Conference Paper

Improving quality: bridging the health sector divide

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Abstract

Issue. All too often, quality assurance looks at just one small part of the complex system that is health care. However, evidently each individual patient has one set of experiences and outcomes, often involving a range of health professionals in a number of settings across multiple sectors.

Addressing the issue. In order to solve the problems of this complexity, we need to establish high-quality electronic recording in each of the settings. In the UK, primary care has been leading the way in adopting information technology and can now use databases for individual clinical care, for quality assurance using significant event and conventional auditing, and for research.

Building towards a solution. Before we can understand and quality-assure the whole health care system, we need electronic patient records in all settings and good communication to build a summary electronic health record for each patient. Such an electronic health record will be under the control of the patient concerned, will be shared with the explicit consent of the patient, and will form the vehicle for quality assurance across all sectors of the health service.

Keywords: electronic patient records, health informatics, patient empowerment, quality assurance, quality of care

It may seem facile to state that health care is delivered in many settings by many different health professionals. However, it is often forgotten when quality of care is being assessed. For example, in my family practice—about which I will give more details later—I have 217 people with diabetes, which represents a prevalence of 3.5% (Table 1). These patients had 2477 consultations, an average of >10 each, with members of my primary health care team. These consultations are usually held with a general practitioner (GP; as family doctors are known in the UK), a practice nurse, or a community nurse or, less commonly, a chiropodist, a physiotherapist, or a counsellor. Thirty-five (16%) of the 217 patients with diabetes attend a hospital diabetes clinic, and average just over two visits per year—about 80 consultations in all. Many also attend other hospital clinics associated with their diabetes for eye care, renal problems, and so on, and many will of course attend the hospital for reasons not connected with their diabetes.

For any one person with diabetes in the example shown above, there is only one clinical journey, one flow of glycaemic control, and one set of outcomes. There is one life duration and one quality-of-life experience. So to whom do we attribute these quality markers? The GP, the primary care team, the combined diabetes team in the hospital and community settings, or the entire medical community in the area?

A popular measure of hospital quality of care is re-admission rate; however, I submit that this is as much a measure of primary and social care as of hospital care. The same can be said for thrombolysis rates, day surgery rates, or asthma admissions for example. Almost all care is a collaboration and quality should be measured in all its settings. Quality of care is a shared issue.

Given that this is the case, this article will explore the implications for this reality in the setting of the UK. I will examine the state of primary care informatics, the uses of primary care data for quality assurance and research, and how we intend to link our data to allow multi-sectoral assessments of quality of care.

Primary care informatics in the UK

In general, health informatics in the UK is not well advanced. We have experienced our share of large development programmes, mainly designed to yield management data that have failed to live up to promises or even cynical expectations. We have experienced blueprints and master plans [1]. Yet, there is one area in which health informatics has been reasonably successful. British GPs are independent contractors and have a vested interest in using computer systems to deliver clinical care. As a side benefit, their systems provide

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management information, and in particular information on quality of care, as I shall demonstrate.

The development pathway has not, however, been driven primarily by management data requirements. Most practices started using their computers to gain extra payments through call and recall for activities, such as immunizations, cervical smears, and routine checks that attracted state payments. They computerized their prescribing to reduce staff costs, thereby improving accuracy and safety at the same time. Now 85% of all prescriptions received by the Prescription Pricing Authority are computer generated (given the need for out-of-hours, nurse-prescribed and narcotic prescriptions to be handwritten, the maximum number will be a little over 90%).

As disease management became a greater focus of primary care, the benefits of having a disease register became clear. Often this was achieved by coding every consultation, and it has been only a short step from such coding to using the computer as the sole recording medium for clinical care. Along the way, practices linked to local pathology laboratories and radiology units to receive results electronically; they started scanning in letters received, and they introduced electronic appointment systems in order to control the flow of data. Over 30% of general practices in England have reached the end of this road and are referred to as ‘paper light’. The number of such practices is increasing monthly.

This then begs the question of data quality. As you might expect, there is wide variation between practices, but the involvement of clinicians using the data for day-to-day clinical care is a powerful driving force for completeness and accuracy. If I were consulting and saw, for example, that the patient had a diagnosis of epilepsy that proved to be false, I would not only feel embarrassed, I would also be very distressed that I might have made an erroneous decision using inaccurate data. My practice would investigate how that error occurred, correct it, and then look to see if a change in systems was required to ensure it never happened again. So data quality is improving, and we regard it as being of a sufficiently high standard to use for research in one-third of practices and clinical audit in two-thirds.

The National Health Service has recognized the need for high quality recording, and funds my department to deliver a programme called Primary Care Information Services (PRIMIS). We employ 25 people to facilitate better use of clinical computers, including coding, data quality, and clinical auditing in primary care. For example, we can look at the prevalence of ischaemic heart disease by primary care organization (also known as ‘primary care trusts’) (Figure 1), the use of statins in

Table 1 Consultation pattern for people with diabetes in one family practice in the UK

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<tr>
<td>Total number of patients registered in the practice</td>
<td>6200</td>
</tr>
<tr>
<td>Number of people with diabetes</td>
<td>217 (3.5%)</td>
</tr>
<tr>
<td>Number of consultations by people with diabetes in year 2001</td>
<td>2477</td>
</tr>
<tr>
<td>Number seen in hospital diabetes clinic</td>
<td>35 (16%)</td>
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Figure 1 Prevalence of ischaemic heart disease, by primary care organization in England, in Primary Care Information Services (PRIMIS) (males and females, 2002). PCT, primary care trust.
the secondary prevention of those with ischaemic heart disease (Figure 2), or the changes in recording over time (Figure 3).

