fi was not particularly good. We had similar issues trying to do virtual ward rounds with care homes... The wi-fi within some of the care homes, they're very old buildings often with thick walls. [It's] very difficult to get even a mobile phone signal... It wasn't easy, and we still haven't cracked that one. We had devices given to us by Facebook and other suppliers with tablets and we've

been trying to utilise those...with mixed success, I would say.

(GP)

One respondent thought that the pandemic marked an opportunity for the infrastructure in primary care to be completely reimagined for a modern world.

The IT specification nationally, in terms of what I think it should look like, is mobile, pure mobile, plug in and hi spec, so that you're not having to replace it too frequently and everything in the cloud. It's much, much, much cheaper for the NHS. And it's far more versatile and offers a lot more resilience as well.

(Supplier)

Where some of the other factors that we've covered have involved a complex picture of differing interests and competing solutions, the picture regarding hardware is simpler: greater investment is needed with a clear goal in mind that support can be designed around, funded in a way that would consistently deliver to the front line. There is significant excitement in the sector about this prospect.

Information governance

Almost all our interviewees identified a new attitude to information governance as critical to the rapid roll-out of digital technology, particularly those aspects related to information sharing between practices or between primary and secondary care. Before the pandemic, concern about information governance was seen as a significant blocker to change, particularly at local level.

Every time we tried to do anything around information sharing, getting GP records out into hospital settings, community settings, has always been blocked. We've got a whole programme around information and general practice, and it was blocked until recently because of IG.

(GP/CCG Clinical Lead)

Information governance professionals, who absolutely go into their profession for the right reasons but [can] become embedded in a negative culture... You've got a project that you're really excited about and you can absolutely justify the sharing, you've got total clinical consent and everybody is in total support, the consensus is there. And

then somebody will come along going, 'No, you can't do that', and then all the energy falls out.
(GP/CCG Clinical Lead)

Pandemic responses such as the introduction of PCN-wide hot and cold hubs for treating patients had necessitated quick decisions about information-sharing and clinicians having wider access to clinical records, and newly emerging tools to support video consultation, in particular, required quick sign off. Rapid action and messaging from national bodies had been critical to remove these blocks, providing high-level guidance and protocols that gave clarity.

We built the video consultation software on Saturday and Sunday, released it on Monday... and then on Thursday, after literally messaging Matthew Gould [Chief Executive, NHSX], because so many CCGs said, 'You don't have ISO27001, you haven't been approved' NHSX responded very quickly and we were very grateful for that.
(Supplier)

[The message] basically said, information governance is effectively suspended... It was literally just a switch in culture that allowed clinicians to go, 'I've got this statement here from the Information Commissioner and from the Secretary of State that is saying to me that if I get into trouble because I've shared inappropriately, you guys will have my back.'
(CCG Clinical Lead)

Not all interviewees were positive about continuing this more permissive culture going forward. Some interviewees were mindful of the need to review the information governance around actions that were rapidly adopted.

I think everyone needs to be careful in what they put on in those first few weeks and months. We ought to really, properly and systematically review because we look pretty dodgy on some of the things we may have done some work around. So that remote access worries me a bit.
(GP)

However, most were keen that the benefits and tolerance of risk were not lost.

I think when the pandemic settles down, we'll start looking again at patient data and safety and governance and I think we've got to be careful, we've got to be mindful that we look at the benefits of what we've done and what we've achieved in the past three months and that we don't slip back into old ways.

(GP)

Looking at this issue from the perspective of the development of population health, information governance can be an enabler for individual organisations to move beyond their own interests and establish new working relationships, as we have previously suggested (Maguire *et al* 2018). Not everyone saw this in their local areas.

Their default position is 'do not share' because it's too risky and it creates risk to the organisation. And we don't have a system information governance officer, so we don't have an STP [sustainability and transformation partnership]-level information governance programme. I've struggled for two years to try and get this to happen because they're always about protecting their organisations rather than sharing information for the right reasons.

