The Kings Fund

Ideas that change health care

Research paper

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Managing acute illness

An Inquiry into the Quality of General Practice in England

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The views expressed are those of the authors and not of the panel.

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Contents

1 Introduction

As part of the Inquiry into the Quality of General Practice, The King's Fund commissioned this research project to examine the management of acute illness (both minor and serious). In common with the other projects commissioned as a part of the Inquiry, the research team was tasked with examining: the role of general practice; what good quality of care looks like in terms of patient care *and* cost-effectiveness; how good quality care can be measured (metrics); and to make a current assessment of what is known about the current quality of acute illness management in general practice.

This report identifies four categories of acute illness before considering the possibilities for proposing quality markers, under the headings of acute distress, patient perspectives, the consultation in general practice, the quality of diagnosis, the quality of treatment, including prescribing, and the quality of referral.

Defining acute illness

Acute illnesses are those that are of short duration. They may be minor or they may be serious. Minor acute illnesses include some of the commonest problems presented in general practice, such as upper respiratory tract infections or skin rashes. Major acute illnesses may present as an acute exacerbation of an underlying chronic illness, such as a myocardial infarction or diabetic coma, or the sudden onset of a previously undiagnosed condition, such as epilepsy or stroke or an acute emotional or psychological problem.

Symptoms of rapid onset can pose a diagnostic puzzle (and are therefore the remit of another working group), but they can be significant in determining whether the underlying problem is acute, in the sense of being self-limiting, or not. We have therefore included the problem of triaging acute presentation into minor and serious problems. Acute is also often encountered in a lay sense as meaning 'serious', but we believe that this usage is also encompassed in our coverage of acute illnesses and acute presentations.

For our contribution to the inquiry, we have classified acute illness as:

- acute minor illness (self-limiting)
- acute major illness (self-limiting or requiring treatment)
- acute presentation of existing major illness (acute exacerbation)
- acute presentation of new chronic illness.

The scope of the report

The structure of the National Health Service (NHS), established over 60 years ago, re-emphasised the sharp divide between primary and secondary care. This has resulted in a number of characteristic features of general practice, including its generalist orientation, its gatekeeper role, the referral system, and a range of issues to do with access to investigations and specialist opinions across the interface between primary and secondary care.

Although general practice remains the main site of first-contact medical care in the United Kingdom, a number of alternative routes to first-contact or primary care have emerged in the past decade or so, including walk-in clinics, accident and emergency departments (with some A&E departments employing general practitioners as first-contact clinicians), NHS Direct, minor injury and minor illness units (often nurse-led), general dental practitioners, optometrists, and, most recently, screening clinics and the NHS Health Check. These may be located in commercial settings, GP surgeries or local pharmacies.

In this review we focus on general practitioner care, recognising that even within a general practice first-contact care may be provided in a range of ways, including GP consultations, nurse practitioner triage and first-contact practice nurse and health visitor consultations, telephone consultations and personal or deputising services to provide out-of-hours care. Other projects that are part of this inquiry focus specifically on diagnosis, referral, choice, access and continuity or co-ordination of care, and we touch on these too in considering the important issue of the quality of management of acute illness.

As indicated in the research brief, the medical geography of any general practice is important in considering the measurement of quality. Factors such as practice size and structure, the location of a practice in relation to the base hospital and its emergency services, local arrangements for direct access to investigations, and the availability of on-site investigations will all modulate aspects of how acute illness is managed and how its quality is measured.

Method of working

We began our research by conducting a literature review with the aim of identifying studies that examined approaches to evaluating quality measures for the management of acute illness. The literature in this area was relatively sparse, and few studies were available to guide the preparation of this report.

A series of discussions took place between the authors of the report, culminating in a seminar conducted at the Department of General Practice and Primary Care at King's College London on 29 July 2009. At the event we received input from clinical, academic and NHS general practitioners, academics, practice nurses and managers, departmental administrators and lay people. This seminar informed the development of our ideas.

In particular, we attempted to test our ideas about quality metrics against an actual clinical problem – in this case, the management of a patient presenting acutely with cough – and found this approach very useful in teasing out the components of quality.

We then presented our ideas to The King's Fund Expert Seminar, which took place on 24 September 2009, and modified the paper in the light of the discussions that took place there. We later conducted a further seminar with general practitioners and members of our department in order to further refine our ideas.

Our draft proposals for quality measures were presented at The King's Fund on 3 March 2010. Using the feedback from that meeting, we developed and summarised these measures into a Quality Measure Template. These quality measures represent what we believe represent potential ways to capture what good quality of care looks like in the management of people with acute

illness. The template includes an assessment of the potential for each of the measures to be used for gaming purposes (to earn more money from the Quality and Outcomes Framework than is merited from a true assessment of performance) or to have unintended consequences.

Finally, we conducted a further literature review to establish whether there was any evidence that some of our quality improvement proposals (such as significant event analysis, audit with feedback, note review and peer review) had been tested in research settings. The findings of this review are included at the end of the report.

2 The clinical content of general practice

In recent years there has been an emphasis on the role of general practice in the management of long-term conditions and the so-called secondary-to-primary care shift. In the NHS, this has culminated in the introduction of the Quality and Outcomes Framework (QOF)[1] element of the new GP contract, which is composed of financial incentives relating mostly to chronic illness. Alongside these changes, GPs remain responsible for assessing the majority of acutely ill patients.

The scale of the management of acute illness is impressive: while new and follow-up attendances at hospital outpatient departments total about 41,600,000 per year, with about 20,000,000 A&E attendances, there are more than 280,000,000 GP consultations in England each year, with a mean annual consultation rate per individual member of the population of around five per year.

