Research

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Use of an electronic consultation system in primary care:

a qualitative interview study

Abstract

Background
The level of demand on primary care continues to increase. Electronic or e-consultations enable patients to consult their GP online and have been promoted as having potential to improve access and efficiency.

Aim
To evaluate whether an e-consultation system improves the ability of practice staff to manage workload and access.

Design and setting
A qualitative interview study in general practices in the West of England that piloted an e-consultation system for 15 months during 2015 and 2016.

Method
Practices were purposefully sampled by location and level of e-consultation use. Clinical, administrative, and management staff were recruited at each practice. Interviews were transcribed and analysed thematically.

Results
Twenty-three interviews were carried out across six general practices. Routine e-consultations offered benefits for the practice because they could be completed without direct contact between GP and patient. However, most e-consultations resulted in GPs needing to follow up with a telephone or face-to-face appointment because the e-consultation did not contain sufficient information to inform clinical decision making. This was perceived as adding to the workload and providing some patients with an alternative route into the appointment system. Although this was seen as offering some patient benefit, there appeared to be fewer benefits for the practices.

Conclusion
The experiences of the practices in this study demonstrate that the technology, in its current form, fell short of providing an effective platform for clinicians to consult with patients and did not justify their financial investment in the system. The study also highlights the challenges of remote consultations, which lack the facility for real time interactions.

Keywords
electronic mail; online consultation system; online systems; primary health care; qualitative research; remote consultation.

INTRODUCTION

There is an increasing demand for UK primary care services, with overall clinical workload increasing by 16% between 2007 and 2014.[1] General practices have struggled to meet this challenge and difficulties with access have become a major source of patient dissatisfaction and practitioner stress.[2,3] Primary care providers have been encouraged to develop new, flexible models of patient access, including online consultation.[4]

It has been suggested that online consultations have the potential to reduce the burden of time for patients and staff, and lead to more focused, time-saving face-to-face consultations.[5,6] The technology has also been identified as offering improved access to marginalised groups who may find the usual access routes challenging.[7] Current evidence indicates a low level of use, with around 6% of practices having used some form of electronic consultation (e-consultation) and a further 20% having plans to do so in the future.[8] The Royal College of General Practitioners has highlighted limited research evidence around the use of online consultations,[9] and a systematic review did not identify any substantive benefits.[10] The technology supporting online consultations has advanced in recent years and made inroads into primary care but, to date, the experience of using such systems has yet to be fully evaluated.

There are currently two main e-consultation systems being used in primary care in the UK NHS: askmyGP (http://askmygp.uk/) and eConsult (https://www.emishealth.com/products/econsult/ [previously known as WebGP]).[6] This study focuses on eConsult, an online platform developed by the Hurley Group, now delivered by EMIS Health, which aims to give patients access to advice and care via their GP practice website.[6] Patients can use a symptom checker (self-help guides and videos about common conditions), find pharmacy advice, link to the NHS 111 service (a free phoneline for medical advice in the UK), perform an administrative service (such as to request a repeat prescription), or submit an e-consultation. To submit an e-consultation, patients complete an online form to provide a structured medical account of their condition to a clinician. If the patient is identified as in need of immediate medical attention (through identification of red-flag symptoms) while completing the form, they are directed to relevant services. There are no financial charges for patients using the system.

Thirty-six practices from a regional consortium of GP practices based in the West of England participated in a 15-month pilot of eConsult, the preferred system of the practices involved in the pilot and

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How this fits in

Electronic consultations in primary care have been identified by UK policymakers as a means of easing pressure on practices and improving patient access, but there is very limited research on whether they are able to deliver such improvements. This qualitative research study examined the experiences of practices that piloted the use of an e-consultation system. A number of challenges were associated with the technology, including increased workload, difficulties in clinical decision making, and administrative problems generated by a lack of system integration. This article discusses the potential changes needed to facilitate future development and use of such systems.

thus the focus of this evaluation. GP practices received the eConsult software free of charge during this pilot, and did not receive any other reimbursement for conducting e-consultations (as GPs in the UK are paid predominantly by capitation and not per consultation). Overall, there were an average of 18 e-consultations per month at each of the practices and a comprehensive quantitative analysis is published separately.[11] A qualitative evaluation was undertaken to investigate the views and experience of practice staff using e-consultations and the perceived impact on managing patient access and care.

