

Access to and delivery of general practice services: a study of patients at practices using digital and online tools

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Key points

- General practice in England is facing unprecedented demand. Greater use of digital and online tools for access to and delivery of primary care services has been advocated as a way of easing pressures, and is a long-standing NHS policy objective. Accelerated by the COVID-19 pandemic, most practices have implemented online consultation systems and can offer remote consultation by telephone, SMS/online messaging or video.
- Using an online consultation system, a patient can contact their GP by filling in a form on their smartphone, tablet or computer. This is referred to as making an online consultation and might include booking an appointment, checking symptoms, ordering a repeat prescription or updating personal details. The request is then forwarded to the practice who respond via text or email (SMS/online messaging) confirming the request has been received and giving advice about what to do next. If further action is required, more texts or emails may be exchanged, or the GP practice may suggest a telephone, video or face-to-face consultation.
- Nationally, practices have been advised to implement online consultation systems as part of a hybrid approach where online routes of access are used alongside traditional routes in person or via telephone. Remote consultation via telephone, online/SMS messaging and video is used alongside traditional care delivery by face-to-face consultation.

- Online consultation systems and remote consultation may facilitate greater choice and flexibility in how primary care is accessed and delivered. From a patient perspective, online consultations systems can offer more convenient access to general practice. From a practice perspective they can help better triage and signposting. Combined with the ability to deliver consultations remotely, patient requests can be streamlined to the right person or service in the right time frame, with care prioritised and delivered according to patient preferences and needs.
- However, depending on how these digital tools are implemented and used, there is a risk of unintended consequences creating inequalities in health care. Some patients may find it harder to access their GP practice using an online consultation system and having a remote consultation may not be suitable for some patients or conditions.
- To understand more about the way primary care is accessed and delivered in practices using online consultation systems, we examined 7,558,820 patient-initiated requests for primary care made using the askmyGP online consultation system between 1 March 2019 and 30 September 2021 at 146 general practices in England. These practices had a combined total list size of 1.35 million patients. The askmyGP system is unique in capturing all patient-initiated demand whether initiated directly by patients online, or indirectly by practice staff on behalf of patients who prefer to contact the practice by telephone/in-person.
- A unique contribution of our study is the ability to follow a patient's journey from their initial point of contact with a practice to receiving treatment or advice, or having further care arranged. We can then use this flow of information alongside data captured on patient characteristics, clinical or administrative needs, and preferences for how care is delivered, to determine the key factors driving access to and delivery of general practice services.
- Our results demonstrate a clear shift in how patients are choosing to contact their GP. Even before the pandemic, the largest proportion of requests were initiated online. This increased from a low of 60% in June 2019 up to 69.6% just before the pandemic in March 2020 while overall demand remained dipped or remained fairly static. During 2021, 71.8% of all patient requests were initiated online rather than by telephone or in person. And once patients had accessed their GP online, they were 25% more likely to do so next time compared with those who had not.
- However, how a patient chose to contact the practice varied according to their characteristics, clinical/administrative needs and how they wanted their care delivered. For example, men were over 10% less likely to contact the practice online than women; patients requesting a response via SMS/online messaging were more than 35 times as likely to use the online channel than those asking for a telephone consultation; and during 2021, patients asking about new medical problems were twice as likely to contact the practice online compared to those asking about an existing medical problem.
- Our study challenges the assumption that a majority of patients prefer face-to-face over remote consultation. The proportion of requests indicating a preference for a face-to-face consultation dipped from an average of 29.7% before the pandemic to less than 4% at the start of the pandemic. It steadily recovered after that but was only at 10% by the end of our study period in September 2021. Telephone consultation was the most popular patient preference, favoured on average in 44% of requests pre-pandemic, and by 55% in both 2020 and 2021. Requests for a response via SMS/online messaging accounted for on average 26.2% requests pre-pandemic, rising to over a third in 2020 and 2021. Fewer than 1% of requests asked for a video consultation.
- During the pandemic, the rate of requests by patients to the general practices studied increased by almost a quarter compared to the year before. However, there was no increase in the ratio of requests made online versus by telephone during this time suggesting that the ability to contact the practice online was not stimulating the additional demand. This contrasts with anecdotal reports of supply-induced demand as a result of expanded access to general practice.

- Almost 40% of all requests across these practices, regardless of the access route, were from the top 10% of requesters (frequent attenders) and most (ranging from 49.1% of all requests before the pandemic to 43.7% in 2021) were from patients asking about pre-existing medical problems. Although many of the patients making these requests may have complex needs and need to be seen regularly, understanding who they are and why they are seeking care will be important for general practices to improve services for these patients in future.
- Care tended to be delivered according to patient characteristics, clinical/administrative needs, and preference. For example, patients older than 74 years were up to 28% more likely to have a face-to-face consultation than those aged 25-44 years; those asking about new medical problems (around 40% of requests over the study period, although they dipped to around 30% at the start of the pandemic) were two-thirds (67%) more likely to be seen face-to-face than those asking about existing medical problems; and those asking for a face-to-face consultation were more than 4 times as likely to have one compared with those who asked for a telephone consultation.
- More than 83% of all requests made at these practices were responded to within the same working day and the median time to respond was less than 4 working hours. Response times varied according to how care was delivered, patient characteristics and clinical needs.
- Only a minority of the 7 million requests in this study indicated a preference for a face-to-face consultation. The October 2021 NHS support plan set out a concern that levels of face-to-face care lower than 20% are likely to indicate 'wholly inappropriate access'. Our work suggests that numerical targets for the proportion of consultations carried out face-to-face are inappropriate, and a more holistic view should be taken. Key factors in determining the appropriate blend of consultation types are likely to include age, frequency of use, clinical need and patient communication preference.
- In 2021, there were increases in the proportion of requests from non-frequent attenders and from those asking about new medical problems. There was also a recovery in the rate of requests from younger patients after decreases in 2020. These patients were contributing to the care backlog driving demand in 2021. The time taken by practices to respond also increased steadily throughout the pandemic. This may have been due to a growing complexity of care, higher patient expectations and an increased administrative burden. These trends are continuing, suggesting that a care backlog is going to continue to create pressure in general practice.
- Our results suggest that use of an online consultation system to support access and triage alongside multimodal care delivery can be effective in managing demand and prioritising care based on need and meeting patient expectations. Non-digital users did not seem to be disadvantaged by the move to the greater adoption of digital tools at these practices. However, more work is required to look at impacts relating to socioeconomic and health inequalities.

About the Improvement Analytics Unit

The Improvement Analytics Unit is a unique partnership between NHS England and NHS Improvement and the Health Foundation that evaluates complex local initiatives in health care in order to support learning and improvement.

For more information see: www.health.org.uk/IAU

Background

Digital-first primary care, where patients use digital and online tools for access to and delivery of primary care services, such as booking appointments, requesting repeat prescriptions, or having consultations with a health care professional, has been a long-standing NHS policy objective. In January 2019 the *NHS Long Term Plan* committed to offering every patient the right to access primary care digitally by 2023/24.¹ The 2019/20 General Medical Services (GMS) contract set out a requirement for all GP practices to implement online consultation systems by April 2020 and to offer video consultations by April 2021.² This transition sped up exponentially at the start of the COVID-19 pandemic in March 2020. Practices were urged to adopt total triage supported by the use of online consultation systems, and to deliver consultations remotely where clinically appropriate³ to reduce the risk of infection to patients and staff.

However, these policies have been implemented against a backdrop of unprecedented pressure on primary care services.⁴ Increasing risks of preventable disease due to changing lifestyles, people living longer and with multiple chronic conditions, and the requirements for GPs to deliver a wider range of services, and challenges in workforce recruitment and retention,⁵ are all adding to pressures. During the first wave of the pandemic, GP consultations⁶ and hospital use for the general population dropped substantially,⁷ resulting in a severe backlog of care. This backlog, as well as longer waits for services in other parts of the health system (for example, the elective outpatient backlog⁸), has resulted in sicker patients further compounding the pressure on practices, as well as secondary care services. From December 2020, GPs were also charged with delivering COVID-19 vaccinations.⁹

Online consultation systems and remote consultation facilitate greater choice and flexibility in how primary care is accessed and delivered.¹⁰ Using an online consultation system, a patient can access their practice by filling in a form online on their smartphone, tablet or computer to contact their GP about a health or other issue. This is referred to as making an online consultation and might include booking an appointment, checking symptoms, ordering a repeat prescription or updating personal details. The request is then forwarded to the practice who respond via text or email (SMS/online messaging) confirming the request has been received and giving advice about what to do next. If further action is required, more texts or emails may be exchanged, or the GP practice may suggest a telephone, video or face-to-face consultation. Nationally, practices have been advised to implement these systems as part of a hybrid approach where online routes are used alongside traditional routes of access in person or via telephone, and remote consultation via telephone, online/SMS messaging and video is used alongside traditional care delivery by face-to-face consultation.

