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Investigation report

Digital tools for online consultation in general practice

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A note of acknowledgement

The investigation saw first-hand the high demand for general practice services and the ongoing efforts of those practices to deliver high-quality care. General practices are actively working to transform their models of care to better support patient access and experience, and ensure patient safety. We are grateful to those general practices who supported our observations despite the ongoing clinical pressures they were under.

We would also like to thank the many people who contributed to this report at national, regional and general practice levels. From a patient and public perspective, thank you to all those who attended our focus groups and contributed in other ways. We are also grateful to those at a system level who supported our undertaking of the focus groups.

About this report

This investigation report is published under the Health Services Safety Investigations Body's (HSSIB's) theme of '[workforce and patient safety](#)'. The theme was launched by HSSIB's predecessor organisation, the Healthcare Safety Investigation Branch, and was therefore completed under The NHS England (Healthcare Safety Investigation Branch) Directions 2022.

Following safety management system principles, this report describes the investigation of a potential hazard (something that could cause harm) that was highlighted to HSSIB by patients and general practice staff. Further information about safety management systems can be found in HSSIB's publication '[Safety management systems: an introduction for healthcare](#)'.

This report is intended for healthcare policy makers to help influence improvements in patient safety. It is also intended for those who work in and engage with general practice, such as integrated care boards (ICBs), primary care networks, local medical committees, and general practices themselves. This report focusses on online care as a form of remote care, specifically the use of online consultation tools.

This report refers to technical language throughout and a glossary is provided below to support the reader.

Glossary

Accessibility	How something can be used by people with 'the widest range of user needs, characteristics and capabilities' (International Organization for Standardization, 2019).
Asynchronous consultation	A consultation that does not take place in real time between a patient and a healthcare professional. May be provided via an online consultation tool.
Capability (digital)	The description of the need that a piece of software must meet; what it must be able to do. Used to support assessment as to whether software meets the need and for procurement (NHS England, 2024a).
Digital	The use and transfer of information using devices and technology, such as computers and smartphone applications, and the infrastructure and processes used to do so.
Online consultation	A form of remote consultation which enables people to make contact with their general practice without waiting to get through on the phone or visiting the practice (NHS England, 2023a).
Online consultation tool	Software that allows people to contact their general practice to make clinical or administrative requests, or seek health advice (NHS England, 2023a). May be used to provide asynchronous consultation.
Procurement	The process of identifying and acquiring goods and services from other sources, such as software designers and vendors.
Remote consultation	A consultation where the patient and healthcare professional are not face to face. May be undertaken by telephone, video link, and/or online (NHS England, 2023b).
Standard (digital)	A set of technical and operating conditions that a piece of software must meet (NHS England, 2024a).
User	The person who uses a digital system such as an online consultation tool (International Organization for Standardization, 2019). This includes patients, carers and staff.
User interface	The parts of a digital system, such as an online consultation tool, that users interact with and enter information into (International Organization for Standardization, 2019).

Executive summary

Background

This investigation explored the patient safety risks associated with the use of online consultation tools in general practice. The investigation focussed on the use of these tools for 'asynchronous' consultation where the patient and healthcare professional are not in the same room, and the patient does not receive a response in real time.

In recent years increasing demand on general practice in England has meant that some patients have been finding it difficult to access care. This, along with developments in technology, has led to the increasing use of online routes to access and receive care. To support choice and flexibility for patients, and to help manage demand, general practices must offer and promote an online consultation tool. These tools provide an online way for patients to contact their general practice to make clinical or administrative requests, and to seek health advice. Some general practices are using online consultation tools for asynchronous consultations.

The introduction of online consultation tools into general practice is part of the national vision for a 'modern general practice model'. Where general practices have transformed their ways of working to align with this model there are examples of the positive impact this has had. Online consultation tools can have several benefits both for patients and general practices, including improved access, patient satisfaction, and management of demand. As part of HSSIB's [wider investigatory work](#), patients and some general practice staff also told the investigation of their concerns that online consultation tools when used for consultations could contribute to patient safety incidents. As digital-based approaches to healthcare are increasingly implemented, such as with online consultation tools, a proactive approach to identifying risks to patient safety must be undertaken.

Findings

- Patients and general practices engaged with during the investigation had concerns that online consultation tools could contribute to risks to patient safety. Although there is evidence these tools have benefits, the investigation also found evidence that they had contributed to some patient safety incidents.
- Where actual and potential harm to patients has been contributed to by the use of online consultation tools, these incidents are not always reported. There is underreporting of patient safety incidents in general practice.
- Harm can result to patients where they are unable to use an online consultation tool due to their personal circumstances. This may also result in inequitable access to care if patients are not aware of or unable to use other access routes.

- General practitioners have not always had specific training to undertake online consultations, resulting in some having concerns about the making of decisions based on the limited clinical information provided through an online tool.
- The design and configuration of an online consultation tool may mean it is not always able to safely deliver the task(s) it is being used for, nor address and meet the needs of its users (patients, carers and staff).
- The explicit needs of users are not always identified and incorporated into the design and configuration of online consultation tools. The needs of patients and staff may be different in respect to how a tool collects information about a patient's medical problem.
- General practices engaged with during the investigation have had limited oversight and support from their former clinical commissioning groups and current integrated care boards when procuring and implementing online consultation tools. This has contributed to variation in how tools have been implemented.
- Safe and effective local implementation of an online consultation tool into a general practice is a complex project. Demand on general practice makes it difficult for some practices to allocate the necessary time and resources to ensure implementation is successful.
- NHS regions and general practices may not know their local population's digital needs and capabilities. Assumptions about the needs of patient populations may be made as a result.
- Limited patient engagement and education can lead to misinterpretation about how to access care. The investigation found examples in different parts of the country where patients believed they could no longer access general practice care if they could not use the online route.
- Some general practices are having to limit the number of daily requests available via their online consultation tools to protect patient safety. There are further concerns that tools may increase future demand by reducing opportunities to provide health promotion advice or manage long-term health conditions.

HSSIB makes the following safety recommendations

Safety recommendation R/2024/030:

HSSIB recommends that NHS England undertakes an evaluation of the risks to patient safety of online consultation tools in general practice, taking into account the findings of this investigation, recent research, and the experiences of general practices. This is to identify and implement actions to support the safe delivery of care using online consultation tools in line with best practice.

Safety recommendation R/2024/031:

HSSIB recommends that NHS England develops mechanisms for assuring that integrated care boards support general practices when implementing online consultation. This is to ensure online consultation tools are procured and implemented in ways that best support patient safety.

HSSIB makes the following safety observations**Safety observation O/2024/024:**

National healthcare organisations can improve patient safety by supporting general practices to report patient safety incidents associated with the use of online consultation tools.

Safety observation O/2024/025:

National healthcare organisations can improve patient safety by creating the conditions within which online consultation tools can be effectively implemented, including ensuring general practice has the resources, capacity and capabilities to meet the needs of its patients.

Safety observation O/2024/026:

National healthcare organisations can improve patient safety by considering how long-term condition management and proactive health promotion can be accomplished alongside the online consultation model of general practice, which may limit opportunities to provide holistic care to patients.

Safety observation O/2024/027:

National healthcare organisations can improve patient safety by supporting software developers of online consultation tools to meaningfully involve patients and staff in software design to help better understand their needs.

HSSIB suggests the following for integrated care boards

Safety response for integrated care boards ICB/2024/007:

Integrated care boards can improve patient safety by:

- Involving general practices and patient groups as stakeholders in procurement processes for online consultation tools.
- Supporting general practices to implement tools in a way that meets the specific needs of a practice and its patients.
- Ensuring general practices provide suitable alternatives to online consultation tools where they are needed for patients to access and receive care.

1. Background and context

This investigation focused on the safety of patients when using online consultation tools for consultations in general practice. Online consultation tools are a way for patients to contact their general practice through software on a computer, tablet or smartphone.

This report is part of a wider programme of work being carried out by HSSIB on the theme of '[workforce and patient safety](#)'. The focus for this report was identified during investigation of how the digital work system in primary care (for example general practice or community pharmacy) and community care (for example district nursing) supports staff to deliver safe care to patients. This section provides background to the investigation.