METHOD

Sampling and interviews

A range of practices was recruited as study sites. These were purposively sampled by: practice population measures of deprivation,[12] proportion of ethnic minority population in practice area,[12] location (rural and urban), and level of e-consultation use (high, medium, and low, calculated by dividing the number of e-consultations by number of days the system was live).

Semi-structured interviews were conducted with a range of practice staff at each site. Practice staff, including reception and administrative staff, practice managers, and GPs, were purposefully sampled via the practice manager who identified and contacted staff who were involved in the implementation and/or day-to-day use of the system. All participants gave full informed consent.

Researchers used an interview topic guide that explored how staff worked with the e-consultation system, clinical issues arising, and acceptability and effectiveness. Interviews were conducted face to face

or by telephone and lasted between 10 and 40 minutes. Sampling was continual until no new themes emerged from the interviews by the end of data collection.[13]

Data analysis

Interviews were audiorecorded, transcribed, anonymised, checked for accuracy, and then imported into NVivo (version 10) qualitative data analysis software.

All data were scrutinised using inductive thematic analysis to identify and analyse patterns and themes.[14,15] First, the interview transcripts were individually read and re-read to gain familiarity with the data and initial ideas noted. From this, an overarching coding framework was developed, informed by the interview topic guide. This was developed with inductive sub-codes, generated by line-by-line analysis that provided insight into the participants' behaviours, views, and understanding of their experiences. The data were scrutinised for differences and similarities within themes across interviews, seeking disconfirming as well as confirming cases. To enhance analysis and enable team discussion and interpretation, two researchers independently coded a subset of transcripts to inform the development of the coding framework. Any discrepancies were discussed to achieve a coding consensus and maximise rigour.

RESULTS

Six practices were recruited to the study (Table 1) and 23 staff members agreed to be interviewed (Table 2). These practices introduced eConsult between August 2015 and January 2016. Interviews were undertaken between June 2016 and August 2016 when practices had been using eConsult for a minimum of 5 months and were still using the system.

There was variation in how practices incorporated e-consultations into their workflow but there were core procedures common to all practices. Usually, on the morning of a working day (Monday to Friday), a member of staff would retrieve all the e-consultations that had arrived since the previous working day. These were either dealt with electronically by exporting them into the relevant electronic patient record and assigning them to a GP appointment slot for review, or they were manually printed out and stored in a folder for designated GPs. GPs would decide whether patients needed a face-to-face appointment, a telephone consultation, or whether advice, a prescription, or information could be relayed to them. These

Table 1. Practice characteristics

Practice number	Area	Ethnic minority % population[a]	eConsult use per day[b]	Index of Multiple Deprivation decile[c]
Practice 1	Urban	17.5–20.0	2.9	5
Practice 2	Rural	0.0–2.5	0.9	10
Practice 3	Urban	35.0–37.5	1.6	1
Practice 4	Urban	7.5–10.0	0.2	1
Practice 5	Urban	5.0–7.5	0.7	3
Practice 6	Urban	10.0–12.5	0.8	8

[a]Ethnic minority data are estimated proportion of non-white population at each GP practice (presented in 2.5% bands to preserve anonymity). [b]Calculated by dividing the number of e-consultations recorded by the number of days live prior to commencement of the study. [c]GP practice levels of deprivation based on Index of Multiple Deprivation and grouped by decile (1 = most deprived, 10 = least deprived). Deprivation and ethnic minority data from National General Practice Profiles (Public Health England).[12]

follow-on actions varied between practices but they often involved administration team members who contacted the patient by telephone either to arrange an appointment or to relay messages. Practices were obliged to respond to a patient's e-consultation within 1 working day. The system did have an option to respond to patients electronically, but at the time of data collection it was not easy to incorporate this within the practice operating systems, and it was not used substantively by participating practices. Therefore e-consultations were not normally conducted as a two-way online-based interaction between GPs and patients.

