

E-MAIL CONSULTATIONS IN GENERAL PRACTICE

**Dundee Local Health Care Co-operative
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project**

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EXECUTIVE SUMMARY

E-mail is an accepted part of modern communication in business and education. The use of e-mail could benefit communication between patients and health care professionals. Use of e-mail within health care has been hampered by concerns about privacy, technical barriers, perceived fear of change, and increased workload.

Sixty- two General Practitioners within the Dundee area responded to a questionnaire and indicated that they regularly used e-mail for communication within their practices and with outside agencies, but rarely with patients. Many perceived a need to provide an e-mail service for clinical enquiries and repeat prescription requests but felt constrained from doing so by a lack of an accepted system and workload concerns.

An e-mail service for appointment booking, repeat prescription requests and clinical enquiries was established in an urban general practice. In response to mailing invitations, practice newsletters and a waiting room notice 150 patients enrolled in a project to evaluate the service. Participating adults ranged in age from 24 to 85 but were predominantly from middle or higher social class households. Fifty-nine people used the repeat prescription ordering service. The service was free of technical hitches and saved patients' time and eased practice workload by reducing incoming telephone calls and visits to the practice solely to order or collect prescriptions. Nineteen patients used the appointment booking facility. The need to have appointment requests confirmed and restriction of the service to non-urgent requests limited its usefulness.

Thirty-six patients used the service for clinical enquiries and this did not have any adverse effect on GP workload. The commonest types of incoming e-mails from patients were requests for results of investigations, brief description of symptoms and to ask if a consultation was necessary, administrative requests, or simple 'updates' on clinical progress. The linguistic style of communication was less formal than for clinical letters but maintained a high degree of politeness and courtesy.

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 ease of ordering repeat prescriptions. Patients were pleased to have a means of seeking a doctor's comment or opinion without bothering him or her by making and attending a formal face to face appointment.

There is an unmet need for patients to have access to a General Practice e-mail facility and an unmet need for practices to have the technical and logistic support necessary to respond. Use of an e-mail consultation facility worked well within an urban practice, was deemed helpful by patients, and had no measurable increase in GP workload. The system used can and should be 'rolled out' on a regional basis.

BACKGROUND

E-mail communication is established in business, science and education. E-mail dialogue between health care professionals is common practice, but e-mail dialogue between patients and health care professionals is a new area. Government policy is to promote better patient access to health care professionals. There will be a relentless pressure on 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 are convenience, an exact record of dialogue is kept, and attachments with web-links can be used to disseminate information. There may be opportunities to save unnecessary face to face contacts and a chance to achieve equity of decision making between patient 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 pattern of busy General Practitioners (GPs), and fears about security (5,6,7,8).

Some patients may already have used e-mail to contact their GP. Anecdotal evidence suggests that some GPs already have experience of replying to such e-mails. The current local Primary Care Trust policy on IT actively discourages GPs from responding to e-mails from patients. Most practices now have access to the Internet and an e-mail facility. Some practices use an e-mail facility to support communication between staff within the practice. Others use e-mail 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. Individual GP e-mail addresses are relatively easy to obtain via Health Board or individual practice web sites and practice notepaper. There is a lack of published work to evaluate the impact of e-mail service for patients within UK general practice (9, 10, 11, 12, 13).

There may be 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. GPs and

their colleagues are likely to have a range of views on this new medium ranging from cautious enthusiasm to outright hostility. This project explored the issues around e-mail consultations in modern general practice.

AIMS

- 1) To survey GP opinions, experience of and attitude towards E-mail communication
- 2) To establish an e-mail communication and consultation service for patients within a general practice
- 3) To perform a quantitative and qualitative evaluation of the service
- 4) To survey the opinions of patients who used the service and those who did not
- 5) To develop recommendations for 'roll out' strategy for Dundee LHCC

SURVEY OF DUNDEE GPs OPINION, EXPERIENCE AND ATTITUDE

Questionnaire

A questionnaire for GPs examining current usage of and attitudes towards e-mail was developed and piloted. It was available in postal or electronic format. The electronic version was sent as an attachment to an e-mail to all 122 GPs in the Dundee LHCC area (See Appendix 1). We wished to explore GPs own views and experiences and thus did not make specific mention of pre-existing Trust policy regarding e-mails from patients.

Responses

Seventeen GPs initially replied with a completed electronic questionnaire successfully attached. One GP printed the questionnaire and posted it back. Three replies were initially lost because our virus scanner suspected problems with the attachments and thus removed them. We subsequently found out that virus protection software was not installed on many local practice systems. We sent the postal version of the questionnaire to non-respondents and received 41 additional replies by post. There were thus a total of 62 (51%) usable replies.

Current usage of computers and e-mail

All respondents said they had computers on a practice network and had Internet access. Most GPs (55 or 89% of respondents) had exclusive use of a computer and most (48 or 77%) reported having a practice Intranet. Nine GPs either did not respond or did not know if they had an Intranet. Twenty-five (40%) had received formal training in the use of e-mail and a further 15 reported a desire for such training.

