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Quality & Safety in Health Care

AIMS AND SCOPE

Quality & Safety in Health Care (formerly *Quality in Health Care*) was founded in 1992, to meet the growing need for a journal to reflect and report initiatives to improve quality of health care. It it an interdisciplinary journal with an international readership and contributions from all healthcare professions.

CONTACT DETAILS

Editorial Office
The Editor-in-Chief, *Quality & Safety
in Health Care*
BMA House,
Tavistock Square,
London WC1H 9JR
UK
Tel: +44 (0)20 7383 6651
Fax: +44 (0)20 7383 6869
Email: eioannou@bmjgroup.com

Instructions to authors
Full instructions are available online
at www.qualityhealthcare.com/misc/
ifora.shtml
If you do not have web access please
contact the editorial office.

Permissions
Permissions Executive
Telephone +44 (0) 20 7383 6169
Fax +44 (0) 20 7383 6668
Email: permissions@bmjgroup.com

Supplement Enquiries
Susan King
Telephone +44 (0) 20 7383 6086
Fax +44 (0) 20 7383 6668
Email: sking@bmjgroup.com

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Email: ecurrer@bmjgroup.com
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Author reprints
Sheila Williams
Telephone +44 (0) 20 7383 6305
Fax +44 (0) 20 7383 6699
Email: swilliams@bmjgroup.com

Commercial Reprints
(except USA & Canada)
Nadia Gurney-Randall
Telephone +44 (0) 20 8346 1339
Fax +44 (0) 20 8371 9314
Email:
ngurneyrandall@bmjgroup.com
Sheila Williams
Telephone +44 (0) 20 7383 6305

Commercial Reprints
(USA & Canada)
Marsha Fogler
PO Box 3227
Cherry Hill, NJ 08034, USA
Telephone 800 482 1450
Fax 609 489 4449
Email: fogler@erols.com

Working differently

Working differently for better, safer care

F Moss

Is there the capacity to change?

Errors pervade all health systems. Health care in the United States may cost more, have more resources, and be more customer friendly than that delivered by the United Kingdom National Health Service (NHS), but the epidemiology of errors is probably much the same.[1][2] Even the French system, recently declared the "best" in the world,[3] has during this summer's soaring temperatures publicly failed many of its older population when they desperately needed help.[4]

Poor quality and unsafe care, we have come to understand, are caused by faulty systems and not by faulty individuals and no single group is to blame; "every system is perfectly designed to give precisely the results that it gets". Even though collated figures about poor quality or unsafe care may be alarming—it is estimated that 5000 people may die each year as the result of hospital acquired infections and that for a further 15 000 deaths hospital acquired infections are a "substantial contributory factor"[5]—the effects of the faults in the design of health care are insidious. For every one person who is harmed by the system of care, many more are unwittingly put at risk, not offered available appropriate options and choices, or simply left bewildered by a system that seems to be overwhelming. These people do not present discrete groups but are scattered among the many who receive good, error free care. Although we know much more about the extent of the problems and something about the causes of poor quality care and the sources of errors, managing to change health systems so that patients not only consistently receive better and safer care but also so we can identify those who do not, is proving a huge challenge.

The papers in this supplement to *QSHC* are published to coincide with a Nuffield Trust–BMJ Group conference, *Working differently, for better safer care*, that aims to explore some of the changes

needed to working practices if health care is reliably to deliver better, safer care.

Health care is not the only industry to have to face the need to improve safety. Hudson (see pp i7–12 this issue),[6] describes the changes made over the years in the airline and oil industries and considers the lessons applicable to health care. With vestigial reporting systems and a culture of safety that can only be described as pathological or reactive, health care has much to learn from these safety conscious industries—despite the differences. The relationship between pilots in the cockpit is recognised as central to safety management—something that any team that has worked with an awkward member should recognise. Good working relationships, trust, and understanding are crucial for safe delivery of health care. Edwards (see pp i21–4 this issue) argues that better understanding between doctors and managers is vital if health care is to change enough to ensure safer, better care.[7]

Patients receive care from health professionals, and the roles of doctors and nurses and other health professionals are the usual focus for discussion about the quality and safety of care. But hospitals and surgeries depend on all those who work in them—those providing the infrastructure and facilities as much as anyone. Many people work, often in difficult conditions and during unsocial hours, to do essential cleaning and carrying, and caring. Toynbee's (see pp i13–5 this issue) recent experience as a porter, cleaner, and health care assistant in London uncovered a separate world operating within health care with its own rules and culture, in which work is subcontracted out and links between the workers and hospital management are tenuous.[8] The people who do these jobs have direct contact with patients. They help care for patients. Unless they too are properly valued and allowed to be part of a team then any quality improvement initiative will be incomplete.

Berwick (see pp i2–6 this issue) writes that accelerating healthcare improvement will require large shifts in attitudes and strategies for developing the workforce.[9] In short, working practices will need to change, for some perhaps out of all recognition. Barber and colleagues (see pp i29–32 this issue) suggest, for example, radical changes to prescribing: doctors will become "directors of therapy" and pharmacists and nurses working in partnership with patients will prescribe drugs.[10]

How long will it take before health care can boast a culture of safety that is proactive or generative?[6] A key factor in industries that demonstrate through their working practices that they take safety seriously, is recognising that what they do is potentially dangerous; its time that health care recognised this too. As Chantler has said, "Medicine used to be simple ineffective and relatively safe. Now it is complex, effective and potentially dangerous."[11] We are still operating in a system that evolved in that safer world.

Author's affiliation
F Moss, Editor-in-Chief, QSHC, BMA House, Tavistock Square, London WC1H 9JR, UK; fmoss@londondeanery.ac.uk

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Improvement, trust, and the healthcare workforce

D M Berwick

Although major defects in the performance of healthcare systems are well documented, progress toward remedy remains slow. Accelerating improvement will require large shifts in attitudes toward and strategies for developing the healthcare workforce. At present, prevailing strategies rely largely on outmoded theories of control and standardisation of work. More modern, and much more effective, theories of production seek to harness the imagination and participation of the workforce in reinventing the system. This requires a workforce capable of setting bold aims, measuring progress, finding alternative designs for the work itself, and testing changes rapidly and informatively. It also requires a high degree of trust in many forms, a bias toward teamwork, and a predilection toward shouldering the burden of improvement, rather than blaming external factors. A new healthcare workforce strategy, founded on these principles, will yield much faster improvement than at present.

See end of article for author's affiliation

Correspondence to:
D M Berwick, Institute for Healthcare Improvement, 375 Longwood Avenue, 4th Floor, Boston, MA 02215, USA; dberwick@ihi.org

Quality and trust are first cousins. A mechanic who fixes a car builds the customer's trust; a doctor who relieves suffering earns the patient's trust. When these would-be helpers do not deliver on their promises, explicit or implied, trust decays. The fastest and best way to improve the public's trust in health care may be to improve its performance. Results build trust.

But performance improvement, to put it mildly, is difficult. If it were easy, we would not suffer from the serious quality problems that continue to plague medicine in America, the United Kingdom, and elsewhere. Study after study during the past 40 years has documented the system's gaps and failings.[1] It is beyond the scope of this article to examine these quality problems in detail. The Institute of Medicine Roundtable lumped many of them into three categories: overuse of procedures that do not help people get better; underuse of procedures that can help; and misuse, or errors.[2]

Overuse, underuse, and misuse are mainly variations in the processes of care, and these apparently lead to variations in outcome. For example, the Cystic Fibrosis Foundation in the United States collects data on most patients with the disease who are treated in 160 American cystic fibrosis centres. The variation in outcomes among these centres is striking. Nationally, for example, about 26% of children with cystic fibrosis are below the tenth percentile for weight.

Yet the range among centres is 7.4–60.0%. Nationally, the average FEV1 (a measure of lung function) is 73.5% of the predicted normal value. Yet individual centres range from an average of 70.1–104.4% for children aged 6–13, and from 40.0–85.8% for adults aged 18–30.[3]

Recent analyses of large United States databases by Professor Brian Jarman suggest that case mix adjusted standardised mortality rates in American hospitals (on a scale where 100 represents the national average) range from near 40 to over 160, a difference of 400%.[4]

Yet despite the evidence of defects and the tantalising promise that some among us excel and could be teachers to us all, changing healthcare systems to make them better has proven disappointingly challenging, cumbersome, and time consuming. Perhaps focusing on improving trust might play a key role in facilitating the process of change.

CHANGING THE SYSTEM AS THE ROUTE TO IMPROVEMENT

Health care is an emotionally charged part of the economy and society; almost everyone cares about it. Sociologically, it is a deeply entrenched system of institutions and behaviours. Moreover, providing health care is a difficult, demanding job, and not just for clinicians. Healthcare workers of all sorts, from managed care executives to hospital orderlies, operate in a fishbowl characterised by high expectations, deep personal commitment, and low tolerance for error. In such a high voltage context, almost any proposal for change leads to sparks.

And yet, change is possible. Other industries almost as large and as cumbersome as health care have changed substantially during the past couple of decades. American automobile manufacturers, for instance, reorganised production fundamentally in response to the onslaught of competition from Japan. Indeed, much of manufacturing worldwide today works on principles very different from, and much more effective than, those of a few decades ago.[5]

At the heart of a scientifically grounded theory for improving health care is the premise that quality is a system property, and that, therefore, what primarily determines the level of performance is the design of a healthcare system, not simply the will, native skill, or attitude of the people who work in that system. This is a relatively rare insight in a world strongly biased toward individual accountability and, when things go wrong, toward blame. To be sure, clear minds must acknowledge the existence of a few "problem doctors" and a few badly run healthcare institutions. None the less, the most

effective route to improvement is through changing systems, not yelling at them.

The notion that quality is a system property may be a bit counter cultural, but it is not hard to grasp. It is obvious that any specific automobile has a certain top speed. That top speed characterises the automobile. A person displeased with his/her car's top speed is fully entitled to get angry at the car, to give it incentives to go faster, or to put an incident report in the car's file. But none of this, of course, will matter; the car will still never go faster than it is inherently able to. A driver who wants to go faster is going to need a different car. So it is with variations in the quality and results of care. The mortality rate of a specific hospital, the preservation of FEV1 in a specific group of children with cystic fibrosis, or, indeed, any other outcome at all is a property of the existing system at work. As I have written elsewhere, "every system is perfectly designed to achieve exactly the results it gets", a statement I have called the first law of improvement.[6] If we want a better result we will have to change the system.

How do we change a system, especially one as large and entrenched as health care? Three preconditions seem helpful: to face reality, to seek new designs, and to involve everyone. Facing reality means identifying the gap between current performance and the performance we desire. Without knowledge of the gap, will for change cannot develop. New designs are the way out of the bondage of the status quo. Involvement of many helps assure that the best possible new designs are found, adapted, and deployed. An individual can improve at playing tennis or learning Spanish on their own, but health care is inherently an interdependent system, usually beyond the reach of anyone acting alone to change it. Alone, as individuals, healthcare practitioners cannot often lower mortality rates or cut costs or reduce error rates. They need to work on the problem of improvement together. They are a team, whether they know it or not.[7]

Because the improvement of health care is a team effort, the issue of trust comes to the foreground. Many forms of trust are relevant to improvement: trust that the future can be better than the present; trust in patients and families, allowing us to hear their needs as legitimate and reasonable; and trust in our own capacities to learn and change, even in a hostile environment. People in health care, like people everywhere, may find it easier to blame others for their troubles, and health care has many promising targets for blame: insurance companies, the government, regulators, lawyers, and the media. However, the responsibility to change health care belongs to those who provide and manage it.

To shoulder that responsibility requires one final element of trust—trust in the workforce. This is the subject we will examine in the remainder of this article. Our premise is this: to achieve the health care we want, we will have to re-envision, and largely re-train, the healthcare workforce, so that they can become citizens in the improvement of their own work.

BEYOND TAYLORISM

Change in the workplace is handicapped by a widespread, though usually implicit, theory of production—a theory of the workforce. The theory is often called Taylorism, after Frederick W Taylor, although in many ways the label is unfair. Taylor's thinking was complex and deep, and his aims were often laudable. The management system that bears his name does not do the man justice. But if we want to understand how the workplace needs to be changed, we must understand and call into question many of the principles of Taylorism.[8]

Frederick W Taylor was born in 1856 to a well to do Philadelphia family. Unlike other young men of his background, he dropped out of college and went to work in a metal products factory as a machinist. In the course of his career he became a self taught industrial engineer, eventually achieving a path finding insight about production and production workers. At the time, industrial production was new. Much of the work done in factories was based on an earlier "craft" model of production—skilled employees performed a variety of tasks, often fabricating entire products from start to finish. Taylor realised that if the work could be subdivided into highly specialised tasks, then less skilled people, the workers (rather than craftsmen), could staff the production line. He also measured the time employees took to perform their tasks and, based on his findings, he learned how to arrange the sequence of work so as to maximise the output of each person and of the factory as a whole. Scientific management, as his system came to be known, rigorously separated the planning of the work, done by engineers such as Taylor himself, from the execution of the work, which was carried out by ordinary frontline employees. To make scientific management effective, workers on the shop floor were to perform their tasks as fast as they could and exactly as they were told, no more and no less.

Scientific management was a momentous achievement, but it came at a high price to the nature of work itself. As Charlie Chaplin showed us, with agonising clarity, in his classic film *Modern times*, each worker became no more than a pair of hands. Taylor himself was deeply respectful of labour and labourers, and indeed viewed his system as enabling workers to attain a higher standard of living than they otherwise could. However, he wanted them to express their individuality at home, not at work. In the factory, the worker's job was to follow the rules as spelled out in manuals and enforced by supervisors. If a worker had an idea about how to build a better axle, he should keep it to himself; after all, the new axle might not fit the standard. Innovation would occur, of course, but that was the responsibility of the engineers, scientists, and planners, not the production workers.

Assuring quality of the manufactured products was primarily the responsibility of inspectors. In 1925 a quarter of the employees at Western Electric Labs (which made telephone equipment) were inspectors. The inspection system worked well enough; quality was fairly good, but it was stable. Its rate of improvement depended on the laboratories, not on the workforce.

Health care came late to the Taylorist party. For most of the 20th century, the model for healthcare delivery was very much a craft model. Individual doctors would treat the patients using their professional skills, experience, and judgment. In the 1980s, encouraged by the movement toward evidence-based medicine, healthcare leaders and regulators became interested in developing detailed protocols for care, creating Taylor like standards for many procedures. The Harvard anaesthesia guidelines, for instance, would make Taylor proud, spelling out a precise series of steps for anaesthesiologists to follow: connect the oxygen, do not leave the room, and so on.[9] Much of this helped improve care and no doubt, many parts of medicine should be Taylorised. No parents want an anaesthesiologist experimenting with new and untried procedures when their child is in the operating room. Health care, a Baldrige award judge said to me in 1989, "has discovered Frederick Taylor and fallen in love".

But while health care was discovering Taylorism, other industries were moving beyond it, into more effective terrain. The car industry is a notable example. Influenced and threatened by the Japanese, car companies and other large manufacturers began experimenting with a different approach to work and the workplace. The key principles of this new approach are in many ways the exact opposite of

what Taylor and his disciples taught. Taylor and Ford expected every customer to take what they produced ("the customer can have any color Model T he likes as long as it's black" was Ford's famous dictum). In the new view, every customer is an individual with individual needs and preferences, and quality consists of meeting those needs and preferences. Taylor and Ford assumed that there was a trade off between quality and cost. In the new view, improving quality often is the best way to reduce costs.

The post-Taylor view reconceptualises the employee's ideal role. Taylor espoused only one basic role for employees—read and follow the manual. Understand what you are supposed to do, and do it. The post-Taylor view suggests that good ideas for process improvement can come from anyone, and that the more ideas that are available, the easier it will be to find ways to improve processes. Because the best foundation for change is trying something, measuring the result, and learning from the measurement, the employee ends up being a real time scientist, practicing what might be called pragmatic or real time science aimed at making the work continually more productive.[10] For the post-Taylor leader who values improvement, a key question is, "How can the workforce be helped to help?" Taylor focused on the design of work; post-Taylor leaders focus on the development of the workforce.

