Information in practice

Ten ways to improve information technology in the NHS

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I have a request for Richard Granger, the newly appointed director general of NHS Information Technology,[1] who is responsible for implementing the government's ambitious and very costly plans for the use of information technology in the NHS.[2] My request to Mr Granger is this: please can you implement an information technology programme that supports me in my clinical practice, helps to improve the quality of care I provide, and allows me to run my general practice more efficiently. To help Mr Granger to achieve this objective, I have listed the top 10 improvements I would like to see in the NHS information technology systems that I use.

The list is based on my experience as a general practitioner, an academic, and someone with a reasonably good knowledge of information technology issues, as well as discussions with colleagues with varying levels of knowledge about information technology. I work in a practice that uses computers rather than paper medical records to document consultations and that has tried since 1999 to store all the information we receive on patients electronically.[3] So I have direct experience of trying to use the outputs of the NHS information technology strategy in my day to day clinical work, as well as in my academic work.[4] I realise that some other clinicians and managers may not agree with my list, but it does serve as a starting point for a debate on the direction that the NHS information technology strategy should take.[5]

Ten requests

1. Send discharge summaries and clinic letters electronically

We still receive all letters from hospitals in paper format only. This means that a member of our staff has to scan them into the patient's electronic medical record. Because of the volume of letters we receive in our practice of 9000 patients, this is not a trivial task (about three to four hours of a receptionist's time every day). It also results in mistakes, with letters sometimes being scanned into the wrong set of notes. All hospital letters are produced on computers, so it seems surprising that they still cannot be sent to practices electronically.

2. Allow hospital diagnostic codes to be sent to practices electronically

To maintain the completeness of a patient's electronic record, we have to extract information on diagnoses and procedures from hospital letters and enter the appropriate Read codes into the patient's record. This creates extra work for clinical staff and also introduces variability in coding, because different doctors will often code the same diagnosis differently. Information on diagnosis and operative procedures is already coded for all hospital admissions by trained teams of clinical coders. Why not send these codes electronically to practices (in Read code format) so that they are automatically filed in patients' records?

3. Allow the electronic transfer of records between practices

When my patients inform me that they will be leaving my practice, they are often amazed when I tell them that the electronic medical record we have laboriously constructed about them has to be printed off, stuffed into an envelope, and posted on to their new practice. If their new general practitioner works in a computerised practice, someone has to re-enter all their data into their new electronic record. In an inner city practice such as mine, about 20% of our 9000 patients leave our practice every year and a similar number join. This means that each week we send about 40 sets of notes to the primary care trust and receive about the same number in return. The work created for us by resummarising and re-entering information on our

Summary points

Over the next few years, the government proposes to spend several billion pounds on information technology developments in the NHS in England

This programme is to be overseen by a newly appointed director general of NHS information technology, Richard Granger

The NHS information technology strategy should be aimed at supporting clinicians in their day to day work, improving quality of care, and allowing clinicians and managers to run services more efficiently

Key priorities should include improving the speed and reliability of NHSnet, developing integrated electronic health records, and making information on patients, clinical activity, and health services more accessible

new patients' medical histories imposes a major burden on our staff. Furthermore, the current system can result in long delays before patients' notes arrive at their new practice and, in time honoured NHS fashion, some of these notes never arrive at all. The NHS also needs to consider what it proposes to do with the vast amount of historical clinical information stored on paper records and how it proposes to convert this information into electronic format.

4. Improve the arrangements for sharing information

Many patients are treated in both primary and secondary care. It would therefore seem logical to allow general practitioners and hospital doctors to view each other's records on the patients they are jointly managing and to update their own records with information collected by the other. Just think of the unnecessary investigations that could be prevented if general practitioners could download laboratory results from hospital records. They would then also perform much better on audits of the process of care, as many of these are about ensuring that appropriate physical examinations and laboratory investigations have been carried out.
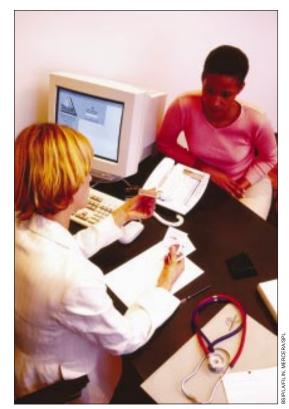
5. Start coding outpatient encounters

Outpatients are the "black hole" of NHS information activity. More than 40 million outpatient appointments take place every year in the NHS in England, but we know very little about what goes on during these consultations. Unlike hospital admissions, information is not collected and coded on the diagnoses that patients are being treated for or the investigations and procedures they undergo in outpatient departments. This needs to be rectified, given that an increasing amount of care is being delivered in outpatient settings. As with codes derived from hospital admissions, any diagnostic and procedure codes derived from outpatient consultations also need to be sent electronically to practices.