(GP/CCG clinical lead)

Clear national guidance will be key to avoid different (and risk averse) local interpretations.

There's a piece of work within NHSX to try and rationalise the record sharing, so can we join all these bits together and get something that's more consistent, recognising that different things would work in different areas, but also then rationalise the information governance around it.

(GP/national body)

Interoperability

Often research into interoperability focuses on the integration of records across health care providers or across the health and care sector. This will be key as the health and care system moves toward population models of health, but is also important in any setting where multiple tools are used as part of regular day-to-day processes. Clinicians spoke often of their desire to work with well-optimised systems that were flexible enough to cope with other,

older software and provide integration across different aspects of record management and the sort of paper or form-based tasks, such as sick notes.

I think accuRx is actually the first one that we adopted...you can email, you can very easily attach documents to them. If they want a referral or if they want a sick note it's really easy to send it directly without involvement of an admin person, which causes time delay and probably increases workload.

(GP registrar)

This is not always the case, and where less optimised systems are installed, productivity often suffered.

Most of the online consultation systems don't have much integration with the clinical systems... [I gain] maybe 20 per cent efficiency compared to the old ways, but then you lose a lot of that, or even most of it, through things like the lack of integration with the clinical system.

(GP/STP clinical lead)

I don't want to write a text message and then have to copy and paste it into the medical record. If somebody sends me a photo on one platform, I don't want to have to save it to the desktop and then upload it somewhere else.

(GP partner)

Suppliers also found a lack of interoperability frustrating.

We had the ludicrous case of where Facebook gave 2,000 iPads to care homes and you had the NHS asking us to change our video consultation software... It could work on Facebook's, the iPad that Facebook had given. It was Facebook apps only.

(Supplier)

Smaller suppliers also reported long time delays from the main clinical systems providers in enabling integration with their systems.

Responsiveness of technology suppliers

Feedback from interviewees on the responsiveness of suppliers of the two main GP record and consultation systems was almost universally negative, with some suggesting the duopoly in the market led to complacency.

I think [large provider 1] has a pretty poor reputation for customer service but, rather like Apple, their solution is thought to be sufficiently good that we're less reliant on good customer service in order to keep using them. Of course one would hope that there is a responsive dynamic relationship that evolves over time with these suppliers.
(GP/national body adviser)

Because I don't know if you've any experience of trying to get information about your organisation out of [large provider 2], but it is terrible. You end up building 15 searches and holding 17 spreadsheets, whereas actually, the provider holds the data that could tell me the name of my worst controlled diabetic just like that, but it's chosen not to develop that functionality.
(GP/CCG clinical lead)

The newer providers were felt to have demonstrated greater responsiveness and flexibility.

I sent a message to [new provider] wanting to clarify a facet of their information governance and I had a robust response from them within 48 hours... through email. And then there was another post by one of their founders online about information governance and I sent him a message on Twitter and had a response from him within hours.
(GP/national body adviser)

Some of the lack of agility of the larger suppliers was related to the complexity of their products and systems. For example, one of the larger suppliers had been developing a fully functional video interface and app, which would integrate totally into their system and provide a wide range of features, but this could not be deployed as rapidly as the simpler video solution from a newer company. It may be the disruption of the market will encourage more suppliers to be responsive to customer needs if we see the smaller suppliers encroach into their typical areas of operation.

Changing patient expectations

It was outside the scope of our research to consider patient experience of digital technology in detail, however Healthwatch England was one of the national bodies interviewed for our research, and we drew on their work with National Voices with patients across England (Healthwatch England *et al* 2020). This work found a mixed picture: while patients have been supportive

of using digital technology to make services more convenient and accessible, in particular for regular appointments with clinicians they already know, others raised concerns. Most frontline GPs we spoke to mentioned that patients were very aware of the need to change the way in which they would engage with their GP, particularly at the start of the pandemic. Concerns about the risk of Covid infection for both staff and patients eclipsed many previous cultural barriers to change.

