

E-MAIL CONSULTATIONS IN GENERAL PRACTICE

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ABSTRACT

Background

E-mail is an established method of communication in business, leisure, and education but not yet health care.

Aim

To evaluate an e-mail service enabling communication between patients and their general practice regarding repeat prescriptions, appointment booking and clinical enquiries.

Design

Qualitative analysis of interactions and an electronic user survey.

Setting

An urban practice in Dundee, Scotland.

Participants

One hundred and fifty patients aged 24 to 85.

Methods

We set up a practice facility to allow our patients to use e-mail to book appointments, order repeat prescriptions and consult their GP.

Results

Patient satisfaction with the service was very high. Patients specifically commended the practice for setting up a facility to allow communication out with standard working hours and for the ease of ordering repeat prescriptions. Patients were pleased to have a means of seeking their doctor's comment or opinion without bothering him or her by making and attending a formal face to face consultation. E-mail dialogue was polite, factual, but less formal than standard letters.

Conclusion

Use of an e-mail consultation facility worked well within an urban practice, was deemed helpful by patients, and had no apparent increase in GP workload. Our results suggest that there may be an unmet need amongst patients for clinical e-mail services, and that such services may have positive outcomes for patients and practices.

Key Words

E-Mail, Consultations, Communication

Where this piece fits

People choose to communicate using e-mail for a variety of business and leisure purposes. To date patients have been unable to use e-mail to communicate with their GP practice because of technical and attitudinal barriers, coupled with concerns about confidentiality.

We set up an e-mail facility to allow patients to use e-mail to book appointments, order repeat prescriptions and consult their GP. The service was free of technical hitches, was extremely popular, and did not adversely affect GP workload.

INTRODUCTION

E-mail communication is well established in business, science, social interaction, and education. While e-mail dialogue between health care professionals is common practice, use of e-mail to facilitate dialogue between patients and health care professionals is a new area. Increasing public internet access is likely to generate pressure on general practices to respond to patient demand for e-mail access for booking appointments, ordering prescriptions and asking for advice.^{1,2,3,4}

Arguments for an e-mail dialogue between patients and professionals include the convenience offered by remote access and asynchronous communication, the ability to document clinical transactions, and the facility to attach documents or web links as a means of disseminating information. This may create opportunities to save unnecessary face to face contacts and potentially facilitate equity of decision making between client and health care advisor. Arguments against e-mail include concerns about the ‘dangers of the Internet’, confidentiality, social exclusion of the technically illiterate, lack of access to Information Technology (IT), intrusion into the lives and work patterns of busy General Practitioners (GPs), and fears about security.^{5,6,7,8}

Many patients may already have used e-mail to contact their GP. Anecdotal evidence suggests that some GPs have experience of replying to such e-mails, even although this may be in breach of local health authority policy.^{9,10,11,12} Most UK practices now have access to the Internet and an e-mail facility. Some use e-mail to support communication between staff within the practice. Others use it to communicate with colleagues in hospitals and with health service administrators. Many practices thus have the capacity and technical skills to allow communication with patients by e-mail.¹³ Individual GP e-mail addresses are relatively easy for patients to obtain via Health Authority or individual practice web sites and practice notepaper.

There is a lack of published work to evaluate the impact of e-mail services for patients within UK general practice.^{14,15,16,17,18} There may be an unmet demand from patients to use e-mail in communicating with their GPs for routine matters such as making appointments, repeat prescription requests, and asking simple questions to determine whether a face to face

consultation is necessary. This project aimed to establish an e-mail communication and consultation facility for patients within a general practice and to perform a quantitative and qualitative evaluation of this service.

METHODS

Setting

The practice had five partners, a full range of practice based and practice attached staff and served a patient population of 7000, mainly resident in the City of Dundee but with a few living in rather more affluent rural Perthshire. The practice had a track record of Information Management and Technology (IM&T) innovation including the use of e-mail to communicate within the primary care team and electronic referrals and results retrieval from secondary care. The patient population had an age sex profile similar to the Scottish average, a low rate of turnover, and a complete spectrum of socio-economic status.