1.1 General practice healthcare

1.1.1 Primary care services are often the first point of contact for people accessing the healthcare system. NHS primary care services include community pharmacy, dentistry, optometry and general practice. While general practices offer many services, they are commonly used by people to seek a consultation with a healthcare professional about a medical problem. The general practice consultation process is described as 'unique' due to how it establishes long-term relationships between a patient and healthcare professional (Wonca

Europe, 2023). Consultations can be provided face to face, over the telephone or online, and the aim is to manage the person's medical problem. A consultation also gives a healthcare professional the opportunity to manage a person's long-term health problems and to offer health promotion advice (Watt, 2019).

1.1.2 Demand on general practice was increasing before the COVID-19 pandemic and has since exceeded pre-pandemic levels (NHS Digital, 2023a). From a patient perspective, it has become increasingly difficult to access care from general practice, with associated 'discontent' (Care Quality Commission, 2023). From a staff perspective, demand is affecting wellbeing, resulting in staff leaving their roles. The national strategy for general practice includes supporting access to general practice and building capacity (NHS England, 2023c).

1.1.3 The national vision is for patients to have streamlined access to general practice (and other primary care services) with personalised care (Fuller, 2022). NHS England (2023c) published a 'Delivery plan for recovering access to primary care' which describes a commitment to modernising general practice, including with 'digital access' for patients and 'high-quality online consultation'. In support, NHS England has also provided resources and guidance, including through the National General Practice Improvement Programme.

1.2 Digital general practice

1.2.1 'Digital' in this report refers to the use and transfer of information using devices and technology, such as computers and smartphone applications, and the infrastructure and processes used to do so. In 2016, NHS England committed to further digitise general practice with better online tools and consultation management systems (NHS England, 2016). In 2019, improved digital access was reiterated through the NHS Long Term Plan with an 'offer of a 'digital first' option for most' (NHS, 2019). Subsequent publications have described patients having 'the right' to be offered digital-first primary care (NHS England, 2019).

1.2.2 In 2020, the COVID-19 pandemic led to increased use of 'remote' routes to access general practice that did not require face-to-face contact. Examples included the use of telephone, text and video (Rosen et al, 2022), and new technologies were implemented to support this. There is now an expectation and contractual requirement for general practices to 'offer and promote an online consultation tool to its registered patients' [GP Contract 2023/24] and that online consultation is 'available for patients to make administrative and clinical requests at least for the duration of core hours' [arrangements for the GP contract in 2024/25] (NHS England, 2024b). Frameworks (see 1.2.5) have provided routes for the procurement (buying) of appropriate digital systems (NHS Digital, 2023b).

Online consultation tools

1.2.3 Through an online consultation tool, at a minimum, a patient should be able to make 'clinical or administrative requests' or seek 'health advice' (NHS England, 2023a). These tools are described as 'asynchronous' – that is, they do not provide a real-time response to the patient. Online consultation tools are a form of remote care, where the patient and healthcare professional are not face to face (Royal College of General Practitioners, 2021). Figure 1 shows a simplified summary of the process for submitting and responding to a patient request in general practice. The figure refers to 'triage' which is where requests are screened by the practice and signposted to the next appropriate step for the patient.

1.2.4 NHS England (2023a; 2016) describes several potential benefits of using online consultation tools and case studies showing their benefits are available (for example NHS England, 2020). For patients these benefits include increased choice, flexibility and improved access. For general practices they include improved patient demand management, freeing up staff capacity to deliver clinical care, and collection of high-quality clinical information to support care decisions. It is also recognised that remote approaches to care, including online consultation tools, can create risks to patient safety depending on how they are implemented (Nuffield Trust, 2022).

1.2.5 In support of the procurement of an online consultation tool the Digital First Online Consultation and Video Consultation Framework (DFOCVC) describes the 'capabilities and standards' that tools need to meet to be 'nationally assured' (NHS Digital, 2023b). During 2024, a Digital Pathways Framework was planned to replace DFOCVC; at the time of writing the launch of the Framework had been paused. Within the Digital Pathways Framework, online consultation is a core capability for general practices (NHS England, 2024c). Frameworks use the following terms:

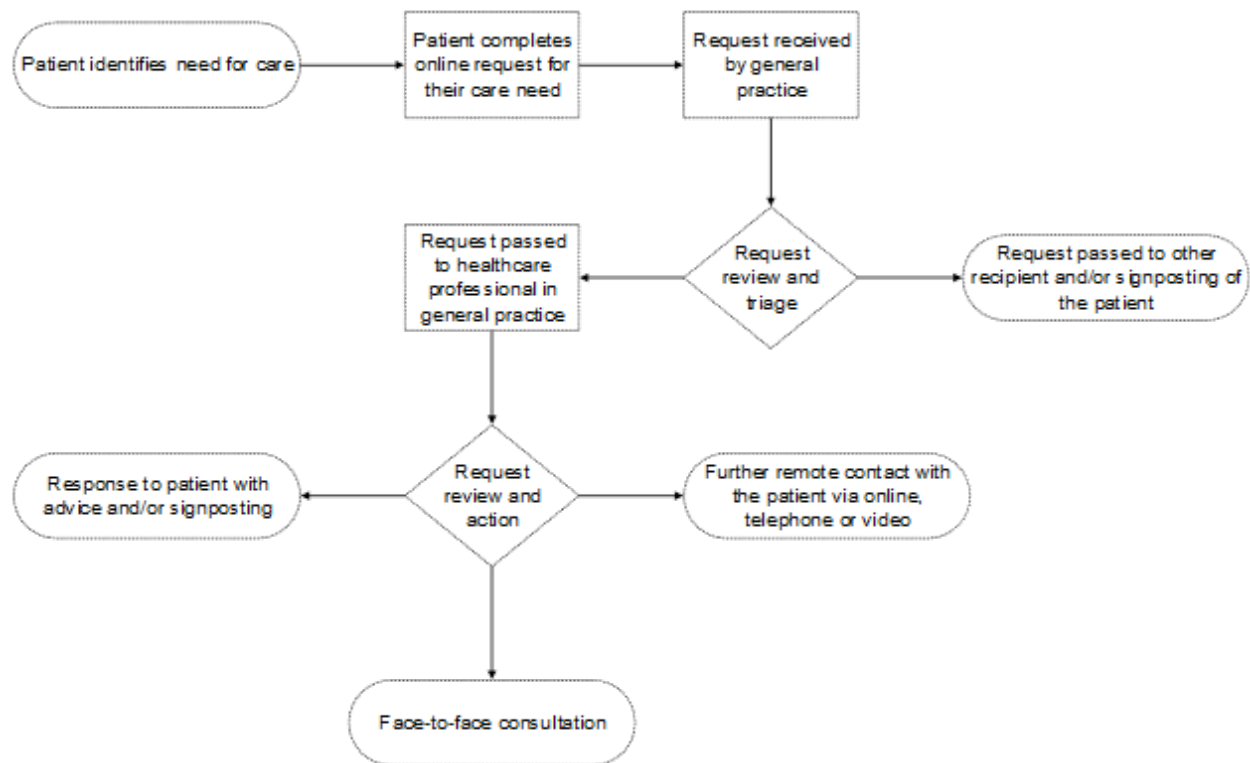
- **Capabilities** – what software needs to do. Online consultation tools need to allow patients 'to request and receive support relating to healthcare concerns, at a time and place convenient to them'.
- **Standards** – the technical requirements of software, and how it should operate. Standards include clinical safety and information governance, testing, and interoperability (how different digital systems interact with one another).

NHS App

1.2.6 The NHS App is one of the NHS's national digital channels alongside its website, [nhs.uk](https://www.nhs.uk). The NHS App provides access to services via a smartphone or tablet. For example, depending on the general practice, patients can use the NHS App to order repeat prescriptions, book appointments, and view health records.

1.2.7 National plans for digitisation include the NHS App becoming the ‘front door’ to the NHS (Department of Health and Social Care, 2022). This means patients should be able to access their general practices’ online consultation tool through the NHS App. At the time of writing, not all online consultation tools were available through the NHS App and could instead be directly accessed through a general practice or specific website.