Fifty six GPs replied to questions concerning the use of e-mail of whom the majority used e-mail to communicate with other GPs within the practice (46 or 82% of respondents), with GPs in other practices (44 or 79%), and with their own practice administrative staff (50 or 89%). E-mail communication with Practice Attached Staff

or 'PAMS' was less common with only 18 (32%) reported. Communication with hospital staff was uncommon with e-mails to consultants (14 or 25%), hospital administrative staff (9 or 16%) reported. Fifteen (27%) used e-mail for referrals (presumably using the local 'ERS' system). Twenty- six (46%) of GPs reported using e-mail to communicate with the LHCC and 47 (84%) used e-mail for personal correspondence.

Attitudes to use of e-mail with patients

The majority of respondents expressed concern about the security of e-mail as a means of communicating with patients exemplified by 39 (63%) expressing disagreement or strong disagreement with the statement "e-mail is a secure way of communicating". Opinion was divided on whether e-mail is a convenient way for patients and GPs to communicate but nearly all GPs thought e-mail would be used much more in future.

Replies to questions about concerns with e-mail emphasised worries about confidentiality with 40 (65%) agreeing or strongly agreeing that this was a major issue. The difficulties of making a diagnosis by e-mail and a preference for face to face contact were emphasised. The majority expressed the view that there was insufficient time to respond to all e-mails (45 or 73%), e-mail would erode time available for seeing patients (40 or 65%), and place an additional burden on an already onerous job (38 or 58%).

Despite these misgivings 32 (52%) of respondents said they would be willing to provide an e-mail service to patients. Twenty-five (40%) GPs expressed a willingness to use of e-mail to request repeat prescriptions, 17 (27%) to make appointments but only 14 (23%) for consultations.

Actual experience of using e-mail to communicate with patients

Twenty- three (37%) respondents had already received one or more e-mails from patients. Repeat prescription and appointment requests were the commonest reasons, although nine reported 'consultation' requests. The great majority of GPs (over 90%)

chose not to answer our questions about whether they replied to patient e-mails. This is an awkward area. According to some sources of guidance GPs should not 'consult using e-mail'. Nor of course should they ignore a patient request for a consultation. Qualitative interview work is needed to explore this issue in depth. Ten GPs (16%) were frank and reported having used e-mail to answer a patient enquiry using e-mail (14,15,16).

Conclusions

All practices are equipped with computers attached to the Internet and have an e-mail facility. GPs appear comfortable with e-mail as a communication medium between themselves and their colleagues within and out with their practices. The questionnaire highlighted a training need. The difficulties our GP colleagues experienced in attempting to reply to our electronic questionnaire confirmed training is a priority. The lack of virus protection in some practice systems is a concern.

A few GPs admit to already using e-mail to communicate with patients. The majority of GPs accept that use of e-mail has potential advantages and is set to expand. Many are willing to embrace change and use e-mail with patients but genuine concerns about confidentiality and workload issues need to be addressed. E-mail communication is already an accepted part of some GP's working routine and is set to become more common. There is a need for clear leadership, training and technical support to help GPs cope with patient demand for an e-mail service. The current Trust Guidelines do not reflect actual clinical practice.

E-MAIL CONSULTATION SERVICE WITHIN A PRACTICE

The practice

The practice had five partners, a full range of practice based and practice attached staff and served a patient population of 7000 resident in the City of Dundee and the Eastern Carse of Gowrie. The practice had taken a proactive role in developing and implementing Information Management and Technology (IM&T) and pioneered the use of practice web sites, internal electronic communication, practice Intranet, electronic message book and paper-light consulting. The electronic record was the definitive clinical record having superseded the paper system. The practice shared a management team, including IM&T expertise, with a neighbouring practice in the same Health Centre. 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:

Doctors@wgmail.finix.org.uk

Appointments@wgmail.finix.org.uk

Prescriptions@wgmail.finix.org.uk

All incoming e-mails on the 'doctors' account were forwarded to the GP leading the project (RN). He undertook to respond to them himself if the enquirer did not specify which GP the enquiry concerned and to pass specific issues on to colleagues as necessary. 'Appointment' e-mails were directed to one of the reception staff who was comfortable with e-mail technology and the practice GPASS electronic appointments book. Appointments made using e-mail were flagged on the GPASS system. The prescribing clerk responsible for processing all repeat prescription requests dealt with all 'prescription' e-mails. There was a named deputy to deal with each account during spells of annual leave.

The practice IM&T manager (HM) developed a system whereby paired incoming 'doctors' e-mails and their ongoing replies could be saved directly into patients' GPASS record. An extra 'e-mail consultations tab' was created within the Passport consulting module attached to GPASS. Passport is an add on programme attached to GPASS to facilitate 'paper light' consulting. Doctors replying to patient e-mails used simple 'copy and paste' skills to save the dialogue within each patient's normal clinical record.

Practice staff issues

The project was presented and discussed with reception staff and medical partners at each stage including concept, protocol, technical details, worked examples, early results and analysis. All personnel within the practice had previously received e-mail training. Reception staff carried out their additional duties with relative ease and saw the project as a natural extension of their role in helping patients access medical services.