Technical issues

We set up three dedicated e-mail accounts to handle repeat prescription orders, appointment requests and clinical enquiries. All incoming e-mails on the clinical or 'doctors' account were forwarded to one GP (RN). He undertook to respond to them himself or to forward messages addressed to specified colleagues as necessary. 'Appointment' e-mails were directed to reception staff who operated the practice electronic appointment book. The clerk responsible for processing repeat prescription requests dealt with all 'prescription' e-mails. The practice IM&T manager (HM) developed a system whereby paired incoming 'doctors' e-mails and their replies could be saved directly into patients' computerised clinical record.

A practice 'user guide' was compiled including instructions in how to reply to e-mails and how to 'save' them. Reception staff were asked to keep their replies concerning appointments or prescriptions short, factual and polite. We planned to keep clinical e-mails brief, free of personal details not already declared within the incoming patients' e-mails, and polite. In short we aimed to provide a 'triage' type service with options including advice to consult face to face, supply of simple fact, further information sources, or confirm that an administrative task would be completed.

Patient recruitment

Our target recruitment number was 100 patients. We were unable to determine which of our patients had access to e-mail at home or at work and which patients might wish to use a GP e-mail service. We opted to recruit proactively from the practice age/sex register and reactively in response to patient requests. We used a random numbers sequence to produce sample batches of 100 names and addresses of adults aged over 18 registered with the practice. We sent an invitation letter and project Consent Form to the first batch of 100 patients, and then one month later to the next 100 and so on until target recruitment was exceeded. We placed an article in the practice quarterly newsletter 'The Westgate View' and a notice was displayed in the waiting area inviting recruitment. Patients who expressed an interest were given a project information letter and a Consent Form.

User Guide for patients

On receipt of a signed Consent Form, participants were sent, by e-mail, a 'User guide for Patients'. The instructions also appeared as a signature on all reply e-mails:

DO NOT USE E-MAIL IN AN EMERGENCY

prescriptions@Westgate1.Tayside.scot.nhs.uk For repeat prescriptions please include: full name; date of birth; the name and strength of the medication you need; and method of collection.

appointments@Westgate1.Tayside.scot.nhs.uk For non-urgent appointments please request a date and time. Reception staff will book the nearest available appointment and e-mail you to offer that appointment. Please reply to confirm that this is convenient for you to attend.

doctors@Westgate1.Tayside.scot.nhs.uk To consult, please give your name and a brief description of your symptoms or ask a short question. Do not disclose sensitive personal information.

Tayside Medical Ethics Committee approved the project. The project lead clinician (RN) sought the views of his Medical Defence Organisation who advised that the project did not pose undue risk.

Observation

Clinical requests and repeat prescriptions were saved to patient records. All e-mails received were copied to a secure server for observation and analysis by the research team.

Patient opinion survey

After the project had been running for six months a mixed format electronic questionnaire was sent, by e-mail, to all participants. This sought their views on the service, whether they had experience of using each of its components, and invited comments and suggestions. In order to assess the representativeness of respondents, telephone interviews were conducted with 10 randomly selected patients who had declined to enrol in the project.

Analytic strategy for the electronic interactions

Quantitative analysis was performed to determine the frequency and time of use of each component of the e-mail service. Content analysis of qualitative data within e-mail exchanges was based on Hahn's classification of assistance requests, which includes the following categories: Instructional; Explanational; Informational; and Service.¹⁹ A further category of Update messages was added. Units of analysis were a request and reply exchange which formed a pair of e-mails. In addition to content analysis for determining the purpose of each exchange, qualitative analysis was used to characterise the specific nature and context of the electronic interactions.

RESULTS

Participating patients

Eighty patients enrolled in the project via the mailed invitations, giving a response rate of 20%. Over the course of six months a further 70 volunteer patients enrolled whilst on a visit to the Health Centre. The total of 150 participants consisted of 69 males and 81 females with an age range 24 to 85 with an even distribution and median, mode and mean all occurring in the mid 50s. Twenty (13%) participants used an e-mail address likely to be from their place

of work. We marked the home address of each participant on a map of Dundee and surrounding area. The great majority of participants were resident in the relatively affluent areas of the city. There were only a handful of participants from the two large housing schemes close by our Health Centre. We received 59 (39%) e-mail replies to our electronic questionnaire about the service. Fifty-five (93%) of respondents reported using the service and found it 'OK, easy or very easy' to use with no reports of any technical difficulty.

