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Evaluated Service Improvement

The impact of patient record access on appointments and telephone calls in two English general practices: a population-based study

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Key messages

- Patient record access is likely to save time for patients and practices.
- If 30% of patients accessed their electronic general practice record online at least twice a year, a 10 000-patient practice is likely to save 4747 appointments and 8020 telephone calls each year – about 11% of appointments.
- Patient record access offers environmental savings from fewer patient visits.
- There is a business case for patient record access for UK general practice.
- The government has made a commitment that all patients who want it will be able to have online access to their electronic GP record by 2015.

Why this matters to me

Medical student view (CF)
I recently graduated as a doctor after five years at Manchester Medical School. As a student, I have seen general practice clinics, outpatient appointments and ward rounds where good patient care has been impeded by a lack of access to patient records. Patient safety has sometimes been compromised due to the absence of the patients' healthcare records. One of the core principles we were taught was the importance of clear and effective communication between patient and physician, and between healthcare workers within the NHS. At the heart of this was the transmission of information to patients in a way that would help them better understand their underlying condition and to enable informed and shared decisions about treatment options and care. Patient record access appears to present a way of solving this problem and empowering the patient to gain a better understanding and management of their health.

GP view (BF)
I have been an advocate of patient online access to their genral practice records ever since the practice where I was a patient shared my daughter's record

with me. From that time, in 1983, I have been exploring the impact of record access (RA), initially by offering it in my own practice and then through research across the country. I have been moved by patients' stories of how it has helped them and impressed by the way other general practitioners have worked with their patients to extract the most benefit from record sharing for their practices and patients. I also think that there is a moral imperative for data to be shared with patients. To ensure that RA was as available as possible, I set up a company called PAERS Ltd and worked with EMIS to make it possible for all EMIS practices (60% of the UK) to offer their patients free online access. I appreciate that this relationship constitutes a conflict of interest. I know that studies around the world have demonstrated the benefits of RA to both patients and health organisations, including time saved through increased efficiencies. However, I also know that many practitioners worry that their workload will increase as a result of RA. They worry that patients will misunderstand what they read and attend far more frequently than before. Although no practice that has offered RA seems to have found this in practice, I felt I needed to explore their concerns. I needed to know for my own peace of mind and to be able to be honest with practices who felt they were being asked (and soon forced) to offer RA, a process that feels to practices like jumping off a cliff.

ABSTRACT

Background Government policy expects all patients who wish to have online record access (RA) by 2015. We currently have no knowledge of the impact of patient record access on practice workload.

Setting Two urban general practices in Manchester.

Question What is the impact of patient RA on telephone calls and appointments in UK general practice?

Method We asked patients in two urban general practices who used RA whether it had increased or decreased their use of the practice over the previous year. Using practice data, we calculated the change in appointments, telephone calls and staff cost. We also estimated the reduction in environmental costs and patient time.

Results An average of 187 clinical appointments (of which 87 were with doctors and 45 with nurses) and 290 telephone calls were saved. If 30% of patients used RA at least twice a year, these figures suggest that a 10 000-patient practice would save 4747 appointments and 8020 telephone calls per year. Assuming a consultation rate of 5.3% annually, that equates to a release of about 11% of appointments per year, with significant resource savings for patients and the environment.

Discussion This is the first such study in the UK. It shows similar results to a study in the USA. We discuss the study limitations, including the issue of patient recall, nature of the practices studied and nature of early adopter patients. Strengths include combining national data, practice data and local reflection. We are confident that the savings observed are the result of RA rather than other factors. We suggest that RA can be part of continuous practice improvement, given its benefits and the support it offers for patient confidence, self-care and shared decision-making.

Keywords: capacity building, medical records, patient access, patient appointments

Introduction

The government has committed itself to ensuring that all patients who request it will have online access to their general practice record by the end of this parliament in 2015.[1] In a previous issue of the *London Journal of Primary Care* (*LJPC*), we described how patient record access (RA) can easily be set up, and the patient and practice benefits that can result.[2] These include better relationships with the practice, more confidence to self-care and safer care by sharing information across sectors and organisations.

However, many general practitioners (GPs) are concerned that RA will create more work.[3] They fear extra consultations and telephone calls as a result of patient misunderstandings. This study explores this concern.