Within the partnership, prior to starting the project, there was a range of views on its likely benefits and drawbacks. We opted not to include nursing or practice attached staff (PAMS) in the project. Some expressed mild disappointment but appreciated we needed to keep the project simple and to concentrate our skills until we were sure the venture was running well. Written practice user guides were compiled including instructions in how to reply to e-mails and how to 'save' them. Reception staff was asked to keep their replies concerning appointments or prescriptions short, factual and polite. The practice partners are all experienced at contributing to a newspaper 'doctor enquiries' column. It was decided to keep clinical e-mails short, free of any 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 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', available in the waiting area. A notice was displayed in the waiting area inviting recruitment.

Completed and signed consent forms were colour coded to determine whether they originated from the mailing sample or from visitors to the health centre (See Appendix 3). Eighty patients enrolled in the project via the mailing invitations giving a response rate of 20%. Over the course of six months a further 70 patients enrolled whilst on a visit to the Health Centre. The total of 150 participants consisted of 69 males and 81 females. The age range spanned 24 to 85 with an even distribution and median, mode and mean all occurring the age 50s (See Figure 1). Twenty (13%) of 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 West End, Broughty Ferry and Carse of Gowrie. There were only a handful of participants from Menzieshill and Charleston: the two large housing schemes close by Westgate where many of our patients live.

User Guide for patients

Once participating patients had returned a signed consent form and supplied their own e-mail address they were sent an e-mail message from the practice providing them with the project e-mail addresses and a set of brief instructions for their use. These instructions appeared on all outgoing e-mails from the practice:

DO NOT USE E-MAIL IN AN EMERGENCY

prescriptions@wgmail.finix.org.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@wgmail.finix.org.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@wgmail.finix.org.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.

Conclusions

It was possible to set up and support a practice based e-mail service for patients. This involved minimal extra staff training. Patient recruitment amongst practice attendees was more fruitful than via mass mailings. The lead applicant did not have to deal with any ethical enquiries in connection with the project. The main beneficiaries of a service may be patients on repeat prescriptions. It may be desirable to include the prescription e-mail address on GPASS prescription counterfoils. There were no technical hitches or impediments to running the service. Participants were from the predominantly more affluent parts of the practice area.

EVALUATION OF SERVICE WITHIN THE STUDY PRACTICE

Practice staff

The reception staff absorbed e-mail work into their daily routines without any adverse time implications. The practice IM&T manager was able to set up and supervise the use of three additional e-mail accounts for the service. Nursing and attached staff expressed some mild disappointment at not being included in the project.

Partner attitudes

The practice partners were all supportive of a research project to evaluate the use of e-mail but expressed varying degrees of scepticism, in line with the GP survey opinions described earlier. Concerns about unfettered demand and inexorably rising workload featured as major concerns. On completion of the project all the partners were satisfied that the service did not adversely impinge on their day to day workload.

Numeric Analysis of the Repeat Prescriptions Service

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 calculate 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 were within 24 hours (the project specified 48 hours as being the norm). Forty-eight (81%) were initiated on behalf of the patient themselves.

Numeric Analysis of the Appointment Service

During the months August to November 2002 we identified 19 appointments marked within GPASS as having been booked exclusively by e-mail. Eight of these were initiated out with standard hours. Seventeen were completed within 24 hours but on 3 occasions a mutually satisfactory appointment time was not agree by e-mail dialogue.

Numeric Analysis of the Clinical Service

Between April and December 2002 there were 36 e-mail consultation requests and 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.

E-mail form and content: framework for qualitative analysis

Examination of the e-mail data identified initial themes that correspond to Hahn's classification of types of assistance requested (17). Hahn identified four request types from study of IT support requests within a library: Informational, Instructional, Explanational, and Service.

- Instructional requests - are requests for a sequence of actions the user could take to attain some objective
- Explanational requests - describe some sort of behaviour which is believed to be unusual or diagnostic and requires an explanation
- Informational requests – are questions which require the provision of non-instructional, non-explanatory information
- Service requests – involves requests for staff to perform some action on the senders behalf

The participants in the e-mail project demonstrated the same characteristics of e-mail use as those identified in the e-mail based IT help service when making requests. However, the participants in this project added a further category of supplying information and updates on their health status.

- Update message – providing outcome information on a previous e-mail request

Repeat prescriptions, appointments and consultation exchanges were analysed separately. Although they were all components of the same service provision they had been set up to fulfil different functions. The characteristic features of the exchanges were identified, and set of questions was developed from these to create a framework for the analysis:

- How users frame their request – do they ask questions?
- What information do they provide?
 - Does this match the guide?

- Do they give more/less information than asked for?
- Do other things appear on a request message
- Does dialogue develop?
- How do staff frame their responses?
 - Do they respond to the request accurately?
 - Provide more/less information than is asked for?
- Are there implicit questions in the text or are they all explicit?
- Were courtesies used?

Writing and sending an e-mail is an action chosen in preference to other alternative actions, such as making a telephone call or calling into the practice in person. A number of patients commented in their e-mails in the convenience of being able to choose to communicate with the practice in this way.

Qualitative Analysis of Repeat Prescription Service

Repeat prescriptions are classified as Service requests - these involved requests for staff to perform some action on the senders' behalf. The majority of Repeat Prescription exchanges were 'RR pairs', ie a Request and a Response. We analysed RR pairs between 31/07/02 and 21/11/02.