Practice perceptions

The reception staff absorbed e-mail work into their daily routines without any adverse time implications. Concerns about unfettered demand and inexorably rising workload did not materialise and all the partners were satisfied that the service did not adversely impinge on their day to day workload. Answering clinical queries took one partner less than 10 minutes per day.

To aid the reader, the results of the survey, content and qualitative analyses are presented together for each e-mail service.

Repeat Prescription Service

All e-mails from patients requesting a repeat prescription were classified as 'Service requests', as they required staff to perform an action on behalf of the sender. During the months August to November 2002 there were 59 repeat prescription requests processed by e-mail. This represented a tiny fraction of the typical volume of requests handled by a large practice on a daily basis. We were unable to perform detailed frequency analysis of requests because patients were recruited to the project on a rolling basis. Thirty (51%) requests were initiated out with standard working hours. Almost all responses from the practice occurred within 24 hours (the project specified 48 hours as being the norm). Forty-eight (81%) were initiated on behalf of the patient themselves; the remainder were made on behalf of another family member, usually a spouse. Qualitative analysis revealed these interactions follow a similar style to other types of electronic helpline use and confirmed that patients invariably complied with the 'User Guide'..

In the patient survey 35 (59%) respondents reported having requested repeat prescriptions using e-mail. All rated it 'OK', 'quite useful' or 'very useful' with no critical replies. The ability to request a repeat prescription at any time of the day or night was welcomed. A consistent theme was that participants preferred e-mail to the telephone to order repeat prescriptions. The facility to receive a reply confirming safe receipt of the request was welcomed. This saved participants from wondering if their letter or telephone request left on an answering machine had been acted upon. In turn this saved the practice from having to deal with telephone enquiries checking safe receipt of requests. Two respondents suggested that the practice produce a template for ease of ordering and several participants mentioned that they had created their own ordering template and copied this for repeated requests.

Appointment Service

Appointment requests were also classified as 'service requests'. During the months August to November 2002 we identified 19 appointments marked as having been booked exclusively by e-mail. Eight of these were initiated out with standard hours. Seventeen were completed within 24 hours. Most participants followed our guidelines indicating a date, or a day, and time for the requested appointment. Most gave a range of options but nine gave only one date and time. Fifteen of the patients requested appointments with a specific doctor, only two said any doctor. There were 7 requests for appointments with the nurse; 1 for the asthma clinic; 1 for the physiotherapist; and 1 for the midwife. In contrast to doctor appointment requests, nurse appointment requests invariably included the reason for the appointment.

A brief dialogue developed when an appointment given was not convenient to the patient and they asked for it to be changed, or if an appointment could not be given on the day or time requested by the patient. Three of these resulted in no appointment being made via e-mail. The responses stated whom the appointment had been made with and gave the date and time of the appointment, for example

an app. has been made for you with Dr X on Monday 26th at 9.20

In some cases where no appointment with the specified doctor was available on the requested day the first available alternative was offered and in other cases the day and time were offered but with a different doctor.

Twenty (33%) survey respondents indicated that they had used this service, of whom 16 (75%) rated it OK, useful or quite useful. Favourable comments included 'saves making phonecalls' and 'lets me book out with standard hours'. Several participants commented that because they worked full time it was very convenient to communicate routine administrative matters out within normal hours, without having to use a telephone. The tone of replies from reception was referred to as quick and courteous. The lack of display of available appointment times was seen as a drawback. Some participants felt it was rather cumbersome to have to place an appointment request and then await an offer from the receptionist. The system was unfavourably compared to ease of booking theatre or airline tickets on-line. Our guarantee of a response within 2 days was perceived by some as being too slow. One participant felt the appointment system had not met his expectations because his symptoms had resolved before he had received receipt of his appointment time. Future developments of this service could include the provision of secure Internet access to available appointment times.