Three key themes emerged from the interviews: the impact of the system on clinical decision making, the impact of the system on workload, and staff perceptions of patients' use of e-consultations. The quotes described below are differentiated by clinician (CN) and administration staff (AM). The nurse practitioner is included in the clinician group with the GPs to ensure anonymity.

Impact on clinical decision making

E-consultations were challenging for GPs, with the asynchronous nature of the assessment meaning they were unable to probe for further information. They were limited to the textual information provided by the patient along with background information contained in the patient record on the practice system:

'It depends probably on your general confidence overall of doing anything without seeing the patient face to face … medicine isn't completely a science. It's also an art in terms of you reading body language, what other things are going on in someone's … you do lose that nuance which sometimes helps you make a decision.' (CN07)

GP confidence or ability to process e-consultations without seeing, or talking to, a patient varied but they consistently identified the type of consultation or enquiry as being key. For patients presenting with a complex or new set of symptoms clinicians usually felt the need to talk to the patient directly:

'When someone says, "I have felt unwell for 3 weeks with headache, dizziness, limb aches, vision's blurred" it's just impossible to actually disentangle that with an e-consult, you've got to see them.' (CN17)

GPs often struggled to identify a patient's key concern or reason for consulting based on the information in the e-consultation form:

'It's difficult to know what was expected from it … whether they're expecting you to ring them or what they wanted but, yeah, as we've got used to it, it seems to be … sounds like they need to get a phone call from somebody.' (CN06)

Another key factor that influenced clinical decision making was the level of detail and the quality of information available to GPs on the e-consultation form. Clinical staff described a wide variability on the e-consultations they examined:

'Generally, they are quite good at explaining what the problem is and in some ways it's quite clear and concise.' (CN13)

'We get so many spurious things coming through that you just think, "How on earth do you think that a GP could have dealt with that reading it?"' (AM03)

Although initial clinical decision making took place remotely and asynchronically, GPs did not report feeling a greater risk

Table 2. Study interviewees by practice and role (n = 23)

Staff role	Practice 1	Practice 2	Practice 3	Practice 4	Practice 5	Practice 6	Total
GP	2	2	2	1	1	2	10
Nurse practitioner	0	0	0	0	0	1	1
Admin/reception/IT manager	1	2[a]	1	1	0	1	6
Practice manager	1	1	1	1	1	1	6

[a]Undertaken as a joint interview.

burden. If there was any doubt, they did not tend to 'force' themselves into providing advice or making a decision. Instead they would telephone the patient or task the administration team to arrange an appointment:

'If you have any doubts about what's going on or you need to review, you know you need that proximity to actually "Well I need to see you", then you just get them in.' (CN13)

Clinicians felt happy to deal with an e-consultation without creating a further appointment for what were considered straightforward clinical queries such as slight changes in medication for an ongoing issue (for example, changes in blood pressure tablets following changes in blood pressure):

'So to me, it [e-consultation] *favours people who have some experience in their condition and know what sort of treatment they're looking for, or maybe it favours people who just want a quick bit of advice from a doctor … it feels like it's an easy way to get advice from a doctor without having to go through the appointment system and booking an appointment.'* (CN15)

They also felt comfortable processing some issues via the administration team, including prescription queries, test results, and fit notes, without direct contact with the patient.