Up to two-thirds of primary care contacts are for acute problems, although the reasons for consultation and the content of the consultation are often more complex than the presentation and treatment of a single episode might suggest. The term 'acute' is likely to have somewhat different meanings in different contexts. Cough is said to become chronic after eight weeks[2] and diarrhoea after six,[3] but given the likelihood that patients' symptoms will often have been present for some time before the decision to consult, these figures must be regarded as arbitrary.

Acute minor illness might be regarded as the bread and butter of general practice, but much major illness that finds its way into hospital through emergency admissions (such as coronary heart disease, stroke, chronic obstructive pulmonary disease and acute gastrointestinal disorders) is first seen by GPs and referred into hospital.

The assessment of acutely and potentially seriously ill patients in community settings is a core skill of general practice, and has major implications for medical education and vocational training schemes, which need to equip GPs to deal better with major illness. Evidence gathered by the General Medical Council, reflected in the recent edition of *Tomorrow's Doctors*,[4] suggests that recently qualified doctors in the United Kingdom are concerned about their ability to evaluate seriously ill people. The continuing restrictions imposed by the European Working Time Directive (EWTD) are likely to exacerbate this situation.

3 Presentations in general practice

This section is divided into two subsections: acute minor illness and acute major illness.

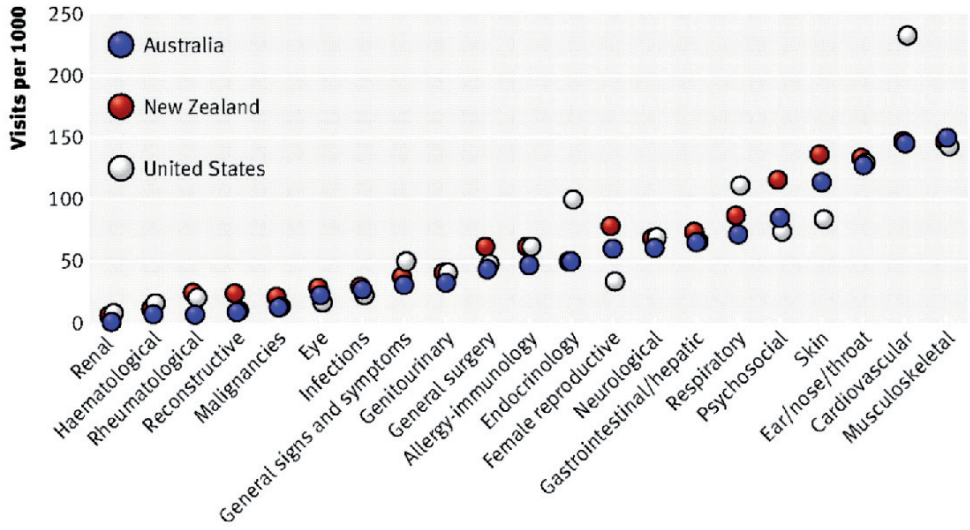
Acute minor illness

One of the distinguishing features of the clinical content of primary and general practice care, compared with secondary care, is the undifferentiated nature of the problems presented by patients to GPs. Patients bring symptoms that are often partially developed (and sometimes difficult to describe) at an early stage in the evolution of illness, long before a firmer diagnosis has resulted in a hospital outpatient referral. Indeed, Thomas, writing in the 1980s, estimated that up to 40 per cent of patients that he saw in his Hampshire practice were suffering from a condition to which it was difficult to give a precise name, coining the telling phrases 'the temporarily dependent patient' and 'the therapeutic illusion'.[5,6]

The concept of the 'test of time',[7] or the use of time as a 'therapeutic tool' arises from the frequently perceived need to allow symptom complexes to develop before moving in with investigation or treatment, although this approach may not always be most appropriate, as discussed later. The assessment of medically unexplained symptoms in the presentation of acute illness is a significant challenge for general practitioners.[8]

The content of general practice is remarkably similar across Western health care systems with different funding and administrative arrangements. Figure 1 illustrates this with statistics from Australia, New Zealand and the United States.[9] The proportion of patients being seen for problems relating to different bodily systems is shown along the y axis.

Figure 1 Age standardised frequency of health problems managed in primary care in Australia, New Zealand and the United States, 2001/2



Source: Bindman *et al* (2007)[9]

Some of the more important minor acute illnesses encountered across this spectrum are shown in the box below.

Minor acute illnesses	
Musculoskeletal	Minor traumatic or degenerative disorders, aches and pains, backache, gout
Respiratory	Viral upper respiratory tract infections, coughs and colds, earache, sore throat, dizziness
Gastrointestinal	Nausea, dyspepsia (abdominal discomfort, distension, belching, regurgitation, etc), infective diarrhoea and vomiting, acute abdominal pain, constipation
Neurological	Tingling, dizziness, headaches, lassitude
Dermatology	Rashes, cysts, warts, itching, allergy (urticaria)
Cardiovascular	Irregular heartbeat (palpitations), cold extremities, musculoskeletal chest pain, ankle swelling, varicose veins
Mental health	Anxiousness, low mood, bereavement and other situational reactions, minor phobias

Of course, many of these symptoms that initially may appear minor (for example, headache, abdominal pain and cough) can turn out to be harbingers of serious conditions. For this reason, non-resolution of symptoms that initially suggest a minor problem needs to be taken seriously, emphasising the importance of making an early diagnosis and instituting appropriate management as soon as possible.

As well as diagnostic skills, the consultation needs to be characterised by good communication skills, a mutual understanding of the problem and its probable causes and solutions, negotiated management, and clear instructions to the patient about follow-up. All of these need to be clearly documented in the GP record. The concept of concordance,[10,11] which is essential in ensuring that doctors and patients agree on what the problem is and what is being done about it, is particularly important in urban and other settings where doctors and patients may not share taken-for-granted ethnic, cultural and linguistic backgrounds.