Clinical Service

Between April and December 2002 there were 36 e-mail consultation requests and subsequent replies. Eight were initiated out with standard hours. Twenty-four were on behalf of the enquirer themselves. Thirty-three replies were within 24 hours and the remaining three within 48 hours.

Messages sent to the doctors e-mail consultation address, fell into all five categories described earlier (Instructional, Explanational, Informational, Service, Update).The majority were 'Instructional' requests. These were framed as brief descriptions of: physical symptoms; medication; update on an ongoing condition; or a previous action taken.

Since I saw you at my last appointment, I have been seen by Dr A at the eye clinic. He prescribed eye drops and anti-inflammatory pills (Voltarol-25mg), one three times a day for two months. I see from the insert that if one is taking them at the same time as antibiotics, then consult the Doctor. I am taking Ofloxacin, 200mg, once per day, as prescribed by you. Is this alright?

The next most frequent requests were Service requests. These included requesting test results, certificates for absence from work, insurance forms and in one case a certificate for exemption from jury duties. For example

My appointment regarding my dyspepsia was 3 weeks ago, I had a blood test for H.pyloridi the following week but so far I've had no feedback from the test. I'd appreciate an update from you if possible.

Informational requests requiring explanatory information were also common, for example

I had my eyes tested recently because I was bothered by a glare in the left one. I was told I would require laser treatment. Can you give me information on this condition such as risks involved and 'Do's and don'ts' after treatment.

Explanational requests were less common and featured physical symptoms believed to be unusual and thus worthy of clinical comment, for example

I'm sorry to bother you but I've had a pretty uncomfortable weekend and, Sunday night in particular, very little sleep. These palpitations in my chest are quite frequent just now and, I suppose, I just want reassurance that it's OK. I don't want to take up time in the surgery unnecessarily.

Explanational requests tended to be vaguer than other types of request without explicit questions for example: why is this happening?, what should I do? and should I be worried about this, will it get worse/better?

Update messages typically followed on from a previous encounter, for example

X (my husband) was admitted to Ninewells (our local hospital) Mon.pm having had another mini-stroke. He lost the power of both legs and a weakness in the left side. He is in Ward 5 and yesterday was managing to walk to the bathroom. He has an appointment to see you Friday which I will keep.

Update information was commonly included within other types of request and rarely used on its own.

Some messages included the patient's own explanation for the cause of the symptoms and what they have done to relieve the symptoms. For example

I have been up all last night with acute sickness, diarrhoea and shaking etc. I got up this morning and was sick again. I took Imodium. This seems to have little effect, but I now just have diarrhoea and a sick feeling in my stomach. I have a feeling this was caused by a 'bad pint' purchased from X (I only had one). I had chicken for my dinner at my mother's house but no one else contracted this sickness. What advice can you give me on eating, drinking and how to get better.

Dialogue developed with three senders over time. The first case followed the onset of illness, tests, results, referrals and planning medical care. The second was a request for action to be taken on a patient's behalf in support of an application for a State Benefit, which began with a request, followed by supporting evidence and continued with enquiries about the progress of the application. The third concerned the effect of a medication, or rather the lack of immediate effect, in producing a change in the symptoms. There were queries at intervals as to when change should be observed. Many of these e-mails were initiated out with surgery hours.

The responses to consultation requests varied with the different categories of request, providing information, confirming action has been taken, or advising on medication. Responses to 'Instructional' requests contained brief instructions on what to do, or to continue what was already being done, and where a description of symptoms has been given a brief explanation of what the symptoms indicate. For example

Keep taking lots of clear fluids and avoid solid food for at least 24 hours. If the pain does not settle or symptoms continue phone the practice and we can arrange for you to be seen.

In two cases patients were advised to make an appointment to come in and see the GP, one for treatment and one to discuss their problem further. In two cases patients were advised if there is no change within a specified time that they should come in for an appointment.

Responses to Service requests contained details of the action taken on the patient's behalf. For example

I have completed a letter to excuse you. Let the court know your GP has exempted you and you can collect the letter from reception.