Some patients may prefer the convenience of online access and remote consultation as a result of not having to spend time on the telephone, travel to the practice, or sit in a waiting room. Other patients, for example carers, parents, shift, full-time and low-income workers who may find it difficult to have a conversation in real time, may find it easier to access primary care as a result of these new digital tools. From a practice perspective, online consultation systems aim to enable more equitable and effective demand management by gathering relevant information asynchronously to support signposting and clinical triage.

Combined with the ability to deliver consultations remotely, this enables patient requests to be managed by the right person or service, in the right time frame, with care prioritised and delivered according to patient needs, rather than first come, first served.

However, depending on how the digital tools are implemented and used, there is a risk of creating inequalities in health care.¹¹ For example, some patients without digital skills or access, or those with language barriers, may experience worse access and struggle with remote consultation.¹² In addition, expanded access may result in higher patient-initiated demand and consequential increases in overall workload.¹³

In this briefing, we set out to better understand how patient characteristics, preferences and clinical needs are affecting how patients access primary care, and how that care is being delivered at practices already using an online consultation system in England. We use data from askmyGP supplied by Salvie Ltd, one of 31 suppliers offering online consultation systems that are approved by the NHS Digital First Online Consultation and Video Consultation (DFOCVC) framework.¹⁴ Online consultation systems vary in design and the functionality they offer. The askmyGP system is unique in capturing all patient-initiated demand coming in online, by telephone or in person, with minimal expressed demand unmet.

Approach to the analysis

askmyGP

askmyGP is an online consultation and workflow system used by GP practices across the UK. Patients can initiate their request for care online via a link on the practice website. They are presented with a short questionnaire-based form and can report symptoms using free text. Practice staff complete the form for patients who prefer to telephone or walk into the practice. The request is then forwarded to administrative or clinical staff at the practice who navigate and/or triage the request to the right person or service and arrange for care to be delivered in the appropriate time frame and mode. This may be by remote (by telephone, online or video) or by face-to-face consultation (in the practice or at home), according to patient need and preference.

Data

Data were provided for each patient request for primary care made at any of the 216 practices using the askmyGP online consultation system from 1 March 2019 to 30 September 2021. Each record represented a summary of a single request for care and included data on: the date, time and mode of access (online or telephone/in person); patient age and sex; type of problem*; preferred consultation delivery mode (face-to-face, SMS/online messaging, video or telephone); time of practice response; actual consultation delivery mode (face-to-face, home visit, SMS/online messaging, video or telephone); and whether continuity of care was required.

* Until April 2020, patients' requests could be categorized into three types: 'existing medical problem', 'new medical problem' or 'other question'. At the request of practices, a fourth option of 'medication query' was introduced in April 2020.

Data analysis

We limited our analysis to 146 practices that were using the system to record all patient-initiated requests. By capturing all unmet expressed demand in this way, we were able to make comparisons between the characteristics of patients according to how they access their general practice, and how their care is delivered.

We linked askmyGP data at practice level to nationally available data on patient registration,¹⁵ index of multiple deprivation,¹⁶ workforce data,¹⁷ rurality¹⁸ and the GP Patient Survey (GPPS).¹⁹ For each practice each month for each age and sex strata, we calculated the person-months contributed during the month as the fraction of the total practice list size for that strata. Crude request rates were calculated for each period (week or year) of observation as the total number of requests during the period divided by the person-time, or pro-rata person-time contributed during that period. To examine service use in relative terms, we calculated the proportion of requests split by access mode, requested consultation delivery mode, actual consultation delivery mode, problem type and whether the user was a frequent attender. (Frequent attenders were defined as patients occupying the top 10% of age- and gender-adjusted requesters in their practice over the study period.) We also calculated the time taken to respond to each request.

Our study period spans March 2019–September 2021. We calculated request rates and proportions and time to respond, monthly and aggregated across three sub-periods. These were March 2019–February 2021, March 2020–February 2021 and March 2021–September 2021. For ease throughout we refer to these periods as pre-pandemic, 2020 and 2021.

Finally, we used multivariable logistic regression to test the joint effects of patient characteristics on how care is accessed and delivered in each sub-period, controlling for GP practice characteristics including rurality, index of multiple deprivation and number of full-time equivalent (FTE) GPs. Since each GP practice will have a strong influence on care access and delivery, our models include practice-level random effects, which allows for different underlying true effects at each practice.²⁰

Bringing public and private data together

The COVID-19 pandemic has led to a marked increase in the use of digital technology. In addition to digital-first primary care, we have seen new data flows to support research and planning, digital applications to support contact tracing, and increasingly the use of digital technology and artificial intelligence in supporting the NHS recovery.

In many cases, these technologies are provided through start-ups as well as established commercial enterprises. Using their technologies, these companies collect information about users of the health service. To understand if these technologies are effective (and if so, to support adoption and spread), non-identifiable patient-level data need to be consistently made available for evaluation and combined with data sets already routinely collected in the health service.

Bringing public and private data together comes with new challenges regarding patient confidentiality, information governance and commercial sensitivities. A recent report by the Open Data Institute,²¹ funded by the Health Foundation, explores the role evaluators

can play as data stewards, using their position as intermediaries to encourage stakeholders to share data and help increase access to data for public benefit. It argues that everybody involved in technology has a shared responsibility to enable evaluation, whether that means innovators sharing data for evaluation purposes, or health care providers being clearer from the outset about what data are needed to support effective evaluation.

Working with providers of digital-first primary care services

In this briefing we use private provider data supplied for evaluation purposes by Salvia Ltd. Our unique access to these data allows us to derive important insights that are not possible from looking at routinely collected data. All data used in this analysis are pseudonymised and held on a secure system in line with the latest legislation and best practice.

The Improvement Analytics Unit is also working with other providers of digital-first primary care services and has data representing more than 4,000 practices using four different online consultation systems. This represents more than 70% of all general practices in England. More reports will be published as these data are analysed to understand variation in the impact of different online consultation systems and implementation models.

Results

We analysed 7,558,820 patient-initiated requests for primary care at 146 practices between 1 March 2019 and 30 September 2021. The 146 practices comprised 13 already using askmyGP at the start, a further 29 joining askmyGP before the COVID-19 pandemic began in March 2020, and a further 104 joining after that. Practices were spread across 25 of 135 clinical commissioning groups (CCGs) in England* and were broadly comparable to practices in the rest of England (Table 1) but with the following exceptions: a greater proportion of registered patients with white ethnicity (~90% vs ~83% nationally); slightly larger median list sizes; slightly more patients living in less deprived areas and more patients living in rural areas. A slightly lower proportion of patients on average reported good or very good overall experience of their practice in the 2020 GP Patient Survey compared to nationally (80.5% vs 82.4%) but the converse was true in the 2021 GP Patient Survey (85.5% vs 83.4%).¹⁸

Demand for care

Demand for general practice care has increased since the start of the pandemic

The rate of requests increased by 24.2% over the study period from an average of 2.9 (95% confidence interval (CI) 1.5, 4.4) requests per patient person-year (pppy) pre-pandemic to 3.6 (1.9, 5.3) requests pppy in the second year of the pandemic (Table 2). During this time, request rates ranged from a low of 2 requests pppy at the start of the pandemic in April 2020 to a high of almost 4 requests pppy in March 2021 at the end of the third national lockdown (Figure 1).

* Due to CCG mergers from April 2021, there are now 106 CCGs in England.

Females consistently requested care at a greater rate than males with an average rate of requests pppy of 3.6 (1.8, 5.3) in females vs 2.2 (1.1, 3.4) in males pre-pandemic, rising to 4.4 (2.3, 6.5) in females vs 2.7 (1.4, 4) in males in the second year of the pandemic. Age-specific request rates had a J-shaped distribution in all periods, with high rates in infants aged 0–4 years dipping to the lowest levels in the 5–14 year age group and rising to the highest rates in patients aged 75 years or older.