Patients were asked to provide their name; date of birth; the name and strength of the medication needed; and method of collection. Only 18 of the patients framed their request as a question, typically using the phrases – “Could I please...”, “ May I have...” or variations of these. There was also one query “Do I need a prescription for...”. There were two who asked specific questions, one regarding the time they could collect the prescription and the other when the prescription would be at the chemist. Other patients framed their request according to the guidelines by stating the necessary information but without asking a question.

The patients followed the guidelines for the information required, 18 provided the exact information, for example:

“Fred Bloggs 06/02/47

1. Simvastatin Tabs 10 mg

2. 2. Aspirin EC Tabs 300 mg

3. 3. Atenolol Tabs 25 mg

Will collect. Many thanks.”

Most patients gave more information, and only three gave less. The most common additional piece of information was the patients address, 22 people gave it. The other additional piece of information given was the date and time they intended to collect the prescription. Of the three who provided less information, one omitted their date of birth, which might be regarded as a mistake rather than a deliberate omission. Two said that they couldn't remember the name of the medication they wanted. Extra information supplied included holiday departure dates, a CHI number, and the name of the GP who usually prescribed the medication.

The staff responses were framed by where and when the prescription would be available, for example:

“Prescription will be ready for collection on Tuesday after 2pm”

One of the staff responding to the requests used the abbreviation r/x rather than ‘prescription’ in the replies, but it raised no queries from the patients.

There were no implicit questions within the texts, and no dialogues developed.

Four patients used a greeting, two were formal “Dear Sir/Madam” and “To whom it may concern”, and two were informal “Hi” and “Hello”. Seven began their message with “Please”. Most began the message by stating their name and date of birth. The courtesies came at the end of the message with 37 ending the message with “Thank you” or “Many thanks”. Sixteen messages included no courtesies.

Qualitative Analysis of the Appointments Service

Appointments were classified as Service requests, and as with the repeat prescriptions, these involved requests for staff to perform some action on the sender's behalf. Most of the

requests for appointments appear as RR pairs. RR pairs were analysed between 09/08/02 and 21/11/02.

The guidelines for appointments were:

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.

Less than half the requests for an appointment were framed as a question, typically using the phrases “Can I have an appointment”, “ Could you please make an appointment...” and similar variations.

Could you please make an appointment with the Nurse for me for a smear test
Wed 17th July 2002 with the nearest time to 9am

Many thanks

However, in most of the requests the question was implicit and the requests were made using phrases such as “ I would like an appointment...” or “I need an appointment...”. Several requests indicated that the patient was responding to a previous request “I received a reminder...” and “I have been asked to make an appointment”.

Most of the patients followed the guidelines indicating a date, or a day, and time for their requested appointment, 9 patients gave one date and time. Most gave more than was asked for. Ten patients gave 2 dates and times; 5 patients gave up to 6 possible dates and times; and 3 said ‘next week’. There were also 4 who did not specify either date or time.

Most of the patients gave more information than they had been asked for in the guidelines, however they also specified with whom they wished to have the appointment. This was an omission in the guidelines since it was assumed that patients would be making an appointment to see a doctor. Fifteen of the patients requested appointments with a specific doctor, only 2 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. Nurse appointment requests invariably included the reason for the appointment.

A brief dialogue did develop with a few patients 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 were framed by stating who the appointment had been made with and giving the date and time of the appointment, for example

“an app. has been made for you with Dr N 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.

There were less greetings and courtesies at the beginning of the appointments e-mails than in the case of repeat prescriptions. Three began with a greeting of “Hi”, “Dear Sir/Ms” and “Dear Receptionist”. However the majority ended with the courtesies “Thank you” or “Many thanks”. Nine e-mails included no greeting or courtesy.

Qualitative Analysis of E-mail Consultations

The e-mail messages that were sent to the ‘doctors’ e-mail address are classified as ‘Instructional, Explanational, Informational, Service or Update’ messages. They consisted in all cases of RR pairs. RR pairs were analysed between 24/04/02 and 12/12/02.

The guidelines for consultations were:

To consult, please give your name and a brief description of your symptoms or ask a short question. Do not disclose sensitive personal information.

The requests were framed as a brief description of an event or symptoms and were followed in most cases by a brief question. In some cases no question was asked explicitly but the message ended with “Please advise”. Several asked a series of brief questions, in one case numbered sequentially.

As there were no specific instructions about what information to provide patients wrote between 5-10 lines depending on the range of symptoms they were experiencing or the details of the previous action. If they were taking medication they provided the details of its name, strength and frequency of taking. Three mentioned their illness in relation to work either seeing the problem as work related or disruptive to their normal activities.

The majority of the requests were 'Instructional' requests. They were framed as a brief description of: physical symptoms; medication; provided an update on an ongoing condition; or a previous action taken. They asked explicitly or implicitly 'what should I do'? Often there is a combination of information in the description.

“Since I saw you at my last appointment, I have been seen by Dr A at the eye clinic. He is of the opinion that my blurred vision (following the cataract op.) is the result of bruising of the eye causing fluid to gather. 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, nor have I received an appointment for an ultrasound scan. I'd appreciate an update from you if possible.”