Informational requests were responded to with a brief explanation and advice if further queries arose. For example (in response to a question about Warfarin interactions with food)

Vitamin K rich foods include turnip, greens, broccoli, cabbage, lettuce and liver.

www.bmj.com this week has a good article suggesting INR of 2.5 is safest

Explanational requests contained a brief explanation of the symptoms, and in one case recommended changing the dose of the medication. For example

The symptoms described can arise after carrying heavy loads, or if one falls asleep in an awkward position causing pressure or stretching of the nerves in the arm. Symptoms usually clear within one week. If not see your GP to check the arm nerves are working properly.

Update messages were acknowledged.

Thanks for letting me know.

Most messages included a greeting, often indicating that the request was directed to a particular GP and used a formal form of address Dear Dr X.

With the exception of one request, which may have been sent to try out the service, all the messages were an appropriate use of the service. The requests and updates did not require an appointment to exchange information.

Twenty (33%) survey participants reported having used the clinical service. It was rated OK, quite useful or very useful by 17 (85%) of these. Ease of access to medical advice for simple matters and questions was welcomed. Many patients mentioned that they did not wish to take up a doctor's time for a simple enquiry or question. They welcomed the facility to ask for simple advice without arranging a mutually convenient time to speak by telephone. Avoiding having to bother a busy doctor was a commonly expressed sentiment. One patient found it useful to let her doctor know what was happening in advance of an appointment. Another remarked that he found it helpful for obtaining test results of routine monthly blood test to monitor therapy. A simple e-mail dialogue consisting of 'Are my blood tests OK' followed by a 'Yes' allowed this patient to continue with medication without recourse to making appointments or arranging telephone calls during surgery hours. Criticisms of the service

included concerns about which doctor(s) would read the incoming e-mails. One participant was disappointed that the project lead GP replied to her rather than her own GP (although the GP in question was on leave at the time).

The service was highly praised by respondents, many of whom asked if it could be continued. Thanks for introducing – keep it going was a common sentiment. Flattering opinions expressed included

The best thing Westgate have done – it's incredibly convenient

My friends and colleagues registered with other practices are envious of me and the service I receive from Westgate.

Non-participants

On interview, nine of the 10 patients who had declined to take part in the e-mail project stated that their reason was a lack of a computer. One gentleman stated that he never fell ill and thus did not need the service.

DISCUSSION

The use of an e-mail facility for patient services worked well within the practice, was deemed very helpful and useful by patients, and had no measurable adverse impact on medical workload. Prior to suggesting the widespread implementation of e-mail facilities for patients it is worth reviewing some of the key issues encountered in this project.

There were no technical problems encountered by the practice or by patients using the service. The project was kept simple by avoiding the use of Internet sites, log on or registration issues. Unfortunately this limited the utility of the appointment service. We restricted the service to adults registered with the practice that had signed a consent form and received a set of instructions or user guide. We were thus in a position to be able to match incoming e-mail communication against known e-mail addresses.

We made it very plain to participants that they should not include personal or sensitive details in e-mails and we were careful to restrict our replies to general comments free from gratuitous personal details. E-mails from patients were stored within the clinical record and enjoyed the same high level of protection as all other clinical data. In theory an e-mail can be read by those with access to Internet File Servers. Health care professionals and patients using e-mail need to exercise the same level of restraint as they would with a telephone conversation, which in theory can be listened to by telecommunications personnel. The tone and content of e-mail communication was less formal than a letter, but more structured than a telephone call.

General practitioners and their staff wishing to use e-mail communication with patients only need to have basic computer literacy and be familiar with some simple rules of medical e-mail such as: keep it short, keep it factual, keep out gratuitous personal details, and save it. Practices may need to modify their computer records to accommodate storage for e-mails. This is important for medico-legal reasons.

A concern of any new technology is that of privileged access. We were pleased to note the wide spread of ages from 24 up to 85 amongst our participants. Patients' need for medical services, in particular repeat prescriptions, increases with age and so it is important not to exclude those most likely to benefit from the service. We were concerned about how few of our socially disadvantaged housing scheme residents took up our offer of the e-mail service.