I think there's been a lot of fear, the view that doctors' surgeries are dangerous places, so I'm quite happy for [patients] to talk to me on the telephone or to send me an email or even do a video consult when previously that would have been very much seen as being either fobbed off or second best. I think people have realised, the public have realised, this change has been needed.

(GP)

However, the acceptance of change at the beginning of the pandemic appears to be waning: Healthwatch England shared their research into patient views of remote consulting (now published as Healthwatch England *et al* 2020) and this quote summed up what many of our interviewees also reported:

The reality is that for many, remote and virtual consultations are the only options at the moment so it is important we continue to hear from people about whether it is actually working for them or not and what support is needed to ensure people feel confident to receive health care in this way.

(Healthwatch England 2020)

The available national data cannot give detail about who is accessing remote appointments, for what needs or the outcome of those appointments although suppliers are now being asked to provide information on use to NHS England and NHS Improvement. Some suppliers and frontline GPs we spoke to reported that they had seen a drop in the number of online or video consultations from the early peak. It is clear from the literature that patients want a choice about how they interact with their practice, depending on their particular need.

A focus on pragmatism

Most interviewees noted that needing to respond to the pandemic had allowed them more latitude to act than in 'normal' times.

Clinical [work] is now dominated by stuff we do remotely... A few months ago you would have seen yourself in front of the GMC [General Medical Council] if you dealt with a scrotal swelling without examining the patient, a red eye without examining the patient. And I think all of us have various comfort zones and it's very much work in process, what's safe, what's not safe.

(GP)

Pragmatism rather than perfection was a theme, particularly in meeting immediate needs.

We'd been working with a CCG group which was trying to get online consultation going and had done nothing for about three years... They thought they'd identified a provider and then the provider wasn't able to link with the NHS app straight away, so they were removed from the framework.

(Chief executive, GP Federation)

There was the sense of not, is this perfect, but is this a pragmatic solution to the situation that we find ourselves in at the moment? And there was some helpful central steer both in terms of our clinical risk management saying, 'We anticipate that you will be operating at the periphery of your professional competence at times,' that then, I think, allowed us to be unshackled and uncoupled from a concern around these tools that we would otherwise perhaps have had.

(GP)

By kind of cobbling together rather than having a clear strategy by forging together, a number of applications and a more permissive atmosphere during a crisis, it's revolutionised what we do for patients.

(GP/CCG chair)

This suggests that the sector can identify its needs well, and implement systems that reflect those needs if those systems are easy to purchase. There is learning here about a balance between a perfect system that meets all needs, and one that is 'good enough' to meet a local need, but this needs further exploration.

Local support for implementation

Support for implementing new tools was extremely varied and this had a bearing on success. Those who were deemed to have successfully implemented the rapid digital roll-out had one or more of the following in place:

- practice leadership with a pre-existing interest in technology
- dedicated clinical support within the PCN, CCG or local shared service provider with a strong focus on general practice:

Because they're a shared service, they were able to flex all their workforce and just nail that sprint of work for us over a fortnight... And my smartcard always works and my log ons always work and I haven't got a big piece of paper with 25 log ons written on. It's all a single sign on for your smartcard, and that makes so much sense.

(CCG chair)

Where's that local function for explaining, helping, assisting primary care to make the best use of IT? Does that sit with the CCG? Does it sit with your CSU? In which case, make it explicit to the CSU that that's part of their contract, because, actually, what I see most often is that they stop those things happening, quite often against the explicit advice that's come down from NHS E[ngland].

(Chief executive, GP Federation)

Software that was easy to test and trial was key: the literature is clear that experimentation and 'bottom up' innovation is likely to be more successful than a more 'top-down' approach to roll-out (Greenhalgh and Papoutsis 2019), and the ability to trial and experiment with software to meet local need was seen as key in our interviews.