Studies in the US suggest the opposite – that RA can reduce resource demand. In Kaiser Permanente, RA linked with secure messaging led to a 25% reduction in visits to primary care and a 14% reduction in telephone calls.[4] US company Cisco found that 87% of employees with RA had fewer work absences and 72% said they reduced physician office visits, saving over $4 for every $1 invested in RA.[5] There was a reduction in

telephone calls to primary care in Teito in Finland when record access began.[6]

A more recent paper from Kaiser Permanente compared use of services between patients who used RA combined with e-messaging services with those who used neither.[7] Rates of office visits, telephone encounters, after-hours clinic visits, A&E encounters and hospitalisations increased in those using RA and e-messaging.

This paper evaluates the use of RA in two UK practices. In particular it aims to explore whether the experience of other countries – that RA saves practice resources – also applies to the UK.

Practice settings

The two practices have enabled RA using the EMIS system through which patients can also book appointments and repeat prescriptions online:

- Manor House Surgery (MHS) in Glossop has 16 000, mostly white British, patients with over 450 patients having RA for 18 months.
- Haughton Thornley Medical Centres (HTMC) in Hyde 11 855, largely Asian, patients with 1694 patients having RA, offered over 6 years.

The electronic system

The Patient Access to Electronic Records System (PAERS) enables patients in all EMIS practices to access and navigate their GP electronic medical record online, providing information to help patients' understanding of medical terminology. Patients can access their consultation record, their results, their letters and patient information leaflets. Practice experiences of running the service are described elsewhere.[8]

Method

The study had two separate arms:

- we asked patients who had used RA to estimate whether it had increased or decreased their use of the practice over the previous year; and
- we examined costs for each practice to administer the RA process.

The patient questionnaire

We designed and piloted a patient questionnaire with the patient participation group of MHS. The two practices sent the same patient questionnaire out in different ways, as outlined below. The questionnaire asked:

- the number of extra or saved appointments with doctors, nurses, healthcare assistants or other professionals, as a result of RA, in patients' experience, over the previous 12 months;
- the number of extra or saved telephone calls to the practice as a result of RA, in their experience, over the previous 12 months;
- for their comments on those experiences.

Experience shows that registering for RA does not necessarily mean that a patient will use it.[9] For instance, younger, fitter, people may look only once, out of curiosity. We therefore recruited people who had used RA at least twice, suggesting that it had been of practical value to them. We identified them through the questionnaire and an EMIS audit.

The costs of processing RA

The process entails generating passwords, dealing with queries and clinical issues, handled differently at the two practices. Time, personnel and their costs were calculated. Details are described later, because each practice dealt with this process differently.

Results

Excluding savings incorrectly ascribed to record access

We wanted to ensure that any change in the use of resources was the result of patients accessing their records, rather than the result of booking appointments and phone calls online which can also save telephone calls and possibly appointments.

Patient questionnaires asked for details of how the extra or saved appointments or telephone calls had come about. Analysis showed that 7.6% of those who had made comments in HTMC and 7.3% of those in MHS ascribed a saving not to records access, but to booking an appointment or ordering a repeat prescription online. We corrected for this by reducing the savings by 7.6% in HTMC and by 7.3% in MHS.

Response rates

MHS had 94/153 respondents; a 61.4% response rate. HTMC had 135/1694 respondents; an 8% response rate. The likely reason is that HTMC were unable to pursue non-responders, whereas MHS sent follow-up letters and emails.

Characteristics of the study sample.

The practice population at MHS is 97% white British. The 153 patients sampled were 99.4% white British. Responders differed significantly from non-responders. They were on average 5.7 years older and 20.8% (8.4 to 33.2%) had more medical conditions.

HTMC were unable to track their non-responders.

Costs of processing record access in MHS

Patient enrolment was through notices in the practice and website, and recruitment by reception and clinicians.

To access their records, patients needed photo-ID to confirm identity to ensure that authorisation was secure. They then completed an enrolment form which was scanned into the record with the patient number, password and Read code. The form outlines the risks and benefits of RA. The note summariser activated registration. At first, the practice was anxious about sharing records, concerned about patient reactions to what they might see. So, for the first three months the practice manager and note summariser talked with all patients who requested access in order to reassure themselves that RA posed no risk to patients or the practice. They stopped these discussions at that stage, having reassured themselves that the process was safe and straightforward. They continue to review notes before enabling access for patients. This is reflected in the costs we describe below. Any 'problematic' records are passed to the practice manager and residual queries to a GP. Technical problems are usually sorted in-house. The process is described diagrammatically in Figure 1.

Costs of processing record access

National standards established through the National GP Workload Survey were used to estimate the costs of record access and savings.[10] Experience shows that RA management costs reduce after the first year.