Acute major illness

Acute major illness may be self-limiting or may require treatment. In either case, the assessment requires a prompt and accurate analysis. The condition may present as acute serious illness, the acute exacerbation of an existing condition, or as a new chronic illness.

Acute major illness is frequently encountered in general practice. There are three important aspects to its recognition and management:

- **alarm symptoms** red flags that may be presented in someone who is not necessarily acutely, seriously ill, but are indicative of a potentially seriously underlying problem that mandates speedy investigation and/or management

- **acute serious illness** the recognition of acute serious illness in which the patient is self-evidently unwell. Examples include chest pain due to myocardial infarction, hemiparesis due to stroke and hypovolaemic collapse due to vascular compromise following gastrointestinal haemorrhage
- **acute exacerbations of existing chronic conditions** where the doctor and patient can have an agreed or even planned shared response. These include exacerbations of asthma and chronic obstructive pulmonary disease (COPD), deteriorating blood sugar control in diabetes, exacerbations of left ventricular failure, and exacerbations of inflammatory bowel disease, but the list of such presentations is extensive.

Each of these three aspects is described in turn.

Alarm symptoms

Referral from primary to secondary care is frequently triggered by a GP's awareness of features in the clinical presentation that are considered to be predictive of serious, often malignant, disease. For example, guidelines on the identification of alarm symptoms form the core of the two-week rule for urgent referral of patients suspected of having cancer[12,13] and many clinical practice guidelines specify particular symptoms that mandate urgent investigation or referral.

Cancer diagnoses are relatively rare for the individual GP, whose role Marinker characterised as 'marginalising danger', in contrast to that of the specialist, whose task is to 'marginalise uncertainty'.[14] In other words, in patients who present with acute problems, GPs need to sort the minority of patients requiring urgent attention from the majority who are likely to have self-limiting disorders, for which time can be used as a diagnostic and therapeutic tool.

The number of new cases of serious illness that individual GPs see each year is relatively small. For example, assuming a notional patient list size of 1,800–2,000, each of the 42,000 GPs in the United Kingdom should expect approximately seven new cancers, three-to-four strokes and five-to-six myocardial infarctions each year.[15] The other side of this diagnostic coin is the observation made by Thomas many years ago, as described earlier: that up to 40 per cent of patients presenting in primary care and observed over a two-week period recover without specific therapy, and frequently without a specific diagnosis being made.

In his recent publication on evidence-based diagnosis in primary care, Polmear[16] found few studies conducted in primary care that provided accurate information about the predictive value of common symptoms, emphasising the need for more research of this kind. Two recent papers from King's College London[17,18] have provided useful information on the utility and predictive values of alarm symptoms, and are included as appendices 1 and 2. Studies such as that by Hamilton and colleagues on symptoms preceding ovarian cancer are starting to provide evidence for the interpretation of symptoms that can be shown to have a defined risk, and that in turn will allow the selection of women for investigation.[19]

So, alarm symptoms are important warnings of the possibility of serious underlying (cancer and non-cancer) disorders, giving the opportunity for early diagnosis. When confronted with – or having elicited – alarm symptoms, the GP needs to do the next 'right thing', which will be different depending on the alarm symptom. Patients with rectal bleeding need rectal examination and, when appropriate, lower bowel investigation. Patients presenting with serious physical symptoms of depression need to be carefully evaluated for suicidal risk, while those with acute sudden onset of severe back or limb pain need to be urgently evaluated for the presence of pathological fractures. Children and adults with unexplained bruising need to be considered as potential victims of child or partner abuse.

Dealing with these red flags requires another core skill of general practice: the estimation and communication of risk. Whenever possible, an evidence-based assessment of the likelihood of the individual symptom or of a symptom complex representing a serious disease needs to be carefully weighed and, when possible, communicated clearly to the patient as a basis for a shared decision about the need for investigation or treatment. This is a difficult area, in which failure to diagnose and over-investigation represent potential pitfalls on either side of appropriate therapy. Significant event monitoring and analysis, as part of a practice's clinical meetings programme, represents an important means of giving clinicians the opportunity to discuss and reflect on these difficult and complex management decisions.

Acute serious illness

We are using the term 'acute serious illness' to describe a type of acute major illness in which the illness presents a serious threat to the physical or social well-being of the patient, or to their survival. Acute serious illness is relatively rare in general practice. The context in which this occurs, in terms of the frequency of encountering acute serious illnesses and medical emergencies among a notional list of 2,000 patients, is shown in the box opposite.

These consultations may or may not take place in GP surgeries, with many acute episodes taking place in work, home and out-of-hours settings, so that the response to acute serious illnesses in different locations will vary, and will need to take into account factors such as the distance from local emergency services, the availability of paramedics and the distance from the responding GP to the patient's home. This will mean that the response to acute serious illness may range from instructions from the GP (for example, to take low-dose aspirin) to significant interventions, such as setting up an intravenous infusion, administering morphine for pain or heart failure or adrenaline for anaphylaxis. An appropriate decision on the urgency and location of admission also needs to be made.

Serious illness in general practice

Condition	No of cases seen per year
Myocardial infarction	5–6
Stroke and TIA	3–4
Cancer (Total)	7
Colorectal	1–2
Gastric	1/2 years
Lung	1–2
Brain tumour	1/10 years
Breast	1
Other	1–2
Severe depression	8
Suicide	2–3
Pneumonia	15–20
Peptic ulcer	2–3
Inflammatory bowel disease	1/2 years
Acute exacerbations of COPD	
Acute asthma	

Source: Adapted from Fry[15]

Acute exacerbations of existing chronic conditions

Acute exacerbations of existing chronic conditions differ from acute serious illness in that both the clinician and the patient may know that the presentation relates to an acknowledged chronic illness. Awareness of the risk of an exacerbation may significantly alter the response to the presentation of symptoms that in other circumstances might generate an emergency response.