Uses of primary care data for quality assurance

These primary care databases are used for two main quality assurance functions: significant event auditing and conventional clinical auditing.

Significant event auditing was first described in 1994 [2,3], and has been evaluated as an aid to quality assurance [4]. The practical application of this technique in one practice from a single case through to fundamental change in the delivery of care has been described [5]. Significant event auditing is not a new concept, just a relatively new expression of an established activity. Perinatal mortality meetings are common in hospitals and have gone into the confidential enquiry into maternity deaths [6]. There is now an entire and expanding range of such enquiries, including those looking into operative deaths, asthma deaths [7], suicides [8], and deaths following accidents [9]. Increasingly these enquiries involve examining care outside hospitals.

In primary care, significant event discussions have often focused around deaths [10–12] or complaints [13]. There is a strong belief, based on anecdotal evidence rather than research, that openness in handling complaints and in telling patients when they have experienced negligence will ultimately protect the clinician [14]. The technique has been used to look at the interval between a patient first presenting with a symptom, which in retrospect was the first sign of cancer, and action being taken [15], the processes underlying difficult prescribing decisions [16], and the use of investigations [17]. In other countries it has been used to reflect on ‘near misses’ and adverse events, some of which are potentially avoidable [18,19].

In its usual application, a practice team lists, over the period of 1 month, all events that might help to throw light on the process and outcomes of its care. For example, in my practice we search our computer records for all new myocardial infarctions, strokes, cancers, and attempted suicides. We also look for emergency consultations or acute admissions for a range of conditions, including asthma, diabetes, or epilepsy. Finally, we routinely list all patient complaints or comments, and any adverse events that might occur.

The team member most involved will lead the discussion of an event. If it concerns a patient with a new diagnosis of cancer, for example, we want to look at prevention, screening, early detection, and active management, as appropriate. Good care is recognized and congratulated. Opportunities for improvement are explored. Often we need more information, and this may include a review of the literature, an examination of available guidelines or the undertaking of a clinical audit.

The outcomes might include immediate changes. For example, when it became clear that a doctor had administered an out-of-date drug by injection in an emergency, a new system

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**Figure 2** Percentage of patients with a diagnosis of ischaemic heart disease and being prescribed statins by primary care trust in England in Primary Care Information Services (PRIMIS) (males and females, 2002). PCT, primary care trust.
for regularly checking doctors’ bags and updating the drugs was designed and implemented. Most cases, however, either confirm that routine care was delivered as expected, or that known problems persist. As an example of the latter, we often find that family histories are poorly recorded, although this problem is steadily being addressed.

The most important feature of significant event auditing is that it is not about blame allocation or ‘finger pointing’. We recognize that most errors are either through system failures or personal lapses, for which we are all liable [20, 21]. The discussions are a voyage of mutual exploration and support, with the express intention to finding ways of improving the quality of care our patients experience.

While the practice databases are useful for identifying significant events and for contributing information on cases to the discussions, they allow regular auditing against agreed criteria of care. Some of these are process measures: every quarter we look at recording rates of risks (smoking, alcohol, family history, weight, blood pressure) in the population, and review for diabetes, hypertension, or asthma, for example. We also examine the recording rates for activities such as for glycosylated haemoglobin and creatinine in diabetes.

Levels of disease control in key chronic diseases are examined. These include blood pressure levels in hypertension, diabetes, and ischaemic heart disease; cholesterol levels in hyperlipidaemia and ischaemic heart disease; and thyroid-stimulating hormone levels in myxoedema.

Lastly we audit intervention rates. These include aspirin in ischaemic heart disease, statins in hyperlipidaemia, beta-blockers after acute myocardial infarction, and so on. Overall we look at >60 criteria every 3 months, tracking trends and identifying areas for specific action. Every year we set new targets for key criteria and publish these for our patients in our annual reports.

In order to achieve these audits on a regular basis in background mode, we do need to be able to rely on the completeness and accuracy of our data. As Figures 1–3 show, the quality of such data is improving across a range of general practices in England, often with the support of PRIMIS.

**Use of primary care data for research**

This is not the main focus of this article, but it is included because data for quality assurance can be used to provide information through research which, in turn, can inform audit standards. In my area of England, a health region called Trent, we have recruited a network of 52 practices with good databases. The patients in these practices have been shown to be representative of those in Trent as a whole [22], and Trent is recognized as being representative of England.
Using only the data routinely recorded on general practice computers, we have demonstrated: that spouses are at increased risk of the same diseases their partners may have [23,24]; that depression is a risk factor for ischaemic heart disease [25] and this is largely attributable to one anti-depressant [26]; the extent of inequalities in care delivered for ischaemic heart disease [27,28] and by practices of different sizes [29]; the management of teenage pregnancies [30]; and the implementation of health service policy [31].