The cost per patient in MHS was £4.35 per year. The cost per patient in HTMC was £46.15 per year. This is because patient enrolment, processing and problem-solving in HTMC were done almost entirely by one doctor, rather than by admin staff. The costs in detail are compared in Table 1.

Since this study, HTMC have adopted a similar approach to MHS.

Impact of record access on consultations and telephone calls at MHS

Because the practices had different IT and administration systems, we present figures from the two practices separately before combining them.

The numbers of extra or saved consultations and calls in a year reported by the 94 MHS responders as a result of their record access are shown in Table 2. We also record the net cost savings. The unit costs are based on national standards.[11]

The impact of RA on consultation and telephone calls at HTMC

The numbers of extra or saved consultations and calls in a year that the 135 HTMC respondents reported as a result of RA are shown in Table 3.

Net cost–benefit as an average for both practices

The MHS approach is standard for practices across the UK and so we have used these costs to derive the net cost–benefit.[9]

The average savings to a practice in terms of appointments and telephone calls per year, per patient (who use RA at least twice a year) are shown in Table 4.

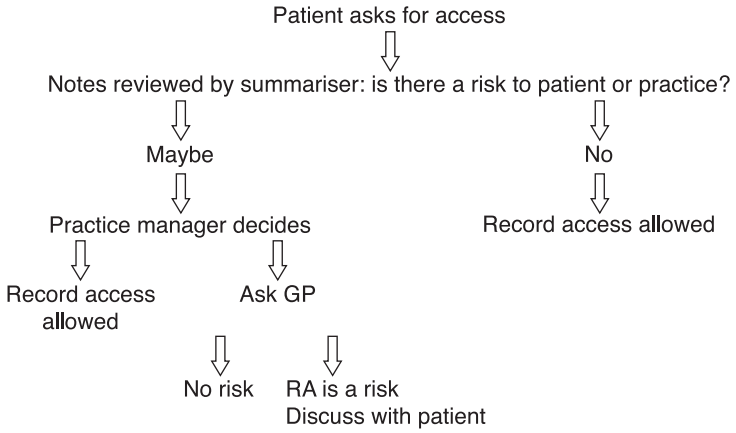

Figure 1 RA enrolment process

Table 1

Surgery	Staff and task type	Unit cost (£ per min)	No. minutes (per task)	No. tasks	No. patients in pilot	Total cost (£)	Per-patient cost (£)
MHS	Receptionist – patient request	0.15	2	94	94	28.20	0.30
	Receptionist – check return	0.15	2	94	94	28.20	0.30
	Receptionist – check record	0.15	20	94	94	282.00	3.00
	Receptionist – scanning	0.15	2	94	94	28.20	0.30
	Receptionist – third party data	0.15	2	0.94	94	0.28	0.00
	Rec manager/IT support – problems	0.19	5	5	94	4.69	0.05
	Rec manager/IT support – access	0.19	20	5	94	19.00	0.20
	GP	0.89	10	2	94	17.80	0.19
	Total						4.35
HTMC	GP	3.08	15		135	6230.77	46.15

Table 2 Numbers of extra or saved consultations and calls in a year (MHS)

	Number of saved consultations/ telephone calls	Number of extra consultations/ telephone calls	Net change in the number of consultations/ telephone calls	Cost per unit (£)	Monetary value of saving – sample (£)	Per-patient saving (£)
Doctor	87	26.5	-60.5	36.00	2178	23.17
Nurse	55	22	-33	13.18	434.78	4.63
Health Care Assistant	18	1	-17	1.60	27.20	0.29
Other professional	16	1	-15	3.00	45.00	0.48
Telephone calls	372	43	-325.5 (including a reduction of 7.3% for misunderstood questionnaire)	0.15	48.83	0.52
Total						29.08

Note: 110 appointments and 325 telephone calls were saved at MHS with a per-patient saving of £29.08.

Averaged over one year in the two practices, we found that 187 clinical appointments, including appointments with doctors and nurses, and 290 telephone calls were saved. If 30% of patients used RA at least twice a year, a 10 000-patient practice would save 4747 appointments per year and 8020 telephone calls. Assuming a consultation rate of 5.3% annually.[12] This represents a release of about 11% of appointments per year.