For example, if a patient with an acute exacerbation of chronic obstructive pulmonary disease (COPD) presents with acute worsening of breathlessness, this may be managed safely at home because the worsening is seen in the context of the previously stable state of severe breathlessness. If the patient is seen by a clinician or emergency ambulance service with no previous knowledge of the patient, such a presentation may generate an emergency transfer to hospital. So, in such patients good-quality acute care may be measured by the achievement of safe home management.

4 Identifying quality in the care of acute illness

In developing quality measures for the general practice care of acute illness, there is an important tension between supply and demand. Demand for medical attention by patients is likely to be strongly related to the expectation of useful intervention. However, it is unlikely that their expectation will be closely related to effective intervention in most acute presentations because the problems presented will be predominantly self-limiting. Good outcomes from the patient's perspective may not correlate well with a perception of efficient and effective practice from the perspective of the clinician.

The perennial difficulty in assessing quality in acute illness is likely to be found in getting the balance right between limiting access for the 'worried well' and broadening access for the early presentation of serious illness. The second annual report of the Cancer Reform Strategy of the UK Department of Health (in December 2009) identifies late diagnosis of cancer as the main reason for the United Kingdom's poorer survival rates from cancer compared to other countries in northern and western Europe. The strong role of UK general practice as the gatekeeper to services is highlighted as a potential obstacle to early diagnosis of cancer.

Access to the GP and onward referral of suspicious presentations are two elements in this process. Lowering the threshold for the presentation and assessment of suspicious symptoms may improve the early detection of cancer. Over-emphasis on the urgency of early detection of cancer is likely to generate unacceptable morbidity as a result of inappropriate preoccupation with illness and false positive diagnoses.

The modern approach to acute illness in primary care is undergoing a major transformation as multidisciplinary primary care teams jostle to find the most effective combination of skills and styles of consultation. The information revolution has made the language and science of medicine accessible to all. The result is that the modern acute consultation is becoming the 'meeting between experts' proposed by David Tuckett and colleagues in their seminal research in the 1980s. From now on, consultations will be measured in terms of satisfaction with patient involvement as well as effectiveness in medical outcomes.

The key to high-quality care of acute illness will be found in the balance seen between acceptable access, satisfactory consultation, accurate diagnosis, effective treatment, appropriate referral, safe outcome, and efficient use of resources. These seven domains led to the development of nine measures of quality of acute illness that were submitted to the Inquiry team separately, the key headings for which are described below:

1. Good access for patients with acute medical problems, in terms of availability of face-to-face and telephone contact.
2. Sufficient time and facilities within the consultation to address problems and make an accurate assessment or diagnosis
3. Accurate diagnosis/assessment with an emphasis on not missing serious illness
4. Adequate patient information about diagnosis and its implications
5. Symptom resolution – patients with acute problems are treated appropriately and their symptoms resolved

6. Appropriate prescribing. Patients should not be given unnecessary antibiotics, non steroidal anti-inflammatory drugs etc.
7. Resources are used in a cost-effective manner
8. Patient satisfaction. Patients should be satisfied with their treatment and feel more empowered to deal with their problems
9. Appropriate referral, without over-referral (wasting resources) and under-referral (missing important diagnoses)

The proposed measures are largely at a developmental stage because the research to support them is limited. Some of the metrics that would need to be developed to support them would be firmly based on epidemiology. Others, such as satisfaction with services, will be more responsive to expectation, current trends and policy. Still others are based on the demonstration of the use of robust processes to examine and promote high-quality clinical practice. The criterion of high quality in each is likely to vary according to the health care needs of the population and the policy objectives of local health services.

In exploring the possible markers of quality in the care of acute illness, we have examined acute distress, patient perspectives, the consultation in general practice, the quality of diagnosis, the quality of treatment including prescribing, and the quality of referral.

Acute distress

The presentation of psychological illness in primary care may be somewhat different from its presentation in more traditional mental health settings. Classification into acute anxiety, depression, panic disorder and other classifiable psychological illnesses is often less clear cut in primary care, where psychological illness presents early, in a more undifferentiated form, and often simply as acute distress.[20] Cultural and social considerations may further blur the distinctions between formal classifications of mental health problems, as may the interactions between psychological and physical illness, the two often co-existing.[21]

Sometimes, distress may be entirely understandable within the context of loss, suffering and adverse life events, and not in itself be a feature of any acute psychological illness. Primary care is often the setting for life's tragedies such as death or the onset of a terminal illness. However, more commonly, primary care is the first port of call for the 'worried well'.

Whether part of an underlying psychological illness or the response to real or perceived adverse events, distress is a commonly encountered phenomenon in the GP consultation. Most distress probably defies coding, and is rarely included in research studies because of obvious difficulties of case recruitment and consent. And yet distress is part of everyday primary care and, as with so many aspects of primary care, its management may vary from excellent to something short of excellent.

Given the lack of research into the phenomenon of acute distress, how can we define the quality of consultations where distress is a feature; how can we develop quality standards; and how can quality indicators be used to improve the response to acute distress?

We know little about the appropriateness of prescribing for distress (such as

the use of benzodiazepine tranquillisers[22]) or the use of alternatives, such as empathy, support, continuing care or referral on to other agencies such as counsellors, the voluntary sector or patient-support groups. We do not even know if 'distress' as an acute phenomenon is recorded well by GPs and others health care workers in primary care – or even what the prevalence of distress is among consulting patients. In the electronic recording of modern consultations there may be significant obstacles to the accurate and consistent coding of acute distress.

Our proposal is that by exploring quality measures for the management of distress, it might be possible to touch on some of the core values of primary care, such as caring, compassion and empathy. These values might be less measurable but considered more important both by professional and lay respondents. Whether it is feasible to introduce quality measures into the management of acute distress is, in our opinion, worthy of further consideration.