Table 1: Comparison of study practices with average English practice

GP practice characteristic	March 2019		March 2020		March 2021	
	Study practices N=42	National practices N=7,006	Study practices N=146	National practices N=6,804	Study practices N=145	National practices N=6,674
Age (years) % (SD)						
0–4	5.6 (1.1)	6.0 (1.3)	5.5 (1.0)	5.8 (1.3)	5.5 (1.0)	5.8 (1.3)
5–14	12.1 (1.7)	12.4 (2.1)	12.2 (1.6)	12.5 (2.1)	12.2 (1.6)	12.5 (2.1)
15–24	10.4 (2.3)	11.5 (4.5)	10.9 (3.6)	11.5 (4.4)	10.9 (3.6)	11.5 (4.3)
25–64	50.9 (3.4)	51.9 (3.9)	51.3 (3.1)	51.9 (3.9)	51.3 (3.1)	51.9 (3.9)
65–74	11.1 (3.3)	9.8 (3.3)	10.8 (3.0)	9.8 (3.2)	10.8 (3.0)	9.8 (3.2)
75+	9.8 (3.2)	8.3 (3.1)	9.2 (2.8)	8.5 (3.2)	9.2 (2.8)	8.5 (3.2)
Sex % (SD)						
Male	49.2 (1.1)	49.4 (1.3)	49.4 (1.1)	49.5 (1.3)	49.4 (1.1)	49.5 (1.3)
Ethnicity % (SD)						
White	90.0 (16.0)	83.0 (19.8)	90.7 (13.5)	83.1 (19.8)	90.7 (13.6)	83.1 (19.7)
Education % (SD)						
3rd level education	12.1 (1.6)	12.0 (3.0)	12.5 (2.5)	12.0 (3.0)	12.6 (2.4)	12.0 (2.9)
List size Median (Interquartile range)						
List size	9,150 (7,389, 11,944)	7,451 (4,694, 11,031)	8,597 (5,788, 10,856)	7,751 (4,902, 11,336)	8,756 (5,920, 11,477)	7,916 (5,063, 11,582)
GP full-time equivalent (FTE)/10,000 list size Median (IQR)						
GP FTE	5.7 (4.1, 7.4)	5.3 (3.9, 6.9)	5.5 (3.9, 7.1)	5.2 (3.9, 6.9)	5.7 (4.3, 7.2)	5.3 (3.9, 7.1)
Practice LSOA IMD Quintile % (number of practices)						
1 (Most deprived)	14.3 (6)	28.2 (1,974)	22.6 (33)	28.0 (1,907)	22.8 (33)	27.9 (1,864)
2	31.0 (13)	23.1 (1,616)	26.0 (38)	23.1 (1,573)	26.2 (38)	23.2 (1,547)
3	19.0 (8)	19.1 (1,342)	18.5 (27)	19.1 (1,303)	18.6 (27)	19.2 (1,282)
4	16.7 (7)	15.4 (1,079)	19.9 (29)	15.6 (1,059)	19.3 (28)	15.5 (1,037)
5	19.0 (8)	14.2 (995)	13.0 (19)	14.1 (962)	13.1 (19)	14.1 (944)
Practice LSOA Rural/Urban % (number of practices)						
Rural	31.0 (13)	14.3 (1,006)	22.6 (33)	14.6 (988)	22.8 (33)	14.7 (976)
Small Town	42.9 (18)	39.3 (2,738)	26.0 (38)	39.0 (2,642)	26.2 (38)	39.0 (2,591)
Urban	26.2 (11)	46.3 (3,229)	51.4 (75)	46.4 (3,141)	51.0 (74)	46.3 (3,075)
GP Patient Survey good or very good overall experience % (SD)						
	80.5 (10.5)	82.4 (10.3)	85.5 (8.6)	83.4 (9.4)	-	-

Older patients accounted for the greatest share of the increase in request rates during the pandemic

Patients aged 45 years or older accounted for the largest proportion of increase in request rates in 2020 (20.8–32.9% vs less than 15.1% for patients younger than 24 years) as well as in 2021 (26.3–36.6% vs less than 23.3%), compared with pre-pandemic levels (Table 2 and Figure 2). During 2020, demand decreased by almost a quarter (23.2%) for patients younger than 5 years, and by 15.1% for patients aged 5–14 years, compared with pre-pandemic. However, by September 2021, demand for care recovered to pre-pandemic levels in these youngest age groups.

Table 2: Request rates for primary care services per patient person-year

Patient characteristic	Pre-pandemic	2020		2021	
	Mean 95% CI	Mean 95% CI	% change from pre-pandemic (P-value)	Mean 95% CI	% change from pre-pandemic (P-value)
All	2.9 (1.5, 4.3)	3.3 (2.1, 4.5)	15.2 (<0.001)	3.6 (1.9, 5.3)	24.2 (<0.001)
Sex					
Female	3.6 (1.8, 5.3)	4.1 (2.6, 5.6)	16.5 (<0.001)	4.4 (2.3, 6.5)	24.8 (<0.001)
Male	2.2 (1.1, 3.4)	2.5 (1.6, 3.4)	13.0 (0.006)	2.7 (1.4, 4)	23 (<0.001)
Age (years)					
0–4	3.2 (1.7, 4.7)	2.5 (1.4, 3.6)	-23.2 (<0.001)	3.2 (1.6, 5)	2.3 (0.614)
5–14	1.4 (0.8, 1.9)	1.2 (0.7, 1.6)	-15.1 (0.094)	1.4 (0.8, 2.1)	4.5 (0.249)
15–24	2.7 (1.3, 4)	2.9 (1.5, 4.2)	7.9 (0.001)	3.1 (1.2, 5)	16.5(0.002)
25–44	3.1 (1.5, 4.6)	3.5 (2, 5.1)	15.1 (<0.001)	3.8 (1.7, 5.8)	23.3 (<0.001)
45–64	3 (1.4, 4.6)	3.7 (2.2, 5.2)	24.3 (<0.001)	3.9 (1.9, 6)	31.8 (<0.001)
65–74	3 (1.2, 4.9)	3.6 (2, 5.3)	20.8 (<0.001)	3.8 (1.6, 6)	26.3 (<0.001)
75+	4.1 (0.8, 7.4)	5.4 (2.4, 8.5)	32.9 (<0.001)	5.6 (2, 9.1)	36.6 (<0.001)

Figure 1: Request rates per patient person-year

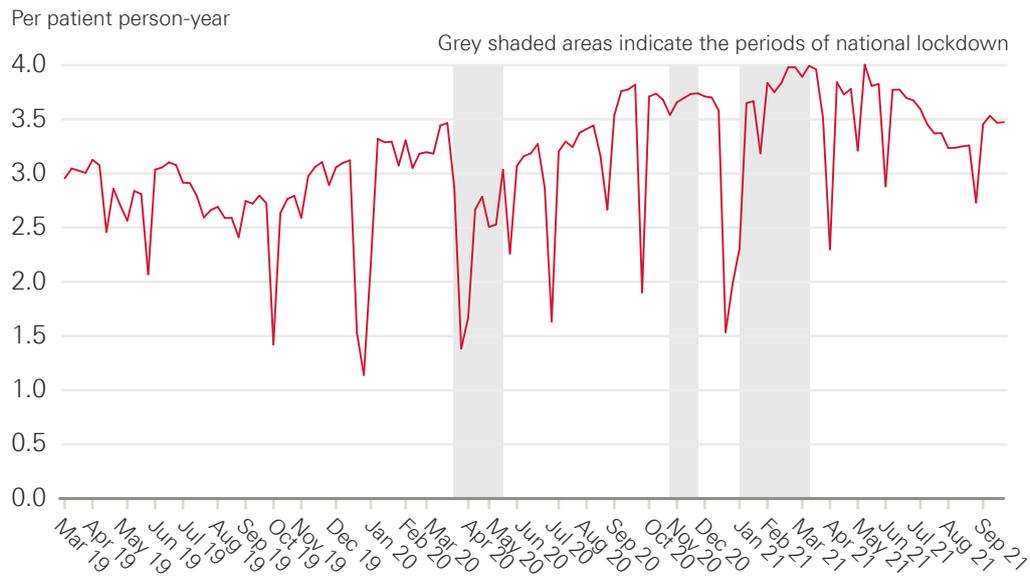
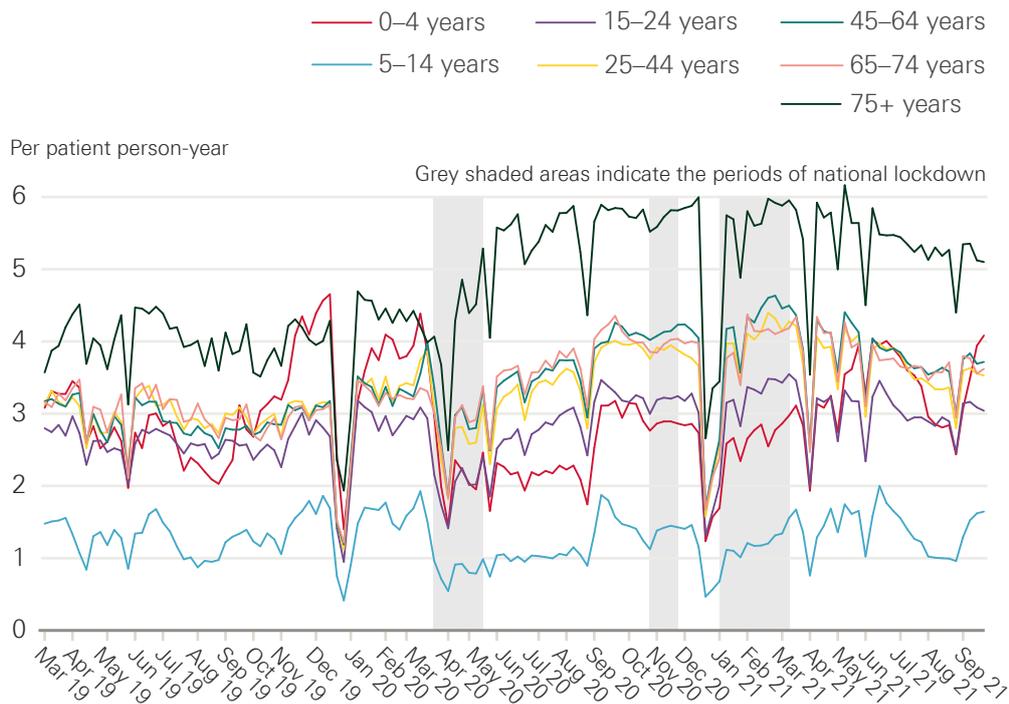


Figure 2: Request rates per patient person-year stratified by age



Most requests are about existing medical problems

Patients were asked to categorise their requests as an existing problem; a new medical problem; a medication query; or 'other question'. Requests about existing medical problems ranged from 49.1% of all requests before the pandemic to 43.7% in 2021 (Figure 3). As well as long-term conditions, these requests may include episodic conditions a patient had previously consulted about. Requests classified as 'other questions', which may include administrative queries, consistently accounted for approximately 10% of all requests.