Table 3 Numbers of extra or saved consultations and calls in a year (HTMC)

	Number of saved appointments/ telephone calls	Number of extra appointments/ telephone calls	Net change in number of consultations/ telephone calls	Cost per unit (£)	Monetary value of saving – sample (£)	Per-patient saving (£)
Doctor	164	23	–141	36.00	5076.00	37.60
Nurse	68	11	–57	13.18	750.98	5.56
Healthcare assistant	15	1	–14	1.60	22.40	0.17
Other professional	38	3	–35	3.00	105.00	0.78
Telephone calls	319	44	–255 (including a reduction of 7.6% for misunderstood questionnaire)	0.15	38.25	0.28
Total						44.39

Note: 212 appointments and 255 telephone calls were saved. The saving per patient is £44.39.

Table 4 Average savings to a practice

	Net savings at HTMC	HTMC savings per patient	Net savings at MHS	MHS savings per patient	Average saving per patient	Annual savings to a practice with 10 000 patients where 30% of patients use RA at least twice a year
Doctor appointments	141	1.04	60.5	0.64	0.84	2532
Nurse appointments	57	0.4	33	0.35	0.37	1160
Healthcare assistant appointments	14	0.1	17	0.18	0.14	427
Other appointments	35	0.26	15	0.16	0.21	628
Telephone calls	255	1.8	325	3.5	2.65	8020

Patient experience

The questionnaire asked for patient comments on the process. The questionnaire asked for patient comments on the process. We received 226 comments. The following responses are illustrative of the reasons for calls and appointments saved:

Able to print off results/reports for consultant without bothering the practice.

Test results normal saved me from making an appointment.

Checking to see if a letter has been sent, or seeing results online so you don't need to phone.

This suggests that savings are likely to be the result of RA enabling patients to get information from the record for which they would otherwise have to contact the practice.

Discussion

Our preliminary results suggest that, for a 10 000-patient practice with 30% of patients using record access at least twice a year, and assuming a consultation rate of 5.3% annually that there may be a release of about 11% of appointments per year, with significant resource savings for patients and the environment.[12] This study suggests that the effects occur in different types of practices. To reduce costs, practices should train admin staff to process RA, rather than doctors.

This study supports previous research from the US and Finland that shows that practices can achieve a reduction in workload when RA is introduced. This data may help to reduce concerns that RA will increase workload.

However, as mentioned earlier, not all studies have led to the same conclusion. The more recent paper from Kaiser Permanente, contradicting their previous study, suggests that RA combined with e-messaging can increase demand.[7] It is unclear whether the RA or the e-messaging or both contributed to the workload. The control group in the study had no internet access so they may also have differed in other respects.

The effects in our study are likely to be the result of people doing things for themselves, typical of online experience. Patients can find out more about their care and make some decisions without contacting the practice.

One study practice only managed an 8% response rate because it felt unable to pursue patients with follow-up letters. The same practice was not able to track non-responders. This suggests that even an enthusiastic practice may have difficulty fitting in extra RA work.

There are a number of strengths of this exploratory study. This is the first UK exploration of RA that attempted to assess the cost–benefit. We used national data for costs and real practice data when national data were not available. The costs of administering RA in the practice that operates in the most representative way are derived from staff records and experience.

The study involved two different practices with different populations.

By excluding from the figures the impact of related transactional services – booking appointments and repeat prescriptions – we feel reasonably confident that we have isolated the effect of record access itself.

There are significant limitations of the study. Both practices have RA enthusiasts who may be more likely than the average practice to extract benefit.[13] Two of the practices are authors of this study. MHS has a more affluent population, which may affect RA use. Early adopter patients are likely to be different to later users – responders and non-responders in HTMC had different characteristics, consistent with other studies.[9]

The returned questionnaires were self-reported over 12 months. Recall bias is clearly an issue. Patients may have misreported actual events, but we have no evidence that this would bias answers in any particular direction. There was a low return from one practice because of lack of follow-up. There were differences in processing data between the two.

Patient comments described above are consistent with previous evidence.[9] This suggests that patients checked results online and used access to their record to make life easier for themselves. Our results are consistent with that experience.

Forty-two percent of patients with RA looked at their records twice or more a year.

Experience, literature reviews and research suggest that RA in general practice improves safety,[14] patient satisfaction[15] and compliance with treatment.[2,16] This may come from a greater sense of understanding and control felt by patients. Combining this evidence with the likely evidence of savings set out here, local health systems may find it desirable to promote RA as a key component in their continuous quality improvement processes. In acknowledgement of this, Lewisham CCG appointed a record access facilitator. A national website collating evidence and resources can be found at www.myrecord.org.uk.

We suggest that the time is right for a full-scale study of RA within general practice, including benefits and costs to both patients and practices, using objective measures rather than self-reported data and also exploring the training and support needed to maximise benefit in safe and effective ways.