A MODEL FOR IMPROVEMENT AS A GUIDE TO DEVELOPING THE WORKFORCE

Understanding that the workforce needs to be engaged in the process of change is only the first step. The theory does not tell one how to go about it. A more specific "model for improvement" helps as a guide to workforce development. One of the simplest and best was laid out some years ago by the quality expert Thomas W Nolan and his colleagues.[11] That model begins with three questions:

- What are we trying to accomplish?
- How will we know that a change is an improvement?
- What changes can we make that will result in an improvement?

Once a team has answers to these questions, it can run tests of change to see what works and what fails to work. We will examine each question in turn, and thereby clarify an image of the healthcare workforce of the future.

What are we trying to accomplish

All improvement requires a goal, an aim that is essentially the same as facing reality, mentioned above. Nobody learns Spanish until they acknowledge that they do not already know Spanish and decide that they would like to. In a Taylorist workplace, the workforce by definition has no aim other than getting the job done and collecting a pay check. In a post-Taylorist workplace, the workforce also has to develop the skill of identifying and agreeing on what they are going to make better.

Agreeing on aims for improvement is no small matter. An organisation's leaders must recognise and acknowledge the difference between where the organisation is and where it wants to be. That gap must be measured and communicated publicly. Workers and leaders can often best find the gaps that matter by listening very carefully to the people they serve—patients and families. The goal is to study the effect of the organisation's work on the people it is trying to help. That search—the search for the gap—requires an unusually high level of trust. There is no point in asking somebody "how are we doing?" if one does not trust their answer.

Another way to find gaps is to scrutinise data on performance. Any cystic fibrosis centre in the Cystic Fibrosis Foundation's database, for instance, can compare the percent of its children under the tenth percentile for weight with the other centres. The difference between its own results and those of the best performer can become an embarrassment, a public relations problem, or, in the ethos of improvement, an aim. Of course, only fools would choose the third if they did not trust their own capacity to improve.

Whenever anyone proposes an improvement in a complex system, competing ideas inevitably emerge about what else should be improved. The Institute of Medicine's report, *Crossing the quality chasm*, itself listed six categories for improvement: safety, effectiveness, patient centredness, timeliness, efficiency, and equity.[1] Within one hospital, different people will have different preferred aims, for example, reduce infections, reduce waiting times, and improve cardiac care. The list of candidates is endless, but improvement requires some degree of focus. Therefore, part of developing skill to improve in the workforce is to foster the ability to confront and resolve disagreement about what ought to be done first. That, too, involves trust.

How will we know that a change is an improvement

All improvement is change, but not all change is improvement, therefore the model for improvement includes measurement—a way to know which changes help, and which do not. Interpreting measurements requires both skill and courage. The relevant skills are primarily those that allow one to sort a meaningful signal from background noise. The key issue here is, can the data be trusted? Is a change from 8–10% random or real? What extraneous factors, other than the change being tested, ought to be taken into account? How can a graph over time help? How can we measure several important variables at once, without becoming overwhelmed by numbers? Simple statistical skills, unnecessary in the Taylor era, are essential in helping a post-Taylor workforce contribute to improvement.[12] Equally important are narratives and stories, which people involved in improvement in complex systems must be able to exchange to maximise their learning and increase their wisdom, a capacity that Karl Weick, a student of high reliability organisations, calls collective mindfulness.[13]

What changes can we make that will result in improvement

The third part of the model is actually to identify an alternative to the status quo that is worth trying out. An improvement oriented cystic fibrosis centre curious to know why its performance is not at the top of the distribution would, of course, promptly study the higher performing centres to see what they do differently.

There is no way around this search. Trust is central to this entire endeavour. Questions that are asked with distrust, jealousy, or defensiveness will not be authentic. Also, the answers will not be listened to. As a consequence, it cannot usually be done effectively or efficiently by third parties, no matter how eminent. It has to be done by the people who are trying to improve themselves, and it is often best done in groups. This comparative information cannot be gathered in secret either. The exchange of information has to be open, and it has to be two way, to enrich the knowledge of both those studying and those being studied. The fundamental skill here is best thought of as authentic curiosity as distinguishable from mere compliance or check list thinking. Curious seekers, on the lookout for changes worth testing, genuinely ask, how do you really do this? How do you do so much better than we do? They must mean it, and they must want to hear the answer.

Searchers for better ideas than the status quo must cast a wide net. Not all of the answers for improving health care will come from healthcare organisations. For instance,

hospitals and clinics could eliminate many of the waits and delays for patients and staff at the moment. The resources to do so are sufficient and in hand, but the current models of scheduling and flow management in health care do not work. They are systems with long delays built right into them. The best models for achieving continuous flow lie in other industries, and healthcare people must venture beyond the boundaries of their profession to discover them.[14] [15]

Run a test of change

When children are learning to ride a bike, thinking about the task is not enough. They must also practice until they learn the required muscle movements and techniques, and make them on their own. Improving health care is no different. Improvement requires testing changes, for the purpose of learning and adapting them. In the jargon of the model for improvement, this is the plan–do–study–act (PDSA) cycle, running real world tests of change and learning from what happens. To join in improvement, the healthcare workforce must have the skills to run many PDSA tests, assess the results, and build on what they learn.

A handful of basic rules govern effective use of the PDSA cycle. Usually, the tests are best done in teams, so that learning takes place among a whole group. They must be adapted to local conditions, which will not be the same in Maine as they are in Manchester or Minnesota. A key rule is that small and frequent tests are better than big and slow ones. In formal science, tests tend to be large scale and take a lot of time. That is often as it should be. In real time science, however, the best tests are small, quick, and frequent. Real change requires many tests, performed over and over again. When such tests are linked to powerful new designs—comprehensive models of a new system of care—they can accumulate into truly new levels of performance for the system as a whole.

Another key rule in improvement is to be open and honest about "failed" tests, which are often the most valuable ones. It is natural for human beings, especially self critical healthcare professionals, to want to forget about experiments that do not work. But any scientist knows that learning from failure is just as important as learning from success. Negative experiments rule out attractive but unproductive hypotheses, identify unexpected correlations and consequences, and make the experimenter smarter.

FACING REALITY (ONCE MORE)

A truly post-Taylor healthcare workforce would be one far more capable of improving systems of care. It would have new and better skills in setting aims, measuring progress, finding alternatives to familiar ways of working, and running many rapid tests of change informed by bold and important new models of the system as a whole. But, so far, the first step toward that vision, facing the reality of our current flaws, remains a major stumbling block. Two Japanese words encapsulate the problem especially well: taseki and jiseki.

Taseki means "the burden is yours", it is passing the buck. For lower performers, the first reaction is, often, the data are wrong. If that line of defence fails, the second reaction is usually, the data are right, but it's not a problem. That discarded, it is then only a small step to the third stage, which is, the data are right, and it's a problem—but it's not *my* problem! Taseki is a way of saying, "the dog ate my homework, it is not my fault, and it is not my responsibility".

The Japanese opposite, jiseki, means "the responsibility is mine". It means I've got the ball, the buck stops here. From the point of view of jiseki, blaming cost constraints, the environment, the regulators, or anybody else for the current defects in health care is not an acceptable plan. Jiseki is a tough mindset. Accepting responsibility for gaps, for

Key messages

- Current strategies for developing the healthcare workforce are based on outmoded theories of control and standardisation of work.
- Quality is a system property; if we want better results, we have to change the system.
- We need to harness the imagination and participation of the workforce in reinventing the system.
- The workforce needs to know how to set bold aims, measure progress, find alternative designs for work, and test changes rapidly and informatively.
- Change begins with a shift in attitude from taseki (the burden is yours) to jiseki (the responsibility is mine).

example, can be the front door to feeling guilty. Jiseki requires trust in oneself, belief in one's own worthiness, intention, and capacity to improve. It requires that failures be embraced because of what they can teach. Psychologically, taseki is much easier!

Health care in the Western world has an unprecedented opportunity to improve. Modern information systems, better evaluative sciences, and consumerism have converged to hold a mirror up to its nature, and, for the first time in history, to generate a social consciousness that our precious systems of care are not achieving what they could and should. Daylight has arrived.

What we do with that opportunity will depend on the theory on which we act. We can tighten the ropes, celebrate Taylorism, and achieve a modicum of standardisation and stop there, small improvements at a high price in spirit.

Or we can leapfrog Taylorism—keeping only the manuals we really need—and invest in a workforce of imaginative, inspired, capable, and (dare I say it) joyous people, invited to use their minds and their wills to cooperate in reinventing the system, itself. The investment, if it is to be effective, must be real. Doctors, nurses, pharmacists, therapists, technicians, managers, and executives (everyone) will need to acquire and refine their capacities to set aims, measure and interpret results, search for unfamiliar and promising alternatives to the status quo, and test those alternatives rapidly, carefully, and constantly. They will need to do so together, in teams, to welcome failures as informative, to celebrate successes as collective, and to feel the excitement of jiseki because of the meaning it adds to their lives and the peace it offers in their souls. A workforce so nobly engaged deserves no less.

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Author's affiliation
D M Berwick, Institute for Healthcare Improvement, 375 Longwood Avenue, 4th Floor, Boston, MA 02215, USA

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Applying the lessons of high risk industries to health care

P Hudson

High risk industries such as commercial aviation and the oil and gas industry have achieved exemplary safety performance. This paper reviews how they have managed to do that. The primary reasons are the positive attitudes towards safety and the operation of effective formal safety management systems. The safety culture provides an important explanation of why such organisations perform well. An evolutionary model of safety culture is provided in which there is a range of cultures from the pathological through the reactive to the calculative. Later, the proactive culture can evolve towards the generative organisation, an alternative description of the high reliability organisation. The current status of health care is reviewed, arguing that it has a much higher level of accidents and has a reactive culture, lagging behind both high risk industries studied in both attitude and systematic management of patient risks.

High risk industries, such as commercial aviation and the oil and gas industry, have always been concerned with safety. The commercial aviation industry learned early that failures to pay sufficient attention to safety were rapidly punished and, as a result, passengers today face greater risks getting to and from an airport by car than they ever face once they step aboard an aircraft. The oil and gas industry has had a rather different history, moving from a macho culture in which accidents were regarded as to be expected, to one where death and injury rates are essentially negligible and employees are safer once they have arrived on company premises. The practice of medicine, in contrast, still appears to be dangerous for patients, with current estimates of patient iatrogenic fatality rates in hospital being put informally at several times the fatality rates for road traffic in countries such as the United States,[1] Australia,[2] the Netherlands,[3] and the United Kingdom.[4] The practice of medicine appears to be open to error without necessarily taking the problem seriously.[1 5-7]

The questions posed in this paper are: how did the high risk industries achieve their current high levels of safe performance; what do they currently do to remain there or even improve further; and what implications does this knowledge have for the practice of medicine? The answer to the last question will be that health care is, at best, in an early stage of development of thinking about safety and that the lessons from hazardous industries can certainly be applied, although the culture is one that will require considerable effort to progress past its current stage.

This paper first describes how two different high risk industries have developed in their approach to safety. It will then examine how they regard safety and will review the attitudes, mechanisms, and processes put in place. The current status of health care, as seen from this industrial point of view, will then serve as the basis for a discussion about how health care might be developed to create, within the profession, a culture of safety more comparable with the highly hazardous industries described.

COMMERCIAL AVIATION

From the first flights of the Wright brothers in 1903, aviation has always been dangerous. Even today, although it is one of the safest activities people participate in, many people still feel that it is extremely dangerous, and even refuse to fly. While the hazards remain real, their effective management provides the compensation that makes flying so safe. The danger is shared not only by the passengers but also by the pilots.

An aircraft crash is almost always disastrous, given the speeds, altitudes, and the presence of dangerous and inflammable materials. This rapidly led to a political, social, and commercial awareness that aviation safety had to be taken seriously. The "barnstorming" style of aviation soon fell into disrepute, to be replaced by increasingly professional attitudes in commercial flying. The consequence of such developments has led to flying being one of the safest means of transport. The guarantee of passenger safety even applies in far flung parts of the world. So, what makes commercial aviation so safe? What does the industry do? This paper will describe briefly how the performance is achieved, but will also consider a different industry, oil and gas exploration and production, which is less public but achieves, in many ways, an even better performance.

THE OIL AND GAS INDUSTRY

The oil and gas industry impacts less obviously on the public, except when supplies are threatened or the price rises. Hydrocarbons remain, nevertheless, extremely dangerous and the activities required to provide them to the customer are also hazardous. The ravages caused by an explosion at a refinery or a chemical plant can bring home how dangerous the industry can be. The Piper Alpha disaster in 1988, when 167 people died, highlighted the dangers to offshore workers.[8] The hazards of the industry are, however, far more extensive. Operations are found in environments ranging from arctic to high temperature desert conditions, with heavy

See end of article for author's affiliation

Correspondence to:
P Hudson, Centre for Safety Research, Department of Psychology, Leiden University, Leiden, Netherlands, PO Box 9555, 2300 RB Leiden, Netherlands;
Hudson@fsw.leidenuniv.nl

machinery, involving high temperatures and pressures. These are often performed by untrained or inexperienced local workforces because of the necessity to respect political and legal requirements for local involvement.

In the early years of the industry, accidents, frequently fatal, were regarded as part of the business. There has been a considerable change, brought about partly but by no means exclusively because of the Piper Alpha disaster, so that since the early1990s the industry has become exemplary in its performance.[9] Societal pressure has required the attention to safety to be extended to environmental and occupational health issues with, more recently, an integration of effort and experience into sustainable development. The levels of safety performance that are currently achieved by many companies, and are required of their contractors, mean that aviation operations are regarded in the oil and gas industry as a major hazard in need of careful management. This evaluation comes as a surprise to those inside aviation who feel they know how safe they are.

ATTITUDES AND ORGANISATIONAL FACTORS CREATING SAFETY

How have these two industries achieved their current levels of performance? The answer appears to lie in the acquisition of good attitudes to safety issues and the application of systematic management of the hazards of the business.

Safety management systems

The processes and beliefs that are required to be proactive about safety are formed by the presence of a systematic understanding of what the enterprise is doing. In the oil and gas industry this step change from a reactive culture was set in train by the legal requirement, following the Piper Alpha disaster, to develop safety cases demonstrating the existence of an active safety management system.[8] Such mandatory requirements started in the United Kingdom, where the disaster had taken place, but were soon taken up in the regulatory regimes of other countries such as The Netherlands, Malaysia, and Australia, all major producing countries.[9]

Safety management systems (SMSs) are simply the systematic application of management processes to the problem of hazards an organisation faces. One typical approach, used in the oil and gas industry,[9 10] involves the discovery and assessment of the hazards of particular operations, which may differ considerably from place to place, the specification of how those hazards are to be managed, and what is to be done if things, despite best endeavours, go wrong. There is a register of known hazards, as part of the SMS, and a clear understanding of the nature of defences applied to manage those hazards. Risk assessments are regarded as normal, but there is a feeling in many quarters that the numbers should not be taken too seriously as it is the structure and magnitude of the risks that is important. The system is documented, with specified accountabilities and required competence to perform duties critical to safety. Finally, there are a number of levels of audit and review required, given the assumption that, unlike quality management systems, safety will never actually achieve perfection and processes and knowledge can always be improved. The demonstration that there is a safety management system in place and that it is operational and effective is called a safety case.[8]

In commercial aviation full safety management systems are still sporadic. They will only become an International Civil Aviation Organisation (ICAO) standard during this decade, first for air traffic services (2003) and airports (2005) and, somewhat later, for airlines.[11] There is, nevertheless, a substantial body of knowledge and required processes embodied in the ICAO's Standards and Recommended Practices (SARPs). These serve to support many of the requirements of an SMS but were not constructed with a management system, as such, in mind. As a result they are, literally, unsystematic and are not collected together with the requirement to demonstrate an assurance, as with a safety case. They have, nevertheless, served aviation well and form a repository of good practice and safe design.[12]

Aviation attitudes

Aviation has always been seen as dangerous and as a result commercial aviation has had very positive attitudes towards safety from the start. The barnstormers were always in a minority, they crashed and died, thereby hastening the process, so that the industry developed clear standards and rigorous requirements. Pilots and engineers have been licensed and are severely restricted in what they may do, airplanes undergo rigorous certification processes based upon standards often developed as a result of crashes, and these constraints are accepted without question by all involved. I have argued[12 13] that aviation is, despite its exemplary performance, essentially haphazard in its management of the risks of flying, relying more upon positive attitudes and less upon systematic approaches to the management of risks.