The proportion of requests about new medical problems has risen steadily since the end of the third lockdown

The proportion of requests about new medical problems, which accounted for 40% of requests pre-pandemic, dipped to approximately 30% at the start of the pandemic. It then steadily recovered after the third lockdown was phased out in March 2021 and almost reached pre-pandemic levels by September 2021. The proportion of requests about 'other questions' peaked at the start of the pandemic, but otherwise remained fairly constant, accounting for approximately 10% of all requests. Medication queries, introduced in April 2021, consistently accounted for approximately 12% of all requests.

Requests from the top 10% of requesters accounted for approximately 40% of all requests pre-pandemic but fell steadily in 2021

Requests from frequent attenders, who account for just 10% of the patient population, accounted for almost 40% of all requests before the pandemic began. This surged to 45% at the start of the first national lockdown in March 2020 and remained higher through the rest of 2020 before falling steadily to below pre-pandemic levels during 2021 (Figure 4). Conversely, the proportion of requests from non-frequent attenders increased steadily to above pre-pandemic levels during 2021.

Figure 3: Proportion of requests by query type

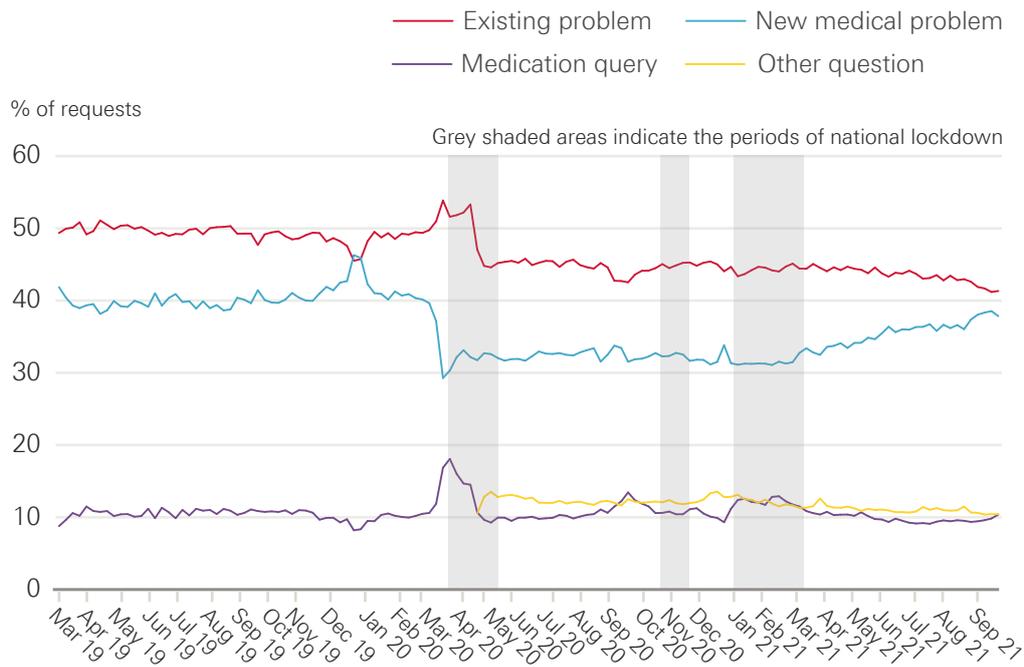


Figure 4: Proportion of requests by frequent attender status

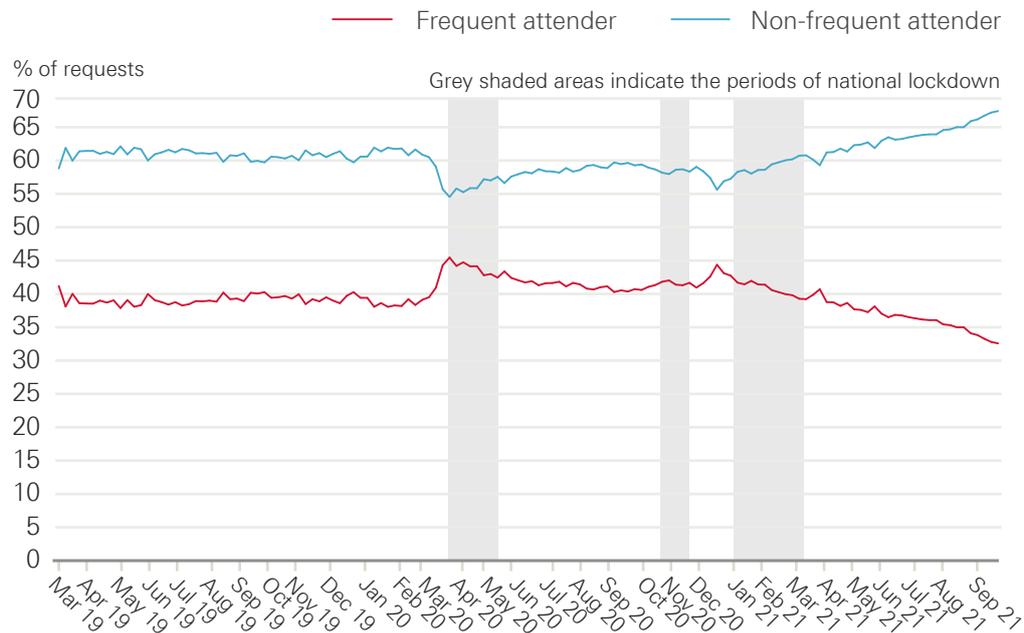


Figure 5: Proportion of requests by access mode

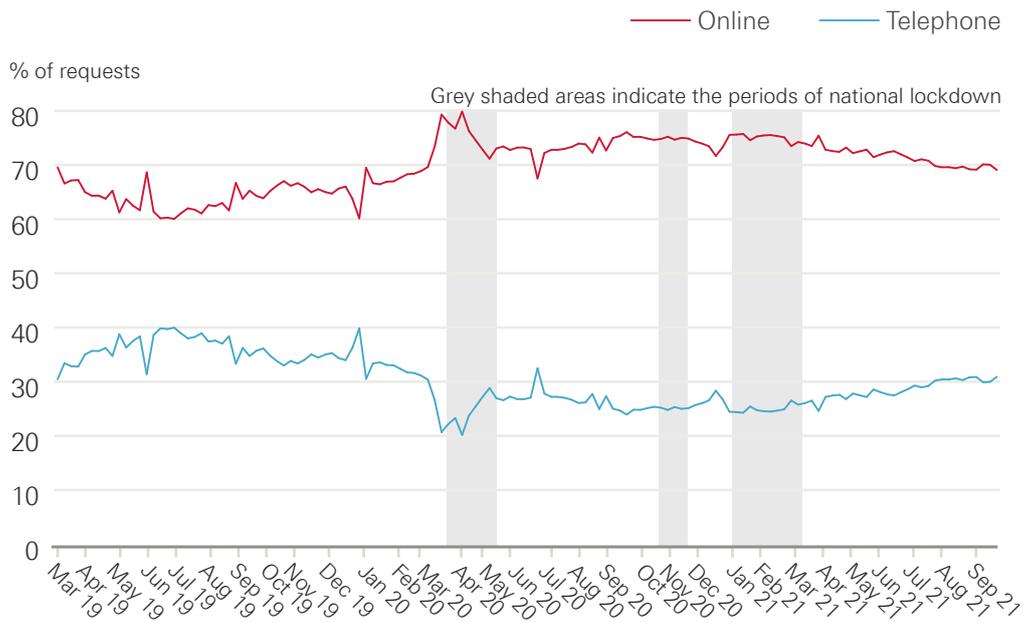


Figure 6: Proportion of requests by requested consultation delivery mode

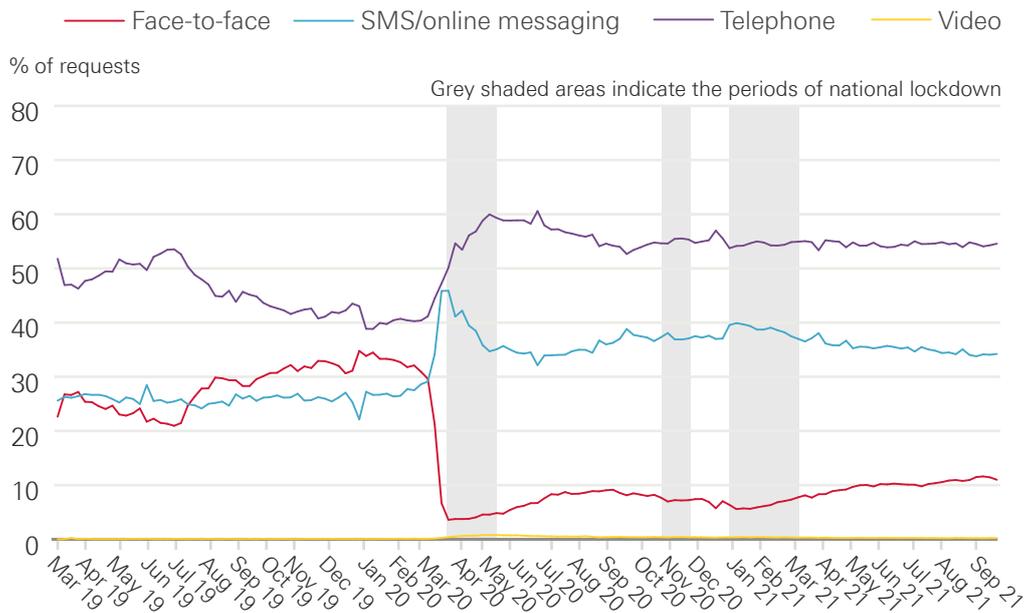
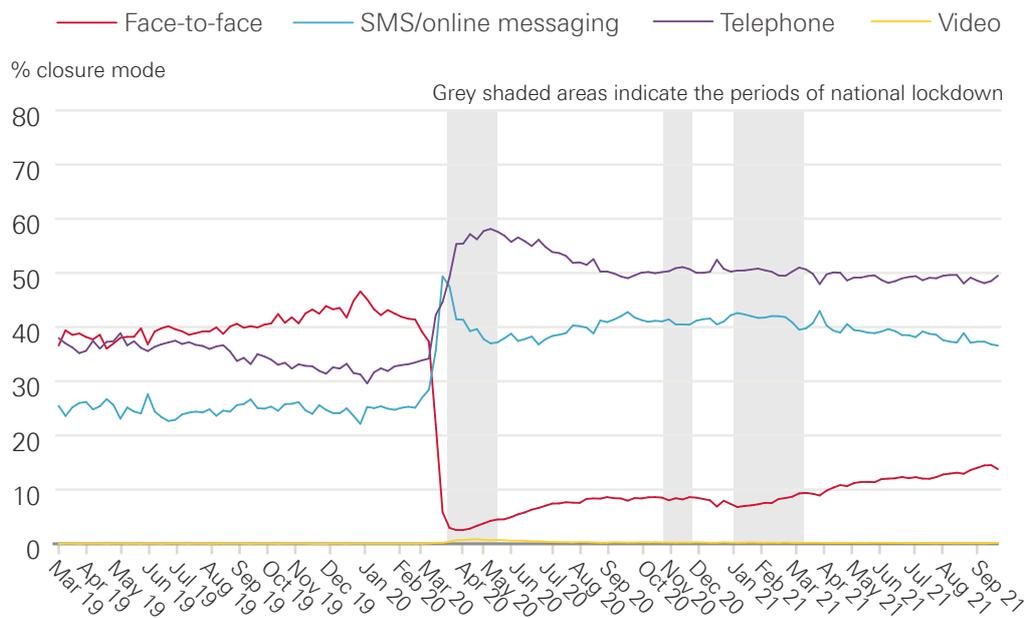


Figure 7: Proportion of requests by actual consultation delivery mode



Accessing care

More requests were initiated online than by telephone/in person at these practices

The proportion of requests initiated online rather than by telephone/in person increased from approximately 60% in June 2019 up to almost 80% in March 2020, then settled between 68% and 78% during the pandemic (Figure 5). Also, once patients had accessed the system by going online, they were more likely to do so next time: the odds ratios (OR) for pre-pandemic, 2020 and 2021 respectively, for accessing the system by going online vs by telephone/in person, were OR=1.79, 1.16 and 1.26 (P -value (P) <.001) for patients who had accessed online previously compared to those who had not (Figure 8).

Patients preferred telephone over face-to-face consultations and video consultations were seldom requested