**Lessons learnt for quality assurance**

Experience in the UK suggests that routine data collected for the purpose of recording clinical care delivered to individual patients offers a cost-effective way to quality assure care and to promote research. Such data is of a high quality because the physician will come to rely on it for delivering care, and any shortcomings in its accuracy and completeness risk compromising a patient’s health.

However useful a high-quality database may be for an individual health professional or health team, the patient’s health experience is recorded in many locations, sometimes electronically and often still on paper. This failure to link health databases inhibits quality assurance across sectors and for the entire patient journey.

Many individual patients and groups advocating on their behalf are concerned about the confidentiality of their clinical records and access to them. Perversely, as we link databases to offer integrated records communication between relevant health professionals, and use records for audit and research, the risks of inadvertent or malicious disclosure increase.

Finally, we recognize that the further an observer may be from the clinical consultation, the more difficulty there is in interpreting the data [32]. For data to be turned into information they require context. For information to become knowledge, and thus inform change, it requires an understanding of options and possibilities. As an illustration, the cancer plan in England called therefore inform change, it requires an understanding of options and possibilities. As an illustration, the cancer plan in England called for a maximum 2-week wait between patient referral by a GP and being seen in an outpatient department. Two audits in one practice of just over 10,000 registered patients, undertaken in the 6 months before the target was set and then again 1 year later, showed the improvement expected from the national picture. The median delay between referral and first outpatient visit for newly diagnosed cases of cancer had fallen from 17 days to 7 days (Table 2).

<table>
<thead>
<tr>
<th>GP referral to decision to treat or palliate</th>
<th>Before guidelines</th>
<th>After guidelines</th>
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<tr>
<td>Presentation to GP referral</td>
<td>17 days</td>
<td>7 days</td>
</tr>
<tr>
<td>GP referral to 1st outpatient visit</td>
<td>45 days</td>
<td>65 days</td>
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Table 2 Median duration of the clinical journey of newly diagnosed cancer patients in one family practice with just over 10,000 registered patients

1In the 6-month period before the cancer ‘2-week wait’ (from referral to first outpatient visit) guidelines.
2In the 6-month period 1 year after the cancer ‘2-week wait’ (from referral to first outpatient visit) guidelines.

myocardial infarction, after which he is referred to a regional centre for coronary angiography. While waiting he recovers with his daughter, and is looked after by another family doctor until he returns home. After his angiogram shows triple vessel disease, he is admitted to the regional centre for angioplasty and then returns to the care of his usual family doctor. This is a straightforward story involving two family practices and two hospitals. At present in the UK all communication is by paper and there is no shared record. It is intended that this will change.

The first item in the jigsaw will be communication between general practices. Bizarrely, when a patient leaves my practice and moves to another practice using the same computer system, I still print out my record and the next practice enters key items onto their computer. Within 2 years the problems of transmitting parts or all of the record to accompany the patient’s journey through primary care should be resolved.

Although we have links with laboratory and radiology services, allowing the transmission of results directly to our computers, the problems of linking primary and secondary care clinical records remain formidable. The hospitals still use International Classification of Diseases (ICD) codes, whereas we use Read Clinical Terms. When SNOMED-CT (the next version of Read codes) arrives, we will all start using the same codes. Hospital databases in England have, however, been commissioned to provide management information, not to support the clinical care of individual patients. This means that we have a long way to go before the electronic patient record can follow the patient between sectors.

Nevertheless, the vision that we are building towards is of each unit—family practice or hospital—having an electronic patient record for each patient for whom they care. The family doctor’s electronic patient record will contain key aspects of all the electronic patient records for each patient, and in addition there will be a summary of all the electronic patient records, based on the family doctor’s record, called a patient health record. This will follow the patient wherever he or she goes, and will be the key tool for communication and quality assurance.

**Joining up health informatics**

Let us consider a man, Mr Smith, who attends his family doctor for years with hypertension and hyperlipidaemia. Regrettably he is admitted to his local hospital with an acute myocardial infarction, after which he is referred to a regional centre for coronary angiography. While waiting he recovers with his daughter, and is looked after by another family doctor until he returns home. After his angiogram shows triple vessel disease, he is admitted to the regional centre for angioplasty and then returns to the care of his usual family doctor. This is a straightforward story involving two family practices and two hospitals. At present in the UK all communication is by paper and there is no shared record. It is intended that this will change.

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An important refinement of this model is that the electronic health record will be patient-controlled. They will have access through a website and can enter comments and corrections. They will enter their own readings, for blood glucose, blood pressure, or cholesterol for example, on their record. The record will be shared with health professionals with the patient’s informed consent.

In such a world we will start to link health care records across all sectors and, with consent, be able to look at quality assurance as a whole system enterprise. We will still need to be cautious about interpreting the data, but we will begin to have the tools to fully understand the patient’s experience and outcomes.

References


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