Oil and gas attitudes

The oil and gas industry, in contrast, has retained an image of the macho oilman, even to this day. The success of the industry in achieving high levels of safety performance has come more from the hard nosed application of safety management systems, driven by the commitment of senior managers and, where that is less obvious, by the threat of legal sanction. The evident dangers of the business, especially as seen from the level of senior management with a wider horizon, became compounded by the growing realisation that safety performance was a sensitive indicator of economic performance, so that cutting corners to make money was punished too often to make it a worthwhile strategy. The success of early implementations of safety management systems, and the discovery that they were not as difficult or expensive to develop as had been feared, led to major oil companies requiring safety management systems to be in operation even in countries where there is no legal requirement.[10] The discovery was simply that it helps to understand what you are doing, and that understanding is what you have to develop when you create your safety management system.[9]

The limits of safety management

The two industries under discussion appear to have achieved their performance in quite different ways, suggesting that both routes may be feasible. Commercial aviation has achieved its current performance on the basis of positive attitudes towards safety, and is only now coming to the implementation of systematic approaches. Oil and gas exploration and production has achieved considerable progress on the basis of hard and systematic management, despite residual poor attitudes, and is slowly developing approaches to engender better attitudes. The question both industries are currently facing is: how do you go further when you have achieved so much?

The systematic application of safety management principles, culminating in the formal assurance that the goals can and are being achieved, can significantly help to achieve high levels of safety. However, such systems are, by their very nature, paper based and bureaucratic. They tend to set minimum common standards and can easily result in no more than the achievement of such standards, especially when there is competition for managerial attention and resources. A safety management system therefore defines sound systems, practices, and procedures, but is never

enough if practised mechanically; an SMS requires an effective safety culture to flourish.[9][10][13-15] Such a culture enables individuals to fill in the gaps and exercise initiative while retaining high levels of safety performance. A research and development programme, called the Hearts and Minds Programme, is currently under way to attack this particular problem.[14][15] The ultimate aim of that programme is to raise the maturity level of the safety culture in the oil and gas industry, and links are increasingly being made to aviation. But the problem has become—what is a safety culture?

SAFETY CULTURES IN HIGHLY HAZARDOUS INDUSTRIES

Both industries under consideration can be regarded as taking safety seriously and they can be described as having a culture of safety, whether internal or imposed. For a comparison with health care, it is worth examining what such a culture is and how it operates. The following list, first identified by Reason,[16] has wariness added. Such an organisation should be:

- Informed: managers know what is going on in their organisation and the workforce are willing to report their own errors and near misses.
- Wary: the organisation and its constituent individuals are on the lookout for the unexpected, maintaining a high degree of vigilance.
- Just: the organisation is normally a "no blame" culture, although some actions are agreed by all to be totally unacceptable, deserving some retribution.
- Flexible: such organisations reflect changes in demand and adapt rapidly to changes in circumstances, providing both high tempo and routine modes of operation.
- Learning: organisations expect to have to change, are ready to learn and can do what needs to be done to improve.

There is a model of cultural maturity,[9][12] based originally on one developed by Westrum,[17][18] for the evolution of safety culture (fig 1). Westrum[17] initially identified three stages, the pathological, the bureaucratic, and the generative. This development of the model distinguishes a slightly larger number of distinct steps on the ladder and re-labels the

bureaucratic stage as the calculative, partly because it is easier for people to accept that they are being calculative than that they are being bureaucratic:

- Pathological: safety is a problem caused by workers. The main drivers are the business and a desire not to get caught by the regulator.
- Reactive: organisations start to take safety seriously but there is only action after incidents.
- Calculative: safety is driven by management systems, with much collection of data. Safety is still primarily driven by management and imposed rather than looked for by the workforce.
- Proactive: with improved performance, the unexpected is a challenge. Workforce involvement starts to move the initiative away from a purely top down approach.
- Generative: there is active participation at all levels. Safety is perceived to be an inherent part of the business. Organisations are characterised by chronic unease as a counter to complacency.

An advanced safety culture can be reduced to four dimensions:

- It is informed at all levels: informedness follows from seeking and providing information.
- It exhibits trust by all: trust is developed by being just and informed, when even bad news can be told and accepted as information to be acted upon rather than as a reason to punish.
- It is adaptable to change: adaptability follows from being flexible and learning from what goes well as well as what goes badly.
- It worries: success does not engender complacency. Being worried is a healthy state that follows from a combination of being informed and a belief that, even when things appear to be going well, life is not always fair, which provides the reason why the culture is wary.

From this analysis it is clear that being informed, knowing what is really going on, provides the primary and necessary step in development of a safety culture. Informedness feeds trust and provides the raw material for adaptability. Worry
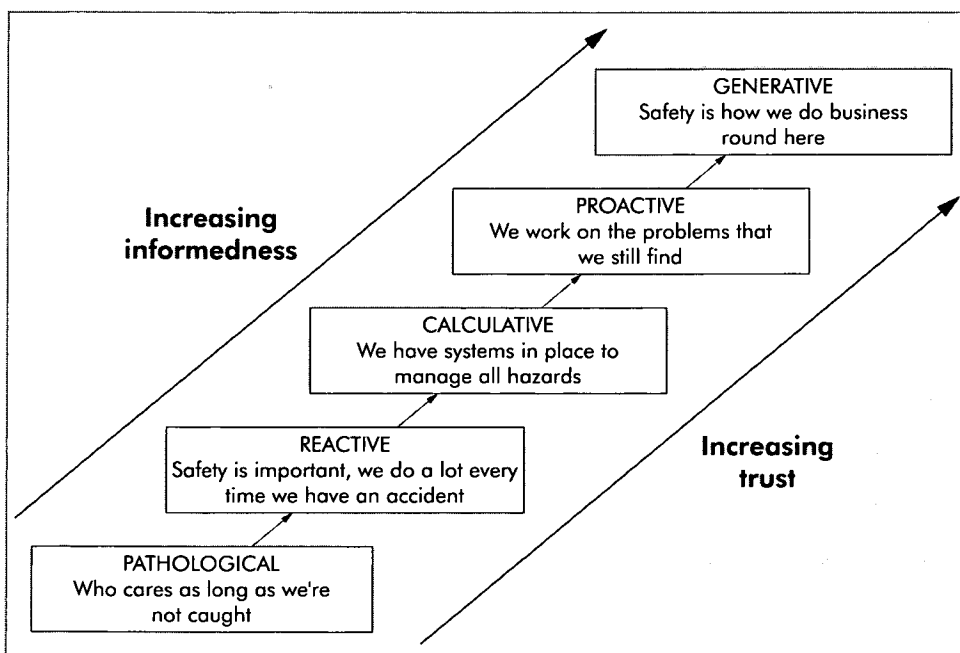

Figure 1 The evolution of safety cultures.

comes later, when complacency threatens, as chronic unease provides the necessary antidote to the greatest threat to advanced safety cultures, their own success that can cause them to take their eye off the ball.

WHAT DO SUCH CULTURES DO?

Advanced safety cultures in highly hazardous settings have found ways of operating that can serve as lessons for others who might wish to emulate them. The original Berkeley studies into the "high reliability organisation",[19] a notion very similar to the generative culture, were carried out on non-profit organisations such as the United State's Navy's aircraft carrier operations and San Francisco air traffic control, or an exceptional organisation such as a nuclear power plant.[20][21] It is still a question how much the profit and non-profit advanced cultures have in common.[22] Organisations described here have to make a profit to survive, they have to acquire and use the information available to them, they have to implement their management systems, and they have to cope with their inherent problems.

Handling commercial pressure

The commercial aviation industry and the oil and gas industries both operate under considerable commercial pressure. There is always a conflict between production and safety and it is a mark of the advanced culture that this conflict is at least contained and at best resolved. Pathological and reactive cultures are open to arguments about the financial benefits of safety, if there is any incentive for an organisation to improve and move up the ladder. Interestingly, personal experience with proactive organisations finds them uninterested in such arguments; they represent a battle already won and they are now convinced by other arguments. Commercial organisations that take safety and, more widely, sustainable development generally seriously perform better economically than their peers. The implication is that both profit sector and non-profit organisations, once they become advanced, have a common view of what is important and which processes are necessary. The belief is that such organisations operate more effectively and improved performance, both in the areas of safety and production, follows naturally.

Informedness

The information needed to create trust and be flexible can be won in a number of ways. Organisations can rely upon investigating and analysing their accidents, by performing audits and by reporting about what happens, which usually means what goes wrong, their near misses. Westrum[17] identified how cultures differ in their response to messengers bearing bad news. In pathological cultures messengers are shot, being blamed for the bad news they bring. In bureaucratic cultures they are tolerated, while in generative cultures messengers, even of bad news, are encouraged because they bring necessary information. More advanced cultures seek out information and, increasingly, are beginning to look at what helps in ensuring that incidents do not turn into worse accidents. Aviation does this well, the oil and gas industry is only now beginning to develop reporting systems for effective near misses, unsafe acts, and unsafe conditions. One approach developed in aviation, the line safety audit,[23][24] is aimed at developing a better understanding of normal operations, with its associated non-consequential errors and violations.

Accident investigation and analysis

Both industries have a tradition of taking their accidents seriously, especially when they involve fatalities. All aviation accidents are investigated and reported publicly. Annex 13 of the ICAO convention[25] defines how accidents are to be investigated and is quite specific about how such investigations should be performed in a blame free manner. In the oil and gas industry, investigation techniques have been developed to direct attention away from the "sharp end" and towards underlying causes and senior management.[26][27] The swiss cheese model[28][29] was originally developed as part of a research programme in a major oil company, where it is routinely used for all major incidents and has become the industry standard. The model was rapidly taken up by the world's aviation industry.[25] The Australian Bureau of Air Safety Investigation (BASI) was the first to use Reason's model for all its major reports, directing attention to organisational factors underlying aviation accidents.[30][31] BASI instigated simple systems for reporting minor incidents in general aviation in order to collect useable information aggregated over larger numbers of minor incidents. The marked safety record of Australasia can be related to the attitudes that also supported BASI's introduction of potentially embarrassing analysis techniques.[30-32]

In the oil and gas industry, accidents, even fatalities, were once dealt with at a local level. Supervisors or the victims themselves were blamed and contractors, who classically ran the greatest risks, were not even counted. Companies now insist on analyses that uncover the underlying factors and managerial failings that led to accidents and then often require chief executive officers to fly, possibly round the world, to head office to be called to account, even for the deaths of those in contracting and sub-contracting companies. Management teams of companies now receive reports of all major and many minor incidents, with predetermined timescales within which reports have to be made. Incidents are rated in terms of their potential damage, which means that apparently trivial incidents may trigger a significant response. Such continued pressure and commitment ensures that safety remains high on the list of priorities and is slowly changing attitudes from the top down.

Incident reporting in aviation

The quality of incident reporting in aviation is exemplary. There are mandatory reporting requirements for many occurrences. Air safety reports (ASRs) have to be submitted to the national aviation regulator, such as the United Kingdom Civil Aviation Authority, by the airline. There are also many events that are not regarded as serious enough to warrant an air safety report but are nevertheless reported to the airline by flight crew and other staff.[33] Much of what is reported is of a simple technical nature, posing no personal problems for the reporters, but the reports may include problems caused by others, such as separation failures, ground handling problems, and unacceptable behaviour of passengers. British Airways operates BASIS, the British Airways Safety Information System, that is also used by many other airlines worldwide, to collect all these reports and allow them to be analysed statistically.

There are, however, situations where the reporter might well attract opprobrium or place a colleague in difficulties by reporting. Under such conditions, usually because someone has performed poorly, there has always been a temptation to bury the information if at all possible. Systems such as the Confidential Human Factors Information Reporting Process (CHIRP) allow for confidential reporting in such a way that the story can be followed up and the lessons learned without revealing the identity of those involved.[33] Such systems are agreed by both airlines and unions to have no repercussions for reporters, while important information can be made available. Aviation has learned that anonymous, as opposed to confidential, reporting is of little value, any incident reported invariably requires a degree of specialised follow up.

Monitoring systems on board modern aircraft can provide detailed information about what happens, such as exceeding rates of descent or being at the wrong altitude, which means that it is becoming harder to escape scrutiny if the information available is used in that way. Aviation had already achieved a sufficiently well developed reporting culture before aircraft monitoring systems were capable of revealing what had happened.

Considerable efforts have been made to remove the concept of blame from both the aviation and the oil and gas industries.[14-15 28] Both industries were prone to blame those at the sharp end, so that pilot error was the traditional end of an accident analysis, while victims were most frequently blamed for their own demises in the macho, and frankly pathological, early days of the oil and gas industry.

Management systems

As described above, the Piper Alpha disaster created the legal requirement for SMS, and the associated assurance, in the safety case, that such systems were operating effectively. In the oil and gas industry SMS was mandatory in a number of countries, but early experience showed the value of such systems, so most companies quickly required their operations to have an SMS even where there was no such requirement. Shell Group's experience with setting up systems for new operations has led them to use the SMSs as a way of defining more general management systems because they are so useful as well as effective. Experience in the implementation of such systems soon showed that they were an efficient way of understanding how an operation was best carried out.

Now that the International Civil Aviation Organisation has made SMSs a requirement for aerodromes to be in place by 2005,[11] while it is already a standard for air traffic services, commercial aviation is catching up rapidly with the oil and gas industry.

Organisational culture

The flight deck is a location staffed by professionals where there is usually a significant difference between the captain and the first officer. The difference in status between individuals in the cockpit is called the cockpit gradient. Aviation learned the hard way that this gradient has to be managed if it is not to be a source of problems. A number of major accidents, such as the Royal Dutch Airlines (KLM) disaster at Tenerife, had such cultural problems as a major cause of the accident. Today, crew resource management[34 35] is a method taught to all flight deck personnel, and increasingly to cabin and maintenance staff as well, enabling them to overcome personal differences and operate effectively as a team, even when a crew might not fly together more than twice a year.

One of the distinguishing characteristics of advanced cultures is the reaction when things do go wrong. Less advanced cultures, the pathological and reactive, emphasise the fault of those immediately involved. This results in denial of organisational involvement in causing incidents, and calls to remove the rotten apples without the critical self examination that leads to the realisation that the problem may well lie with the barrel, not the apples.

SAFETY CULTURE IN HEALTH CARE

So, where does health care fit in this picture? Health care has always taken medical dangers seriously, so the culture cannot be pathological. The lack of systematic risk management suggests that the culture is, at best, reactive, even though there may be the occasional proactive area. The medical culture responds to high profile events (for example, the Bristol[36] and Winnipeg inquiries[37]) with repair measures but is often uninterested in systematic improvements. The difficulty in getting evidence-based healthcare to be accepted

argues against the culture being calculative. In many cases medical professionals appear to have difficulty in following protocols, arguing that written protocols, called procedures elsewhere, restrict individual initiative and clinical judgement. Calculative cultures embrace procedures, while proactive ones develop ways of encouraging initiative within well controlled systems of procedures.[9] As the aviation and oil and gas industries are both borderline calculative–proactive, this places health care some way behind in its cultural maturity.

Health care has always been concerned with managing dangers and hazards, but these are inflicted on others. Unlike pilots, surgeons, physicians, pharmacists, and nurses rarely suffer the fate of their patients. The history of the SARS outbreak is particularly indicative. Medicine, as a discipline, is certainly aware of the hazards for others, but not for its own practitioners, so when it was the medical staff who died first, we can understand the shock effect. This was akin to the captain of the aircraft and the front line supervisor who deny that they have a problem involving them personally, no matter how much they know about the dangers for others.