The proportion of requests stating a preference for face-to-face consultation dipped from an average of 29.7% before the pandemic to less than 4% at the start of the pandemic before recovering to 10% by September 2021 (Figure 6). Telephone consultation was the most popular patient preference, favoured on average in 44% of requests pre-pandemic, 55.3% in 2020 and 54.5% in 2021 respectively. Preference for consultation via SMS/online messaging accounted for an average of 26.2% of requests pre-pandemic increasing to 36.9% and 35.5% in 2020 and 2021 respectively. Fewer than 1% of requests asked for a video consultation.

Patient characteristics, clinical/administrative needs and preference for how care is delivered are all associated with how a patient contacts the practice

After controlling for the effect of all other patient characteristics that affect how patients access their practice, patients contacting the practice by telephone/in person were more likely to be (Figure 8):

- Male. Men were over 10% less likely to contact the practice online than women. OR for pre-pandemic, 2020 and 2021 respectively, for contacting the practice online vs by telephone/in person were OR=0.89, 0.9, 0.86 ($P<.001$) for men compared with women.
- Older than 44 years or younger than 25 years. For example, patients aged older than 74 years were up to 10 times less likely to contact the practice online rather than by telephone/in person compared with those aged 25–44 years: OR=0.11, 0.09, 0.1 ($P<.001$). In 2021, OR=0.86 ($P<.001$) for patients aged 0–4 years, OR=0.9 ($P<.001$) for patients aged 5–14 years and OR=0.97 ($P<.001$) for patients aged 15–24 years, for contacting the practice online vs by telephone/in person compared with those aged 25–44 years.
- Asking about new medical problems, medication queries or other questions. OR for pre-pandemic, 2020 and 2021 respectively, for contacting the practice online vs by telephone/in person were OR=0.92, 0.53, 0.5 ($P<.001$) for new medical, and OR=0.44, 0.49, 0.43 ($P<.001$) for ‘other questions’ compared with existing problems.
- Asking for a telephone consultation. Patients asking for consultation by SMS/online messaging or face-to-face were more likely to have contacted the practice online (see below).

Patients contacting the practice online were more likely to be:

- Asking about existing problems. Patients with other queries tended to access by telephone/in person (see above).
- Frequent attenders. Frequent attenders were consistently approximately 60% more likely to use the online channel to contact the practice than a non-frequent attender: OR for pre-pandemic, 2020 and 2021 respectively, for contacting the practice online vs by telephone/in person were OR=1.62, 1.64, 1.58 ($P<.001$) for frequent compared with non-frequent attenders.
- Asking for consultation by SMS/online messaging or face-to-face rather than by telephone. For example, those asking for consultation by SMS/online messaging were more than 35 times as likely to use the online channel to contact the practice than those asking for telephone consultation: OR=90.6, 35.8, 43.9. ($P<.001$).