In general, frontline GPs had not felt well-supported by the wider system either in procurement or in implementation. There was strong overlap with findings in the secondary care sector case studies in Maguire *et al* (2018), where clinical leadership, supplier support and local support were all identified as foundational for digital change.

Ongoing evaluation and development support

Interviewees were concerned about ongoing evaluation and support, particularly to enable sustainability and optimisation of tools, rather than focusing just on roll-out.

[Ongoing evaluation and support] is absent, that's absent in literature, that's absent in the support. Everyone will talk about patient engagement, creating a multidisciplinary team working group before you implement it, make sure everyone understands the value of the purpose. I mean we could rattle off how to implement this really well at a practice and how to make it successful. What I feel is absent is how to sustain it and how to not just implement it but do it well and use it well and that's what I think we are having to figure out for ourselves.
(GP/STP lead)

We need to really focus on the optimisation rather than the implementation. Implementation's fine, everybody gets an eConsult or everybody get an online consultation tool, tick, done. Anybody using it, [did not feel it was implemented well]. And what I wanted to do was bring that hive mind of those practices together into a collaborative space and then utilise their experience and knowledge of how they're using it... out-of-the-box use to really exploit that and then create a spread model.
(GP/CCG Clinical Lead)

National bodies have been providing written guidance and resources, but the desire for on-the-ground support to support the wider organisational and change management that needs to go alongside digital change was often mentioned.

Clinical peer support often forms a key aspect of successful implementation in the hospital sector (Maguire *et al* 2018), but this is more difficult to do at practice level, where expertise might not be shared easily across practices. This lack of support may also be one of the underlying factors behind some of the issues raised earlier – without the feedback that ongoing support and high-quality implementation can generate, suppliers and regional/national stakeholders will be less informed of the needs of the people using tools at the front line.

4 Digital exclusion

While safety from Covid-19 infection has been the prime driver of providing remote consultation to patients, some groups clearly benefit more from access to digital consultation with general practice, either asynchronous or in real time, than others. For example, those who may have benefited include those who find it hard to miss work to attend appointments, or those for whom travel time is a barrier.

GPs we interviewed, including partners and system leaders, felt that they knew their populations, both at an individual level and a practice level, and that they were best placed to act on that knowledge to identify the groups that were at risk of exclusion.

Some clinical leaders we spoke to had begun to think about how they would identify who in their population might be excluded by the move to digital services, but it was clear that more support was required to enable them to do this. Much more research is needed to understand the nuances around digital exclusion, and interviewees expressed concerns around a lack of research evidence which had led to false assumptions. For example, several interviewees expressed the view that it should not be assumed that only older people are more likely to be digitally excluded. While levels of broadband access in rural areas can be an issue, using telephone or email rather than video can mitigate and there are positive benefits for people in rural areas.

Actually, it's saving significant journey times. We have had quite a few of the positive comments coming from rural communities.

(National body)

Most of our interviewees identified socio-economic factors as a key driver of digital exclusion, including access to a smart phone and sufficient data.

It is more the socioeconomically disadvantaged groups in society who struggle more with these tools, and that can often be young people with additional needs, that that feels to me like one of the greatest misunderstandings that needs to be dispelled and unpicked really.

(GP/national body adviser)

One supplier we spoke to had started to explore with telecommunications companies how the data requirements for video consultations might be reduced to mitigate some of the cost.

Other interviewees identified cultural factors, for example only the head of the household having access to a smart phone. In 2019, 20 per cent of adults in the United Kingdom did not use a smartphone according to Ofcom research (Ofcom 2019). Digital literacy is also linked to health literacy (and literacy more generally), and some interviewees suggested that the complexity of some digital interactions would exclude people even if they did have access to technology.

Having to fill in a two-page form, even if you're digitally capable, feels like a significant blocker to accessing care... The digital natives, higher socioeconomic groups, are likely to fly through these things and those people who already struggle to access services are likely to struggle even further if you introduce new solutions.