Reporting

Health care does not report well. That is to say, the reporting of scientific facts, primarily biological ones, is well established and admirable standards for winnowing fact from opinion have been developed over the years, but reporting about individuals and systemic failings has been desultory at best. Messengers have been shot and the "facts" being reported have not been regarded as scientific and, therefore, worthy of regard, let alone analysis and action. This situation is akin to the technical industries that have never experienced problems in reporting technical problems, but took some time to realise that reporting problems associated with people, especially themselves, is equally important, if often personally embarrassing.

Investigation

Incident investigation in health care is, in my experience, amateur. There are no established methodologies, blame still dominates, and it is only in the event of major and multiple incidents[36 37] that any analysis with systemic consequences is drawn. Although the organisational accident model[28 29] is being used in places,[1 2 4 36] this is yet to become a standard in the way it is in the other industries discussed here.

Attitudes

Health care, at least in Europe with a few trivial exceptions, is not a commercial profit based endeavour, so there is no need to have the pressures under which the two industries discussed here operate. Yet the medical community, and indeed the public at large, appears to accept a fatal accident rate estimated at three times that of road accidents and a significant multiple of the rates in aviation and the oil and gas industries.

Medical attitudes are often entrenched in the individual blame culture, characteristic of the pathological and reactive cultures.[9 17 18] Given the importance of general attitudes in the aviation industry, and the attitudes of senior management in the oil and gas industry, this suggests one place where health care needs to examine its organisational culture very closely if improvement is to be achieved. The interpersonal culture of a traditionally hierarchical profession such as the medical profession will also need to move closer to those accepted in aviation.[38]

Safety management systems

The systematic approach to safety in health care appears to be extremely unbalanced. There is a large body of knowledge about the individual risks of medicines and surgical procedures or about the relative effects of certain patient

Key messages

- Advanced safety cultures are organised and systematic about how they manage their hazards. Health care has yet to reach this stage.
- Good attitudes to safety issues support processes that can be difficult to perform. Medical attitudes, while good at a local level, need to embrace the global levels necessary to improve total patient care.
- Advanced highly hazardous industries are striving to become proactive safety cultures: health care has yet to become calculative.
- Effective management of highly hazardous risks involves becoming informed before things go wrong; embracing bad news without "shooting messengers".

parameters on survival or quality of life. What appears to be missing is any systematic knowledge about the operation of the system as a whole.[39][40] Therefore, patients are actually at far higher risk from non-medical factors than they believe.

CONCLUSION

Two highly hazardous industries, commercial aviation and the oil and gas industry, have both achieved remarkable levels of safety performance. They have taken slightly different routes that appear to be converging as continuous improvement is sought. Aviation has started from being reactive and has progressed on the basis of good underlying attitudes; the oil and gas industry has improved by becoming systematic and calculative. Both are converging, improving their weaknesses, as they strive to become truly proactive. Health care is, in the light of such experience, still at an early stage of development. Either, or both, routes could be followed to the creation of an advanced safety culture and the associated high performance. In one case, it may be necessary to force the implementation of safety management systems, as occurred after the Piper Alpha disaster and is currently being required by the ICAO. The alternative, attitudinal, approach will require a major change in the way members of the medical profession view their work and each other, regarding it more as a highly hazardous enterprise for patients, paralleling aviation's attitude to the safety of its passengers. Both approaches have been shown to succeed in hazardous industries; whether health care takes one or both will depend upon the level of disruption such a leap forward may engender and the willingness of the profession to accept the effort and move forward.

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Author's affiliation
P Hudson, Centre for Safety Research, Department of Psychology, Leiden University, Leiden, Netherlands

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Quality care means valuing care assistants, porters, and cleaners too

P Toynbee

All too often, the focus of the very clever strategy papers produced in the upper reaches of the health department is on the next grand plan. Some of these reforms have been catastrophic for the quality of service that patients experience at ward level. Of these, the contracting out culture introduced in the 1980s and the 1990s has been the worst. Researching my book, *Hard work—life in low pay Britain*, I took six jobs at around the minimum wage, including work as a hospital porter, as a hospital cleaner, and as a care assistant. These are jobs at the sharp end, up close and very personal to the patients, strongly influencing their experiences of the services they were using. Yet they are low paid, undervalued jobs that fall below the radar of the policy makers. In hospitals they need to be brought back in-house and integrated into a team ethos. Paying these people more would cost more, but it would also harvest great rewards by using their untapped commitment.

See end of article for author's affiliation

Correspondence to:
P Toynbee, *The Guardian*, 119 Farringdon Road, London EC1R 3ER, UK; p.toynbee@ guardian.co.uk

It has taken some two decades, but at last there is a glimmer of recognition that what happens at the bottom in hospitals and care homes matters too. Floors do not clean themselves: dirt drags down the health, safety, and reputation of hospitals. These days it can lose them precious league table stars.

Porters matter too, patients' experience of a hospital stay may have less to do with whether their surgeon is cutting edge or average, than on whether gentle people are considerate and helpful in navigating the maze of clinics and procedures that form hospital life. In care homes, all the residents will feel is the small day to day kindness or neglect of care assistants on whom they depend for everything.

Yet all too often in the upper reaches of the health department and in the health think tanks, all the focus of the very clever strategy papers they produce is on the next grand plan, the next big idea, deconstructing and reconstructing structures, because structures are things that can be controlled from politicians in Whitehall. That is why the National Health Service (NHS) has suffered 15 major structural reforms in the past 30 years. Far too little attention is given to what happens at the distant ends of their telescopes, on the ground among the humblest employees.

Some of these reforms have been catastrophic for the quality of service the patient experiences at ward level. Of these, the contracting out culture introduced in the 1980s and the 1990s has been the worst. It is taking far too long for this government to grasp that what happens among the lowest paid staff is of critical importance in making the public believe the figures that show the NHS is steadily improving. Keeping them outsourced means they remain outside the blood stream of hospital life.

As a journalist reporting on health and social affairs for most of my life, perhaps I too have been preoccupied with glitzy intellectual ideas at the top—trust hospitals, GP fund holders, now primary care trusts and foundation hospitals. So last year I went to look at these services from the worm's eye view. And was treated like a worm, too.

EXPERIENCE OF WORK AT THE MINIMUM WAGE

Researching my book, *Hard work—life in low pay Britain*,[1] I took six jobs at around the minimum wage, including working as a hospital porter, as a hospital cleaner, and as a care assistant. From my base on a council estate, I searched the computers of the Brixton Job Centre for a job working directly for the state—for the NHS or a local authority. Every time I thought I had found one, it turned out to be working for a contractor, at one remove. Worse, it was often working for an agency that sent me to work for a contractor, at two removes. Until then I had not realised that there are now very few manual jobs left in the direct employ of the state. But these jobs gave me a good insight into why delivery of public services to the public is often so badly done, undermining voters' faith in their progress and quality.

Working as a hospital porter

The job as a hospital porter in the Chelsea and Westminster Hospital came via an agency down in the east end of London who sent me to work for Carillion, the company that held the cleaning and portering contract. I arrived there with no induction into the noble calling of working for the NHS. I was sent out with another porter for half a day to pick up the basics, but no one tried to give me any sense of the importance of how I treated the patients I was trundling about all day. It was a week before I met even a Carillion supervisor: I never saw anyone connected with the hospital management itself.

By pure coincidence I had been sent back to the same hospital, rebuilt, that I had worked in over 30 years before, in a job at the same grade. The first shock was to discover that I was now

being paid £36 a week less, in real terms, than I was then. During three decades, when the gross domestic product had doubled and the country was twice as rich, the wages at the bottom in this hospital had fallen back, not progressed. Thirty years ago I was at least employed by the NHS and hired by the hospital manager who would supervise me. She interviewed me, instructed me in my duties, and kept an eye on my work. This time I was hired by an agency who would take anyone half presentable, few questions asked, no references checked. I could have been a serial unplugger of patient life support machines, or just released from jail or mental hospital.

The next shock was to discover that porters were no longer allowed to lift or even touch patients. How different from 30 years ago when they did all the lifting. Now strong men stood by and watched while frail nurses heaved hefty male patients in and out of beds and wheelchairs. This was because the company was not insured, and so to protect themselves they made it a sackable offence. Here was an example of the many perversities that spring from the contracting culture. We were told not to pick up patients even if they were falling but to let them fall and call for a nurse. How did the patients see this? With perplexity and sometimes distress. Of course we often did lift and help and soothe patients—at our own risk.

Time keeping on the job according to the contract meant we were allocated 15 minutes for each task: often confused or distressed patients took much longer to get in and out of wheelchairs. We had to leave frightened old people, when it would have been kinder to stay and wait with them when they had tests and x ray scans. But we had to refuse. All this is the result of contracts where everything is laid down, every function down sized to its bare bones. An imaginative manager might look at the work of the porters and see ways they could be used better, working in teams with certain wards perhaps, doing extra tasks as the eyes and ears and the oil that wheels the hospital's daily life. But there was no way of altering fixed processes to humanise the porters' time with patients: contracts are more rigid than the old trade union demarcations that were an obstacle to good management in the old days.

Above all, the talents and the intelligence of the porters were wasted. Treated as expendable, replaceable dross, no one thought to invest in their skills. So the NHS lets precious human resources that it needs slip through its fingers at the bottom. The caste mentality fails to see the potential in those they regard, wrongly, as unskilled. This is a self fulfilling attitude: undervalued, few stay long, which makes them not worth investing in. Many of the agency porters were trying to get taken on as permanent staff, but because it would mean the contractor paying them fair overtime rates, they were often refused, and left for better opportunities elsewhere. But above all, it is the contract itself that kills off their opportunities. Why should any contractor up-skill a workforce that would then leave their employ and move on up into the hospital itself? Contracts are the hatches that batten down the workers to keep them in their caste.

Despite their treatment, most of the porters still gave very good service. Many disobeyed the no touching rule and did help patients. They were kinder and more concerned than they were paid to be. Yet the rigidity of the working system, devised by calculator, wastes those caring qualities that would have been well used spending longer with distressed patients who often had to be left alone, uncollected for several hours. When porters saw the system not working, they were not allowed to intervene to rescue a patient: they had to take each job in strict order of rotation. Here as everywhere I worked, the frustration the staff felt was as more directed at the obstructions that stopped them doing their jobs as well as they would have liked, as indignation at

their own pay and conditions. This employment policy is no way to engender quality, caring, and pride in a service.

Working as a cleaner

Working as a cleaner in Guy's and St Thomas' hospital was another illuminating story of bad management, the direct result of contracting out. Starting at 5 am, I was assigned 3 hours for a relatively easy cleaning task that could be done well in under 1 hour. Yes, said another worker, this was a good job for students who usually read their books through the other 2 hours. The work had been contracted out for so long that the hospital seemed to have lost touch with how long a cleaning job should take: the contractors had claimed for years that this was a 3 hour job, and so it remained. Hospital managers had become deskilled in how to time cleaning. Now that they were no longer directly employing and timing cleaners, they were plainly at the mercy of the cartels of cleaning companies that ran rough-shod over them. At least the place was clean—but at that price it should be.

Working in a care home

Everywhere else I worked, the jobs were cruelly under timed, none worse than as a dinner lady where it was impossible to complete the task in the paid hours: the staff often worked unpaid time to finish it. Since writing this, it has been interesting to find that managers always ask me questions about the one over timed cleaning job, and rarely about the under timed jobs. Downsizing is still deep in their mind set, ahead of quality.

I went out of my way to look for good employers and mainstream work places, not hole-in-the-corner worst cases. No doubt I could have found the world's worst employers for all these jobs, but then people would too easily have dismissed my experiences as untypical. So I sought out a good care home, at the upper end of the market, with a fair amount of private as well as state funded residents, and high standards. Hazeldene was the only place that checked all my references before taking me on, the only place that gave me lessons in lifting patients, using hoists, and instructions in basic safety and fire regulations. The supervision was excellent: it would have been hard for any care assistant to have mistreated or neglected a resident unobserved.

But residents of care homes need more than an absence of unkindness. They need the consideration, understanding, and patience that comes from a care assistant knowing residents personally, and their needs. Paid £4.85 an hour, with nothing extra for working outrageous unsocial hours, we had to work 12 hour days on both Saturday and Sunday every other weekend. So of course there was a rapid turnover of staff on the look out for less stressful and better paid work. This was in the centre of London, with no London weighting allowance and one could not survive on this pay.

None the less, I was struck by how much these women gave the residents. It was physically exhausting work, but above all it drained their emotions. Many of the residents were understandably depressed, and needed cheering and comforting at the lonely end of their days. They depended on their carers for every little thing, their lives easily made intolerable if left too long in bed or too long on a commode—and the care assistants gave their all for little remuneration. In the long run, though, quality in a home depends on staff who stay and build a bond with the residents: low pay leading to high turnover will always mean lower quality for vulnerable residents.

DISCUSSION

So here were jobs at the sharp end, up close and very personal to the patients, strongly influencing their experiences of the services they were using. Yet these are low paid, under valued jobs that fall below the radar of the policy makers. In

Key messages

- Paying these people more would cost more, but it would also harvest great rewards by using their untapped commitment.
- Creative managements should be looking at these high turnover jobs and seeing the employees in their true potential for providing far higher quality.
- More trust and responsibility of these people would help tap their unused commitment and skill.
- Contracted work in hospitals needs to be brought back in-house and integrated into a team ethos.
- Quality in a care home depends on staff who stay and build a bond with the residents: low pay leading to high turnover will always mean lower quality for vulnerable residents.

hospitals they need to be brought back in-house and integrated into a team ethos. Paying these people more would cost more, but it would also harvest great rewards by using their untapped commitment. Creative managements should be looking at the swathes of people who come and go in these high turnover jobs and seeing in them their true potential for providing far higher quality. They are willing— but they have to be paid a living wage. The dividend would be in staff development, a sense of cohesion and a united front in the holistic treatment of the public: contracting out reduces service to a series of minimum tick boxes.

As the demographics increasingly point to a shortage of labour, it will become ever more important to value and make best use of the labour available. Politicians talk of the need for upskilling the workforce: what struck me was how the intelligence and aptitudes of these people is underrated, simply because they lack formal qualification. In truth, it would take very little beyond the opportunity to move them up the scale of responsibility: it is partly qualification obsession that holds them down. Quality in these services is not necessarily to be found in national vocational qualifications. Face to face good treatment of patients will often count for more when it comes to making the public feel they are getting high standard public services.

We hear so much cant these days about trying to make bottom up not top down change. But the bottom rarely means those scrubbing the floors. Ask them, and very often they know how they could make their own work more fulfilling, and produce better results for the end users. A little more trust in those of the untouchable class would be refreshing and rewarding for managers. At the top, it means rethinking the whole contracting out culture: until I did these jobs myself, I had not appreciated the depth of damage done by separating out these workers from the main body of the institution and its purposes. Squeezing their pay and conditions makes short term savings, but only at the cost of long term loss in quality.

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Author's affiliation
P Toynbee, The Guardian, 119 Farringdon Road, London EC1R 3ER, UK

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Can we select health professionals who provide safer care

J Firth-Cozens, H Cording, R Ginsburg

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In order to improve patient safety, health services are looking to other industries' experiences and as a result are adopting a systems approach to learning from error, rather than simply focusing the blame on the individual. However, in health care the individual will remain an important contributor to safety and this paper looks at other literatures besides health to consider a number of individual characteristics and the role they might play in terms of work practices that affect patient safety. It considers the effects of a variety of personality profiles including sensation seeking, Type A, and those with high self esteem; looks at our ability to select for psychological wellbeing; and discusses the ways that psychometrics have been used in medicine to predict performance. It concludes that although rarely used, psychometrics has been shown to be useful in predicting some aspects of performance in medicine and suggests that this is an area well worth further study for the benefit of patient care. Nevertheless, we are a long way away from being able to select safer staff and should instead be developing this knowledge to enable us to recognise and address potential difficulties.