GOVERNANCE

As an evaluated service improvement project this study did not require research ethics committee approval. The practices took responsibility for the questionnaire and for any complaints had they arisen.

CONTRIBUTORSHIP STATEMENT

CF, RF and ASH gathered data for the study. All authors contributed to the non-economic analysis of the data. LM, DH carried out the economic analysis of the data. BF drafted and revised the paper.

FUNDING

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COMPETING INTERESTS

BF is a co-director of PAERS Ltd, the software company that makes the record access described in the paper possible. Dr Hannan is a member of the Health Informatics Clinical Advisory Team NHS North-West and has talked at meetings sponsored by Pfizer, Kings Fund, BT Health and the DH; LM is an employee of the Department of Health, and one of the analysts who worked on the Impact Assessment for the Department's latest Information Strategy (of which patient access to records was a part). There are no other relationships or activities that could appear to have influenced the submitted work.

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REFERENCES

1 *Chancellor of the Exchequer's Autumn Statement* (29 November 2011) www.nhsconfed.org/Documents/Autumn_statement_291111.pdf
2 Fisher B. Patient record access: making it work for you and the NHS. *London Journal of Primary Care* 2011;4:22–9. www.radcliffehealth.com/sites/radcliffehealth.com/files/ljpc_articles/4_1_8.pdf (accessed 29/11/2013).
3 Rimmer A. Patient access to medical records will add to GP workload. *GP Online* 2012; 20 January. www.gponline.com/News/article/1113203/Patient-access-medical-records-will-add-GP-workload/ (accessed 29/11/2013).
4 Zhou Y, Garrido T, Chin HL, Wiesenthal AM and Liang LL. Patient access to an electronic health record with secure messaging: impact on primary care utilization. *American Journal of Managed Care* 2007;13:418–24.
5 Hoeksma J. Cisco sees return on staff PHRs. *ehi ehealth INSIDER* 2008;21 August. www.ehi.co.uk/news/ehi/4076 (accessed 29/11/2013).
6 Bruce S. Finnish digital doctors cut workloads. *ehi Primary Care* 2010;15 February. www.ehi.co.uk/news/primary-care/5639 (accessed 29/11/2013).
7 Palen T, Ross C, Powers J and Xu S. Association of online patient access to clinicians and medical records with use of clinical services. *JAMA* 2012;308:2012–19.
8 Pagliari C, Shand T and Fisher B. Embedding online patient record access in UK primary care: a survey of stakeholder experiences. *JRSM Short Reports* 2012; 3(5):34. doi 10.1258/shorts.2012.012009
9 Bhavnani V, Fisher B, Winfield M and Seed P. How patients use access to their electronic GP record – a quantitative study. *Family Practice* 2011;28: 188–94.
10 Health and Social Care Information Centre. *2006/07 UK General Practice Workload Survey*. Health and Social Care Information Centre: Leeds, 2007. www.hscic.gov.uk/catalogue/PUB01028 (accessed 29/11/2013).
11 Curtis L. *Unit Costs Of Health & Social Care*. University of Kent: Canterbury, 2011. www.pssru.ac.uk/archive/pdf/uc/uc2011/uc2011.pdf (accessed 29/11/2013).
12 Hippisley-Cox J and Vinogradova Y. *Trends in consultation rates in general practice 1995 to 2008: analysis of the QResearch® database*. The NHS Information Centre: Nottingham, 2009. catalogue.ic.nhs.uk/publications/primary-care/general-practice/tren-cons-rate-gene-prac-95–09/tren-cons-rate-gene-prac-95–09–95–08-rep.pdf (accessed 29/11/2013).
13 Gale EAM. The Hawthorne studies—a fable for our times? *QJM* 2008;97 (7): 439–49. doi: 10.1093/qjmed/hch070. qjmed.oxfordjournals.org/content/97/7/439.short (accessed 29/11/2013).
14 Fisher B, Bhavnani V and Winfield M. How patients use access to their full health records: a qualitative study of patients in general practice. *Journal of the Royal Society of Medicine* 2009;102:539–44.
15 Pyper C, Amery J, Watson M, Crook C and Thomas B. Patients' access to their online electronic health records. *Journal of Telemedicine & Telecare* 2002;8 (Suppl 2):103–5.
16 Ross SE, Moore LA, Earnest MA, Wittevrongel L and Lin CT. Providing a web-based online medical record with electronic communication capabilities to patients with congestive heart failure: randomized trial. *Journal of Medical Internet Research* 2004;6 (2):e12.

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