(GP/national body adviser)

The balance between ease of access for patients and ensuring collection of adequate information for appropriate triage was discussed in many of our conversations and again, the solutions were often felt to vary depending on the specific needs of the local population. Blanket approaches to implementing technology were felt to be unhelpful whether at national, regional or even practice level, as they could create inequity that did not account for differing populations.

Where we've put in 'we're only doing online' it creates so much tension. It creates inequity and nobody feels comfortable about it. That's where the digital exclusion stuff came to a head and then we had politicians getting involved and they were advocating for their patients.

(GP/CCG clinical lead)

There were differing views about mitigation for digital exclusion with some favouring an approach that would focus on getting the majority of patients using digital to allow more time for those who could not, with others considering how to make digital tools work for their whole patient population. Whatever the solution, participants felt there should not be a two-tier system.

If we're saying, 'Please do go online if you can, but if you can't, then phone up,' there is still the risk that patients who can't go online feel that they're not welcome.

(GP)

Patients who can't go online should get essentially the same service as those who do go online... So if you can't go online, you phone up and the receptionist asks you the same questions as if you went online. I think that's important so there's no discrimination against those people.

(GP/STP clinical lead)

We heard many examples of innovation to mitigate exclusion, mainly at GP practice level.

Because we've chosen to work this way [digitally], it's our responsibility to support people to make that change if they want to... If we have patients who are struggling with that, we see it as our responsibility to help support them through it. We bring them in and we show them how to use it, we set it up for them, and then we say, 'Well, give it a go, and if it doesn't work, come back, phone us or pop in.'

(GP)

We invested in kit for those who were digitally excluded so that we always have some that we could give to anybody. We worked with local charities, Alzheimer's UK, local museums... we had our telehealth community champions who were older people themselves who had got into it.

(GP/CCG chair)

In an area of Sheffield where 40 per cent of consultations need an interpreter, with about 50 different community languages spoken and low levels of literacy in any language, the practice used volunteer medical students and members of the whole practice team to make YouTube videos to explain things from how to contact the practice to how to test blood sugar levels in the four different languages most commonly spoken by their population.

5 Future plans

Most of the topics we've looked at so far cover the conversion of existing processes – whether back-office functions or care delivery – into a digital format. In the longer term, digital technology is likely to be used in more transformative ways, in particular in the management of long-term conditions and in the integration of care across place as integrated care systems (ICSs) are developed.

Earlier this year, The King's Fund highlighted some of the ways that technology could transform the management of long-term conditions, empowering patients to monitor and maintain their own health in partnership with their care providers and a range of clinicians (Collins 2020). One concern we noted, which was shared by some interviewees in this project, was whether digital transformation during the first phase of the pandemic had focused too much on maintaining business as usual, rather than transforming care.

We need to shift away from this reactionary kind of thing, so online consultation to get access to the GP, I think that bit we will optimise and make better and move into long-term condition management. We need to establish a digital relationship with those patients... at the moment it's an in-the-moment relationship. For anyone with a long-term condition, we need to establish a digital relationship with them. And that might mean they have to sign up to an app or something and we have to have a platform in place to be able to do that.

(GP/STP lead)

The link between hospital and primary care records is typically poor, with few areas able to demonstrate flexible sharing of records across place. We expect data sharing to be a key part of the work of ICSs in the future (Charles et al, 2018), and interviewees were hopeful of the prospects of data sharing as well.

My inbox is full of people saying we can now see patient information in the hospital and A&E departments, and A&E consultants are saying this is really making a difference, we want to keep this, how do we keep it, how do we keep the summary care record from going back in

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September, how do we hold onto that, how do we get more of this?
(GP/CCG lead)

Finally, suppliers in particular told us that there are limited funding mechanisms to support large-scale roll-out for things such as digital long-term conditions management, as the only national procurement opportunities are for video and online consultations, giving limited routes for funding for companies to build platforms to meet future needs.

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