Figure 8: Association between request characteristics and access mode

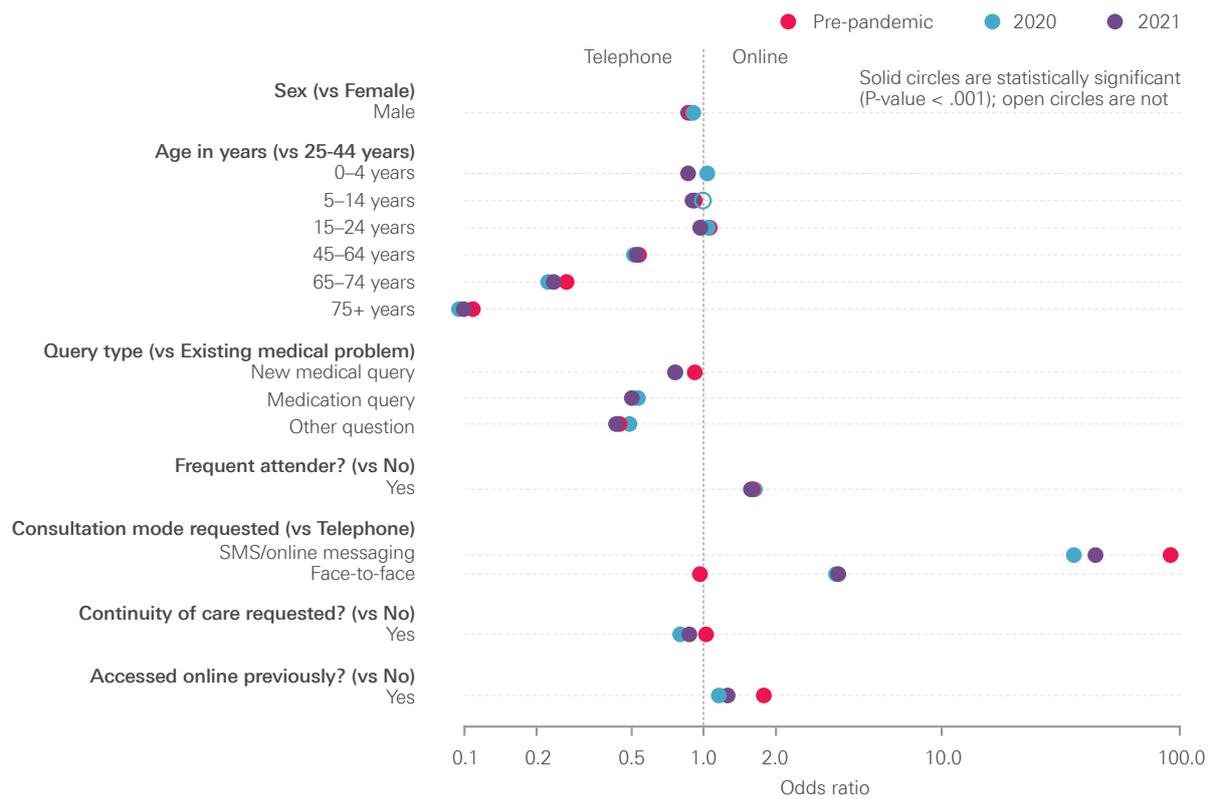
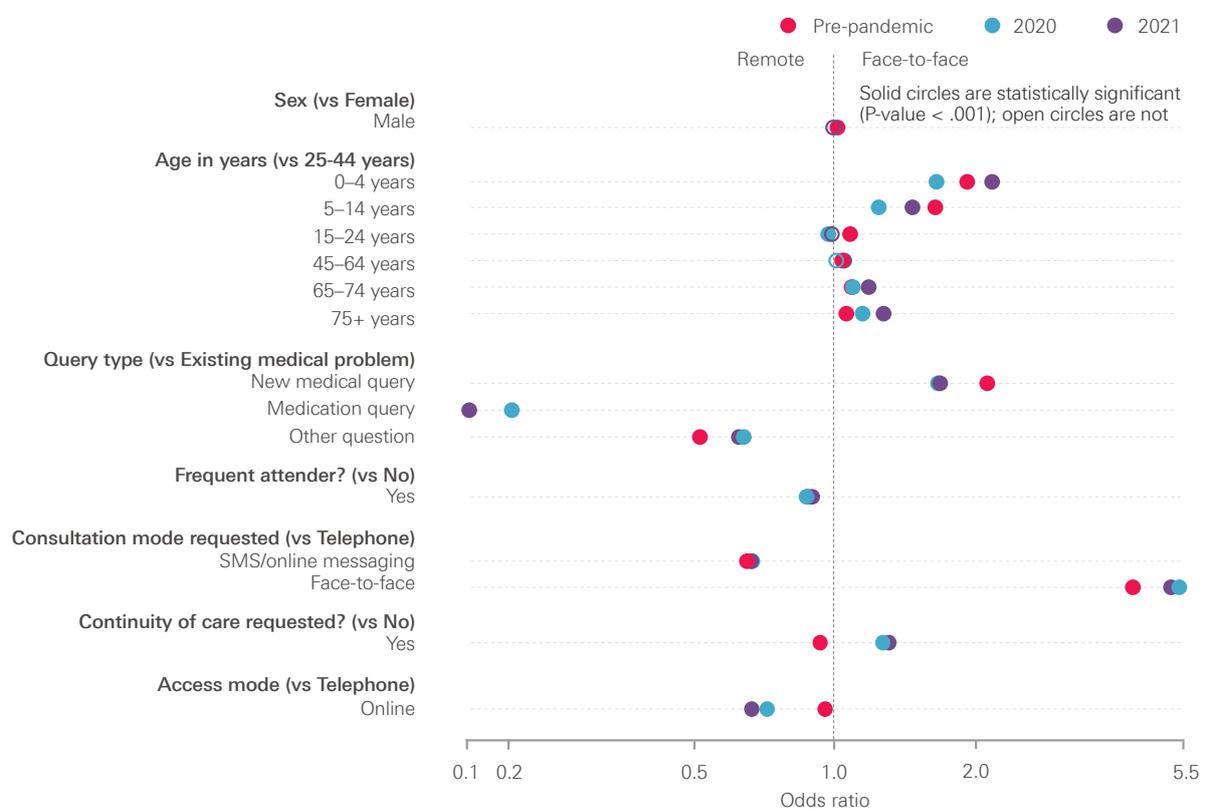


Figure 9: Association between request characteristics and consultation delivery mode



Care delivery

A minority of consultations were delivered face-to-face at these practices

Pre-pandemic 41.1% of all requests were delivered face-to-face (Figure 7). During 2020 this dropped to 7.8% but increased to almost 14% in September 2021. Since March 2021, the proportion of care delivered face-to-face has ranged from 2.5% to 34.2% across the 146 practices studied, with only 10 of the 146 delivering more than 20% of care face-to-face.

GPs tailored how care was delivered according to patient characteristics, clinical/administrative needs and preference

Consultations were more likely to be delivered according to patient preference than not. For example, patients asking for a face-to-face consultation were more than four times as likely to have one compared with those who asked for a telephone consultation. The odds ratios (OR) (maximum *P*-value) for pre-pandemic, 2020 and 2021 respectively, of having a face-to-face vs a remote consultation, were OR=4.3, 5.6, 5.2 (*P*<.001) for patients who asked for one compared with those who asked for a telephone consultation (Figure 9).

After controlling for the effect of all other patient characteristics that affect how care is delivered, patients given face-to-face consultations were more likely to be:

- Older than 44 years or younger than 15 years. For example, patients older than 74 years were up to 28% more likely to be seen face-to-face rather than remotely compared with those aged 25–44 years: OR=1.06, 1.15, 1.28 (*P*<.001). Patients aged 0–4 years were over 65% more likely to be seen face-to-face compared with those aged 25–44 years: OR=1.92, 1.65, 2.17 (*P*<.001).
- Asking about new medical problems. Patients with new medical problems were more than 67% more likely to be seen face-to-face as those asking about existing medical problems: OR=2.12, 1.67, 1.68 (*P*<.001).
- Asking for continuity of care. During the first 2 years of the pandemic, patients requesting continuity of care were more than 20% more likely to be seen face-to-face as those who did not: OR=1.2, 1.24 (*P*<.001).

Patients given remote consultations were more likely to be:

- Frequent attenders. Frequent attenders were over 10% less likely to be seen face-to-face as non-frequent attenders: OR=0.88, 0.87, 0.9 (*P*<.001).
- Using the online channel to access. Patients accessing online were less likely to be seen face-to-face compared to those who accessed by telephone/in person: OR=0.91, 0.68, 0.63 (*P*<.001).

Figure 10: Median working hours for practice response

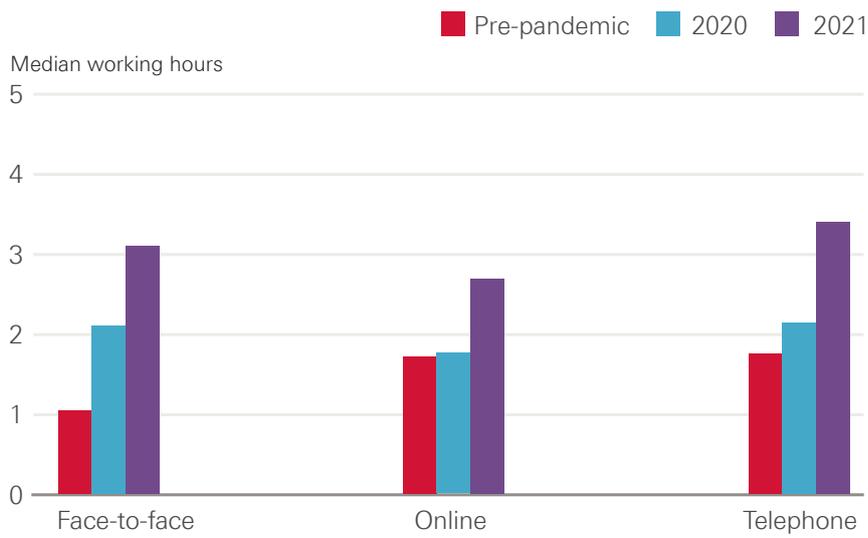


Figure 11: Median working hours for practice response stratified by age (years)