Impact on workload
The Hurley Group had promoted e-consultations on the basis that it could reduce face-to-face and telephone contact with GPs. This proved to be a strong motivator for practices that felt overstretched and under pressure for appointments. It also resonated with practices that considered themselves to be innovative:

'I think it fitted in quite nicely with our ethos of trying to move work away from GPs … we thought hopefully this will give another avenue in for patients that GPs in a 5-minute appointment can bat away, and that we can get rid of the easy stuff and not have to deal with face to face. And that worked in the way that our practice works, which is all about the multidisciplinary workforce and moving work away from GPs and towards other things. So in terms of our business strategy it fitted in really well.' (AM03)

The perceived impact of the e-consultation platform on GP practice workload varied. Many clinical staff felt that most e-consultations required the patient to be telephoned and/or seen before clinical advice could be given. Rather than save time, it added a stage to the workflow and therefore increased practice workload:

'One of the things that we've found is that often a lot of the EGP [e-consultation] *appointments … So, you know, if you have two or three a day then all three would be needing an appointment, so then actually it hasn't saved time … From the clinician's point of view, it's still generated the same sort of things. It's just been an extra step to go through.'* (CN05)

E-consultations could save clinician time when they were actioned without direct contact between GP and patient. As described above, these would typically be consultations for clinical administrative issues (such as fit notes) or straightforward clinical enquiries where a GP could assess the e-consultation and direct administration staff to follow up and complete the consultation using their instructions:

'For somebody saying, "I came in 2 days ago, was told to leave a urine test, I've still got symptoms. You know, what does the doctor think?" Then, I can just say, "Actually, I've looked up the result. It showed a wee infection. There are some antibiotics at the desk. Please tell them that if they start vomiting, or having more of a temperature, or the antibiotics aren't working, that they should call me back." Then that's also saved me a phone call, and it's saved, it's saved the patient even having to come anywhere near here.' (CN22)

There were subtle perceived benefits in the e-consultation process, even when a face-to-face or telephone consultation was generated. A number of GPs felt that having the clinical issue documented before the appointment gave the consultation an advanced starting point. This could contribute to some e-consultations leading to a more focused and quicker consultation:

'The agenda's already set isn't it? So you say, "Oh you've come about this, this is what you mentioned" and I have found that with those they don't then tend to bring in their list because they're coming about whatever it was they put on the e-consult thing, so yeah, possibly they're a bit more focused.' (CN16)

There was a perception that

e-consultations could be changing the consultation threshold with patients more likely to complete an e-consultation for issues that may not have been raised through the usual appointment system. This led to a change and possible increase in the workload. This was seen as a different method of access, which brought with it a different type of enquiry:

'It's very easy to access and for some patients they may not have brought that particular niggle at all because actually they sort of thought it, we're not sure, we need this, but because there is this way of e-consulting, then it is another way of coming in to consult with us.' (CN07)

Despite the benefits identified, the overall feeling from practices was that e-consultations did not save time; the system generated work by adding another stage in the workflow for GPs and administration staff.

Staff perceptions of patients' use of e-consultations
Practice staff highlighted tension between their expectations of how e-consultations should be used and their perception of how they were being used by patients:

'I think it has to be used appropriately by patients and it also has to be, we have to use it for our good as well, it has to be a mutual thing for it to work. I think that's the difficulty, because I think the, there can be a mismatch between what patients feel the process can be used for, what it should be used for, and versus actually what it is being used for.' (CN18)

Perhaps the biggest frustration expressed by practice staff was in receiving an e-consultation in cases where clinicians felt it was clear that a face-to-face consultation was necessary. This type of e-consultation came to represent a different means of accessing a face-to-face or telephone appointment. E-consultations require a response from the practice by the end of the next working day — if it was clear to a GP that a patient needed a face-to-face or telephone consultation, this was arranged by the administrative team and was sometimes perceived as patients 'gaming' the system. Staff felt that patients could get an appointment quicker via eConsult without having the challenge of getting through on the telephone because it then became the responsibility of the practice to contact the patient. Thus, patients were

seen as having quicker and easier access to the appointment system and potentially using it inappropriately for this purpose:

'[e-consultation patients] *are brought in more urgently than sometimes they need to be.'* (CN17)

'I think that there are a few who are using it because they can't get appointments, which, you know, it's pretty obvious that they're going to need to see someone. You know, "I've got this shoulder pain. It's just not getting better." What am I going to say on the webGP thing? So, reading between the lines, what they're wanting is us to ring them back with an appointment. But I can't blame them for that. It's frustrating if you can't get an appointment.' (CN22)

'But because all it is, is a quick way into the appointment system or a way into the appointment system. So it's not batting off what we thought it would.' (AM03)

There was a feeling that if used in this way the overall outcome could be to reduce pressure on practice telephone systems at times of peak demand for appointments such as Monday mornings:

'If it frees up telephone lines, then that means they're [patients] *going to get through sooner.'* (CN22)

There was a widespread perception among participants that, although the e-consultation system may not have delivered the expected benefits to practice workload, it had proved valuable to those patients who used it:

'We've got a high number of commuters that are out before we open in a morning at work and don't get back until after we close, they can sit in when they get home and ping you off a e-consult. You see them coming through at 9, 10, 11 o'clock at night or over a weekend. You know it can fit in around their lifestyles so there is a, I think there is a demand and it's welcomed.' (AM10)

Practices also perceived other patient benefits around the ability that patients have to articulate their concerns with less fear of embarrassment:

'The feedback from patients I found really positive. I think they've really, you know, found it; I think they like it and a couple of them crystallise it around saying that it was a bit of an embarrassing problem

and this almost allowed me to sort of hide behind. I haven't got to have a whites of the eyes conversation with my GP. I can put it in an e-mail and it feels very detached when I send it off and then I get the answer or result back without having to sort of embarrass myself so that's worked well.' (AM10)

The recognition of the value to patients was juxtaposed against the system's shortcomings for practices and created potential dilemmas regarding the future of the system. Once beyond the pilot period, practices would have to pay to continue using the system and, although the financial cost to the practice was a key factor, the staff members interviewed did consider the benefits that it brought both patients and the practice:

'I would like it from a patient experience, if nothing else, because I think it's good that people can go online at any hour of the day, register a worry with a doctor.' (AM23).

'I think the principle of it is brilliant. We just need to engage our patients and work out a way because if not we won't be able to afford to pay for it.' (AM12)

DISCUSSION
Summary
For the practices in this study the eConsult platform did not deliver substantial savings in GP contact time to justify financial investment in the system. Although positive elements were identified, these were minor in comparison with a perceived increase in workload and no improvements in freeing up GP time overall. Using the system presented challenges for GPs because they initially had to work with textual information and lacked direct interaction with the patient. The one-way patient written communication reduced the ability for clinical decision making, and further direct contact with the patient (via telephone or face to face) was often needed to facilitate adequate clinical assessment. GPs effectively deferred many e-consultations to face-to-face or telephone consultations. This links directly to another key finding: practice staff perceived that some patients were using e-consultations as an easier way to get an appointment and bypass the normal telephone booking system. If practice staff are, in effect, taking triage decisions rather than substantive clinical decisions, the e-consultation system may be vulnerable to being seen as a route to an appointment rather than a means of undertaking a clinical consultation.

Practices did recognise benefits when an e-consultation could be processed without a further appointment, and these were reliant on particular types of enquiry, typically clinical administrative and routine enquiries about longstanding conditions.

It is important to highlight that this study's results provide the practice perspective, which focused on workload impact. However, staff also recognised benefits to patients including the ability to access the system at any time, avoidance of the busy telephone system, and an opportunity to raise issues they may not have been comfortable raising face to face.