6. Make the Lab-Links system work better

Lab-Links is a system that allows laboratory results to be sent electronically to practices and filed in a patient's electronic medical record. According to government figures, more than half of general practices now have the opportunity to make use of this facility. Unfortunately, in practice, Lab-Links fails regularly. I have lost count of the number of times I have been faced with a patient asking for the results of laboratory investigations that should be, but are not, stored in their electronic record. This means that I have to either ring the laboratory or ask a receptionist to bring in the paper records to be able to give the patient in front of me the information he or she wants. A second problem with Lab-Links is that some departments at my local hospital, such as radiology and pathology, are not yet able to use the system. This means that the results of many investigations still have to be entered manually into patients' electronic medical records.

7. Improve the speed and reliability of NHSnet

NHSnet is the network that links general practices, hospitals, and other NHS establishments. Its improvement is crucial if the NHS information technology strategy is to meet its objectives. The internet connection I have at home is quicker than the one in my practice, which has to serve six doctors, three

Supporting doctors' clinical practice comes too low in the NHS's IT priorities

nurses, several managerial and administrative staff, and any attached medical students. Inevitably, if even a few of us try to use the practice's internet connection at the same time, it simply grinds to a halt.

8. Take responsibility for maintenance away from general practices

The doctors and managers in my practice are responsible for the information technology systems that we use. This includes responsibility for ensuring that our systems stay on line, for security and virus checking, for backing up our data, and for many other information technology related activities. Unlike hospitals, general practices do not have large information technology departments to do all these tasks for them. I do not wish to undervalue the role or expertise of my colleagues, but does the NHS really want general practitioners to be responsible for all these functions? Because nearly 10 000 general practices exist in England, the NHS cannot realistically provide each general practice with a team of information technology support staff. This means that the only long term solution to this problem is to store patients' electronic records on central servers that the primary care trust is responsible for maintaining and that practices access through NHSnet. However, clinical staff need to play a key role in shaping these developments, to ensure that supporting clinicians in their work and improving patient care remain the driving forces behind any such changes.

9. Provide more comparative information on practice activity

I would like to know how my practice compares with other practices, both locally and nationally, in areas

such as prescribing, hospital referrals and admissions, and use of diagnostic investigations. Theoretically, the NHS should already be able to supply this information by using its existing information systems. However, trying to get this information from primary care trusts or hospitals is very difficult. In the longer term, I would like more sophisticated performance measures of our clinical activity, using the information stored on my practice's clinical computer system, by building on current initiatives in this area.[6 7] If I had this information, I could use it to identify areas in which we were underperforming and so improve the quality and efficiency of the services we offer. Many patients and consumer groups would also find this information useful.

10. Provide training

Training is essential to allow all members of the primary healthcare team to benefit from investment in information technology. The computer skills of general practitioners and other primary care staff vary widely. Some general practitioners need little additional training to allow them to exploit the full value of the electronic medical records and the online resources that are being made available to them through initiatives such as the Primary Care National Electronic Library for Health.[8] However, many general practitioners will need considerable training to allow them to use these resources and help make the NHS information technology strategy succeed. Medicine is an information based discipline, and giving doctors the information and skills they need to practise up to date and evidence based medicine is essential in improving the quality of care the NHS provides.