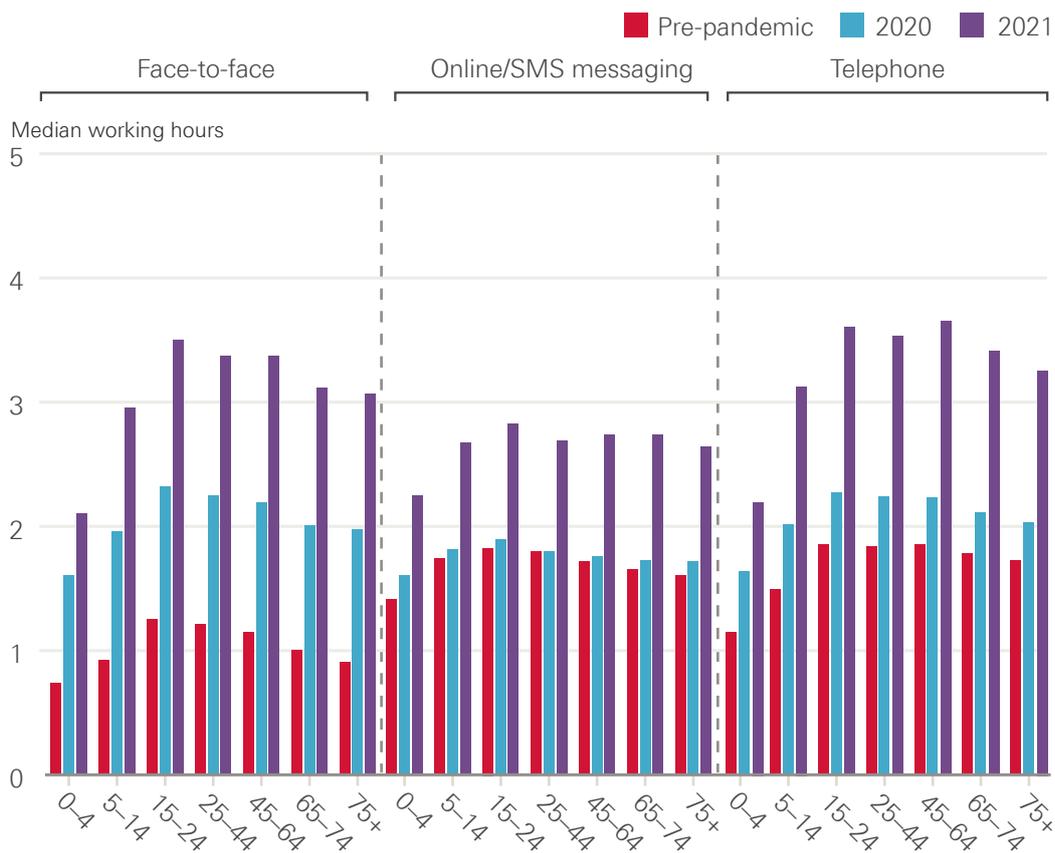


Figure 12: Median working hours for practice response stratified by query type

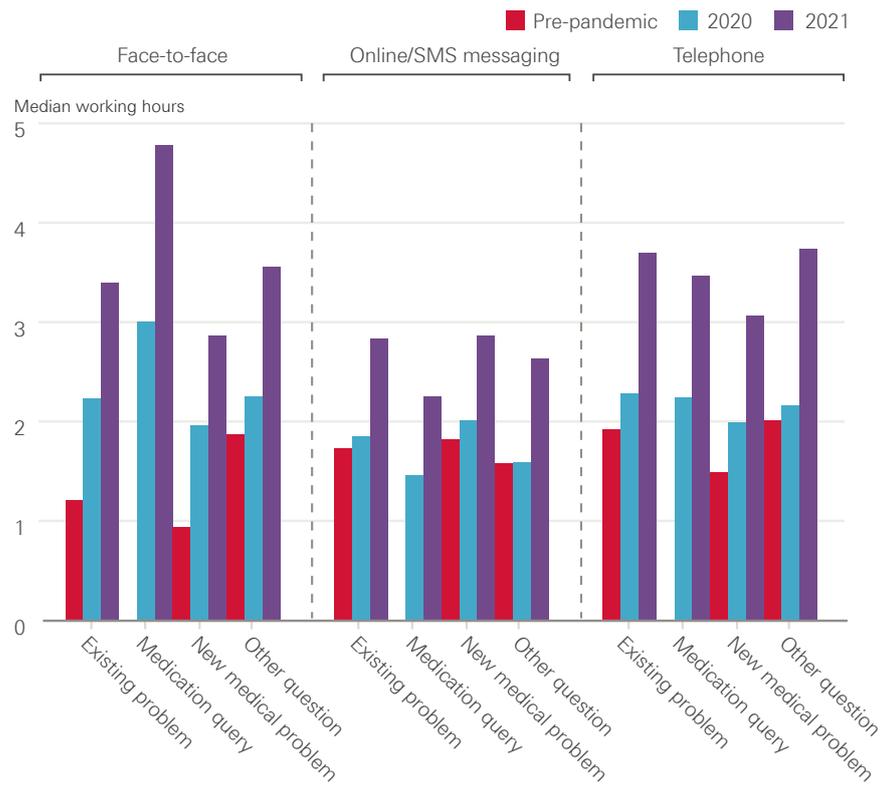
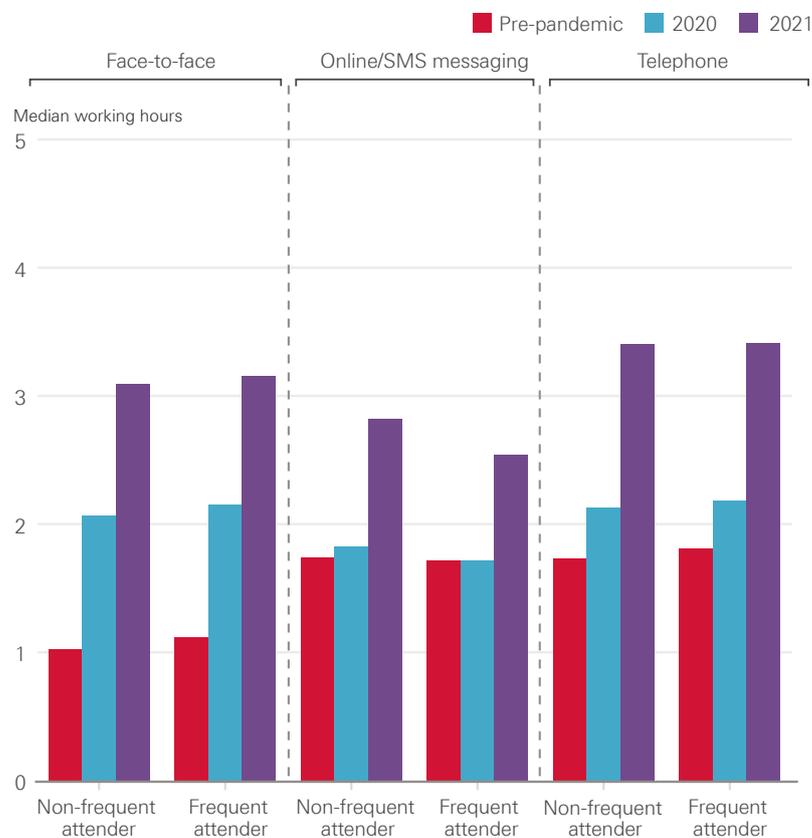


Figure 13: Median working hours for practice response stratified by frequent attender status



Time to respond

We calculated the time taken in days and in working hours* for practices to respond to requests (Figures 10, 11, 12, 13). For consultations delivered by telephone or SMS/online messaging service this equals the time taken in days or working hours to complete the consultation. For face-to-face consultations this equals the time taken in days or working hours to book the appointment only.

More than 83% of requests were responded to within the same day and the median time to respond was less than 4 working hours

Pre-pandemic, 90% of all requests made at these practices were responded to within the same day and the median time to respond was 1.42 (interquartile range (IQR) 0.52, 3.68) working hours. The proportion of requests responded to within the same day decreased to 89% in 2020 and 83% in 2021; the median time to respond steadily increased over the study period to 2 (IQR 0.78, 4.5) working hours in 2020 and 3.12 (IQR 1.19, 6.84) hours in 2021.

Time to respond varied according to consultation delivery mode, patient characteristics and clinical need

Practices responded most quickly when booking face-to-face appointments.

Pre-pandemic, the median time taken to book a face-to-face appointment was 1.06 (IQR 0.41, 2.72) working hours compared with 1.73 (IQR 0.54, 4.73) working hours to complete a consultation via SMS/online messaging and 1.76 (IQR 0.71, 4.08) working hours to complete a telephone consultation (Figure 10). Across all modes of care delivery, practice median response time was consistently shortest for the youngest patients (Figure 11). Practices responded fastest to requests about new medical problems when care was delivered by face-to-face or telephone consultation and to requests about medication queries, or 'other questions', when consultations were delivered by SMS/online messaging (Figure 12). No real differences were seen in the median time taken to respond to requests from frequent compared with non-frequent attenders (Figure 13) across consultation delivery modes or periods studied. Successive increases in median working hours to respond during the pandemic were seen within all consultation delivery modes and patient subgroups.