Strengths and limitations
The study provides a novel and in-depth insight into the experiences and challenges of using e-consultations in primary care from a range of staff involved in using the system. Practices were chosen to ensure that a range of patient populations were included, as well as those with high and low e-consultation use. The study provides evidence at a time when the drive to expand e-consultations in primary care has been given fresh impetus and support by policymakers.[16] It has also been undertaken on one of the two systems that have gained traction in UK primary care, and the results are therefore very relevant to practices considering implementation.

However, this study only evaluates one system, and the limitations may not apply to other e-consultation systems. It is important to note that this evaluation took place during the pilot phase of implementing the system and captured issues related to its initial use. Because practices were given the system free of charge, it is possible that their implementation strategy and use of the system may have been different had they paid for it; having not made financial investment, they may have lacked motivation to increase uptake and engagement with the system. Nevertheless, the results highlight issues and challenges that arguably apply across asynchronous consultations, in particular, the difficulties of making clinical decisions with limited information leading to more traditional types of consultation and the resultant impact on workload.

Comparison with existing literature
There are few published studies about the use of e-consultations in primary care. A Cochrane review of e-mail consultations in clinical practice identified fewer than 10 randomised controlled trials and was unable to make any substantive recommendations.[10] Brant *et al*[8] investigated the use of alternatives to face-to-face consultations in

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primary care and found a gulf between the rhetoric of policymakers promoting digital consultation and GPs, who were much more sceptical about the benefits of technology. An earlier study exploring the use of e-mail between patients and GPs highlighted how the use of e-mail for clinical communication was not only often triggered by situational need and convenience but also took place in an *ad hoc*, unstructured, and unregulated way.[17] The e-consultation platform in the current study attempts to overcome the latter factors by providing a secure platform with clear regulatory boundaries, but the convenience that the GPs highlighted in the study by Atherton *et al*[17] was not a significant feature of the e-consultation system examined in this study. Issues with lack of system integration have been highlighted previously,[18] and were also present in this study, where e-consultations had to be printed for clinicians or electronic files had to be attached to the patient record.

A pair of studies that looked at the perspectives of GPs and practice managers both highlighted a potential interest in using digital communication but with limitations, most notably from GPs who favoured e-mail communication for administrative and less complex clinical tasks.[19,20] This finds resonance with GPs in the current study who favoured e-consultation for specific types of consultation.

It is worth noting that many of the issues that this study highlights, particularly around clinical decision making without the aid of visual assessment, can be found in the early literature on the use of telephone consultations in primary care.[21,22] Now telephone consultations have become normalised in primary care, although their impact on workload and access continues to be a source of debate.[1]

Implications for practice

The current drive from the UK government is to improve access to primary care and to use technology as a key element to support this.[16,23] Perhaps the fundamental issues highlighted by this study are the challenges in not only creating an e-consultation system that brings with it the flexibility and convenience offered by other aspects of electronic communication in modern life, such as online banking, but also incorporates safeguards for clinician and patient safety. In its current form, it is arguable whether the e-consultations in this study could be truly classified as a tool of electronic communication; as once with the clinical staff communications reverted to a more traditional form, with responses being mainly facilitated via telephone. To some extent this could be seen as an outcome of poor system integration, with the e-consultation platform sitting outside the practice information technology system and relying on staff manually importing e-consultation details into the electronic patient record in practice systems. However, the limitations GPs identified in working with text-based information identifies key problems in developing such models for use in primary care.

Although the current study highlights areas where the system was perceived to add to the practice workload, there were certain types of consultations deemed to be effective, such as routine enquiries around fit notes, repeat prescriptions, test results, and simple requests about ongoing or more straightforward conditions. These enabled GPs to process clinical enquiries quickly without the need for direct contact with a patient. There could be a case for developing an electronic platform that integrates with practice information technology systems, and has algorithms that channel these more routine types of enquiries down an electronic route, but for more complex clinical enquiries the system could also enable a patient to make an appointment.

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