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The emphasis on patient safety has, over the past few years, shifted from blaming the individual to focusing upon the system that led or might lead to accidents.[1] This has proved a very useful approach in other industries such as aviation,[2] and within health care this should bring about change too, by helping us understand both the less frequent but serious errors and those smaller slips that occur again and again. The previous focus, upon the individual staff member, has isolated responsibility in ways that have meant that organisations need not learn from error.[3] Nevertheless, the blame free culture sometimes implied by a shift in responsibility totally away from the individual would be inappropriate in health care, where the relationship and actions that occur between the patient and the staff member will inevitably have some effect upon outcome. We know from banks, for example, that dissatisfied staff lead to dissatisfied customers[4]; and within health care too there are studies that show that the quality of patient care, such as their general adherence to treatment[5] and no show rates,[6] are related to physician and patient satisfaction. These areas of literature show that the one to one staff–patient relationship matters.

Some actions of the individual that lead to poor care are going to be due to a lack of

knowledge or competence, both of which may be improved when they are recognised. However, others are likely to be more dispositional or attitudinal, leading to poor interactions with patients or other staff, or to a greater likelihood of providing care that is risky.

In this case, selecting staff who, because of their particular personality or psychological make up, are more mindful of safety, might be seen as a way of working differently to the ultimate benefit of patient care. To judge whether this is possible to achieve, this paper reviews a wide range of literature where the relationship between individual factors and risk have been studied, and asks whether we can— and whether we should—be selecting for safety.

PERSONALITY AND RISK

There is much literature now on an individual's risk propensity in terms of personality, mainly focusing on mountaineers, criminals, gamblers, and those who take part in unsafe sex, but also involving risky workplaces, such as Antarctica.[7] In these studies risk taking has naturally been seen as a bad thing, leading to poor outcomes. However, throughout this discussion we must remember that how risk is viewed will always depend on the contex; for example, a meta-analysis[8] has shown entrepreneurs to have an appropriately higher risk taking propensity than managers. Similarly, where the relationship between personality and safe performance has been addressed within health care, it has not necessarily been seen negatively; one study examines nurses who become managers and who may not have sufficient risk propensity to deliver services more intensely, faster, and at lower cost.[9] In some cases, a propensity to take extra risks may be a necessity of the job, and a characteristic that some would argue is also a requirement within various fields of medicine, in particular surgery.

Despite this viewpoint, most studies focus on the negative aspects of risk propensity, and it is this aspect of the literature that has implications for patient safety.

Risk perception

Risk perception is an important aspect of risk creation—if a doctor or nurse is able to see risk, then it is likely that he or she is more likely to do something to avoid it. This underlies the practice of one surgeon in using his early morning swim as a time to think about his cases that day and of all the possible things that he could anticipate going wrong and a recent paper on the links between certain behaviours and patient outcomes suggests this type of anticipation is important.[10]

However, the association between being able to perceive risk and changing one's behaviour

See end of article for authors' affiliations

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Correspondence to:
Professor J Firth-Cozens,
The London Deanery, 20
Guilford Street, London
WC1N 1DZ, UK;
jfirth-cozens@
londondeanery.ac.uk

....

accordingly is not so clear cut[7] because some people might actually favour the thrill that comes from the danger they see, or they may believe, with unrealistic faith, in the protection and infallibility of their safety systems. Certainly people's perception of risk increases once they have sustained a major incident. For example, after the destruction of some towns by Hurricane Hugo, huge precautions were put in place by those who had been hit to prevent future damage on that scale. However, the towns nearby, which the hurricane by chance barely missed, were much less likely to make changes,[11] their risk perception remained low. There is evidence that strongly held views on risk levels are actually quite resistant to change even if objective data on hazards, such as reports of death or disability, are given.[12] This suggests either some form of magical thinking ("it can't happen to me") of the type we saw in towns that the hurricane missed, or strong personality factors are at play.

Sensation seeking

If you can see risks but actually are still attracted to them, then your behaviour falls within the area of the risky personality. Someone with this psychological make up may simply choose an area of health care where risk is higher and be satisfied by that, but it is also possible that they might choose procedures that are more dangerous, or generally deliver less safe care.

There is growing evidence across decades and across continents that some aspects of personality, in particular that termed "sensation seeking", are related to a variety of dangerous behaviours, such as gambling, drug and alcohol misuse, speeding, extreme sports, and violence.[13] The concept of sensation seeking includes factors of disinhibition, thrill and adventure seeking, impulsivity, boredom susceptibility, sociability, and aggression, depending upon the measure; a study of adolescents found that risk seeking predicted delinquent behaviours of alcohol misuse and risky driving.[14] Moreover, high sensation seekers tend to perceive risk as lower than low sensation seekers and anticipate less anxiety when they are in the situation.[15] Although sensation seeking has been shown to be linked to biochemical processes,[16] cognitive processes also appear to have a role in influencing decisions[17] and this is likely to be a more useful target for change. There is evidence too that sensation seeking may be used to compensate for anhedonia; a study of skydivers showed higher sensation seeking alongside more anhedonia and blunted affect than controls.[18]

Although the types of activities studied in research on sensation seeking may seem a long way away from any behaviours that might compromise safety in health care, this is a link that makes sense intuitively but one that has almost never been considered. However, in a study that used the Zuckerman sensation seeking scales[19] as one of several potential predictors of risky behaviour in nurses, logistic regressions showed that higher disinhibition predicted having at least one occupational exposure to blood. Also, disinhibition, alongside a greater susceptibility to boredom, having less nursing experience, and having a permanent position, predicted having a larger number of these exposures—a mixture of individual characteristics, and traditional job related factors.[20] If we are looking for characteristics that may make a health worker less safe, then sensation seeking seems to be one worthy of further investigation.

Type A personality

Type A personality, found in those people who are more aggressive, competitive, and impatient, was originally recognised as a predictor of increased risk of coronary heart disease. However, differences between Type A and Type B individuals also show differences in various vocational activities and performances,[21] and Type A personality has been found to be related to having more traffic accidents, greater frequency of breaking traffic laws, higher impatience when driving, more aggression on the road, and more risky driving behaviours.[22] The forceful, confident Type A is highly rewarded in the modern world, presumably also within medicine and nursing, and, therefore, another area for future research would be to see the extent to which the personality safety records of Type A people match those of Type B.

Unskilled and unaware

There is a growing area of individual differences that may also have implications for health professionals, particularly those working in some isolation where feedback may be less. A series of studies[23] has shown that most of us overestimate our skills. However, people who are particularly unskilled in certain areas are actually more likely to overestimate their abilities. The authors see this as a deficit in metacognitive skill, or the capacity to distinguish accuracy from error. Although it sounds like a paradox, improving their skills actually increased this capacity and helped them recognise their limitations better. This area has been applied to medical students,[24] where the study showed that individual self assessments are stable over time, regardless of performance, but that there is an overall fall in accuracy (in both accurate and inaccurate students) when they begin the more complex clinical work with patients. In these days of error reporting and learning from error, this may be important not only in terms of educational planning but also in the essential step of recognising that an error has been made at all.

Confidence and self esteem

Confidence is usually regarded as a good characteristic for medical practitioners, as it is for other professionals. Doctors need to be able to show confidence to increase the reassurance they might provide for patients, and a lack of confidence would be a worrying trait in a team member such as the anaesthetist or the surgeon. However, like other related characteristics such as self criticism and self esteem, it is likely that not only too little confidence, but also too much confidence can cause harm. For example, high self criticism is related to depression in doctors, while those with particularly low self criticism have more problems with colleagues and with patients.[25] Similarly, while low self esteem is related to depression, high self esteem has frequently been linked to aggression.[26] Theorists are now seeing this as a reflection not so much of high self esteem, but as an underlying insecurity that leads to more grandiose, narcissistic behaviours that, when threatened, can cause aggression.[27] With the reported levels of bullying in health care being so high and potentially affecting teamwork and safety, the type of self image that gives rise to aggressive behaviours is again an aspect of the individual worth considering in terms of patient care.

Attitudes and performance

Although there is not always a direct relationship between attitudes and performance at the individual level,[28] performance at the organisational level has been found to be related to staff attitudes.[29] Having the right attitude towards the need for safe, thoughtful care is important and recognised within most high risk industries. For example, a number of aviation studies by Helmreich and his colleagues have shown the links between attitude and performance in terms of aircraft management and safety. Those pilots independently rated as outstanding or as extremely poor differed significantly in their previously measured attitudes to cockpit management.[30] The items which most clearly distinguished them were:

- My decision making ability is as good in emergencies as in routine flying situations (superior ones disagreed)

- Captains should encourage their first officers to question procedures during normal flight operations and in emergencies (superior ones agreed)
- Pilots should be aware of and sensitive to the personal problems of fellow crew members (superior ones agreed)
- There are no circumstances (except total incapacitation) where the first officer should assume command of the aircraft (superior ones disagreed).

The study concluded that pilots rated as extremely poor epitomised the stereotype of the "macho" pilot, one who "does not recognize personal limitations due to stress and emergencies, does not utilize the resources of fellow crewmembers, is less sensitive to problems and reactions of others, and tends to employ a consistent, authoritarian style of management" (ref 30; p1200).

They later showed that such attitudes could be changed with crew resource management training in all but a small group of pilots.[31] However, in this group attitudes actually worsened over the course. They were the pilots who were low in both autocratic traits but also in expressive interpersonal characteristics, as well as being poor in performance. The authors called them the "no stuff", as opposed to the "right stuff" and the "wrong stuff" (those who were autocratic), both of which categories changed for the better. They concluded that this has the worrying implication that "the types of individuals who seem to need the training most may be less likely to be influenced in the desired manner" (ref 30;p.298).

These findings very much fit those that have implications for the effects of different leadership styles on safety and quality in health care.[32] They stress the importance of getting senior nurses and doctors to appreciate their own limitations, as well as the importance of genuine interaction within the team in terms of safety. The fact that most people are to some extent changeable in this regard, stresses the value of good team leadership training within health care.

PSYCHOLOGICAL HEALTH AND SAFETY
There is a wide array of research to suggest that people who are stressed, depressed, or alcohol dependent, or even simply dissatisfied or exhausted, are less likely to provide the same standards of care than those who are not.[33] For example, those surgeons showing behaviours indicating high emotional resilience have better outcomes than others.[10] There is evidence too that hospitals that have reputations for being good places to practise actually have lower staff burnout and better patient outcomes than those without such attractions.[34] This suggests that the effects of stress in doctors on their patients may be a systems problem like any other,[33] but also that it still needs to be recognised (as part of this system) that people who are suffering emotionally may be less safe and need support at these times. Life events, for example, have links to both psychological and physical health, and there is evidence that they influence the risk of injury in athletes, particularly if social support is low[35]). Moreover, some people—for example, doctors with high self criticism—may be more likely to be emotionally at risk than others.[36]

Chemical dependency in United States doctors has a lifetime prevalence of 10–15%,[37] and alcoholism is said to be particularly high in the medical profession.[38] Unusually, women doctors have similar rates of alcoholism to those of men,[39] and Flaherty and Richman[40] report that female medical students are the only group whose drinking increases over their undergraduate years. In terms of alcohol misuse, there are very few longitudinal studies of the precursors; however, a United States study shows that, in terms of individual factors, having a technological orientation to medicine, as opposed to an interpersonal one, is predictive,[41]

while workplace abusive experiences in interaction with personal vulnerability (termed narcissism) best explains drinking outcomes in the longer term. Nevertheless, there remains little in this literature on psychological distress and dependency, which would allow us with any accuracy to select staff who are likely to be more resilient to the very real pressures of health care, and so to be safer.

CONTEXT
As shown in the search for long term predictors of psychological problems, work based variables often interact with individual differences to create the conditions that may lead to risk to patients. For example, the second generation of research on risky personality has been improved considerably by a search for interactions with moderating variables— aspects of the environment that might exacerbate or buffer against the risks created by the individual.[42] For instance, the influence of sensation seeking on drinking is strongest in boring situations, whereas the influence of neuroticism on drinking is strongest in stressful situations.[43] Sicard[44] used a different measure of risk propensity, the evaluation of risks, on a group of pilots subjected to strenuous night flights with sleep deprivation. Unlike the control group, they increased in impulsiveness after the exercise, as well as being more clumsy and having lower mood. We know from numerous studies that cognitive ability and dexterity deteriorate with sleep loss,[45] but these findings suggest that sleep loss may also increase risky behaviours, and this is likely to be even more of a problem in those with a risky personality. This too is an important area for future study.

Of course, some contexts may interact with personality badly in terms of satisfaction with career choice. For example, a doctor whose obsessionality and need for order is high may be particularly unhappy as an inner city general practitioner; while a young doctor who is depressed may find that becoming a psychiatrist makes his or her problems worse[36] and this can then affect patient care. For this reason career counselling early in the process seems as essential in medicine as it is in other occupations, particularly as it is difficult to change pathways.

Given that the research suggests there may well be individual psychological issues involved in the provision of quality care, the next section looks at how psychometrics has been used to date within medicine.

PSYCHOMETRIC TESTING IN MEDICINE
Within medicine a shift in the recruitment process has taken place. The old paradigm of unstructured short listing, interviewing, and referencing, frequently supported by "off the record" phone calls, has been replaced by criteria for short listing that become the basis for decision making. Interview panels favour scenarios that involve a safety component.[46] Structured references requesting information on sample characteristics may then throw additional light on previous safety behaviour, although it may not be predictive.

Despite this progress in medical recruitment, the use of psychometrics as a selection tool has taken place only rarely within medicine, and often only to complement traditional selection procedures, primarily in anaesthetics or surgery.[47] [48] Nevertheless, where it has been used and linked to later performance, it has been remarkably successful. In a seminal paper, Hunter and Hunter[49] demonstrated that psychological testing out ranked all other factors in predicting ultimate job performance, although these did not directly address safety matters. Also striking was the very low validity coefficient for interviewing, a feature that is common in research on selection. Conversely, Bobko et al[50] demonstrated that the use of alternative predictors alone to predict job performance

(in the absence of cognitive ability) lowered their potential for identifying likely poor performers.

A study by Ferguson et al[51] on performance during undergraduate years suggests that references do not consistently predict performance, while analysis of the content of the free response personal statement is predictive of clinical aspects of training. Reference categories covered character and social skills, whereas personal statement categories covered motivation and hobbies. A-level grades predict pre-clinical performance only; but conscientiousness was the best predictor across the course as a whole. They concluded that inclusion of personal statements and evaluation of conscientiousness would aid selection.

Reeve et al[47] also used personality testing (Cattell's 16 Personal Factor Questionnaire) and interviews on a cohort of 62 anaesthetists appointed to a training scheme, and followed them up for 3–8 years using academic, clinical, behavioural, and overall performance as criteria of outcome. The positive ends of the primary factors of dull/bright, unstable/stable, timid/socially bold, and casual/controlled predicted better performance. However, there was also evidence of a non linear relationship on some factors—detached/warm hearted, expedient/conscientious, and relaxed/tense—indicating that scoring nearer to the middle of the scale was predictive of better performance. Interview ratings also had a significant, though smaller, relationship with outcomes, and the combination of the two methods accounted for 52% of the variance. This study has largely been supported by others from the US.[52] Though the important factors do map quite closely onto the Big Five indicators of good leadership skills,[32] these studies can only be said to show us the personality factors that are important for successful performance in anaesthesiology; not necessarily those for general practice or for other specialties, such as psychiatry or surgery.

In the Harvard Medical Practice Study,[53] 48% of all adverse events related to surgical interventions, with 17% of these seen as negligent. Being able to select surgeons who are good at risk perception and risk avoidance seems important. However, the issues for surgeons are particularly complex when one considers that a willingness to take risks will so often be required. Hall et al[54] suggest that we should be training and assessing our young surgeons in higher order cognitive skills such as problem solving and the justification of actions, but selection for surgery according to such criteria has not taken place to our knowledge. Certainly we know that surgeons have different personalities to those in other specialties[48] and this is true right from student days[55]; what we do not know is whether these personality differences have any bearing on performance, including the safety of their care. Work has been done on the attributes necessary for a good surgeon[56][57] showing that spatial reasoning was the most important, along with verbal reasoning in terms of communication skills. In regard to personality, studies have used a variety of tests[58–60] but clarity and agreement about the best outcome measures still needs to be decided, and should include a reliable assessment of safety from all its perspectives.