Patient perspectives

Patients will have particular views about the quality of management of acute illness, often unencumbered by a clear understanding of the actual possible diagnosis involved or of best practice standards. Within this category there are three areas in which quality measures could be useful: timely contact, time and the consultation, and management over time.

Timely contact

Timely contact is important, so that patients experiencing symptoms of acute onset can obtain speedy advice. This is likely to range from the availability of same-day surgery appointments to a near-instant telephone response to acute serious illness. Patients will often trade continuity (in other words, contact with their usual GP) for rapid access.[23] It may be important that they speak to someone – perhaps someone that they know – for initial rapid assessment, although there is little evidence on this point.

These patient requirements have clear implications for the availability of 'slots' for extra patients in general practice, for a practice's approach to telephone consultation and triage, and for the response to acutely unwell patients by practice reception staff.

Time and the consultation

Patients need to be heard and taken seriously, and should expect an accurate assessment by a well-informed and interested GP.[24] They should expect their GP to communicate the differential diagnosis clearly, and to provide them with written information if appropriate. There should be discussion and agreement (concordance)[10,11] on management, including the use of investigations, referral, prescription and the appropriateness of observation with follow-up, all of which should be documented.

Management over time

Patients need to be given appropriate advice about the self care contribution they can make to the management of acute illness – particularly when it is

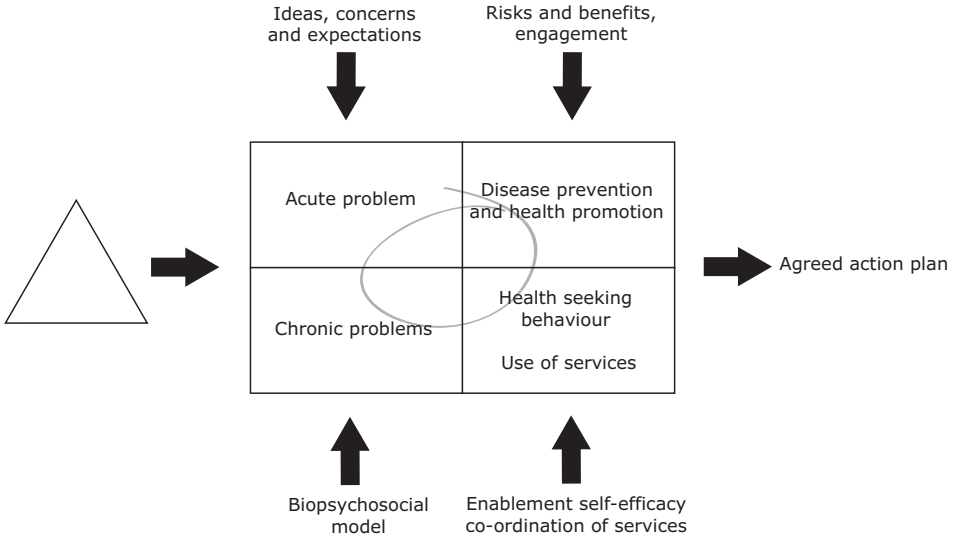
minor and self-limiting. Information about treatment and its likely beneficial and adverse effects, when to expect to get better and what to do if they do not get better. Good communication with colleagues and the provision of written information to patients is, once again, important.

The consultation

Figure 2 illustrates the complexity of the consultation in general practice, and the difficulty of strict separation of acute and chronic problems, and of diagnosis and management. It highlights the four potential components of the consultation described many years ago by Stott and Davis.[25] These components include:

- dealing with the acute problem
- paying attention to on-going or chronic problems
- taking advantage of opportunities for health promotion and disease prevention
- assessing the extent of self care and the use of medical services form the core.

Figure 2 The consultation



Source: Adapted from Stott and Davis[25]

The consultation itself is preceded by the patient's decision to consult, and the need to understand his or her ideas, concerns and expectations in doing so. Accurate diagnosis is at the centre of the consultation, and agreed or negotiated management is the desired outcome. All of these are informed by a range of other considerations, including an awareness of the biopsychosocial nature of all illness and the importance of being able to estimate and communicate risk, and to listen to and hear the patient's own agenda.

The consultation in general practice is getting longer and more complex. Computers have made a significant difference to the amount of time spent attending to record keeping, and this may have been exacerbated by recent requirements to achieve management targets. The effect of this on the management of acute illness in general practice is unknown, although the

suggestion from Bensing's group in the Netherlands that GPs are spending less time talking to patients and more time attending to computers may not bode well for the development and maintenance of consulting and diagnostic skills.[26]

Quality of diagnosis

As we have seen, the task of the GP can be characterised as 'marginalising danger' while that of the specialist can be described as 'marginalising uncertainty'. In other words, GPs need the skills to separate the minority of patients (who have acute, threatening illness) from the majority (in whom their symptoms are likely to represent something self-limiting or minor). While this contains elements of truth, it also perhaps needs to be recognised that the approach to diagnosis and management in general practice in the United Kingdom has, for many years, been shaped by a continuing downward pressure on the use of investigations as part of the 'parsimonious' gatekeeper role.

In the United States, gatekeeping is regarded as a less benign activity that keeps patients away from specialist services. In the United Kingdom, it is claimed that the gatekeeper role serves to protect patients from unnecessary investigation leading to inappropriate interventions.[27] However, the clinical and cost-effectiveness of other health care systems in Europe (in which direct access to specialists and specialist investigations is much freer) do not entirely support the UK position. This may be seen particularly in the higher mortality from cancers in the United Kingdom, recently attributed to a failure of early diagnosis in general practice[28].

Decision-making in general practice has a number of features, combining hypothetico-deductive methodology with pattern recognition. GPs' decision-making is characterised by variation – in the range and nature of data needed to make a diagnosis, in the range and number of diagnostic possibilities elaborated in response to a given scenario, and in the processing of information. This leads to a wide variation in referral rates, prescribing rates and other behaviours.