Figure 1 Simplified summary of the process for submitting and responding to a patient request in general practice



2. Patient safety risks

The risks to patient safety contributed to by the use of remote consulting in general practice, including the use of online consultation tools ('online tools'), are not well understood (Nuffield Trust, 2022). At the time of writing, much of the remote care provided by general practice was via telephone. However, patients and general practice staff engaged with by the investigation described their concerns that online tools, which were being increasingly used to provide consultations, had contributed to some patient safety incidents. This section summarises what the investigation heard and found when exploring how online tools may contribute to patient harm. Findings have been drawn from the evidence sources described in appendix 6.1.

2.1 Exploring the patient safety risks

2.1.1 Box 1 gives an example of a delayed cancer diagnosis for a patient who was told by their general practice that they 'had to' use an online tool to request a consultation with a healthcare professional. This example was found through review of serious incidents reported to the Strategic Executive Information System (StEIS). At the time of writing, StEIS was NHS England's national reporting system for serious incidents.

Box 1 Delayed diagnosis of cancer

The patient visited their general practice having found a skin problem that they worried was cancer. The patient was told to complete an online consultation request which they did, describing that they had a history of skin cancer. The request was triaged by administrative staff the next day and a GP telephoned the patient. The GP made a non-urgent referral to the dermatology service which was appropriate for the type of skin cancer the patient was suspected to have.

While waiting for a dermatology appointment, the patient submitted another online request as the skin problem was getting worse, with symptoms and signs that suggested a more aggressive form of cancer. The second request did not describe the patient's previous history of skin cancer. Administrative staff triaged the request as routine as they assumed the patient was already under follow up. At an appointment 2 weeks later the GP suspected that the patient's skin condition was a more aggressive cancer and made an urgent referral. The patient subsequently needed complex skin surgery.

2.1.2 The incident described in Box 1 was not specifically investigated by HSSIB, but HSSIB met the local investigator. They described how the online tool was being used to help manage workload at the general practice due to staff shortages. While the contributors to the incident will have been multifactorial, the following were described as contributors:

- the design of the tool and the information it requested from the patient
- how the tool worked with other digital systems to show patient information, previous encounters, and past medical history
- how the tool had been integrated into the general practice's other processes.

2.1.3 Overall, the investigation found limited serious incidents reported to StEIS in general practice, a small number of which referenced remote care including online tools. The investigation also found a small number of reports to prevent future deaths which referenced

remote care, including online tools. Researchers have described how safety incidents are 'extremely rare' in remote primary care (Payne et al, 2023), but also that safety-related evidence related to remote and online consultation is limited (for example Mold et al, 2019).

2.1.4 The investigation's finding of limited reports of patient harm contributed to by the use of online tools conflicted with what general practitioners (GPs), patients and academics had described to the investigation. That conflict was heard to potentially be due to a lack of recognition and reporting of incidents, because the use of online tools in some practices was still in its infancy, and because GPs will "err on the side of caution" to maintain patient safety.

2.1.5 It is known that reporting of patient safety incidents in general practice is low compared to other healthcare sectors, despite it being where most patient interactions take place (NHS England, n.d.a). Staff across the general practices visited by the investigation gave examples of where their use of online tools had contributed to harm or had the potential to harm patients. They also acknowledged that these examples were not always reported as incidents. In the examples, harm resulted from missed or delayed.

2.1.6 GPs also described the following patient safety concerns about asynchronous consultations:

- **Safeguarding** – cues may be missed that suggest a vulnerable person is being placed at risk. It may not be recognised that someone has influenced the content of a patient's request.
- **Overtreatment** – healthcare professionals may be more likely to treat something "just in case". For example prescribing antibiotics to a patient even if the infection may not have required them.

Similar concerns to above have been noted by researchers with remote care in general. For example, there may be higher rates of antibiotic prescribing in remote consultations (Vestesson et al, 2023) and remote care may complicate identification of and support for domestic violence and abuse (Dixon et al, 2013).

Patient experiences

2.1.7 Patients who engaged with HSSIB through the focus groups (see appendix 6.1) or when the investigation visited general practices shared concerns about having to use online tools and the potential harm they could contribute to. Patients were aware of online tools being available via their general practices, but several told the investigation that they (the patients themselves) or people they knew were less likely to seek a consultation with their general practice about a medical problem if they had to use an online tool, whether through choice or because they were unable to (considered further in 3.1). Similar concerns were described to the investigation by national advocacy groups and academics.

2.1.8 In addition, several patients told the investigation that their general practices insisted on them using the online tool (see 3.3.14). This meant they had to use the online tool, get someone else to help them use the tool, seek other routes to receive care such as by going to an emergency department, or they went without care. Box 2 provides an example of what was heard by the investigation (Age UK, 2024).

Box 2 Patient experience of online general practice

'It is very difficult to get a medical appointment now and my surgery is pushing more and more services online. It has got to the point where access is so difficult, I don't seek advice and just hope minor conditions just go away'.

2.1.9 Box 2 also exemplifies a wider concern raised by patients to the investigation around accessing care from their general practices. For several patients engaged with, the increasing use of online tools to access care and for consultation led them to believe they could no longer have telephone or face-to-face consultations. These beliefs, coupled with difficulties using online tools, meant some had not sought medical advice when they needed it. While the example in Box 2 relates to a minor condition, other patients told the investigation that they knew of people who had not sought help for potentially major conditions.

2.1.10 Patients described feeling "frustrated", "humiliated" and "embarrassed" when trying to use online tools; they said this made them less likely to want to use them. They also described a loss of "trust" that their general practices could provide for their needs. They no longer felt they had a relationship with their practice or a specific GP, and worried about continuity in their care.

2.2 Benefits of online consultation tools

2.2.1 Some patients who attended the focus groups were positive about online tools, particularly where it did not matter to them which healthcare professional responded to a request. They described getting quicker diagnoses and advice for some problems. Researchers have also reported patient benefits including speed, flexibility and efficiency (for example Moschogianis et al, 2023).

2.2.2 From a general practice perspective, some of the practices visited were positive about the potential benefits of online tools in relation to demand management and access to care. For some patients, online tools are enabling them to access care (for example shift workers or those with carer responsibilities). The use of an online tool may also 'free up' other access routes for those who cannot use the online route. Case studies and various research also

highlight the benefits of the implementation of online tools (for example Chappell et al., 2023; NHS England, 2020). These case studies refer to improved access, reduced telephone call volumes, more effective allocation of clinical time, and improved health and wellbeing.

2.2.3 Due to HSSIB's remit for patient safety, the investigation did not specifically examine the wider benefits of online tools to patients and general practices. While benefits are apparent and these are acknowledged, this report focusses on the patient safety concerns described to the investigation.

2.3 Investigating the patient safety concerns

2.3.1 Due to the patient safety concerns described to the investigation surrounding the use of online tools in general practice, this investigation was launched. The methodology used to proactively investigate the patient safety risks is described in appendix 6.1, and the analysis and findings are provided in section 3. The investigation aimed to:

- Examine the patient safety risks surrounding the use of online consultation tools to support patient contact with and the delivery of care from general practice.
- Examine the factors that contribute to the patient safety risks from local (general practice), regional (integrated care board), national, and software developer perspectives.
- Make safety recommendations and safety observations (if appropriate) to support the safe future implementation of online consultation tools.

3. Patient safety risks – findings and analysis

To investigate the patient safety risks associated with the use of online consultation tools ('online tools') the investigation started by seeking patient and general practice staff perspectives, and observing work. The investigation then aimed to understand the work system and how this contributed to the risks. The analysis and findings are presented in this section under the following headings:

- Patient and staff perspectives.
- Design and procurement of online tools.
- Implementation of online tools.

Online tools for consultation provide one route for general practices to deliver remote care. At the time of writing, much of the remote care provided by general practice was over the telephone. The investigation noted that the research and reports that have considered online tools have commonly done so alongside other forms of remote care; the overlap is acknowledged in this report.

3.1 Patient and staff perspectives

Patient perspectives on online tools

3.1.1 Patients who had not used an available online tool to seek care from their general practice said that this was because they:

- Were unable to find the tool; for example due to difficulties navigating websites.
- Were unable to use the tool; for example due to language or levels of literacy.
- Did not have an appropriate device or internet connection; for example not being able to afford a smartphone or internet credit.
- Did not know how to use the tool; for example finding a tool interface difficult to use and understand.
- Chose not to use the tool; for example because they did not want to engage with digital healthcare.