Being able to stand ambiguity is often said to be important in medicine, and a study by Merrill et al[61] showed that intolerance of ambiguity is related to over reliance on high technology, a negative view of psychological problems, and the Machiavellian attitude that the means justify the end, characteristics which may be thought to affect patient care. They also found that these students were more likely to favour surgery as a career.

Most studies of individual specialties or of those which compare one specialty with another[48] do show that personalities and skills differ between them in quite dramatic ways

that can be traced back to student days and so are not simply a reflection of the job.[55] Given the lack of systematic career counselling that takes place in medicine, this seems to be a process of natural selection occurring at specialisation and earlier. If this truly takes account of likes and dislikes, then it may mean that this process is positively geared towards safer clinicians, because satisfied doctors give higher quality care;[6] however, chance clearly plays a large part in choice.[62]

This review of studies shows that personality testing in medicine has begun slowly and is still in its infancy. In other areas of health care, apart from management, we have even less experience of its use.

CONCLUSIONS

Although rarely used, psychometrics has shown itself useful in predicting performance in medicine more generally, and this review raises a strong suggestion that this is an area well worth further study for the benefit of patient care. However, the overwhelming conclusion from this review is how little we actually know about the role of personality and other psychological variables in terms of their effects upon safety at work and, in particular, upon becoming a safe clinician. To remedy this we first need to have well developed outcome measures in terms of safety.

Many people argue against the use of psychometrics for selection into medical school because a broad church is a necessity in an occupation where such varied postgraduate routes can be followed. However, with patient safety being such a critical issue, any studies that explore how we can recognise as early as possible any individual factors that might negatively affect patient care would seem a worthwhile endeavour. In most cases, what matters most here, in terms of working differently, is not so much the ability to select "the right stuff" as it is the early recognition of these differences so that the potential problems they might indicate can be addressed in advance with career counselling, training, and supervision.

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Authors' affiliations
J Firth-Cozens, R Ginsburg, H Cording, The London Deanery, 20 Guilford Street, London WC1N 1DZ, UK

Key messages

- The individual health professional is an important contributor to patient safety.
- There is strong evidence from other domains that a risky personality exists and has an effect on behaviour.
- Despite almost no consideration of personality in health care, what exists supports this evidence.
- The individual characteristics most likely to affect safety are low risk perception, sensation seeking, Type A behaviour, high self esteem, psychological ill health, and attitudes concerning safety.
- Where psychometrics has been used in medicine for selection, this has been shown to have strong implications for later performance.
- Research in this area is needed in health care and should be used to enable recognition of potential difficulties rather than for selection.

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Doctors and managers: poor relationships may be damaging patients—what can be done?

N Edwards

The problem of poor relationships between doctors and managers is a common feature of many healthcare systems. This problem needs to be explicitly addressed and there are a number of positive steps that could be taken. Firstly, there would be value in working to improve the quality of relationships and better mutual understanding of the necessarily different positions of doctors and managers. Finding a common approach to managing resources, accountability, autonomy, and the creation of more systematic ways of working seems to be important. The use of costed clinical pathways may be one approach. Rather than seeing guidelines and accountability systems as a threat to autonomy there is an argument that they are an essential adjunct to it. Redefining autonomy in order to preserve it and to ensure that it encompasses accountability and responsibility will be an important step. A key step is the development of clinical leadership.

R elationships between doctors and the organisations in which they work may not be in crisis but there are clearly reasons for concern.[1][2] The problems find most tangible expression in the relationships with the managers of the organisation. In the United Kingdom consultants rejected their new contract on the grounds that it gave too much power to managers and the medical press carried a surprising amount of quite vitriolic attacks on the integrity, motives, and education of managers. A study by Davies *et al* found that managers were more optimistic about relationships than their medical colleagues and that even doctors involved in management positions expressed serious misgivings about the state of relationships. Just over a quarter thought they were likely to deteriorate.[3]

In the United States, hospitals are concerned about the disaffection among physicians, which in some cases has led to their defecting to establish rival specialist hospitals. Conflict between doctors and managers seems to be a common problem in many systems. In the United Kingdom there has been a tendency to blame government as managers have become identified with a regime of performance management and target setting that the Department of Health itself has admitted is sometimes excessive. Although government action has not always helped, similar tensions seem to exist in other systems in which government plays a much less

important part and so the problem may have other origins.

THE PROBLEM

There is limited research in this area but there does seem to be a consensus that at least part of the problem relates to a number of changes in society and health care more generally, which have altered the nature of the relationship between doctors, their patients, and the organisations for which they work. In the United States Silversin *et al*[4] argue that this represents a fundamental violation of the psychological contract with the medical profession and Ham and Alberti make a similar argument for the United Kingdom.[5] The old contract promised a different balance of contribution and rewards from that currently on offer, one in which there was relatively high pay, autonomy, deference, and insulation from the exigencies of healthcare markets or government policy. This is clearly no longer available.

The most commonly cited cause of tension is pay and workload, and in the United Kingdom the idea that managers would be able to make consultants work outside the usual working week is one of the reasons most often quoted for the rejection of the consultant contract. Doctors complain about these issues in many other systems. Mechanic argues that a particular problem with workload is the expansion of what is possible in terms of investigations, treatments, and other interventions.[6] This means that consultation times are increasingly inadequate to be able to provide the sort of service that most physicians would wish.

The next most commonly cited set of reasons for tension relates to changes in attitudes to clinical autonomy and the growth of a culture of accountability. Although in the United Kingdom doctors are still the most trusted of all professions, the general reduction in trust and deference in society has meant that government and the public have been increasingly demanding in the way they hold healthcare providers to account. High profile medical scandals have increased this pressure. In addition, the growing costs of health care and its growing share of the economy has meant that the decisions of doctors have come under scrutiny and there are increasing attempts to control it.

A second assault on autonomy has come from an increasingly consumer minded public who have much more access to information and have high, not always reasonable, expectations about what health care can achieve. They are used to the often slick and customer focused approach of

See end of article for author's affiliation

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Correspondence to:
MrNEdwards, NHS
Confederation, 1 Warwick
Row, London SW1E 5ER,
UK; nigel.edwards@
nhsconfed.org

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other parts of the economy and are less tolerant of the badly organised, disjointed, and consumer unfriendly services that are all too common in health care. This challenges autonomy because it requires aspects of clinical work and associated activities such as scheduling, clinic organisation, follow up, and communication to be made more systematic and standardised.

Perhaps the most significant challenge to the traditional idea of autonomy has come from the medical profession itself in response to evidence for huge variations in practice, the continued use of practices known to be ineffective or even harmful, and the failure to adopt effective practice.[7-9] Davies and Harrison argue that there has been a shift in the epistemological basis of medicine from one based on tacit understanding, professional consensus, and reflection to a more scientific–bureaucratic model in which the emphasis is on the use of evidence and, where appropriate, the system-isation of work,[10] which is known to improve outcomes.[9][11-14]

Systemisation of work has also been used as part of a much more explicit emphasis on the role of the physician in containing costs. The interest of policy makers in evidence-based medicine, for example, was in part motivated by the hope that it would reduce costs and improve effectiveness. Guidelines, protocols, and the use of information to feedback utilisation data to clinicians were also hoped to have the same effect.

Why should a decline in autonomy and an increased emphasis on accountability represent an attack on the psychological contract and create so much resistance? Research by Degeling et al in the United Kingdom, Australia, and New Zealand suggests that it is because doctors are socialised into a set of beliefs and approaches that are in opposition to these changes. Their work also starts to shed light on why relationships with managers can be difficult. Doctors, managers, and nurses differ in their views on five key dimensions:[15-17]

- Accountability v autonomy: whether they ascribe to accountability to others or personal autonomy.
- Clinical purists v financial realists: whether they accept that all clinical decisions have resource implications and that this matters. Doctors tend to resist the intrusion of financial issues into clinical decision making.
- Systemisation of clinical work: whether this is seen as appropriate—nurses and managers tend to support this view, doctors to reject it.
- Individuals v collectives: unsurprisingly and appropriately, doctors tend to consider the individual patient whereas those in management positions are more likely to think in terms of groups.
- Power: doctors tend to reject the idea that the power sharing implied by team working is appropriate, nurses and managers tend to be more positive.

The growth of accountability and decline in autonomy is therefore a direct assault on the deeply held beliefs of some doctors. Worse, they are being asked to take rationing decisions—a concept that they do not accept, using system-isation methods, which they tend to reject. Just to add insult to injury, they are then asked to share power with other professionals and managers and join teams, both of which many are at least equivocal about. Managers may have the misfortune to be seen as the embodiment of a number of malign influences undermining medicine as it was meant to be practised.

It is important to stress that the research does not imply that this is the view of all doctors. Indeed, only a minority would strongly subscribe to all the aspects of the extreme form expressed here and many do accept the idea of team

working, taking financial responsibility, making work more systematic, and being accountable. There are, however, few incentives to speak up in favour of these ideas and some considerable risks.

These data explain why many doctors seem to say that their managers do not understand their work. There are aspects of the way that management operates that do not help either. Mintzberg and Glouberman suggest that there is a disconnection in the hierarchy in healthcare organisations; the work of managers does not connect to the work of front line staff as it does in many other non-healthcare organisations.[18] There are two reasons for this. Firstly, there has been a lack of acceptance of the legitimacy of management to be involved in the detail of clinical work and lay managers or even medically qualified managers lack the expertise to do this. This means that management has often been occupied with issues tangential or even unrelated to the practise of medicine, for example in the running of administrative systems. More recently they have become increasingly engaged in indirect attempts to influence medicine through the use of incentives, employment contracts, and structural reorganisation. Secondly, managers are required to focus outside the organisation either on the requirements of government or local politicians or in market systems on those of investors. Both groups have objectives and values that will not necessarily coincide with those of doctors focused on the single patient.

In the United Kingdom a particular issue seems to be high levels of management turnover compared with con-sultants, who tend to spend their entire career in one place. Turnover of chief executives of acute hospital trusts in England has been over 22% in the past three years com-pared with 7.5% in non-finance quoted companies. This makes the development of good relationships more difficult and consultants may be suspicious that the commitments made by one group of managers may not be honoured by the next. High turnover and the operation of a very short term annual cycle for planning and decision making may exacerbate a culture of short termism in management. The perception that some of the high turnover of managers is due to the influence of government is a further problem. Firstly, there is a concern that even if a good relation-ship exists with the current management they may be replaced with others more amenable to the views of government. Secondly, it makes clinicians less likely to become managers themselves, as the job appears to be unattractive and risky. Thirdly, it casts chief executives in the role of middle managers required to implement the vision set by others and focusing on the needs of those above them rather than acting as a "servant leader" to those below them—a role that many in the National Health Service (NHS) would seem to prefer. This inhibits the development of motivation around a vision for the organisation that local staff and managers could share and work towards. Perhaps of most concern for the quality and safety of health care is that seeing senior people treated in what is often a quite brutal way may have a deleterious effect on staff that remain. There are already relatively high levels of bullying and intimidating behaviour within and between different staff groups in health care, and having these implicitly sanctioned at the highest level is unhelpful.[19][20] There is good evidence that high quality relationships seem to produce higher staff satisfaction and improve outcomes for patients.[11][13][21][22] They also create an environment in which error reporting is easier and more common.[23] It seems likely that organisations characterised by stress, fear, high turn-over, bullying, and other sequelae of poor relationships will be doing their patients and staff positive harm and that, ceteris

paribus, there will be measurably higher mortality rates, near misses, and staff and patient accidents.

A further reason for poor relationships that is often cited by doctors is the alleged background and poor calibre of managers in health care:

"Many of the managers in the NHS are there by default. They do not have the intellectual ability to genuinely see the differences between hospitals and supermarkets or doctors and checkout cashiers. They are the pass GCSE students. Remember them at school?"[24]

There seems to be limited evidence for this view and in fact recent studies by Alimo-Metcalfe[25] and the Hay Group for the Department of Health[26] suggest that senior managers in the NHS seem to compare well to their opposite numbers in industry and other sectors.[27][28] It may be that the complexity of health care means that this is not good enough. In fact, most managers come from within health care and in a recent survey 27% of English chief executives had a clinical background.

There is no equivalent evidence about the calibre of middle managers—a group that is subject to particular criticism by doctors in the United Kingdom medical press. What is clear from studies in the United Kingdom and Australia is that this group have a very difficult task in balancing the requirements of those above them with the demands of their job and the need to sustain a relationship with their medical colleagues. In fact, these studies seem to show that it is this group who are displaying most signs of stress. It may be that doctors' training, strong sense of personal identity, and the fact that they identify with a profession or peer group outside the organisation means that they are more protected from emotional buffeting of this sort. In the United Kingdom study middle managers had levels of stress and minor psychiatric disturbances that were significantly greater than the average for the population as a whole and higher than other staff groups, with female managers fairing worst.[29] This is likely to diminish managers' effectiveness and add to a credibility problem that they may have with some doctors because of their junior position.

DISCUSSION

Poor relationships between doctors and managers affect staff and patients' care and seem to be associated with the long term failure of organisations to thrive.[30] Many of the reforms to health care envisaged in *Crossing the quality chasm*,[8] *The NHS plan*,[31] or other manifestos for change will be impossible without high levels of clinical engagement in the work of the organisation.

This is an area that would benefit from more research but a number of ideas seem to be worthy of further exploration.

Work to improve relationships

Mutual respect for differences, taking care of each other, and avoiding falling victim to stereotypes seems important. Organisations may have to positively work to develop this through agreed rules of behaviour (about, for example, integrity, keeping promises, avoiding personal attacks), principles for decision making—particularly in difficult areas such as resource allocation or ethical dilemmas, and through continuous discussion, negotiation, and interaction. Longevity in top management teams and attention to the quality of middle management are important to support the development of these relationships. Experience also suggests that managers and clinicians need to be able to develop mission, goals, objectives, and strategies for their organisation that are aligned with those of the clinicians.[32] This means external intervention, target setting, or the centralisation of

these decisions needs to be carefully handled to avoid disrupting local relationships.[33]

Managers do need to learn more about medicine and doctors would benefit from learning management tools and techniques,[34] however, mutual understanding is not the same as trying to make one group see the world the same way as the other, which is the tone of many of the recommendations in this area.

Develop common approaches

Finding a common approach to managing resources, accountability, autonomy, and the creation of more systematic ways of working seems to be important. The use of costed clinical pathways can help to find a way of translating between medical and managerial views and overcomes the problem that much management discourse is about issues other than patient care. Acknowledging the reality that clinicians are asked to take rationing decisions rather than pretending these do not exist may be important.

Redefine not abolish the idea of autonomy

Rather than seeing guidelines and accountability systems as a threat to autonomy, there is an argument that they are an essential adjunct. Autonomy is not tenable without some form of accountability, the expectations of the public and regulators and simple common sense require that freedoms are balanced with responsibilities, including reporting results and explaining one's actions. Responsible autonomy is essential. The reason for extended professional training is precisely so that doctors know when and how to exercise autonomy and depart from the pathway. Degeling suggests the answer to the question "do I have the right to depart from the pathway?" is "not just a right, you have a duty to do so" (personal communication April 2003). The key is that it should be documented and the reasons for variance understood.

A second component of this strategy is helping doctors regain some of the control they have lost over their working lives in organisations. It is well known that low levels of control over one's job and poor social support are associated with stress and even with higher mortality.[35][36] Doctors receive very little training or support to equip them to deal with organisations and in the United Kingdom may not really encounter organisational life until they are consultants. Training doctors more systematically in management, organisational, and team working skills might help to address the paradox that members of this most powerful profession often feel impotent in the face of unfathomable bureaucracies. Making the bureaucracy easier to navigate would also help.

Create clinical leadership

Strong and high quality clinical leadership and working in partnership with managerial colleagues seems to be a key element of improved relationships and of organisational success.[20][37] Winyard argues that management has intruded into areas that have not been dealt with by the profession in the way they should if it had appropriate systems of self regulation.[38] Doctors and clinical leaders are in a pivotal position to do this and to form a key link between the two groups. They also have an important role in providing leadership, creating shared purpose, and building the relationships necessary for success with their clinical colleagues. Improving clinical leadership requires earlier and better training of doctors in management and leadership, action to make clinical leadership jobs more attractive, and support for clinical leaders in what is often one of the most difficult jobs in health care.