Overlying – or, perhaps, underlying – these reasonably well-described aspects of decision-making in general practice is the ability to detect the deviant cases – the unwell child, the unusual presentation hinting at something more serious, which has led to the idea of the art of medicine and the use of 'antennae' to pick up subtle signals. In reality, these abilities probably represent no more or less than the organised and subliminal accumulation of experience of diagnosis and management. If this is true, the European Working Time Directive and our retreat from out-of-hours services does not augur well for the ability of doctors in the future to develop these skills.

At present, the use of decision-support systems to improve the quality of diagnosis in general practice is rare.[29,30] Although practice computer systems are used to keep a register of patients, to summarise historical data and to collect contemporaneous data, as well as their use in prescribing, the use of integrated diagnostic support systems has not really found a place in routine consultations. Joint consultations within general practices are uncommon and although the interface between primary and secondary care may appear impervious, there is evidence that the ability to make telephone contact with a hospital specialist can provide one approach to rapidly solving diagnostic problems that might otherwise be perplexing.

Quality of treatment

Prescribing is one of the core activities of general practice. Most consultations with a general practitioner result in a prescription being issued. Prescribing is also important to health service managers and taxpayers, accounting for about 13 per cent of NHS expenditure in 2000/1 and about 18 per cent of the budgets of primary care trusts (PCTs).[31,32] In recent years, prescribing has become a central feature of national policy developments, promoting a quality-driven agenda, with National Service Frameworks and the National Institute for Health and Clinical Excellence (NICE) emphasising the central importance of high-quality prescribing.[33]

Subsequent policy initiatives have favoured quality achievement within the context of public health gain. The radical implementation of a pay-for-performance system, linked to the achievement of 146 performance indicators in 2004, offered rewards for quality improvements defined largely on the basis of organisational achievement or public health gains. More recently, concerns have been raised about the misalignment of QOF indicators and the emphasis on maximising the potential of primary care to contribute to public health gains.[34]

This emphasis on quality, and the measurement of quality, has not been applied systematically to prescribing activity, nor to the management of minor illness. Taken together, these omissions contribute to the sense that quality indicators apply only to a small snapshot of everyday primary care. Indeed, the chronic diseases that contribute to the clinical domain of QOF apply to only around 23 per cent of registered patients.[35]

In order to illustrate issues about the management of acute illness and the development of quality indicators for acute illness, we now examine two examples of prescribing activity that are common and familiar to English primary care: antibiotic prescribing and non-steroidal anti-inflammatories.

Antibiotic prescribing

Antibiotic prescribing in the community in England rose steadily from 1980, reaching a peak in 1995. Similar patterns were observed in many European countries. During this period, increasing concerns were voiced about the dangers of widespread antibiotic resistance, coupled with renewed emphasis on the ineffectiveness of antibiotics for minor self-limiting infections that were likely to be viral in origin.

Antibiotic prescribing then started to fall. In part, this fall was attributable to more restrained antibiotic prescribing by general practitioners. However, a larger proportion of the reduction in antibiotic prescribing came from an unexpected source. Consultation rates for common acute respiratory infections started to fall at about the same time. This trend has not been fully explained, but is likely to be the product of the demedicalisation of minor self-limiting illnesses and increasing patient preference for self-management of these conditions.[36,37]

Between 1995 and 2000, antibiotic prescribing fell by 45 per cent.[37] However, antibiotic prescribing remains high for many conditions that are almost always, or usually, caused by viral infection. Thus, for example, one study found that in 2000, 81 per cent of otitis media, 91 per cent of acute sinusitis, 60 per cent of sore throat, 47 per cent of laryngitis and even 26 per cent of influenza were treated with antibiotics.[37] Some primary care trusts include

antibiotic prescribing indicators in local prescribing targets for primary care. However, there has been no systematic adoption of antibiotic prescribing targets on a national scale.

In addition to the adoption of prescribing indicators, another approach to improve the quality of antibiotic prescribing has been the use of decision aids. These, too, might form the basis of the quality assessment of consultations in which antibiotic prescribing was considered.[38, 39]

Finally, there has been little research into non-antibiotic strategies for the management of acute infections. How widely are these alternatives to antibiotics used in English primary care? What are the alternatives to a prescription, how effective are they, and what do patients think of these alternatives? For example, some GPs may give patient information leaflets as an alternative, some might advise alternative medication, such as paracetamol or inhalations, and some might advise more in-depth consultations to explore the ideas, concerns and expectations of the patient. Still others might favour a consultation emphasising patient education.

Antibiotic prescribing for non-specific disorders has been recognised as an example of 'diagnosis following treatment' in general practice.

Non-steroidal anti-inflammatories

There is increasing awareness of the twin dangers of non-steroidal anti-inflammatory drugs (NSAIDs): thrombotic cardiovascular disease (CVD) and upper gastro-intestinal bleeds.[40] Certain NSAIDs appear to be greater culprits. Ibuprofen is thought to be the least likely to trigger gastro-intestinal bleeding, while diclofenac is particularly associated with higher rates of CVD complications.[40] However, diclofenac still constitutes 44 per cent of total NSAID prescribing, and it has been estimated that compared to no treatment, diclofenac may be associated with 2,000 additional deaths from CVD in England.[40]

There is little published work based on consultation data linking consultations for painful conditions with the proportion prescribed an analgesic (such as paracetamol or tramadol), and the breakdown of possible choices of analgesics. We do not know, for example, the proportion of all consultations in which pain is a clinical presenting feature and that are treated with an analgesic. Less still do we have research information on the proportions of patients prescribed analgesia for various acute pain syndromes treated, such as headache, neck pain, back pain, dysmenorrhoea, acute soft-tissue injuries or whiplash injuries.