3.1.2 Appendix 6.2 provides further examples seen and heard by the investigation of factors affecting patient use of online tools. Factors included age, deprivation, education, employment, ethnicity, physical, cognitive (thinking) difficulties and language. Where patients were able and had the means to use an online tool, several described finding them hard to use and so had given up using them. Some patients also told the investigation that, if they could not use a tool, their practices had told them to get a family member, friend or carer to fill in the request for them; concerns about confidentiality and the sharing of personal issues were described.

3.1.3 The concept of 'accessibility' refers to how something can be used by people with 'the widest range of user needs, characteristics and capabilities' (International Organization for Standardization, 2019). The Equality and Human Rights Commission (EHRC) told the investigation that accessibility also refers to the requirements of the Equality Act 2010, including a duty to make reasonable adjustments where required. The investigation heard how patients are not always able to access online tools and use online consultation due to their personal characteristics, social exclusion or deprivation. Similar is described in national publications with recognition that some patients may be disadvantaged by digital approaches to health (for example Age UK, 2024; NHS Race and Health Observatory, 2023). The EHRC further told the investigation of concerns that the introduction of digital services by public bodies may exclude some people from accessing services which risked breaching of equality and human rights laws (Equality and Human Rights Commission, 2020).

3.1.4 The investigation found that online tools were not always accessible which created a barrier to some patients seeking and receiving care from general practice, creating a risk of harm (see 2.1.8). The investigation found that the way online tools were designed and implemented contributed to them not always being accessible. These contributors are considered in 3.2 and 3.3.

Staff perspectives on online tools

3.1.5 In 2022, over 95% of general practices had an online tool installed (NHS England, 2023d). Each general practice visited by the investigation had an online tool. At some practices they were used to enable patients to contact the practice to make administrative requests, while others used them to manage all contacts and requests including appointments and/or for asynchronous online consultations (see 1.2). Where practices only used online tools for administrative requests, staff often said that this was because their patients “did not want them” for consultations (see 3.3.14).

3.1.6 While this investigation focussed on online tools, the investigation heard concerns from some staff in general practice about the ‘digital-first’ plan (see 1.2) for primary care (NHS England, 2019). Staff recognised the need to modernise general practice and the potential benefits, but some were concerned about the potential lack of recognition of the risks to patient safety. Several also described the need for resource to ensure digital implementation is successful, otherwise it was felt to be unlikely to achieve the improvements in access and patient satisfaction hoped for.

3.1.7 Where online tools were being used for asynchronous online consultations, several of the GPs engaged with had concerns about the safety of the tools. Their concerns related to the amount and quality of the information they collected and the potential impact on workload (see 3.1.10). Regarding the amount and quality of information, GPs told the investigation that:

- Patients may find it difficult to describe their symptoms in writing and may not provide all the information required.
- Patients may not disclose certain symptoms and problems, whether unintentionally or by choice because of the nature of the problem.
- They were aware that some patients had given inaccurate answers to online tool questions to ensure they (the patient) received the outcome they wanted. This was described as “gaming” the tool.

The result of the above was that some GPs were afraid of making wrong decisions on limited information. They therefore did not trust online tools for consultations and insisted on seeing or speaking to every patient to reduce the chance of missing or delaying a diagnosis.

3.1.8 Further concerns about online tools described by some GPs included that they disadvantaged some patients (as per the patient perspective in 3.1.1), reduced continuity in patient care, and had changed the value of consultations. Particular concerns were raised about continuity of care for vulnerable patients who may need the unique relationship (see 1.1.1) created through a general practice consultation for their therapy.

3.1.9 Some GPs also perceived that the changing model of general practice care with increased use of remote consultations had reduced their ability to manage ongoing/long-term problems and provide health advice. Care was felt to be less holistic (considering the whole patient) and more transactional (information exchange), particularly when a tool only allowed focus on a single medical problem. Similar concerns have been echoed about remote consultations in general by a Royal College of General Practitioners (2021) survey and in research (for example Mann et al, 2021).

3.1.10 The potential for increased workload created by online tools (as per 3.1.7) was reiterated by multiple GPs the investigation engaged with. That potential has also been highlighted by some researchers (for example Salisbury et al, 2020; Turner et al, 2022). The GPs described the impact the workload had on their wellbeing, as well as creating “decision fatigue” when working through multiple online requests. GPs referred to the ‘mental load’ they carried when managing the multiple demands on their time. They recognised that this mental load may make them more likely to miss something or make an incorrect decision, putting the safety of patients at risk.

3.1.11 Software developers and stakeholders from regional and national bodies told the investigation that, if implemented correctly, online tools can reduce workload (see 3.3). Case studies provided to the investigation by NHS England demonstrated how implementation had reduced telephone call volumes and helped ensure patients see the right person at the right time. Other research has shown no evidence of ‘supply-induced demand fuelled by easier access’ (Chappell et al., 2023). However, the investigation also saw how the effect of online tools on workload may be unpredictable, as demonstrated by the experience of one general practice visited. The general practice had attempted to predict workload before implementing its online tool but found it had underestimated the local need in what it described as a “deprived” area.

3.1.12 Some GPs told the investigation that they did not feel that they had been enabled to confidently undertake online consultations. The investigation also heard concerns that newer GPs may not have seen enough patients face to face in their training to make them competent and confident to provide online care. Some GPs engaged with had received training to undertake telephone consultations and use an online tool, but specific training to undertake asynchronous consultation was more limited. GPs also told the investigation that the skills needed for asynchronous consultation are different to those for telephone consultations. In all

forms of remote consultation important cues may be difficult to identify, but this is particularly challenging when trying to interpret an online request without verbal or face-to-face patient contact. There is a recognised lack of skill-based training in remote working for GPs (Greenhalgh et al, 2024), which requires advanced communication skills (Davies, 2021). The lack of training was heard by the investigation to exist at undergraduate and postgraduate levels.

3.1.13 The investigation reviewed the most recent curriculum for GP training (Royal College of General Practitioners, 2019). No specific competencies relating to remote and/or online consultation were found. The Royal College of General Practitioners (RCGP) confirmed the limited inclusion of remote/online skills in its current curriculum, but told the investigation that relevant competencies will be included in the updated curriculum due to be published in 2025. In support of delivery of the curriculum, NHS England have reviewed the delivery of GP specialty training and are developing approaches to support future GPs to use video and chat programmes (NHS, 2023).

3.1.14 Through the perspectives of staff, the investigation found that online tools had the potential to create risks to patient safety. The design of online tools, potential impact on workload, and the ability of current GPs to undertake asynchronous online consultations may contribute to missed or delayed care. Aspects relating to the design of online tools and how they have been implemented are considered in 3.2 and 3.3.

3.2 Design and procurement of online tools

3.2.1 The investigation saw different online tools (the software) in use. Each had the minimum expected capability (see 1.2.5) for a patient to be able to make 'clinical or administrative requests' or seek 'health advice' (NHS England, 2023a). The online tools had different user interfaces (the part of the tool that patients or staff see and interact with) and varied in what they could do.

Design of interfaces

3.2.2 Design refers to the way an online tool has been created and developed by a software developer. The online tool interfaces used by patients were designed either to enable patients to enter information in an unstructured way (free text) or were structured in a question and answer style. The investigation met with five software developers to explore this variation in design. Developers said that interfaces need to ensure enough information is collected to support a response from the practice, but they also need to be easy for patients to use. Table 1 summarises what the investigation heard from patients, staff and developers about the online tool interfaces used by patients.

Table 1 Views on online tool interfaces used by patients

Interface type	What was heard from patients, staff and developers?
Free text	• Simple and easy to use, allowing a patient to describe what is important to them in their own voice. • Information is unstructured and requires the patient to be able to precisely describe their reasons for the request. • Without prompts, a patient may not provide all the information needed for decision making.
Structured (question and answer style)	• Requires the patient to read and make selections. • Uses prompts to collect information in support of later decision making. • May focus on one symptom or problem, and requires the patient to be able to read and understand the questions. • Limited response options may push patients down a particular algorithm or pathway.