'Informational' requests were also common, for example

“I had my eyes tested recently because I was bothered by a glare in the left one. The optician said that I would require laser treatment and wrote to

Ninewells and also informed you. 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 usually described physical symptoms, 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. Implicit in this and other ‘explanational’ requests were questions of ‘why is this happening?’, ‘what should I do?’ and ‘should I be worried about this, will it get worse/better?’. In this particular case above the GP suggested increase of medication for a week.

Update messages also occurred, for example

“X (my husband) was admitted to Ninewells Mon.pm having another mini-stroke, he lost the power of both legs and a weakness in the left side. He is in Ward 5 and yesterday Wed. 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 (tea) 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, although each exchange is a discrete RR pair. A narrative appeared over time. The first case followed the onset of illness, tests, results, referrals and planning medical care. The second one was a request for action to be taken on a patient’s behalf in support of an application for a State Benefit. The narrative began with the request, was followed by supporting evidence and continued with enquiries about the progress of the application. All of the e-mails from this patient were initiated out of hours. 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.

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 patients’ 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 in a couple of days.”

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

“Vitamin K rich foods include turnip, greens, broccoli, cabbage, lettuce and liver. 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'. There were four informal greetings that used 'Hi', two of those used the GPs first name. Ten used no form of greeting. More than half included a courtesy at the end of the message 'Thank you', 'Thanks', 'Regards' and 'Best wishes' were most often used. Only three used no courtesy. Eleven 'signed' the message with their first name, more than half used their full name, and three had no signature. The most often combination used was 'Thanks' and full name.

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.

There was one instance of a patient making an 'Instructional' request after they had seen their GP. They stated quite clearly that they had seen Dr X about a problem requiring a referral for hospital treatment. The patient asked “if anything could be done meantime to reduce the pain”. The project lead GP (RN) passed the request to the named GP for response. However, the GP replied “ since I have already given him the info I feel rather

uncomfortable at him not coming back to my surgery but using e-mail instead” and requested that RN replied to the request. The request was interpreted by one GP as seeking a second opinion but may have been a simple request for more information or a change of painkiller. This exchange showed that there could be potential for causing tension between partners in the practice, or between a patient and their GP if e-mail requests are interpreted differently.

Conclusions

Practice staff and partners were able to absorb the minimal extra workload associated with an e-mail service into their everyday work routine. Patient recruitment was gradual and thus practice personnel were able to acquire the skills of processing and responding to patient e-mails gradually. Content analysis of e-mails from patients showed that users of the service were able to follow the simple rules we suggested and communicated with the practice in an appropriate manner. The medical replies to consultation type e-mails avoided use of gratuitous personal information and were generally of a short ‘triage’ type suggesting simple advice or the need for a face to face consultation.

PATIENT OPINIONS

Non participants

A random sample of 10 patients was identified from the list of 320 non-participants derived from the mailing invitation. All 10 agreed to a telephone interview with the project worker (WM). Nine declared that they did not have access to e-mail, although one interviewee was about to have access to e-mail and wished to reconsider his decision not to participate. One person said they were 'never sick' and did not need the service. The main reason for non-participation in the project was thus due to lack of access e-mail.

Participants questionnaire

After running the project for 6 months we sent an e-mail questionnaire to all 150 trial participants. In the light of our experiences with GPs struggling to return a questionnaire as an attachment we embedded the questions within an e-mail (See Appendix 2). Fifty-nine (40%) replies were received, all within three weeks. Replies were collated and numeric data analysed and free text comments studied for trends, patterns and representative quotes. Six respondents indicated that they had sent an e-mail to the practice prior to the study. Forty-six (78%) stated that they used e-mail every day. Forty-three (73%) participants stated that they used e-mail from home, one from home and work, and 12 (20%) from their workplace only. There were fifty-five (93%) participants who found the service 'OK', 'easy' or 'very easy' to use, with no reports of technical difficulties. Four patients did not respond to this question.

Views about repeat prescriptions

Thirty-five (59%) had used this service, all of whom rated it 'OK', 'quite useful' or 'very useful'. The ability to request repeat prescriptions 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 prescription. The facility to receive a reply confirming safe receipt of the request was welcomed. This saved any participants from wondering if their letter or telephone request left on an answer machine had been acted on. In turn this saved the

practice from having to deal with any telephone enquiries checking safe receipt of requests. In free text comments two participants suggested that the practice produce a template for ease of ordering. Several participants mentioned that they had created their own ordering template and copied this for repeated requests.

Views about appointment booking

Twenty (33%) 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 ticket 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.

Views about the consultations service

Twenty (33%) used this service. It was rated 'OK', 'quite useful' or 'very useful' by 17 (85%) of these participants. 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 test OK" followed by a "Yes" allowed this patient to continue with medication without recourse to making unnecessary appointments or arranging telephone calls during surgery hours. Constructive

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).

General comments

The service was highly praised. Many patients asked if the service 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”.

Conclusions

We were pleasantly surprised by the overwhelming messages of support, enthusiasm and praise the service attracted from participants. Patient surveys often rate GP services highly and of course this sample was biased towards patients who had volunteered to help with a survey in their own practice. We are unaware of any comparable e-mail survey results.