As with antibiotics, we propose further work to explore non-drug alternatives to the use of NSAIDs or the use of alternative analgesics. Many GPs recommend the use of non-analgesic prescribing for the management of pain, and resort to alternative strategies, such as information leaflets, physiotherapy referral, advice about exercises and posture, and heat treatment.

Quality indicators could be derived to measure the range and proportion of consultations that result in the prescription of an analgesic. Quality indicators could also be derived to promote the use of alternatives to analgesic prescriptions, recognising that in many situations analgesic prescriptions for acute pain may be a positive consultation outcome.

Quality of referral

The huge variation in the proportion of patients that GPs refer to hospital (in some studies, between 2 and 15–20 per cent of patients seen or registered) has long been a subject of research interest. Few studies have been able to explain more than 20–30 per cent of this variance, so over two-thirds of the variation between GPs is still unexplained.[41,42] Most research has focused on individual GPs, and very little has looked at practice culture. It may be that clues to referral rates (which tend to cluster within practices) may be identified through detailed study of practice structure and function.

In terms of quality of referral, it is important to think not only of referrals to consultants in outpatients, but also the use of investigations, including direct access to laboratory investigations, endoscopy, imaging and other tests, such as the carbon urea breath test and the use of the two-week rule.

An important aspect of the quality of care of acute illness in general practice is the appropriateness and effectiveness of the diagnostic and management distinctions that are made between the four categories of acute illness. For patients whose health is seriously threatened by acute illness, the quality of the management decision can often be measured by the appropriateness of referral. We now explore referral decision-making in patients with suspected cancer, using the recently introduced two-week rule for cancer referrals as the basis for a new quality indicator for acute illness care.

The two-week rule

The two-week rule was introduced in its original form in a Department of Health circular about breast cancer in 1999, and was subsequently formally included in the NHS Cancer Plan. The two-week rule states that all patients referred by a general practitioner with a suspected diagnosis of cancer should be seen by the relevant specialist within two weeks. Standardised referral forms with guidance on criteria for referral and information about local contracts with acute trusts for two-week rule referrals were introduced throughout the NHS.

The decision to refer a patient who presents acutely should be based either on the danger that the characteristics of their presentation represent or on the indisputable diagnostic features of their presentation that demand specialist assessment. So, a patient who presents with atraumatic heavy bleeding, from whatever source, is likely to warrant urgent specialist assessment. Similarly, a patient who presents with signs of a condition that will inevitably demand referral should be referred without further delay even if there is further investigation or treatment that should be carried out in primary care.

Most patients who present acutely with a condition that makes the primary care clinician consider referral will have symptoms and signs that are not clear cut. Clinicians with a low threshold for referral will be more likely to refer immediately, while those with a high threshold for referral may defer the decision and decide instead to investigate, to see the response to treatment, or to wait watchfully.

The decision to refer may have major implications for the patient and for the services. Referral is not always good for patients. Patients with symptoms that are likely to resolve spontaneously, or with treatment, may suffer unnecessary anxiety and inconvenience by the decision to refer. Meanwhile,

the costs of such referrals can be considerable – not least, because specialists may feel obliged to investigate simply because the patient has been referred.

Equally, delayed or late referrals may have negative consequences for the patient and the services. Late referrals may miss the opportunity for early treatment and cure, or may allow avoidable complications to arise. Late referrals may generate avoidable costs by virtue of the advance of the disease process, or through the avoidable urgency of treatment of severe disease.

Rates of referral

For many years, referral rates of general practices and of individual GPs have been seen as potential indictors of the quality of care of general practice. Their potential to represent a range of quality performance has never been realised, for two reasons: the difficulty of establishing an agreed denominator of patients at risk, and the challenge of relating medical care outcome to the referral rate.

High referrers from primary care may be wasteful of the resource of specialist hospital expertise, while low referrers may fail to recognise the potential of some patients to benefit from specialist assessment. But unless one can accurately define the patient denominator that describes the group of patients referred, referrers whose referral rates vary widely from the average of their peers can seek explanation for their particular referral pattern in the patients who consult them. High referrers may claim that although they appear to have a high rate of referrals for the population they serve, they have been singled out by patients at high risk. Equally, low referrers may claim that they do not see many patients at high risk with respect to the particular referral rate under examination.

If the patient population from which referrals are made can be described accurately, and with enough precision, then it is likely that rates of referral could be used to identify general practitioners and general practices whose referral rates were so different to the rates of their peers that questions needed to be asked about the quality of their medical care.

A further issue arising from the referral rates of patients who present acutely relates to awareness of rare conditions. Specialists who treat rare life-threatening conditions encourage early referral of patients with symptoms that are familiar and common to the GP but among whom people with the rare disorder are mainly to be found. However, in the absence of specific risk factors or pathognomic signs, referral of patients with a common presentation who might have a rare disorder is probably not justifiable because of the harm it may cause to patients who do not have the rare disease.

Impact of the two-week rule

Our interest in the two-week rule relates to the rate of referrals, the proportion of two-week rule referrals in which a diagnosis of cancer has been made and the proportion of all cancers identified in the practice through two-week rule referrals. Our hypothesis is that the distribution of positive diagnoses of cancer in two-week rule referrals will reveal GPs or general practices in whom the proportion of cancer diagnoses suggests that two-week rule referrals are being used too infrequently or too frequently. Practices with low rates of cancer in their two-week rule referrals may be

showing insufficient regard for the probability of cancer in the case being referred. Practices with high rates of cancer in their two-week rule referrals may be demonstrating too low a suspicion of the possibility of cancer.