3.2.3 The different online tool interfaces for patients (Table 1) have stated pros and cons when used for consultations (NHS England, 2020, 2023d). From a patient safety perspective, GPs described to the investigation how free text was useful for gathering clinical information before seeing or speaking to a patient, but they were concerned that free text may not collect enough information to make informed medical decisions. GPs described that a structured interface may provide more clinical information for an asynchronous consultation about a simple, but not a complex problem; it was described that ‘algorithms that go down single symptom routes miss the complexity of general practice and mean the dots can’t be joined up’. As per 3.1.7, there is also a risk that patients may try to ‘game’ the structured interface to get the outcome they want.

3.2.4 The investigation searched for guidance and research describing best practice approaches for interface design for online tools that support patient safety. Generic publications considering principles of design were found (for example NHS, n.d.), but none specific to online tools. There was also limited research found around the design of online tools for safety (for example Darley et al, 2022). NHS England (2023d) shared national research they had undertaken that included consideration of online tool functionality and usability needs of patients and general practice staff. The national research’s findings included the following in relation to patient and staff needs of a tool:

- From a patient perspective – the number of questions asked by an online tool is the most important driver of usability and patient satisfaction, with large numbers of questions impacting on patients with lower digital confidence and/or lower literacy levels.
- From a staff perspective – the functionality required from an online tool includes templated forms to request specific information for certain symptoms and conditions.

3.2.5 The investigation also reviewed NHS England's standards (see 1.2.5) around interface design. The 'non-functional questions' standard (NHS Digital, 2023b) describes the need for an online tool to be designed in line with user interface principles, but not how an interface should be designed for patient safety. The standard quotes the user interface principles provided by the International Organization for Standardization (ISO) (2019) which describes that interfaces should be based on an 'explicit understanding of users, tasks and environments', and that users (patients and staff) should be involved in their development.

3.2.6 Software developers were asked about user involvement in their online tool design. They said that tools had been designed "by clinicians, for clinicians". Some had been designed in England, others outside of the United Kingdom, and some had been designed by GPs from a specific area, such as an inner city. Some developer representatives were unaware of how patients had been involved, but others said they "would have" been involved in the early design; the investigation was unable to access further information about patient involvement. Developers also highlighted the challenges they face seeking meaningful involvement with patients and staff and the need for support to do this effectively.

3.2.7 To support the delivery of safe care to patients, software design requires consideration of its intended role and users. For online tools, the investigation found limited evidence of users (patients and staff) being involved in the design process. The investigation also found that patient and staff needs of online tools may conflict in respect to the amount of information a tool seeks to collect about a patient's medical problem. This conflict makes interface design challenging, and the investigation found limited guidance or research describing the best approach to design for patient safety.

Other aspects of design

3.2.8 The investigation found other aspects of the design of online tools that potentially created risks to patient safety. Tools varied in their inclusion of language translation, how they integrated with the NHS App and electronic patient records (EPRs), and whether they included artificial intelligence (AI). Findings are summarised here:

- **Language translation** – GPs highlighted language as a barrier to accessibility and safe use of online tools. In response, some software developers had developed translation capabilities in their tools. Due to the variety of languages spoken in England, tools did not always provide a needed language. Developers of tools without translation were concerned about the patient safety risks of mistranslation.
- **Integration** – patients described frustration that some online tools were not available through the NHS App and that this may further reduce their willingness to use them. From a general practice, it was heard that incoming requests from online tools were received in different ways depending on how the tool had been configured to link with other digital

systems. The investigation saw online tools that directly transferred information into EPRs and examples where administrators 'cut and pasted' from the tool into an EPR. Several examples were seen where a request had been inadvertently added to the wrong patient notes during manual transfer. Integration of digital systems will be considered as part of a future investigation ([Health Services Safety Investigations Body, 2024a](#)).

- **Artificial intelligence** – several online tools were observed to have AI. AI is the ability of a computer to 'think' in a more human way, allowing automation of some tasks. The AI provided advice around triage, but staff had mixed understanding of the potential of the AI, how it was designed, what it did, and its accuracy. The investigation heard from national stakeholders and academics that there is a lack of clarity around whether software (including AI) is a medical device; similar was found in a previous HSIB investigation (Healthcare Safety Investigation Branch, 2022). If something is not registered as a medical device, scrutiny of its safety may be less. The Medicines and Healthcare products Regulatory Agency (2023) has a software and AI roadmap that will produce future guidance.

Procuring an online tool

3.2.9 Due to the range of online tools available, the ICBs engaged with told the investigation that procurement processes needed to ensure the most appropriate tool is chosen for a general practice's needs. Some practices told the investigation that they had little or no choice in which tool they could procure, but that there were some tools that would be better suited to their needs. For example, a rural practice with limited patients who use the online tool has different needs to an urban practice using total digital triage (where every patient who makes contact with a practice is triaged through an online consultation tool). Practices also told the investigation that they had no opportunity to test an online tool themselves before procurement, particularly if procured by a (former) clinical commissioning group (CCG) or ICB.

3.2.10 GPs described that where a local online tool was fully or partly funded by a (former) CCG, the tool was chosen by the CCG. ICB staff met by the investigation who had previously worked for CCGs described how selection was often influenced by the software developer who made the best "pitch" and by cost, rather than consideration of functionality, interface design, usability, or practice and patient needs. The investigation also saw that some general practices had directly procured their own online tools.

3.2.11 Some of the general practices that had directly procured an online tool had initially implemented a CCG-chosen tool but had later found they needed to change it because the original tool did not meet their needs. When directly procured from a software developer, those practices had funded the tool themselves with limited input from a CCG/ICB. Those practices told the investigation that they felt isolated procuring and implementing tools, and as a result the investigation found that local understanding of the standards and capabilities for online tools varied.

3.2.12 ICB representatives told the investigation how some historical CCG processes had resulted in variation in the online tools procured, with limited consideration of whether a particular tool was able to meet what was needed of it. During the COVID-19 pandemic, NHS England's (2020) online implementation toolkit was published which described how (former) CCGs should work with practices to match tools to their needs. Since the COVID-19 pandemic, further NHS England publications have provided information on the functionality of different online tools (NHS England, 2023d) and provided procurement guidance describing that tools must be nationally assured and that ICBs are expected to support practices to choose a tool (NHS England, 2024c).

3.2.13 With the NHS England (2024d) procurement guidance and the NHS England (2024c) Digital Pathways Framework for the supply and procurement of online tools (which was planned for early 2024) ICBs described opportunities to better assure the tools in their regions and ensure they met the needs of their patients and general practices. ICBs also described wanting to be better enabled to provide effective education and support to general practices and primary care networks via their digital facilitator teams. It was described that training, time to learn, and ongoing support was needed for practices, not just the technology.

3.2.14 The investigation also heard from national stakeholders that the new Digital Pathways Framework would provide opportunities to better influence the design of software produced by developers. However, at the time of writing, the Framework had been paused and ICBs described frustrations that this was preventing them from working to improve online consultation services in their regions. Interim guidance has been published to support ICBs to uplift regional digital tools (NHS England, 2024e).

3.2.15 While awaiting the Digital Pathways Framework, the investigation saw some general practices continuing to identify, procure and implement online tools independently. These practices described little or no involvement or support from their ICBs, despite the expectation that support was provided (NHS England, 2024d). The ICBs engaged with described challenges providing support without a framework, limited resources, and distracting priorities such as a focus on acute services and financial savings. National stakeholders further described variation in the maturity of ICBs and how much support they were able to offer general practices.

3.2.16 The investigation found that, at the time of writing, there was limited oversight and guidance to support the procurement of online tools by the general practices engaged with that best met practice and patient needs. Expectations of how general practices should be supported in their procurement and implementation of online tools were not always being met. This had resulted in the implementation of online tools where design had not always contributed to patient safety nor met the needs of the practice.

3.2.17 During consultation of the report for this investigation, the EHRC advised the investigation on the duties of organisations in relation to equality and human rights laws. They described how the Public Sector Equality Duty (within The Equality Act 2010) requires consideration of how technology works for people with different protected characteristics when new services are developed, and on an ongoing basis. EHRC (2022) has produced guidance for public bodies on procurement and the Public Sector Equality Duty, and are producing further guidance for general practices.