CONCLUSION

The recurring themes of the proposed solutions are about the need to pay direct attention to underlying values and beliefs

Key messages

- Many of the new ways of working quickly run into problems with clashes between managers and doctors about the way organisations work.
- Many of the tools of quality improvement and safety run the risk of being seen as part of a managerial world that is associated with changes in society and health care that many doctors are uneasy about.
- Good relationships in organisations seem to be associated with improved outcomes for patients and it seems equally likely that poor relationships between doctors and managers may have a direct impact on patient care.
- Explicit attention should be given to finding ways to repairing and renegotiating these key relationships.
- Clinical leadership is of key importance to this enterprise.

held by both sides and to issues of honesty, trust, mutual respect, and relationships. These are very often ignored as organisations focus on the tasks to be undertaken or problems they face and do not have time for these "soft" issues. This runs the risk of mistaking the urgent for the important. A failure to fix these problems inside the organisation may prevent progress on any other issue.

The viewpoints of doctors and managers are different and this is inevitable and not necessarily undesirable. What is important is that the reasons for these differences are properly and appreciatively explored and understood. This will mean having some difficult conversations and confronting bad behaviour and both sides will need to change to accommodate the other. Work on this is in hand in the United Kingdom.[33] This seems urgent, important, and is perhaps the most challenging problem in improving health care.

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Author's affiliation
N Edwards, NHS Confederation, 1 Warwick Row, London, SW1E 5ER, UK

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Multidisciplinary team working, clinical networks, and chambers; opportunities to work differently in the NHS

S Carter, P Garside, A Black

Recently in the United Kingdom some new organisational structures for clinicians have been discussed. So far little has changed, but the intensity of interest suggests this may be an opportunity to link change in working practices with improvements in quality. Multidisciplinary team working is developing within the National Health Service (NHS) and some groups are expanding their roles across traditional institutional boundaries to form complex clinical networks. It would require little to make these functional networks autonomous from current NHS structures. Other models of working without traditional institutional boundaries have been discussed, including the formation of "chambers" for doctors and other professionals. We describe the first tentative steps of one group as an example and suggest that further experimentation with evaluation is required.

The context for the delivery of health care is changing. Patient expectations, targets such as reduced waiting times, and the constraints imposed by the European Working Time Directive have inspired some in the United Kingdom to consider new models of organising and "purchasing" clinical resources. The shortage of labour is probably the most critical issue facing the National Health Service (NHS), if the objectives of the *NHS Plan* are to be met.[1] Even to achieve current aspirations—let alone entertain notions of the NHS moving to a managed care model, with the maintenance of central taxation but mixed ownership of provision—we will need new organisational vehicles for transaction and negotiation of all clinical resources.[2] Motivation for organisational innovation may come from purchasers of care as much as from clinical staff and provider organisations. The key negotiators for provision of services—the newly formed primary care trusts—could elect to buy clinical services from other than the conventional hospital structures and may thus inspire changes in working patterns and organisational structures. Change in the organisation of clinical resources may be motivated if foundation hospitals are established within the NHS. The freedoms attached to foundation status may encourage providers to reshape clinical services and change contractual relationships with staff. The advent of health resource groups (HRGs) as a basis for payment for medical cases within the NHS from 1 April 2003 will mean that services must be reasonably priced. HRGs will form the tariff of prices for designated procedures and episodes of care, similar to diagnostically related groups as used in the United States and other countries. The tariff will enable a method of comparing traditional and new service models to be formed.

There are many pressures for changing the way clinicians work in the modern NHS. An increasing emphasis on team working has led to new groups of clinicians dedicated to specific areas of care. As these groups mature, they are increasingly sophisticated, with considerable experience in managing a small section of the health service. Such strong teams are likely to wish to gain more autonomy in order to improve their service quality. One model that has caused interest is the concept of doctors working in chambers in which autonomous groups of clinicians, to some extent independent from the NHS, sell their clinical services to both the private and the public sector. The notion of "doctors in chambers" has become an urban myth in the United Kingdom—much talked about but little practised; very few chambers have been established and, to our knowledge, all are based in the private sector. Although the model of selling services back to the NHS has yet to be established, it is clear that the banner of doctors in chambers covers a number of different possible models that need to be piloted and evaluated. We report one such example, explore some of the limitations already encountered, and consider the impact of new ways of working and clinical autonomy on the delivery of real gains in quality of health care.

MULTIDISCIPLINARY TEAMS AND CLINICAL NETWORKS IN THE NHS

In the past few years there has been considerable development in multidisciplinary working throughout the NHS. Whereas before individual consultants and doctors led small teams of assistants and trainees, the development of clinical governance has promoted the development of bigger teams with broader remits and less dominance of the individual.[3] The concept of corporate responsibility rather than of the individual clinician's duty of care is further reinforced by the challenging constraints of the European Working Time Directive and other employment regulations.

There are many examples of multidisciplinary teams delivering specialist care—for example, managing care for people with cancer, diabetes, or those who have complex medical and social needs such as is the case with stroke rehabilitation.[4][5] It is widely held that teams provide better

See end of article for authors' affiliations

Correspondence to:
P Garside, Newhealth, 26 Milson Road, London W14 0LJ, UK

care than individuals working in isolation.[6-8] In the United Kingdom this approach to the delivery of better care has been stimulated by the demands of the NHS service frameworks for cancer.[1 9 10] From our experience the quality improvements that result from the process of effective multidisciplinary team working include:

- When patients know that they are being looked after by a team they get a sense of confidence similar to that from having a second opinion, reducing the fear that their treatment is based on the knowledge of just one clinician.

- It is easier to provide continuity of good quality care and clinical responsibility for patients with multidisciplinary team working in a world where the working week and the available qualified staff are both shrinking.

- The constant dynamic of an effective clinical team allows the embedding of clinical management protocols, otherwise often forgotten in clinical practice.

- Not only is protocol implementation enhanced but the audit of protocol design and its outcome is an active and continuous process.

- Communication between individual members of the team is enhanced by more frequent opportunities to speak directly to each other about clinical matters.

- Discussion of the care of individual patients leads to a cross fertilisation of ideas to other situations and patients, which would not be apparent in one to one clinical management.

- Sharing of knowledge becomes easier—you can learn without reading journals!

- The group can address issues of resource management in a more rounded way avoiding waste and improving chances of arguing effectively for more resource as needed.

- Team working increases the sense of partnership and provides friendship and support particularly in difficult clinical situations such as the management of clinical errors and complaints.

Despite the many advantages of multidisciplinary working, building effective teams in the NHS remains a challenge. The reasons for this include:

- Organisations, departments, and units within the NHS have traditionally secured resources through the creation of local power structures that attract money and staff. The concept of sharing responsibility may be thought to weaken this power base for resource acquisition.

- On an individual level, responsibility sharing might be seen to weaken the clinician's ability to help patients and achieve professional goals.

- There is insufficient time available outside the time devoted to clinical work to practice genuine reflective clinical management, team building, and development. Teams are often seen as time consuming and wasteful of resources, especially in the early stages.

- The NHS culture has a long way to go in encouraging staff to listen to the point of view of others while at the same time managing to balance the contributions of individual members and their professional views.

- Effective clinical leadership is underdeveloped and without it team working will fail particularly where there is a high turnover of team members.[8 11 12]

- Defining the boundaries of the team may be difficult because of the multiple linkages between all staff within our organisations. It is easy to include too many individuals in the team without producing real improvements in clinical care, but instead wasting valuable clinical face time.

- As these multidisciplinary teams have matured, in our experience it seems that their sense of frustration with the current hierarchical structure of NHS management grows.

These difficulties, encountered in the setting up of multidisciplinary teams, are likely to apply to the development of other approaches to organising clinical resources, including chambers. Some are the universal barriers that emerge in any change process, but others can be linked to the traditional structure and culture of the NHS.[13-16] Some of these barriers could be overcome if teams could see some prospect of acquiring a more autonomous status in the future.

Clinical network is a term that can be used to describe teams of clinicians from different organisations, offering a comprehensive range of services in different locations across traditional boundaries. (If effective groups of highly motivated individuals were not hemmed in by traditional boundaries they could consider offering their services to a wider range of purchasers across traditional boundaries.) As an example, clinical multidisciplinary teams from neighbouring organisations might decide to share referrals, or establish subspecialty practices to improve quality. Pressure for these linkages is happening because of new statutory limitations on the working hours of staff and the economic pressures for centralisation of specialist services on fewer sites. Such groups are also more likely to work across the boundary of primary and secondary care, incorporating the goals of each domain.

The history of development of clinical networks in the NHS is mixed. Many health authorities attempted to steer local service development by bringing clinicians together and agreeing guidelines. When forced together the tensions of loyalties to the different hospitals often outweigh any perceived advantages of the group working together. The most formalised clinical networks have been the cancer networks established by the Calman–Hine Report.[17] These organisations are becoming effective but the goals are often strikingly different from the local hospital's management and attempts to instruct complex organisations on how to spend money on one issue among many seem to cause difficulties. For further development of effective networks perhaps hospitals will need to act as providers of facilities and support services while clinicians organise themselves into networks, groups, teams, or chambers that have some level of autonomy. Effective networks can perhaps develop as small businesses. Establishing a successful business requires effective leadership, a strong team approach, and the drive to grow. There are clear drivers for change in the NHS and teams are developing in multiple forms. Perhaps all that is needed is sound local leadership?

CHAMBERS—A POSSIBLE MODEL FOR THE NHS
Multidisciplinary teams and networks are developing as a result of drivers such as the NHS service frameworks. But there are fewer obvious external drivers for the development of chambers of clinical staff. Organising clinical resources into chambers would mean staff working in an organisational model similar to that traditionally used by the legal profession.[18] The term chambers in the context of health care is commonly used generically to refer to alternative organisational forms for doctors to sell their services to the NHS and other payers. Cooperative might be a better term than chambers if staff remain employed in the NHS with some autonomy from the monolithic NHS structure. Such models have traditionally been perceived to involve doctors, but to be more effective they should include other groups of staff as well. The chambers of doctors that do exist are all based in

the private sector and most are in south east England, to our knowledge.

The concept of medical chambers is only loosely defined, but there are some common underlying assumptions:

- The advantage of working in chambers is that it provides efficiencies of scale and organisation (this is usually coupled with an assumption that quality of life for members of the chambers would be improved).
- The chambers would negotiate with a variety of agencies for work.
- The individual within the chambers would be under some new form of managerial control and not that which is customary for staff employed in the NHS.
- The chambers would be organised in such a way that streamlined processes and skill utilisation would improve productivity and quality of care.

Radical changes to the way clinicians work will only happen if there are clear advantages to patient care and if clinicians see advantages both to their patients and themselves. This is not about remuneration but about quality of working lives. Just as the resources for such changes are likely to be those of time and drive rather than finances. We describe here the attitudes of a group of surgeons to the prospect of changing their work from that of the traditional NHS monolithic hierarchy to a chambers approach.

CASE STUDY

A group of 27 urological surgeons in London explored the possibilities of a new organisational arrangement early in 2002. Some useful insights emerged. Colleagues were asked to submit their existing job plans for both NHS and private work, and to file their ideal job plans. Sufficient information emerged to suggest that progress could be made towards developing working patterns to suit individual surgeons through working as a group. Some wanted more teaching while some wanted to get out of it altogether. Some wanted more complex cases while others wanted less. Special interests were reasonably spread and there were many points of agreement:

- Bigger groupings were desirable. The arrangement of nine groups of only three surgeons in each was generally thought a poor framework for organising the speciality.
- Substantial increases in quality of care and productivity would be delivered if the whole group worked together and if control of the basic resources (theatres, equipment, key staff) and agreed processes and systems (records, scheduling, appraisal, training) could be established.
- Although money will always be important, it was not the primary factor driving the decision to investigate the option of a chambers type of arrangement.
- The patient's access to and progress through the system of care could be streamlined and improved by agreeing changes in working practices.
- Avoiding the duplication of surgical services on several sites could produce significant gains in quality. However, it was also agreed that good quality urology services required an extensive network of other clinical disciplines and could not easily be performed in a stand alone diagnostic and treatment centre or small hospital.
- There was a widely shared desire to regain control of their professional lives. The need to juggle transport, home life, and work commitments, while battling with the system to get the job done, was clearly regarded as unsustainable.

Some obvious difficulties appeared early in the discussion:

- There was fear and anxiety about taking a line that might be deemed hostile either to the NHS as a whole or to particular hospitals.
- There were also anxieties around power within the group: would some colleagues become too powerful? Could it be better to be managed even by a manager rather than by one of your own?
- There was a reluctance to give up current clinical and management roles that encompassed responsibility for several specialities—the surgeons did not want to become "ghettoised" into single speciality working.
- The group regarded the training of junior surgeons as a high priority and concerns were raised that this could be adversely affected by forming a clinical autonomous group.
- Clinical information systems are too inefficient to allow easy movement of clinical care from place to place or to allow accurate tracking of the group's activity across several hospital organisations.
- Ways of dealing with pension arrangements were critical to establish an enterprise devolved from the NHS.

As a result of these discussions a smaller group of 12 urological surgeons from three trusts and four hospital sites have started working together with arrangements to cover each other's practices, agreed guidelines for referral, and developed internal subspecialist practices. The team is multidisciplinary and works across organisational boundaries and can thus be termed a clinical network. The clinical network or pre-chambers is now in a position to negotiate with primary care trusts and is already changing referral practice and surgical activity from site to site so as to optimise efficiency. Quality of care has been enhanced by the application of standard protocols and the centralisation of complex care for particular procedures to each site. The management of emergency care has been considerably enhanced because of the ability to provide a dedicated team of urologists on one site, which would have been impossible at each individual hospital. Generally the group is much more self reliant and feels more able to control its work, and thus feels more autonomous. Currently, this group has the support of the trusts that employ the surgeons even when at times the group's goals are not the same as those of the individual trusts. An example of this is when new staff are appointed. In this case, the network might like to have a loose job plan which could be portable across the institutions, but the individual trusts might worry about accountability and the best method for sharing the cost between the institutions. Further developments with a centralised referral system and initiatives to take on additional work are being planned. Interestingly, the group has expressed no wish to include their private practice work and for the moment this remains a NHS initiative. There is now a need to learn more about ways in which this group can develop a formal organisational structure that can fit into a wider family of NHS organisations.

DISCUSSION

A significant barrier to achievement of improved care in the NHS including those outlined in the NHS is the shortage of clinical staff. This is a possible stimulus for reform of the organisation of care so that clinical staff are organised in ways better able to meet the needs of today's patients. The NHS should harness this energy, and encourage such initiatives so that it can find new ways through which effective and functional teams can deliver health care. This is a unique opportunity to renegotiate the organisation and deployment of the most valuable resource: highly trained

Key messages

- Multidisciplinary team working provides many opportunities to improve the quality of health care.
- Clinical networks are developing across traditional NHS boundaries.
- The concept of chambers for NHS staff is much talked about but largely an untried idea.
- New organisational structures are emerging to challenge the traditional model of employment in the NHS and should be encouraged and evaluated.
- More research is needed on the outcomes of multidisciplinary team working, new ways of organising healthcare staff, and the effect of both on the quality of care.
- Investigate many different models for employing groups of staff which exist both in other industries and health systems, to determine which would be most suitable for the NHS, and which offer the greatest opportunity for better safer health care.

Perhaps the NHS should harness this energy, and encourage such initiatives. If we can find new ways through which effective and functional teams can deliver health care then this could be beneficial for patients and staff. We should not allow existing, possibly outdated, structures that may be nearing their use by date to dictate the way that we organise our work, if we can organise clinical professionals in a way that provides better care. With this in mind, we need to explore ways by which this apparent growing desire for ways of working and clinical autonomy can deliver real gains in quality of health care.