Access to the 'information superhighway' needs to become a medical and not just a social priority.

The issue of patient training is interesting. People already familiar with e-mail will have no difficulty in appreciating the convenience of communicating prescription and appointment requests by e-mail. The ability to initiate such tasks out with surgery opening hours was particularly well received. A recurrent theme of the project was patients' desire to avoid bothering the doctor with routine tasks or enquiries. Many patients expressed satisfaction at not having to use our telephone line (frequently engaged), use our car park (often full) or take up an appointment (time is valuable to both patients and doctors). It would seem that doctors and their patients can save each other time by making communication more efficient and effective using e-mail. General practices struggling to meet externally imposed targets for patient access times may wish to consider how e-mail facilities for patients may be used to support quick access, or crucially, the perception of quick access. The patient/practice interactions in this project were completed within 48 hours with a high level of patient satisfaction.

This study is limited because it is derived from a single practice with good computing facilities, and motivated and trained staff. It is important to stress that the patient population served included a complete socio-economic spectrum including urban Dundee and rural Perthshire. The main barrier to practices setting up an e-mail facility for patients is likely to be attitudinal, not technical or logistic.

Our results reveal that there may be an unmet need amongst patients for clinical e-mail facilities. To take full advantage of this will require a rethinking of restrictive data security legislation in addition to appropriate patient and professional training in the use and misuse of clinical e-mail.

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REFERENCES

1. Eysenbach G, Diepgen TL Patients looking for advice on the Internet and seeking Teleadvice *Arch Dermatol* 1999 135 151-156
2. Bergeron BP. Get in with the e-crowd. E-mail can serve your practice if kept in check. *Postgrad.Med.* 2000;107:31-4
3. Gurwitz D. Doctor, you've got E-mail. *JAMA* 1999;282:729-30
4. Lewis AD. Patients, physicians, and e-mail. *Arch.Dermatol.* 2000;136:121-2
5. Borowitz SM, Wyatt JC. The origin, content, and workload of e-mail consultations. *JAMA* 1998;280:1321-4
6. Spielberg AR. On call and online: sociohistorical, legal, and ethical implications of e-mail for the patient-physician relationship. *JAMA* 1998;280:1353-9
7. Bloemer L. Doctor, you've got E-mail. *JAMA* 1999; 282:729
8. Askin DF. Making the most of e-mail. *Neonatal Netw.* 2001;20:57-60
9. Terry K. E-mail patients? Don't be nervous. Do be careful. *Med.Econ.* 2001; 78:83, 86-8,91
10. Murphy G. Patient-centered e-mail: developing the right policies. *J.AHIMA.* 2000;71:47-54
11. Ochs JR. Should you use e-mail in clinical practice? *Manag.Care* 2001; 10:58, 61
12. Framework for Information Management and Technology in the National Health Service in Scotland: Taking Action 1998-2002 <http://www.show.scot.nhs.uk/imt/>.
13. Morris L, Dumville J, Campbell LM, Sullivan F. A survey of computer use in Scottish Primary care: general practitioners are no longer technophobic but other primary care staff need better computer access. *Informatics in Primary Care* 2003; 11; 5-11

14. Kane B, Sands DZ Guidelines for the clinical use of electronic mail with patients *J Am Med Informatics Assoc* 1998 5(1) 1-14
15. Neville RG, Warner FC, McCowan C, Hoskins G E-mail Consultations: 2 years experiences from asthma Information Websites *BJGP* 2000 50(452) 256-7
16. Bergeron B. E-mail: a realistic conduit for patient-doctor communications? *J.Med.Pract.Manage* 2000;15:208-10
17. Geddes JA. Consultation and counselling via e-mail. *CMAJ*. 1997;156:484-5
18. Moyer CA, Stern DT, Dobias KS, Cox DT, Katz SJ. Bridging the electronic divide: patient and provider perspectives on e- mail communication in primary care. *Am.J.Manag.Care* 2002; 8:427-33
19. Hahn K. An investigation of an e-mail based help service. CLIS Technical Report No 93 1997 <http://www.raven.umd.edu/research/reports/tr97/03/9703.html> 28/08/02.