The repeat prescription service was singled out for its efficiency and convenience. The consultation service was very well received. The appointment service was welcomed but will need to develop further to increase its utility.

ROLL OUT STRATEGY

Demand

The patient survey results from one Dundee practice indicate there was sufficient patient demand for an e-mail service. Patients using the service appeared to have the necessary technical expertise use the service effectively. It is interesting that several patients - recently retired - told us that they signed up for the e-mail project because they wanted to have a practical use for their computer and wanted to develop their own IT&T skills.

The GP survey results indicate that many doctors accept e-mail services are going to become important but feel ill prepared to respond.

Resource implications

The setting up and running of an e-mail service did not have any adverse financial consequences. The project was run using an existing practice e-mail server and with existing staff resources. Reception and prescribing clerical staff were easily able to absorb the e-mail work into their daily schedules. The lead GP responsible for most of the clinical replies was able to absorb the work of e-mail into his daily routine. The volume of work equated to no more than 5 minutes per day. This would correspond to the time taken for one half of a face to face consultation or the time taken to fill out one insurance report or sign a few prescriptions. An e-mail consultation service would only need to save three face-to-face consultations per week to become a net saver of medical resource.

Training

GPs not familiar with everyday use of e-mail may welcome basic training. Some practices lack an IT co-ordinator with the skills to set up dedicated e-mail accounts to run a service. Practices wishing to use an e-mail service need to have a facility to store incoming and outgoing clinical e-mails within the patient record. The Passport addition to GPASS allows this. A road show to present results from this project and allow discussion and debate may be helpful.

Conclusions

The results of this Dundee LHCC supported e-mail study suggest that a regional roll out would be welcomed by patients and welcomed by many GPs. There is a need for local leadership to back such a roll out. Further support from Medical Defence Unions would help reassure some clinicians. Finix may wish to consider setting up a series of generic 'doctors, prescriptions and appointments' e-mail accounts and templates for Tayside practices. The roll out of the e-mail service could be combined with ongoing initiatives such as 'Advanced Access'. Eventually an Internet based system with appropriate password security may be needed to support an efficient appointment booking service. The socio-economic divide between those people with and those without e-mail access is a pressing concern. Nurses and PAMS should be included in future developments.

The main barrier to the widespread use of clinical e-mail services in General Practice is attitudinal, not technical, financial or logistic.

ETHICS AND PATIENT CONFIDENTIALITY

The Tayside Medical Ethics Committee approved the project. The Medical and Dental Defence Union of Scotland were satisfied the project did not pose an unacceptable risk to the participating General Practitioners. The project was restricted to patients aged 18 years and above who had signed a consent form. The consent form outlined clearly the risks of communicating by e-mail. A copy of the letter to participating patients is included in Appendix 3.

All incoming and outgoing e-mails concerning patients were stored as part of each patients clinical record and thus subject to the rigorous security protocols of a modern computerised general practice.

PROJECT MANAGEMENT

A Steering Group met every two months to review strategic issues. Minutes are available on request. A weekly project review meeting was used to ‘troubleshoot’ any technical problems. Project accounts are available on request.

ACKNOWLEDGEMENTS

We wish to thank all our GP colleagues for their helpful replies to our questionnaire, the staff and partners at Westgate Health Centre, the patients who participated, Mike Fallon and Finix for technical support, and the Dundee LHCC for funding this project through the Primary Care Development Fund.

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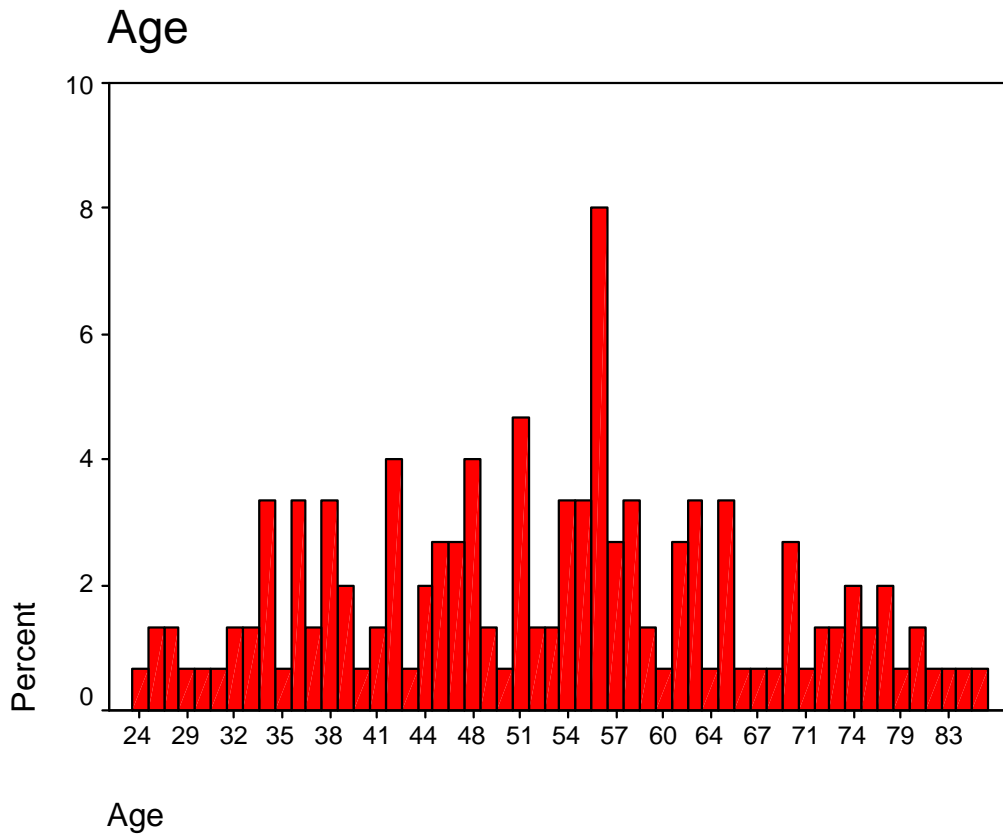
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Figure 1 Age of participants (n=150)