Priorities for delivery

I have raised many of the issues above with local NHS managers, but they always have more pressing matters to deal with—for example, waiting lists, budgetary deficits, and all the various targets the Department of Health has imposed on them. Unfortunately, implementing measures to support doctors' clinical practice seems to come relatively low on their list of priorities. I also understand that my request will not be easy for the NHS in England to achieve, considering that it that serves nearly 50 million people and that every year it generates around 250 million consultations with general practitioners, 44 million outpatient attendances, 15 million accident and emergency attendances, and 11 million hospital admissions.[9 10]

In response to my request, I am sure that Richard Granger will tell me about the various plans and targets the Department of Health has for improving the use of information technology in the NHS. I already know all about these. I have read the Department of Health documents, seen the glossy press releases, and looked at the websites of the Information Policy Unit and NHS Information Authority.[11 12] I also know that government targets have a habit of slipping. For example, in 1998 Department of Health officials told me that the NHS would have developed single electronic health records for use by both general practices and hospitals "within five years." This means that I should have expected to see these by 2003. In 2002 I was once again told that we would see the development of integrated health records "within five years."

I also know about the proposed developments in areas such as online booking of appointments with general practitioners and specialists and the development of telemonitoring techniques. For the time being, however, I do not see these as priorities. The Department of Health should concentrate on improving the flow of clinical information between health professionals; developing integrated electronic health records; making information on patients, clinical activity, and health services more accessible by clinicians; and improving the speed and reliability of NHSnet. Many general practitioners would think much more highly of Richard Granger and his team if they began to deliver in these areas sooner rather than later.

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Endpiece

An act of creation

Research is endlessly seductive; writing is hard work. One has to sit down on that chair and think and transform thought into readable, consecutive, interesting sentences that both make sense and make the reader turn the page. It is laborious, slow, often painful, sometimes agony. It means rearrangement, revision, adding, cutting, rewriting. But it brings about a sense of excitement, almost of rapture; a moment on Olympus. In short, it is an act of creation.

Barbara W Tuchman (1912-89), American author and twice Pulitzer Prize winner, in Search of History. *Radcliffe Q* 1979;65:34

Kamran Baig, research scholar, Department of Surgery, Duke University Medical Center, NC, USA

Commentary: improve the quality of the consultation

Simon de Lusignan

Azeem Majeed is right to challenge the NHS information technology strategy and its lack of alignment with patients' day to day clinical needs. A strategy that neither provides benefits for end users nor is aligned with clinical need is likely to fail. We need to recognise that in primary care the strategic objectives must be delivered during 8-10 minute patient centred consultations.

Shared concerns

I share the author's concern about slow delivery of hospital letters and other communications. At my surgery we have to scan hospital correspondence into our practice computer system. Key data, such as the diagnosis (for example, myocardial infarction) and clinical findings (for example, blood pressure, cholesterol concentration), have to be coded manually. Patients will only be visible to the computer system's search engine if their clinical data are Read coded. Patients who do not have their key diagnoses coded will not be picked up if they need to be targeted for a particular health intervention (for example, offering flu vaccination to patients with heart disease).

Even if there cannot be an instant move to electronic transmission of hospital correspondence, an edict could go out that all routine written communication should be typescript and in scanner friendly format. An enormous volume of information is being lost from patients' records because of hand written documents or complex formatting.

I disagree, however, about the need for central provision of information technology. Although a common strategic purpose defined by the NHS or Department of Health is appropriate and helpful, centralist provision of information technology is unlikely to be effective or offer value for money.

On Majeed's final points, what is important about Primary Care Information Services and Primary Care Data Quality is that they engage primary care professionals to learn about change and how to deliver quality.[1][2] The learning is more important than the comparative data. Similarly, the shortage of generic training in information technology may not be rate limiting. Where information technology offers benefit it is used—for example, in repeat prescribing. New information technology will be adopted if it improves the consultation.

Additional points for Mr Granger

I would ask Richard Granger to focus on implementing information technology that will result in more effective consultations.

(1) No model exists of how computers can make the patient centred primary care consultation more effective; the only published work is in the area of nurse consulting.[3] Research should be commissioned to increase understanding of how computers can improve consultations. The NHS information technology strategy and the next generation of computers can then be designed to fit the task, rather than the consultation being modified to fit what the computer can offer.

(2) Electronic information clearly has a place in the general practice consultation. PRODIGY (prescribing rationally with decision-support in general-practice study) and the Primary Care National Electronic Library for Health have yet to define how such systems directly improve the quality of care,[4][5] but that does not mean they do not have a role. This role needs to be defined, and appropriate medium term developmental arrangements need to be made.