Sensitivity analyses

We separated practices into early adopters which started using the online consultation system supporting a total triage model before the pandemic and late adopters that started during the pandemic. We found no significant differences in the characteristics of patients according to how they accessed care, or how their care was delivered, between early and late adopters.

* Length of time elapsed during working hours (assumed to be 08.00 to 20.00 Monday to Friday excluding bank holidays). Eg a request that was initiated at 21.00 which is completed at 09.00 has been completed in 1 working hour.

Discussion

We examined requests for care using the askmyGP online consultation system at 146 practices over the period March 2019–September 2021 using a total triage model of implementation. A unique contribution of our study is the ability to follow a patient’s journey from their initial point of contact with a practice to receiving treatment or advice, or having further care arranged. We can then use this flow of information alongside data captured on patient characteristics, clinical/administrative needs, and preference for how care is delivered to determine the key factors driving access to and delivery of general practices services.

Demand for care

The top 10% of attenders make up more than 40% of general practice patient-initiated demand. This is consistent with earlier results²² and suggests that a relatively small number of patients account for a large proportion of the demand for care in general practice.

Requests where the patient describes the issue as an ‘existing medical problem’ also accounted for more than 40% of demand at these practices. These requests, compared to requests about new medical problems, were almost twice as likely to be initiated online than by telephone/in person. These rates are higher than a survey of 36 general practices in South West England in 2015/16 which found that just 30.1% of patients using an online consultation system to access care were asking about existing medical problems.²³ More work is required to understand what patients are asking about and whether these issues can be resolved entirely online.

Our results indicate clearly that pressure on general practice is increasing. The rate of requests per patient person-year increased by almost a quarter during the pandemic compared to the year before. Steady increases in the median time to respond over the study period likely reflect this increasing demand as well as the requirement to triage all appointments before arranging a face-to-face appointment only if necessary.³ The increased time taken is also suggestive of a growing complexity of care, higher patient expectations and an increased administrative burden.

In 2021, a steady increase in the proportion of requests from non-frequent attenders and about new medical problems, as well as the recovery in the rate of requests from younger patients after decreases earlier in the pandemic, are consistent with a pent-up demand due to missed or delayed diagnosis. This likely stems from a reluctance to seek care for new medical problems during the earlier part of the pandemic. These patients are part of the care backlog driving demand in 2021.

Accessing care

Overall, most requests were made directly via the online route, rather by telephone or in person – and once a patient had accessed online, they were more likely to do so next time. While practice policies and promotions are likely to play a major role in how patients choose to access their practice, these findings, combined with good overall experience scores, suggest that patients were satisfied with their experience of online access at these practices and are likely to be comfortable with digitally enabled health care.

We found that how a patient chooses to contact the practice is associated with their characteristics and the nature of their clinical or administrative needs. This suggests that the availability of hybrid access routes, as supported by this online consultation system, is necessary to ensure patient satisfaction and that selected patient groups are not disadvantaged.

Although patient-initiated demand for care increased during the pandemic, the proportion of patients accessing online remained largely constant overall and across different age and patient groups, notably frequent attenders. These findings indicate no evidence of supply induced demand as a result of patients taking advantage of the online access route. This contrasts with anecdotal reports of overwhelming increases in demand after the implementation of online consultation systems.²⁴

Before the pandemic, the proportion of patients accessing online increased while overall demand remained static, suggesting a genuine shift in patient communication preference from telephone/in person to online. However, patient behaviour may be driven by system design and practice implementation. We intend to see how these results compare with other online consultation systems and models of implementation.

Care delivery

Variations in how care was delivered across different patient subgroups, and in the time taken to respond to requests, suggest that clinicians were tailoring care according to patient characteristics, clinical/administrative needs and preference. Importantly, mode of access did not determine how care was delivered. Face-to-face care was more likely to be given those who requested it, who had the most complex needs or new presentations. Remote consultation was also more likely to be given to those who requested it, which included patients with existing problems and frequent attenders. These patients may be less likely to require a physical examination and more likely to be known to their general practice or have a pre-existing doctor-patient relationship. All this evidence is indicative of good clinical practice. Combined with positive patient overall experience scores and the ability to respond to over 80% of requests within the same working day, it suggests that this digitally supported model of access and care delivery may be an effective approach to managing demand, prioritising care based on need and meeting patient expectations. However, more work is required to understand exactly how multimodal care delivery affects clinical outcomes.

Video was neither requested nor used much at these practices. Although some patients may have positive views of video consulting,²⁵ issues related to patient access (equipment, skills, reliable internet connection, comfort with technology) and loss of physical presence (to see a clinician and have a physical examination) might outweigh the convenience of their increased accessibility for most patients.²⁶ From the clinician perspective, video consulting in primary care may have few advantages over telephone and face-to-face consulting.²⁷ Technical issues may make the process unsatisfactory and practices may already have adequate, or found alternative,²⁸ ways to deliver care.

The flexibility provided by hybrid models of care, where patients have a mix of access routes and GPs can offer a mix of consultation delivery modes, offers the potential to create more opportunities to inform and support patients to be actively involved in their health care.¹ Higher patient activation can in turn bring further benefits to patients and the health care system.²⁹

Strengths and limitations

Our analysis includes data from 146 GP practices broadly representative of practices in England with some exceptions, notably slightly larger proportions of registered patients with white ethnicity and located in more rural areas. However, the analysis is based on only one online consultation system and results are not necessarily generalisable to other systems or to other practices. Individual practice characteristics, the online consultation model used and how it is implemented will all have a strong impact on patient behaviour. We plan to carry out an analysis of a larger sample of practices using different online consultation systems to capture results that are more generalisable.

Estimated request rates across sex and age groups in each of the different periods studied are consistent with national trends in consultation rates identified by Hobbs et al³⁰ suggesting that we captured most of the patient-initiated demand for primary care at these practices. In regression analyses, we were able to adjust for a range of factors that captured differences between the GP practices included in the study. Estimated effects were highly significant and generally indicated very similar trends in association between patient characteristics and modes of access and consultation delivery across the three different time periods studied. This effectively provides both a sensitivity check and indication of robustness of findings.

This data set allows for the examination of rich contextual factors such as the nature of the problem the patient is seeking care for, how they would like the care delivered and how the care was delivered. While GP clinical record systems provide detailed information on the nature of the problem and how care was delivered, they do not provide reliable information on how the care was accessed³¹ or how patients would like their care delivered.

We were unable to examine differences across ethnic and socioeconomic strata as this information was not available at patient level. Also, we can only look at those patients who are using primary care services at these practices. We cannot infer any details about who is not, and whether that relates to implementation of the online consultation system.

This study focused only on mode of access to and delivery of care and time to respond. We do not know much about why patients were seeking care, nor how long it actually took for face-to-face appointments to be completed. We did not study the clinical outcomes of different modes of care delivery or patient satisfaction with those modes.

Policy implications

Online consultation systems can be an effective tool in helping to manage workload, to triage patients and redirect patients to self-care advice and other services. They can support practices to prioritise patient care based on need, thus supporting more equitable access. In this evaluation we examined askmyGP online consultation software. Although more work is required to compare across different online consultation systems, which vary widely in terms of design and functionality, in line with policy, we recommend use of these digital tools alongside traditional routes in a hybrid approach.

Patients using the askmyGP system were more likely to access their practice using the online route than by telephone or in person and were able to tailor their access based on their clinical/administrative needs and preference for mode of care delivery. Non-digital users did not seem to be disadvantaged by the move to the greater adoption of digital tools at these practices. However, more work is required to look at impacts relating to socioeconomic and health inequalities.

Trends driving the care backlog observed here were increasing as of September 2021, suggesting that there may be a greater backlog still to emerge. GP activity is already back to pre-pandemic levels and GPs are struggling to cope with demand. These results may suggest that the backlog is going to continue to create additional pressure.

Some media stories³² have suggested that most people want to see their GPs face-to-face but can't. Our finding was that only a minority of requests at the practices in this study requested a face-to-face consultation. This was true even before the pandemic when risk of infection was unlikely to have put people off visiting in person. In practice, remote consultations may be preferable to in-person visits for many patients, likely because of greater convenience and reduced travel time and costs. The October 2021 NHS support plan for improving access for patients and supporting general practice set out a concern that a level of face-to-face care less than 20% may be contrary to good clinical practice.³³ In the most recent period, 136 of 146 practices we studied would have been included in this criticism. Our work suggests that simple numerical targets on the use of remote vs face-to-face consultations would be inappropriate, and a more holistic view should be taken. Key factors in determining the appropriate blend of consultation types are likely to include age, frequency of use, clinical need and patient communication preference.

Moreover, a large proportion of requests to general practice are from frequent attenders and patients asking about existing medical problems, and the largest increases in demand for care compared to pre-pandemic are from older patients. Although many of these patients may have complex needs and need to be seen regularly, an understanding of who they are and why they are seeking care is important to allow general practice to think about how services can be more effectively provided for these groups. In particular, research indicates that frequent attenders may have wider psychological and social issues that may be better supported in a non-medical environment.³⁴

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Errors or omissions remain the responsibility of the authors alone.

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