3.3 Implementation of online tools

3.3.1 Throughout the investigation it was heard from software developers and regional and national stakeholders that implementation is key to the success and safety of online tools. National documents also describe how poor planning at implementation can be detrimental (NHS England, 2023a). Implementation was observed by the investigation to be complex with the need to engage with and understand patient needs, work with software developers to configure an online tool to a general practice's local needs, and integrate a tool into pre-existing processes. The general practices engaged with told the investigation that they had implemented online tools with little guidance on the most safe, efficient and productive approach.

Patient engagement

3.3.2 Evidence gathered during the investigation indicated that patient engagement during the implementation of online tools included:

- understanding the demographics, capabilities and accessibility needs of a local population
- consulting and communicating with the public about practice plans.

3.3.3 None of the patients the investigation spoke with recalled being consulted on local plans to implement an online tool or had the opportunity to influence its configuration. Some were not aware that tools existed, and others wanted to use them but did not have the equipment or knowhow. Some ICBs were seen to be offering patients equipment (laptops and tablets) and education around accessing online healthcare.

3.3.4 Understanding the needs of patients requires general practices to speak to and hear from their local populations. General practices can also draw on information from their ICBs and other bodies such as the EHRC. The EHRC told the investigation that effective consultation with different patient groups is important for public service providers to better understand how to adopt new technologies without potentially discriminating against some patient groups; it can also help general practices demonstrate their compliance with the Public Sector Equality Duty. Various national documents describe ways in which public engagement can be achieved,

including through patient partnership groups (PPGs), which are groups of patients and carers who meet with their general practice to discuss issues and experiences (for example Moon, 2022; NHS England, 2023e). The investigation was told by practices that PPGs were a useful way for them to engage with their local communities. However, during the COVID-19 pandemic several PPGs stopped and have not restarted. Practices also described that PPGs may not be representative of their community.

3.3.5 NHS England (2023d) research has described the patient needs of online tools from a national perspective with regards to functionality and usability. NHS England (2023e) also describes the importance of ICBs working with general practices and using data to help understand the local needs of patients. Several practices and ICBs engaged with by the investigation had some data to support their understanding of local needs, such as the proportion of their patients who had access to telephones and computers. Others described that they “know their patients” having cared for them for their entire lives, but did not know the proportion of their patients who had access to computers, nor their local reading and literacy levels. Some patients were concerned that practices were making assumptions about their needs because they were older or lived in a deprived area.

3.3.6 The investigation also saw examples of general practices reaching out into their communities to attempt to understand patient needs in relation to access and consultation. It was heard that these efforts were not always resourced through general practice contracts, creating a further barrier to community engagement. Examples of reaching out included:

- Community ‘in reach’ – healthcare professionals attending community events and foodbanks in a deprived area ([Health Services Safety Investigations Body, 2024b](#)).
- Care co-ordinators – who proactively reached out to potentially vulnerable patients on their general practice’s list; the role of care co-ordinators is being considered in another Health Services Safety Investigations Body ([2024a](#)) investigation.
- Engagement events – where one practice found that it had underestimated its population and more patients than expected wanted to, and could, use online tools.

3.3.7 Patients also shared concerns about communications from their general practices and (former) CCGs/ICBs when service changes were made. This meant patients became aware of changes by word of mouth, leading to misinterpretation. The investigation found that some patients believed they could no longer have telephone or face-to-face consultations, or ring or visit a practice to access care. One patient had written a poem about their experience (see Box 3). Practices told the investigation that patients could still telephone or visit to seek care, and that a route for consultation (whether face to face, telephone or online) depended on a patient’s need and circumstances.

Box 3 Poem by a patient about accessing their local practice

'I telephoned the doctor 'cos I was feeling really sore

I was answered with a message – “We don't make appointments like this anymore”

Please go on line or use your smart phone – just fill up the form

From now this is going to be your 'contacting us' as norm'.

3.3.8 The misinterpretation that patients could no longer receive care from their general practices other than online was found in several parts of the country. The investigation also heard similar from a national advocacy group and an ICB. The investigation observed that in some areas patients had misinterpreted the introduction of digital tools as 'online only' when care could still be received by telephone or in person. The EHRC told the investigation that where no suitable alternatives for access to and receipt of care exist for people with different protected characteristics, this could be in breach of equality and human rights laws.

Managing integration of online tools

3.3.9 Accountability for the integration of an online tool into the processes of an individual general practice was heard to lie with that practice. ICBs then described themselves as having a role in support of general practices. The general practices engaged with told the investigation of the lack of time they had to effectively integrate an online tool while continuing to deliver clinical care. They further described the complexity of an integration and the limited local expertise they had to undertake such projects. They also felt that they had received limited direction around what to consider as part of an online tool integration with some describing learning from “horror stories” of others of what not to do.

3.3.10 The investigation explored the support available to general practices for the integration of online tools. During the COVID-19 pandemic, NHS England (2020) published a supporting toolkit for the implementation of online tools. This provided considerations for implementation and highlighted the complexity of such a project. As part of the 'Delivery plan for recovering access to primary care' (NHS England, 2023c) the National General Practice Improvement Programme Project (GPIP) was introduced to provide support to implement modern general practice. As part of GPIP, practice level support is offered via ICBs to support local improvement work, and a suite of resources is available for practices. The practices engaged with by the investigation welcomed this support, but found that it did not always address all of their improvement needs, nor did they have time (due to work pressures) to take full advantage of the offer.

3.3.11 When exploring integration with general practices, two challenges were repeatedly heard by the investigation. These related to deciding which patients were appropriate for online consultations, and how to manage the volume of incoming requests. With regards to who is appropriate to receive a consultation online, various publications describe considerations for who these may be (for example NHS England, 2020). Remote consultation in general may be best suited to patients who are normally well and have simple acute (short-term) problems (Payne and Dakin, 2024), and online written consultations may work well where there is a pre-existing relationship between the patient and healthcare professional who responds to their request (Bakhai and Atherton, 2021). However, in practice GPs told the investigation that applying these considerations to decide on the consultation route was challenging – simple acute problems may turn out to be something more complex, and increasingly healthcare professionals do not have pre-existing relationships with patients. Continuity of care is a known challenge in the delivery of general practice ([Health Services Safety Investigations Body, 2023](#)).

3.3.12 With regards to the volume of incoming requests, as described in 3.1.10, some practices had underestimated the potential volume of requests an online tool would create. In response to a high volume of requests, several practices had limited the time period during which their tools could be used by patients, or had ‘capped’ the number of requests per day. Practices said that they needed to do this for “patient safety” and because “demand continued to increase on general practice”. A significant concern was the “unknown” risk that might exist within a request that has not yet been reviewed by a practice.

3.3.13 From a patient perspective, a regular experience heard was that request caps were quickly reached, sometimes within minutes of their general practice opening. When a patient then tried to telephone, they would “queue” to speak to staff only to be told that no consultation appointments were left. Box 4 gives an example of a parent who was unable to get an appointment for their son, observed by the investigation.

Box 4 General practice observation – difficulty getting an appointment

A parent came into the waiting room at 09:30 hours (Tuesday) after coming home from night work to find his son unwell. He had come into the practice to book an urgent appointment as he lived nearby and could not get through to the practice on the telephone. The receptionist redirected the parent to the online consultation tool. The parent explained he had attempted to use this first before coming to the practice, but it had “closed”. The receptionist told the parent that there were no appointments left and he would have to call 111.

3.3.14 During observations in general practice the investigation saw some of the challenges faced by patients when trying to access appointments. As per 2.1.9, access to care was also a theme of concern in the patient focus groups. Due to the investigation's scope, the entirety of access to general practice care was not examined. However, it was found that some patients had not been able to get access to a consultation when they felt they needed one. They perceived that they were "competing" with other patients who were "racing" to get an appointment via different routes (telephone, online tool or face to face). From a general practice perspective, the situation was described as "fastest finger first" and some practices faced difficulties ensuring all patients who needed a consultation got one. The investigation was told that the recommended level of patient contacts in order for a GP to deliver safe care is not more than 25 contacts per day (British Medical Association, 2018). In reality, the investigation heard from some GPs that the level of recommended patient contacts was often exceeded but they were still not able to meet demand.