(3) Is migration to SNOMED CT (systematized nomenclature for medicine—clinical terms) a good thing? Much of Europe seems to have opted for the ICPC (international classification of primary care) and ICD-10 (international classification of disease, 10th revision) coding systems.[6] Is the disruption and high cost of pursuing SNOMED worth while when we cannot even send a letter electronically from hospital to practice? SNOMED does not seem to be sufficiently developed to support patient centred consulting.[7]

(4) I worry that things amenable to big contract purchasing will be set ahead of improving what takes place within the consultation. For example, general practice already has electronic prescribing. Where is the advantage for the patient in electronic transmission of the prescription to the pharmacist? My experience with electronic booking of consultations has not been promising. My patients complain more about the length of the wait than about the booking service.

(5) How do you propose that information currently contained within written records is transferred to the computerised medical record?

Conclusion

Azeem Majeed is typical of the frustrated end user. He sees parts of a system that are "broke" not being fixed, while things that are not a priority for him or his patients are receiving or about to receive enormous investment. Buried within the 175 page consultation document for the integrated care records service are nearly all the things on Majeed's list. My concern is that so many priorities exist that those that can be delivered via a big central contract will be done ahead of those that the author rightly sees should be prioritised. Targets will be set and achieved, and heralded as a success, while the more "wicked problem" of making the consultation more effective will be sidelined.

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Commentary: Clinical focus might make it work

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Azeem Majeed deserves applause for his timely "reality check" for Richard Granger, the new director general of information technology for the NHS. The new NHS strategy is ambitious in size and timescale, and the NHS cannot afford for it to fail.[1]

I would not argue with any of Majeed's top 10 improvements, but I would change the emphasis from an understandably general practice oriented, technology focused view to a whole systems approach.[2] Clinical informatics is all about improving patient care by the intelligent application of technology—supporting effectiveness of care, patient safety, and efficiency, across all the organisations and sectors in the NHS.

This aim is not simple—it needs both good clinical systems, with clinical intelligence built in, and clinicians who know how to use them, across the whole of the NHS. Clinical systems in primary care in the United Kingdom are acknowledged to be the best in the world, and education in information management for all members of the primary healthcare team is spreading rapidly.[3] Implementing systems in secondary care that are used routinely in patient care by information proficient clinicians is, however, a major priority. Only then will electronic communication of high quality clinical data between clinicians in primary and secondary care become a reality.

An alternative wish list

(1) The reason for using computers in health care is truly seen as a way to improve the quality of care, not as a means to accumulate data for performance management.[4]

(2) Sensible standards are properly applied, so that clinical standards are embedded intelligently as guidelines within systems; minimum system functionality standards are specified and enforced; coding schema allowing a good representation of clinical reality are mandated across the whole of the NHS; and communications standards allow for secure and intelligible communication between clinicians (not just systems) with fast connection speeds.

(3) Education and training in information management skills (not just computer literacy[5]) are available for everyone in the NHS, enabling workflow redesign, improved quality of data, and the use of clinical information at the point of care, as well as the use of information to improve care and delivery of services.

(4) The NHS as a whole learns from the experience of more than 20 years of clinical computing in primary care and builds on what works.

(5) Use of a policy of rapid prototyping and rollout of systems shown to be effective, rather than a proliferation of strategies and detailed plans (the technology will always move faster than the organisations).

(6) Realism about timescales: a very large investment of money into information technology is needed in the NHS, but the strategy cannot be implemented without well trained people—a scarce resource that will take time to develop.[6]

In short, we need an information proficient workforce, motivated to use the well designed clinical systems available to them and able to communicate information about patients to each other rapidly, securely, and reliably. We also need sensible timescales for achievement.

Competing interests: ST is service director of PRIMIS, a service providing education and training for information facilitators in primary care, and also editor of *Informatics in Primary Care*.

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The patient's referral letter

"Keep falling on left side, dizziness/feeling sick. Permanent pain over my right eye, sleep between 12-14 hours day. Co-ordination not very good, takes at least 4 hours to get ready to go out. Fear of going out too far from home. Bedwetting and myself. Bathing very difficult. Memory short term affected, very forgetful keep burning food etc. No energy or strength."

Shortly after writing this letter, Diane had a craniotomy which revealed a large metastatic deposit, which was de-bulked. She died a few weeks ago, and this letter fell from her notes.

With patient letters that are this good, who needs referral letters? William Murdoch *academic registrar in general practice, Handsworth* (W.Murdoch@bham.ac.uk)