Appendix 1 GP Questionnaire

SECTION I

1. Do you use e-mail ?

if **Yes** - please continue this section

if **No** - please go to question 12 Section II on page 3

To complete the questionnaire please type x in the relevant box

2. Do you have exclusive use of a computer in the practice?

Is the computer on a network?

Is the computer connected to the internet?

Is the computer connected to an intranet?

YES	NO

3. Do you use e-mail to correspond with -

GPs within the practice

GPs outwith the practice

Administrative staff within the practice

PAMs

Colleagues in secondary care

Consultants

Secondary care administrative staff

LHCC

Personal correspondence

4. Do you use e-mail for

Referrals

Test results

Other- please specify

5. Have you ever received an e-mail request from a patient ?

For a repeat prescription

To make an appointment

Consultation

Information on a medical condition

Other – please specify

6. How do you reply to an e-mail from a patient?

- I don't reply to e-mail
- I sometimes reply to an e-mail
- I always reply by e-mail
- I reply, but not by e-mail

7. Have you ever e-mailed a patient?

- To respond to a question
- To provide information
- To suggest an appointment
- To suggest a phone call
- To decline to respond to e-mail

7. Would you use e-mail in your practice?

- To Consult
- Make appointments
- Repeat prescriptions
- Provide medical information

8. Have you had training in how to use e-mail?

9. Do you want training in how to use e-mail?

10. What do you think about using e-mail for consultation?

(1=agree strongly, 5=disagree strongly)

- E-mail is a secure way of communicating
- It is a convenient method of communication between patients and GPs
- E-mail will be used much more in the future
- Most of my patients have access to e-mail

1	2	3	4	5

11. Do you have concerns about using e-mail for consultation?

(1=agree strongly, 5=disagree strongly)

- There is a risk to confidentiality
- I prefer to 'see' patients
- It is difficult to make a diagnosis using e-mail
- There is not enough time to respond to all e-mails
- E-mailing will use up time for seeing patients
- e-mail is an additional burden in an already onerous job

1	2	3	4	5

Do you have any other comments?

Thank you very much for completing Section I.

Section II follows.

SECTION II

“Please complete section II only if you have answered ‘No’ to question 1”

12. Do you have use of a computer in the practice ?

- Is the computer on a network?
- Is the computer connected to the internet?
- Is the computer connected to an intranet?

YES	NO

13. Have you had any training in how to use e-mail?

14. Do you want training in how to use e-mail?

15. Assuming that you have access to e-mail and the training to use it -

a. would you use it for patient consultation ?

- Yes, definitely
- Perhaps
- Never

b. would you use it for patient consultation if there were guidelines?

- Yes, definitely
- Perhaps
- Never

16. What do you think about using e-mail for consultation?

(1=agree strongly, 5=disagree strongly)

- E-mail is a secure way of communicating
- It is a convenient method of communication between patients and GPs
- E-mail will be used much more in the future
- Most of my patients have access to e-mail

1	2	3	4	5

17. Do you have concerns about using e-mail for consultation?

(1=agree strongly, 5=disagree strongly)

- There is a risk to confidentiality
- I prefer to ‘see’ patients
- It is difficult to make a diagnosis using e-mail
- There is not enough time to respond to all e-mails
- E-mailing will use up time for seeing patients
- E-mailing is an additional burden in an already onerous job

1	2	3	4	5

Do you have any other comments?

Thank you very much for completing Section II.

Appendix 2 Patient questionnaire

Dear (personalised),

>

> Thank you very much for participating in our e-mail consultation project.
> We would be very grateful if you would take a few minutes to answer the
> following feedback questions. To respond, click on the 'Reply' button and
> type in your answers. When you have finished, press 'Send'.

>

> 1) Before this study had you used e-mail to contact your GP practice?
> (Answer either 'Yes' or 'No').

> Answer:

>

> 2) How often do you use e-mail in general? (Answer either 'Almost every
> day', 'At least once a fortnight', or 'Less than once a month')

> Answer:

>

> 3) Where did you send your e-mails from during this study? (Answer 'Work'
> or 'Home')

> Answer:

>

> 4) In general, how easy or difficult was the service to use? (Answer on a
> scale of 1 to 5 from 1=Very Difficult ... 5=Very Easy)

> Answer:

>

> 5) You were given three e-mail addresses to use for different services.