4. Supporting improvements in patient safety

The providing of remote care by general practice has associated patient safety risks and benefits. Much of the remote care provided by general practice is over the telephone, but there is increasing use of online consultation tools ('online tools'). The findings of this investigation demonstrate that the implementation of online tools for asynchronous consultation in general practice may create risks to patient safety. The findings are an opportunity to proactively address those risks to support safe patient care. The findings also highlight wider concerns that online tools may unintentionally and negatively impact on access to, and the workload of general practices.

This section describes the investigation's safety recommendations and safety observations.

4.1 Online tools and general practice

4.1.1 The implementation of online tools as part of the modernisation of general practice has had several benefits. These have included improved patient access and demand management. These benefits are welcome as general practices are 'experiencing significant and growing strain with declining GP numbers, rising demand, [and] struggles to recruit and retain staff' (British Medical Association, 2024), and patients have been finding it increasingly difficult to access care (Care Quality Commission, 2023). However, not all general practices and patients have seen the benefits with concerns raised to the investigation that online tools also have the potential to contribute to harm.

4.1.2 The investigation found limited formal reporting of patient safety incidents where online tools had contributed to harm to patients when used for asynchronous consultation. Despite that lack of formal evidence, this investigation was launched because of the concerns raised by those engaged with across the healthcare system, both patients and staff. The investigation heard concerns from staff and emotive stories from patients where family members had been harmed. What the investigation heard was not represented in formal incident reports. There is under reporting of patient safety incidents in general practice and potentially under recognition of the risks associated with online tools when used for consultation.

HSSIB makes the following safety observation

Safety observation O/2024/024:

National healthcare organisations can improve patient safety by supporting general practices to report patient safety incidents associated with the use of online consultation tools.

4.1.3 The role of an HSSIB investigation is to support improvements in patient safety and as such this investigation focussed on safety associated with online tools. The investigation wishes to acknowledge that the NHS faces challenges supporting access to care for patients, while ensuring that care is safe. It is outside of the scope of this investigation to compare different approaches to consultation in general practice, their safety and how they support access. The findings of this investigation are shared to build awareness of potential patient safety risks with online tools so they can be considered and addressed to support future remote care.

Online tools and implications for demand

4.1.4 During the investigation, stakeholders from across the healthcare system referred to the challenge of increasing demand on general practice and the implications this had for patient safety. To investigate the demand and capacity in general practice was outside of the scope of this investigation, but these factors are important to consider when implementing online tools.

4.1.5 Case studies shared with the investigation show that online tools can positively influence demand management in general practice. However, the investigation also heard concerns from those engaged with at practice, regional and national levels that meeting access requirements and demand with remote care (including with online tools) did not mean the needs of patients were always being met in a safe and effective way.

4.1.6 The findings of the investigation highlight how implementation of online tools is a complex undertaking. That undertaking requires recognition of how a tool will interact with the different components of a general practice system which includes social and technical elements.

HSSIB makes the following safety observation

Safety observation O/2024/025:

National healthcare organisations can improve patient safety by creating the conditions within which online consultation tools can be effectively implemented, including ensuring general practice has the resources, capacity and capabilities to meet the needs of its patients.

4.1.7 The investigation also found concerns that the use of online tools has the potential to contribute to longer-term demand on healthcare services. With the health of the population already deteriorating (McKee et al, 2021), GPs engaged with felt that online consultation and the wider use of tools would not enable them to best support the long-term health of their patients (see 3.1.8). They also described that online tools make it difficult for them to meet some of the expectations of NHS England's (2024f) Quality Outcomes Framework, which includes aspects relating to public health. It was described that the core characteristic of effective general practice is the holistic relationship formed between patient and healthcare professional, but this is being lost.

HSSIB makes the following safety observation

Safety observation O/2024/026:

National healthcare organisations can improve patient safety by considering how long-term condition management and proactive health promotion can be accomplished alongside the online consultation model of general practice, which may limit opportunities to provide holistic care to patients.

4.2 Supporting the implementation of safe online tools

4.2.1 The investigation found variation in the design of online tools, how they were being used, and how they had been implemented. Factors that contributed to this variation were limited recognition of the explicit needs of patients and general practices when designing online tools, limited evidence about the most suitable design for an online tool to safely meet its required

capability, and limitations in support to general practices to project manage the implementation of online tools. This is despite the national efforts to support procurement of appropriate online tools and their implementation.

4.2.2 From a software development perspective, developers were aware of the capabilities and standards required of their online tools by NHS England. However, meaningful user (patient, carer and staff) engagement and input into design was heard to be a challenge (see 3.2.6).

HSSIB makes the following safety observation

Safety observation O/2024/027:

National healthcare organisations can improve patient safety by supporting software developers of online consultation tools to meaningfully involve patients and staff in software design to help better understand their needs.

4.2.3 Before the COVID-19 pandemic concerns were raised by some academics about the lack of supporting safety evidence for remote care, limited supporting guidance, and the potential for unintended consequences (Atherton et al, 2018; Iacobucci, 2017; Rodgers et al, 2019). Since the pandemic, strengths and weaknesses of remote care have been described including concerns about potential risks to patient safety and access to care (for example Dakin et al, 2024; Ladds et al, 2023; Payne et al, 2023). Research specifically focussed on online tools without consideration of other forms of remote care is more limited. However, the risks and incidents described by academics associated with remote care were also seen and heard about during this investigation with online tools.

4.2.4 NHS England (2023d) research and evaluation of online tools has previously considered usability, functionality and workflows. The findings of this investigation demonstrate a need to formally evaluate the patient safety risks associated with online tools and their role in online consultations in general practice. This is to support mitigation of the risks, and future safe and effective implementation of online care. An evaluation may also allow consideration of the safety concerns and associated findings identified in the research. This evaluation would align with work undertaken as part of the NHS England (2024c) Digital Pathways Framework [paused at the time of writing] and the efforts being undertaken to modernise general practice as part of the National General Practice Improvement Programme (NHS England, 2023c).

4.2.5 The investigation makes the following safety recommendation with the intent that the evaluation considers the findings of this investigation (summarised in appendix 6.3) and the wider research in relation to design, user needs and implementation to support delivery of safe online consultations and care. The summarised findings in appendix 6.3 may also be of use to ICBs and general practices.

HSSIB makes the following safety recommendation

Safety recommendation R/2024/030:

HSSIB recommends that NHS England undertakes an evaluation of the risks to patient safety of online consultation tools in general practice, taking into account the findings of this investigation, recent research, and the experiences of general practices. This is to identify and implement actions to support the safe delivery of care using online consultation tools in line with best practice.

The role of integrated care boards in implementation

4.2.6 Throughout the investigation stakeholders from across the healthcare system described the complexity of implementing an online tool into general practice in a way that supports patient safety, access and the flow of work. The Equality and Human Rights Commission (EHRC) also highlighted to the investigation the duties ICBs and general practices have under the Public Sector Equality Duty that are relevant to and require consideration when implementing an online tool.

4.2.7 Stakeholders described how ICBs have an important role supporting the safe and effective procurement and implementation of online tools. The investigation found that the general practices it engaged with had received limited support from their (former) CCGs and current ICBs when procuring and implementing online tools (see 3.2.15). Several general practices told the investigation that attempting to effectively implement tools alongside their clinical work was challenging. They wanted more support from their ICBs, and more support than could be offered through the National General Practice Improvement Programme.

4.2.8 The investigation was told by national stakeholders that ICBs should have procurement, digital clinical safety, and project management capabilities to support general practices during their implementation of online tools (NHS England, 2022). As per 3.2.13, the ICBs engaged with did not always feel enabled to provide the required support to practices, including through engagement and education of the public in their local systems. The investigation observed a 'gap' between the expectations for online tools set for general practices by national bodies, and the ability of practices to meet those expectations.

4.2.9 The investigation found that, without appropriate support provided to general practices when selecting and implementing online tools, implementation for online consultation could result in risks to patient safety, as well as affect accessibility and workflows. In the context of this investigation, ICBs were found to vary in their offer of support to general practices. The investigation makes the following safety recommendation and suggestion for a safety response from ICBs.