In examining cancer referrals and the use of the two-week rule we are aware that the evidence of benefit from the two-week rule is variable. Potter[43] analysed two-week rule referrals for breast cancer in Bristol and concluded that the two-week rule for breast cancer was failing patients. Their concern was that the system was being inundated with urgent referrals with no improvement in the stage or rate of pick-up. McKie *et al*[44] reported in 2008 in Newcastle-upon-Tyne that the two-week rule did not increase the number of early-stage head and neck cancers.

To explore the utility of the two-week rule referral as a quality criterion, we have analysed the two-week rule referral data of 51 practices in Lambeth PCT between April 2005 and December 2007. We are grateful to the Lambeth GP Cancer Lead Dr Cathy Burton for access to the data and for guidance on its interpretation. We obtained cancer rates for Lambeth from the South East Thames Cancer Registry.

We assessed the rate of cancer diagnoses, the rate of two-week referrals, and the proportion of cancers diagnosed within two-week rule referrals and summarised them in Table 1. The table highlights the list size, number of two-week rule referrals, number of cancers, number of two-week rule referrals with confirmed cancer, number of two-week rule referrals with cancer per 1,000 population, and percentage of all cancers diagnosed through the two-week rule referral route, in Lambeth PCT practices.

Table 1: Rate of cancer diagnoses, two-week referrals and cancers diagnosed within the two-week rule

	Mean	Median	Range	SD	Top quartile	Bottom quartile	5th centile	95th centile
List size	6,952.31	6,115	1,686–1,8352	3,951.8	8,826+	up to 3,571	2,037	15,191
No of 2WR* referrals	64.5	52	2–107	50.8	90–107	2–24	8.2	178.4
No of 2WR referrals per 1,000 patients	9.08	8.01	0.72–25.1	5.1	12.33–25.1	0.72–5.7	2.42	18.01
Total cancers	17.3	15	2–68	12.87	24–68	2–7	2.6	40
Incidence of cancer per 100 pop	0.24	0.23	0.057–0.504	0.89	0.29-0.5	0.057–0.17	0.1	0.37
No with cancer in 2WR (n=45)	7.2	6	1–28	5.7	10.5–28	1–3.0	1.0	19.1
No with cancer in 2WR per 1,000	0.83	0.78	0–2.35	0.56	1.15–2.35	0–0.39	0	2.0
% 2WR with cancer	10.1	10.12	0–28.6	6.99	13.95–28.6	0–4.71	0	24.24
% of all cancers via 2WR	36.03	33.3	0–100	24.27	50–100	0–20	0	84

*2WR = two-week rule

Source: The King's Fund (2010)

There are two notable findings in Table 1 with respect to quality. The first is the range of two-week rule referrals, from 0.72 to 25.1 per 1,000 patients in the practice: a 35-fold difference between the lowest and the highest. The range between bottom and top quartiles for two-week rule referrals per 1,000 patients is also wide, from 5.7 (at the top of lowest quartile) to 12.33 (at the bottom of the top quartile).

The second notable finding is the range of percentage of cancer diagnoses among two-week rule referrals, from 0 to 24.24 per cent. Some, but not all, of these zeros were in practices with very low rates of two-week rule referrals. For example, one practice had 33 two-week rule referrals – a rate of two-week rule referrals of 5.48 per 1,000 patients (in the bottom quartile) and no cancer diagnoses among those two-week rule referrals, although there were 16 cancer diagnoses in the practice that year.

These figures suggest that it would be fruitful to repeat the exercise on a national basis, with the aim of generating national and regional norms that could be related to list demographics including age and sex structure. These norms may generate thresholds above and below which the rate of diagnosis of cancer would trigger a warning about quality.

Our interpretation of these thresholds is that practices that are making two-week rule referrals with exceptionally low rates of cancer diagnoses are at risk of generating unjustifiable anxiety in patients referred, and of overburdening services. Practices that are making two-week rule referrals with exceptionally high rates of cancer diagnoses may be at risk of using an index of suspicion that is insensitive to the possibility of cancer.

This analysis of referrals looks at first sight as if it is about cancer. However, two-week rule referrals are about acute presentations, the majority of which do not include cancer. The mean rate of cancer diagnoses as a percentage of two-week rule referrals in these 51 practices was 10.1 per cent, with highest rate recorded by any practice at 28.6 per cent. Ninety per cent of these referrals did not have cancer, so this assessment of two-week rule referrals represents an estimate the practice's alertness to the risk of cancer in patients who present with acute illness.

5 Conclusions

In terms of the evidence base, we found ourselves in largely unchartered waters in conducting this study. This was similarly reflected in the findings of a systematic review of studies of quality of clinical care in general practice in the United Kingdom, Australia and New Zealand,[45] in which only 22 per cent of the studies identified examined the quality of care of acute conditions. However, there is a more extensive literature on continuous quality improvement (CQI) programmes and on measurement of the quality of care of chronic conditions, as reflected in the Quality of Outcomes Framework targets.

In terms of the accuracy of initial assessment and diagnosis, there is more information about the problems faced by general practitioners, summarised in a recent systematic review and associated report[46,47] that emphasise the prevalence and importance of misdiagnosis in primary care, often related to the diffuse presentations encountered in this setting.

The literature pertaining to the impact of process monitoring of the quality of acute care is also relatively thin, although a number of studies have recently emerged on the conduct and impact of significant event analysis,[48–51] with some evidence of a positive effect on the identification and subsequent attention to significant adverse events in general practice. The place of peer review has also been investigated recently, with proposals for an assessment instrument designed to provide formative feedback currently under evaluation.[52]

In an attempt to reduce additional administrative burdens, many of our own proposals for quality measures depend on the analysis of data that is routinely collected in primary care, while recognising (as emphasised by Campbell and colleagues) that good team working is a key part of providing high-quality care, and may need specific support.[53] Apart from the use of value-for-money indicators and peer-reviewed audit of referral letters and case notes, the majority of our nine proposed quality measures can potentially be derived from carefully kept routine practice data.

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