How

> useful did you find each service? (Please write a number next to each
> service from 1='Not at all useful'...to...5='Extremely useful'. NB. If you
> didn't use the service, please say 'Didn't use')

>

> a) Repeat prescriptions:

>

> b) Appointments:

>

> c) Consultations:

>

>

> Now please answer the following two questions in your own words (feel free
> to say as much or as little as you wish):

>

> 6) What did you like about the service?

>

>

>

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> 8) Any other comments:

>

>

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>

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>

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>

>

Dr Ron Neville

On behalf of Drs Scott, Dorward, Nicoll, Robson, Neville, Lowe and Al-Agily
Westgate Health Centre

Appendix 3 Patient Invitation Letter

**Drs Scott, Dorward, Nicoll, Robson and Neville
Westgate Health Centre
Charleston Drive
Dundee
DD2 4AD**

Dear

E-mail is used in business, education and many aspects of modern life. It is not known whether or not e-mail could be a useful way for patients and general practices to communicate with each other. It may be that some patients will find e-mail useful for booking appointments, requesting repeat prescriptions, or perhaps asking their doctor or nurse simple questions about health. There are concerns about security, confidentiality, and fears that patients may not be seen or assessed properly if an e-mail were to take the place of a formal face to face consultation.

We are keen to find out what you think. If you have access to e-mail you are welcome to participate in a study within our practice. If you agree to take part we shall give you an e-mail address that can be used to request appointments, repeat prescriptions, or ask your doctor or nurse questions. We shall then study how this service is used and see if we should develop it further.

The Dundee Local Health Care Co-operative (LHCC) are supporting this study because they are also keen to find out how patients might want to use e-mail and how practices should respond.

How do I take part?

Send us an e-mail to the address below. We shall then send you a consent form to look at. If you wish to proceed then sign this form and return it to us.

Do I require my own e-mail address to take part?

Yes. If you take part you can send and receive e-mails from home, work or an Internet café, but it has to be your own e-mail address that you use.

If I do not have access to e-mail, can I still take part?

No, we are looking at communication between people with e-mail and ourselves. If the project proves to be useful, it may encourage more people to obtain and use e-mail. If you do not have e-mail your medical care will not be adversely affected in any way.

Can the practice help with technical support for e-mail or Internet?

No. We cannot give any technical support or advice to you about computing matters.

Can e-mails be used in an emergency?

No. Under no circumstances should patients contact us using e-mail for urgent or emergency matters.

How will my e-mails be responded to?

At least once in every 48 hours we shall look at the e-mails we have received from patients. We shall respond according to whether they concern repeat prescription requests, appointment requests or clinical enquiry.

Will I be able to send and receive e-mails with my own doctor?

Eventually you may be able to, but initially we shall respond to e-mails on a practice basis.

Will other people be able to read my e-mails?

Once an e-mail from a patient arrives at the practice it will be confidential, just like all other paper or computer medical records. We shall not copy or share its content with anyone outside the practice. During the study period when we are looking to see if e-mails might be useful, we shall have a research assistant helping us. He or she will be able to read your e-mails, but will be bound by the same rules of confidentiality that apply to all our other staff.

E-mails can be seen and read by others as they move from your computer to your Internet service provider and back. E-mails sent by accident to the wrong person can of course be seen by that person. We advise you not to include any personal or private details about yourself which might cause you harm or embarrassment if sent to the wrong place or be seen by the wrong person.

When we reply to you using e-mail we shall take similar steps to ensure that if the message is seen or forwarded to another person it would not cause embarrassment, offence or harm.

How do I make sure my e-mails always arrive at the practice and that replies always reach me?

Neither you nor us can guarantee safe sending and receiving of e-mails. For this reason we ask you not to send anything that if seen by the wrong person would cause embarrassment, offence or harm. When writing a 'medical e-mail' imagine that you are writing to a magazine or newspaper 'doc replies' section – keep it simple, short, and of a general nature. Our replies back will be simple, short and general in nature and will not include any details personal to you.

Will I receive junk mail?

No. If you take part we shall not pass on your e-mail address to anyone else. We shall not use your e-mail address to communicate with you for any non-medical matters. We shall keep your e-mail address in the same secure confidential way that we keep your address and telephone number.

Will I have to answer any questions about the project?

If you decide to take part we should like to ask you about what you thought of the project. We should like to ask you views on what you see as the advantages and disadvantages of e-mail communication with your practice. At the end of the project we shall send you an e-mail questionnaire. Completion will of course be optional.

Any questions?

If you are unsure about whether to take part you are welcome to speak to any of the doctors or nurses in the practice to ask questions. Dr Neville is leading the project and will be responsible for researching whether it is useful or not. He would be happy to speak to you about any aspect of the project.

If you do wish to take part or obtain more information you are welcome to send us an e-mail to the address below. If you decide not to take part that is perfectly all right. Your medical care will be not affected or changed in any way. If you decide to take part and change your mind then that is OK. You can withdraw from the project at any time without giving a reason.

Yours sincerely

Dr RG Neville