HSSIB makes the following safety recommendation

Safety recommendation R/2024/031:

HSSIB recommends that NHS England develops mechanisms for assuring that integrated care boards support general practices when implementing online consultation. This is to ensure online consultation tools are procured and implemented in ways that best support patient safety.

HSSIB suggests the following for integrated care boards

Safety response for integrated care boards ICB/2024/007:

Integrated care boards can improve patient safety by:

- Involving general practices and patient groups as stakeholders in procurement processes for online consultation tools.
- Supporting general practices to implement tools in a way that meets the specific needs of a practice and its patients.
- Ensuring general practices provide suitable alternatives to online consultation tools where they are needed for patients to access and receive care.

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6. Appendices

6.1 Investigation approach

To identify topics for investigation within the ‘workforce and patient safety’ theme, the investigation reviewed intelligence from healthcare service and professional regulators/bodies and research. National stakeholders supported HSSIB’s understanding of emerging concerns in this area and, as a result, four investigations were launched in June 2023. One investigation focused on ‘the digital environment’, to which this report contributes.

Evidence gathering

As part of the investigation’s examination of the digital environment, the investigation undertook an initial search and review of serious incidents identified through the Strategic Executive Information System (StEIS), undertook patient focus groups, and visited four general practices across England. During the initial evidence collection, the patient safety risks associated with online consultation tools became apparent. As a result, the investigation visited or remotely engaged with further general practices, primary care networks, local medical committees, and integrated care boards across England (see Table A).

Table A Evidence gathering and stakeholder engagement

Evidence source	Details
StEIS – database search	

Evidence source	Details
	Serious incidents occurring in general practice (care sector) compared to all reports per calendar year: - N = 219 (of 18,983) in 2021 - N = 169 (of 18,291) in 2022 - N = 81 (of 13,596) in 2023 Free-text search of 'description' identified 18 that included aspects relating to remote care.
Reports to prevent future death (PFD) – database search	Free-text search to identify any reports noting delivery of remote care. Seven PFDs following deaths between 2018 and 2023 raised concerns around remote care, online requests, and consultations.
Patient focus groups	35 patients across four focus groups (three face to face and one virtual), representing multiple general practices. Included two patient safety partners. Patient and family insights were further gained through visits to general practices and wider conversations as the investigation progressed.
General practices	Individuals and multidisciplinary teams representing 16 general practices/primary care networks across England.
Primary care networks and local medical committees	Group membership representing eight areas across England, and their associated general practices.
Integrated care boards	Digital and general practice teams representing seven regions across England.
Software developers	Five software developers representing online consultation tools used in England.

After collecting evidence at local and regional level, the investigation engaged with national bodies and researchers (see list of stakeholders below). Further evidence was gathered from searches of national policy and guidance, attendance at learning events, and the research literature. No systematic or scoping review of the literature was undertaken.

Analysis of the evidence

The findings presented in this report were identified following triangulation of various evidence sources and following consultation with those involved in the investigation. The investigation used the Systems Engineering Initiative for Patient Safety (SEIPS) (Holden et al, 2013) and the AcciMap model (Svedung and Rasmussen, 2002) to analyse the evidence. SEIPS and AcciMap are described in HSSIB's (2024c) report '[Advanced airway management in patients with a known complex disease](#)'.

Stakeholder engagement and consultation

The investigation actively engaged with the stakeholders listed below to gather evidence during the investigation. The stakeholders contributed to the development of the safety recommendation and safety observations based on the evidence gathered.

- NHS England
- Royal College of General Practitioners
- Age UK
- Race and Health Observatory
- Equality and Human Rights Commission
- national and regional events about the subject matter
- researchers and academics in general practice and remote consultation
- further subject matter experts at general practice, integrated care board and national levels.

6.2 Factors affecting patient use of online tools

Table B provides a non-exhaustive list of examples seen and heard by the investigation of factors affecting patient use of online tools. Interaction between and the cumulative effects of multiple factors was also found by the investigation.

Table B Factors affecting patient use of online tools

Factor	Factor	What was seen by the investigation?
Deprivation (NHS England, n.d.b)	Income	Digital healthcare is not free; people with low/no income may have to choose how they spend their money.
Deprivation (NHS England, n.d.b)	Education	Access to education, including the ability to read and write, affects the ability to engage with and use digital healthcare.
Personal characteristics (Equality Act, 2010)	Age	Some older people may not have had the opportunity in their life to develop the skills to use online tools or they are not accessible to them due to sensory loss or disability.
Personal characteristics (Equality Act, 2010)	Disability	Physical, mental, sensory and learning related disabilities may mean some people are unable to engage with digital healthcare or require extra support.
Personal characteristics (Equality Act, 2010)	Race and nationality	People may have been brought up without the skills or means to access digital healthcare. They may not speak English as a first language.

Factor	Factor	What was seen by the investigation?
Personal characteristics (Equality Act, 2010)	Sex	Men are less likely than women to engage with digital healthcare.
Socially excluded (NHS England, n.d.c)	Homelessness and vulnerable migrants	May not have the means to use digital healthcare and may not be registered with a general practice.
Other	Preference	People have the right to choose and may choose to not engage with digital healthcare.
Other	Trust	People who do not trust healthcare, or online tools, are less likely to engage with digital healthcare.
Other	Employment	Being employed and working at the time digital healthcare is open may limit engagement.

6.3 Safety evaluation of online consultation tools

Further to safety recommendation R/2024/030, the investigation's findings provide insights that should be included as considerations as part of any evaluation of the safety of online consultation tools. Table C summarises those findings which also may be of use to integrated care boards and general practices.

The investigation acknowledges that several of these considerations are known to NHS England with supporting work completed or underway.

Table C Areas for consideration for a safety evaluation of online consultation tools in general practice

Area	Insight to consider for online consultation tools (OCT)
Strategy and context for OCT	• The purpose of an OCT and the tasks required of it were not always recognised and therefore did not inform design, procurement and implementation decisions. • The differences in context (between general practices and regions) within which an OCT was to be implemented were not always recognised and therefore did not inform design, procurement and implementation decisions. • A clear and explicit understanding of public digital accessibility needs and equality impact had not always informed decisions in relation to OCTs. • General practices did not always have the time to undertake a complex implementation, such as for an OCT, while delivering clinical care. • Implementation is further complicated by the differing needs of general practices across a primary care network, including digital maturity and infrastructure in practices.

Area	Insight to consider for online consultation tools (OCT)
Design of OCT	• The explicit needs of users (patient, carers and staff) are not always able to be sought and used to inform design of OCTs. • There is limited research around the best user-interface design of OCTs to support the tasks required of them. • Additional standards for OCT may be beneficial to support increased focus on interface usability, accessibility, frontline user testing and artificial intelligence. • The role of artificial intelligence has the potential to increase in OCT with the need to consider the implications for patient safety.
Procurement of OCT	• Information about the pros and cons of each OCT, associated hazards and the tasks for which they are best suited, were not always apparent to general practices. • The European and Human Rights Commission described the importance of ensuring procurement decisions comply with the Public Sector Equality Duty. • Testing of OCTs with intended users in clinical environments prior to deployment did not always ensure explicit needs were identified.
Implementation of OCT	• General practices did not always have the required project management and digital clinical safety capabilities available to them to support OCT procurement and implementation decisions. • A clear and explicit understanding of local patient and public digital accessibility needs and equality impact had not always been achieved through patient engagement, involvement and education. • Limited examples of patient and public education and development of digital skills, including for OCT, were found. • Limited examples of patient and public enablement to use digital healthcare, including for OCT, were found. • Specific considerations for vulnerable patients may not always be factored into decisions around implementation of OCTs. • Limited policies, processes and procedures with clear roles and responsibilities for OCT were found.
Undertaking online consultations	• The workforce do not always have the digital skills to use OCT with limited opportunities to develop those skills. • Undergraduate and postgraduate healthcare training and competency assessment in the use of OCT for consultation was seen to be limited. • Multidisciplinary team training in the use of OCTs in general practice was seen to be limited.
Monitoring outcomes	• Software developer feedback mechanisms were included in the OCTs seen. It was unclear how ongoing evaluation of OCTs, including user feedback, informs improvements.

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