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Authors' affiliations

S Carter, Hammersmith Hospitals Trust and Imperial College School of Medicine, London, UK
P Garside, Judge Institute of Management, University of Cambridge, Cambridge, UK
A Black, Durrow, PO Box 22, Machlynlleth, Wales SY20 8WQ

health care professionals. It does not have to be chambers, but a new organisational model or models for the delivery of health care are needed to modernise the way in which we use teams and staff. The development of strong clinical teams—for example, for cancer care—is an important first step and has allowed much local experimentation. As clinical teams mature and more frequently work across boundaries some may want more autonomy. There is an inherent assumption that modernisation of systems and processes bring improvements in quality although it is necessary to test this hypothesis carefully. It is likely that effective and functioning teams do provide better care.[14]

In our view the way we currently organise clinical care does not suit the delivery of modern health care. For real improvements in the quality of care significant changes will need to be made to the way in which clinical resources are organised. There are many drivers for change; important changes have already happened, and our experience of one group of surgeons has found a new way of working that provides a better quality of working life. Of course, there are many obstacles—for example, related to remuneration—but change seems likely. It is crucial, however, that we do not make assumptions about the effects of such changes on the quality or safety of care but that new approaches to constructing working patterns and relationships are each evaluated rigorously as they are developed. In our view emerging organisational forms within the NHS should be encouraged, taken several steps further, and evaluated to see if they realise the potential to improve quality of care to patients.

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Reducing prescribing error: competence, control, and culture

N Barber, M Rawlins, B Dean Franklin

Medication errors are probably the most prevalent form of medical error, and prescribing errors are the most important source of medication errors. In this article we suggest interventions are needed at three levels to improve prescribing: (1) improve the training, and test the competence, of prescribers; (2) control the environment in which prescribers perform in order to standardise it, have greater controls on riskier drugs, and use technology to provide decision support; and (3) change organisational cultures, which do not support the belief that prescribing is a complex, technical, act, and that it is important to get it right. Solutions involve overt acknowledgement of this by senior clinicians and managers, and an open process of sharing and reviewing prescribing decisions.

M edication error is probably the most prevalent type of medical error in both primary and secondary care. In the United States it kills 7000 patients a year[1] and accounts for nearly 1 in 20 hospital admissions (a similar admission rate to that of cancer[2]). In the United Kingdom the incidence is probably similar to that of the United States.

Of all types of medication error, prescribing error is the most serious. Once an error has been made, unless detected, it will be systematically applied and can result in significant harm or death. In United Kingdom hospitals, prescribers make errors in 1.5% of prescriptions;[3] and in primary care errors occur in up to 11% of prescriptions.[4] Communication of prescribing information between the two sectors is also less than ideal: in one study, around half of the patients were failing to take the right medicine, correctly, a month after discharge.[5] Non-adherence, in part a consequence of poor prescribing, affects 30–50% of patients taking medications for chronic conditions.[6][7]

The importance of prescribing errors is magnified by the sheer frequency of prescribing. It is the most common form of treatment in the United Kingdom National Health Service (NHS), and in the community alone 637 000 000 prescriptions were written in the United Kingdom in 2000 and accounted for 12.3% of NHS costs.[8]

Despite this prescribing is a relatively neglected skill. There is no simple, or single, solution to its improvement; rather, a range of different measures is needed in order to make a significant breakthrough.

The most frequently used explanatory model of the causes of medical error has been taken from Reason's studies of the causes of disasters in high risk industries.[9] It can be described, with some simplification, as studying the disaster from three perspectives: the individual, their immediate surroundings, and the organisational culture. We have grouped our suggestions as to the sources of, and solutions to, prescribing error in three broadly comparable categories: the competence of the individual, the controls immediately around which an individual practices, and the culture of medicine as a whole.

INDIVIDUAL COMPETENCE

In the United Kingdom drugs are prescribed predominantly by doctors, although nurses and pharmacists are increasingly expected to assume prescribing responsibilities.

The poverty of teaching medical students about therapeutics in general, and prescribing in particular, is currently a major source of concern to both educators[10][11] and medical students themselves.[12][13] The deficiencies have also been highlighted in two major national surveys.[14][15]

Once doctors start their pre-registration training they usually learn prescribing by the accretion of shards of knowledge and then building up their own collage of skills and understanding. When interviewing doctors who had made serious prescribing errors (most of which were inappropriate choices of dose), some said that no one had taught them about doses.[16] They may be told which drug to prescribe by someone senior on their team, but then would look up the dose in the *British National Formulary* (a pocket guide on drugs provided nationally every six months[17]), or would use the hospital's formulary. They depended on the pharmacists (and sometimes nurses) to tell them if the dose was wrong.

Doctors should be competent to prescribe before they start doing so, and their competence should be demonstrable. Surely, anything else would be a nonsense in the public's view. Before young doctors start their pre-registration house officer training (soon to be their foundation two years) they should be taught about, and tested on, the selection, use, and doses of common drugs as well as the factors that affect doses (including renal failure, which, extraordinarily, seems to be a common oversight) and how to adjust for them. Students should demonstrate their competence by being given the drug charts and medical records for a series of patients and checking the prescribing for appropriateness (a technique commonly used in the education of

See end of article for authors' affiliations

Correspondence to: Professor N Barber, The School of Pharmacy, 29–39 Brunswick Square, London WC1N 1AX, UK; nick@nickbarber.org

pharmacists). Doctors should then be asked to prescribe new drugs for these patients. This test would be straightforward to administer and mark; and the teaching, examination, and certification need take no more than a week.

The education of nurses about prescribing is an area of contrasts. The introduction of a new curriculum in the late 1980s removed much of nurses' education about pharmacology and therapeutics. Although the cause of this was partly a shift in educational philosophy, it also sent an implicit message about the relative importance of medicines, which was reinforced on the wards. Twenty years ago two registered nurses administered medicines to patients. This was then changed to administration by a single registered nurse. Now, nurses of any grade give medicines to their patients. And nurses (particularly in the community) now have the right to prescribe a range of drugs, once they have completed further education. Furthermore, the growth of clinical nurse specialists has lead to some becoming very competent in prescribing within their particular clinical areas, such as diabetes and critical care.

Pharmacists have now extended their training to five years. Yet they have been legally unable to prescribe although they often intervene to prevent prescribing disasters and, increasingly, write discharge prescriptions for (less adequately trained) pre-registration house officers to sign!

Hospital pharmacists detect errors in around 1.5% of prescription items written.[3] Because a 550 bed hospital can generate around 10 000 prescription items a week, 150 prescribing errors will occur over the period. Regression modelling has shown that the experience of the pharmacists, and the time they spend on the ward, are two significant predictors of an increased detection rate (the type of ward being the only other predictor).[18] In order to detect and correct prescribing errors pharmacy departments need to be resourced so they have sufficient skilled staff, with adequate time to spend on clinical monitoring.

The way in which pharmacists feed back on the errors they detect could also be improved. At present, when prescribing errors are detected, the information is indicated, verbally, to the prescriber (usually a pre-registration house officer). This means the clinical team remains unaware of its performance as a whole, or of the competence of its staff. In future the information on prescribing errors should to be fed to the team in a structured manner and discussed openly. Pharmacists cannot continue to pass on important information, verbally, without any record of their advice. Pharmacists must record their interventions in the patient's notes. And all this should be done in a blame free manner.

Although legal barriers to prescribing by pharmacists have, in theory, now been removed, their training and responsibilities have yet to be agreed. If they are to take over more of a prescribing role in the future they will have to work in different ways, including delivering a service in hospitals at times outside the hours of 9 am to 6 pm on weekdays. In the community their clinical input is limited. This is largely due to their isolation from the main environment in which primary care is delivered, including patients' medical records and prescribers' decision making processes. In the future, pharmacists should be fully integrated into general practice and be able to provide prescribing and adherence support services from the practice premises. Pharmacists aspiring to provide these services should have their competency tested formally.

CONTROL

We use the term "control" in its widest sense, including the control of prescribers' actions by the design and use of technology (drugs being, of course, one of society's most advanced technologies). The technologies we will consider include the prescription chart, information transfer between primary and secondary care, and the use of computerised prescribing and clinical decision support.

One of the simplest steps would be the standardisation of NHS inpatient prescription charts. At present, each NHS hospital trust designs and uses its own individual (and idiosyncratic) prescribing system. As a consequence educators of trainee doctors, nurses, and pharmacists find it almost impossible to teach practical prescribing as a generic skill applicable throughout the NHS. Standardisation would reduce the errors caused by prescribers moving between sites and erroneously using a new chart because they are unfamiliar with it. It would also allow teaching to be more effective.

Standardisation should also extend to computerised prescribing screens. In the United Kingdom computerised prescribing is near ubiquitous in primary care; and although, at present, it is available throughout less than half a dozen hospitals, its universal adoption is inevitable and many sites are experimenting with it. The last time one of the authors visited our general practitioner the locum doctor did not understand how to use the prescribing system at the practice, and so wrote a prescription by hand. What will happen if a locum cannot use the computerised prescription in accident and emergency, or if a new doctor on an intensive care unit cannot prescribe dopamine on his/her first day? There is an unassailable argument that standardisation of screens and inputs would reduce errors as doctors move between hospitals.

The commonest prescribing error is to choose an incorrect dose, yet what do we do to help young prescribers to choose the right dose? We need intelligent systems that structure information around the prescribers' needs and provide real time, intelligent decision support. Such systems also need to be updated in real time so that changes to a medicine's summary of product characteristics (that is, the properties of the drug according to its license) are immediately incorporated. Integration with patients' full medical and drug histories and the results of laboratory tests will be essential. And there is even more potential in the future. Currently, many adverse drug reactions (particularly the idiosyncratic type B reactions) are not predictable or preventable; and their occurrence is considered to be bad luck. This will change. Once patients' pharmacogenetic profiles are known we may be able to further individualise drug treatment by selecting more appropriate therapy and almost guarantee efficacy and safety.

Computerised prescribing systems already have great potential. In one United States hospital they reduced serious medication errors by 86%,[19] yet that potential should not be taken for granted. In a review of medication errors suffered by elective surgical patients the most error prone part of the system was the computerised prescribing of discharge medication.[20] In the United Kingdom, where primary care has probably the most extensive computerised prescribing in the world, a recent study of the prevalence of preventable drug related admissions to hospitals, across eight countries, showed the United Kingdom figures to be similar to the median, yet computerisation is much less prevalent in the other countries.[21]

The control and transfer of information is another significant source of error. Much of prescribing involves copying the decision of another doctor, and if this is inaccurately communicated then prescribing errors ensue. This often happens at admission to, or discharge from, hospital; on transfer between general practices; and between doctors in a team. Recently the Hammersmith Hospital (and several others) has adopted a low technology solution to this. All patients on trial wards had a drug history taken by a

pharmacist, then they were supplied all their drugs ready labelled and with a sufficient supply to take home once they were discharged. On average the pharmacists found 0.6 extra drugs per patient than the admitting doctor had, and the "allergy" box was filled 93% of the time, compared with 50% in the control wards. On discharge, simply providing a copy of the discharge prescription for the patient's community pharmacist can significantly reduce serious errors in medicine taking following the discharge of patients.[22]

A different form of control is that of access to, and monitoring of, riskier drugs and perhaps too "riskier" patients (those with little tolerance to the effects of an error). At present most drugs are treated in a similar manner except for those scheduled under the Misuse of Drugs Act. Yet when studying harm from medication error the drugs with low therapeutic indices are those most commonly involved, including, for example, digoxin, warfarin, and antiepileptics. However, changes are beginning to happen and, in the United Kingdom, access to potassium chloride injections has recently been more closely regulated. Some hospitals are targeting drugs such as methotrexate.

A common argument against computerised prescribing and decision support is that controlling actions by removing choice leads to dangerous de-skilling. We do not accept this. Firstly, if the skills were there in the first place, prescribing error would not be as common as it is. Secondly, many skills in our general life have been lost without detriment to the benefits of mechanisation and automation. Pharmacists no longer roll pills, doctors rarely write a prescription that is a formula for the pharmacist to make up and, in driving our cars, we no longer have the ability to double declutch (a necessary technique before synchromesh gears and automatic gearboxes). Fourthly, the prospects of using pharmacogenetic information will make current approaches untenable: no human brain will be able to integrate a patient's lifetime medical and drug records, the results of current and past laboratory results, and a full genome scan, all in the space of a typical 7 minute consultation. Finally, having decisions made by computers does not necessarily mean loosing skills, it just means that the skills must be taught and learned in different (and better) ways.

CULTURE

There are several ways in which the organisational culture contributes to the prevalence of prescribing errors. Firstly, the small amount of teaching in undergraduate courses, and the absence of teaching of doses to house officers, all send a message that these issues are not particularly important. Surely, if choosing the right drug, "for the right patient, at the right dose" matters, then it would be taught? This point is linked to the next point, that of implicit knowledge.

When professionals talk to each other about a patient's medicines, often they only make the name of the medicine explicit, leaving vital information about the dose, form, and frequency implicit. On a consultant ward round it is not unusual to hear something like "Put them on digoxin". There is no mention of checking that the dose will suit the body weight and renal function, nor a debate about starting with a loading dose, nor a check that the patient is not on interacting drugs, nor a suggestion about if and when the plasma concentration might (or should) be measured. When patients are reviewed on ward rounds it is very rare to see a consultant look at the drug chart to review the overall prescription, whether the drugs have been administered correctly, and whether the chart is a mass of crossing outs and conflicting information.

Much of a doctor's prescribing is personal to them and not debated in the open. Hence, it is hard for any reflective learning to occur. Pharmacists' correction of prescriptions is

usually just discussed with the prescriber and the information does not come out into the team for them to discuss and learn from. Even in primary care general practitioners will rarely discuss details of their prescribing with colleagues.

Prescribing needs to be seen as an important act. To achieve this, senior staff, both medical and managerial, should overtly spend time on it. Prescribing mistakes need to be acknowledged, taken seriously, discussed openly, and action taken in a blame free culture. Pharmacists' collusion in the current low profile of prescribing mistakes, giving verbal feedback to the prescriber, or writing on sticky notes, must be stopped. Their interventions need to be written in the notes and form part of a team approach to improving quality.

There are also structural issues as to why prescribing error is so prevalent. In secondary care the power structure is created vertically by clinical area. Medicines, however, go across all clinical areas although they are not a major issue for many clinical directors. Medicines are everybody's and nobody's. Everybody uses them and has opinions about them, but there is rarely anybody with enough power or influence in either primary or secondary care to lead on them at a local level. The Audit Commission[15] has recently tried to increase the role of pharmacists in medicine management in hospitals but we have yet to see whether its recommendations are widely adopted. In primary care the new primary care trusts will generally have a pharmacist advisor and although their initial agenda will probably be cost containment, improvements in specific areas of prescribing, such as asthma, are equally important. We need a pharmacist to review, and potentially prescribe, drugs in each practice if we are to make a significant reduction in preventable drug related hospital admissions. To be effective this activity would have to tackle the issue of non-adherence.

If we are to reduce the prevalence of prescribing error to any extent then we are going to have to change the culture, so medicines become seen as important. To do so we are going to have to treat medicines in special ways—by controlling access and use, and by ensuring competence in the prescribers. It will take time and resource but our future patients will reap the benefits.

DISCUSSION

Prescribing will change. Medicines offer so much help, can deliver so much harm, and are the most expensive element in health care, after staff costs. What is more, society as a whole both craves medicines, yet also fears them. Medicines are too important for the status quo to continue—we will have to work differently.

The role of the doctor will change in a way that parallels changes in the theatre a century ago. The doctor will move from actor–manager to director (ideally, co-directing with the patient). The doctor, instead of deciding what should be done and delivering it her-/himself, will define the ethos and the ends of treatment, and use others to deliver them.

The diagnosis and the direction of treatment will be agreed between the doctor and patient, and then handed over to others, generally pharmacists, to choose the best drug and dose in collaboration with the patient, and to monitor and amend the drug and dose in response to its effects on the patient. The routine, technical/pharmacological tasks in prescribing will, in the way of all developing technologies, be taken over by specialists such as the pharmacist, and by improved technology. The doctor will still require skills for the solution of the more difficult problems in prescribing, particularly in hospitals, but not for routine prescribing.

Pharmacists and nurses who prescribe for patients will work more in therapeutic partnership with the patient—agreeing the end point of treatment and using their knowledge of medicines to deliver it. Prescribing for acute

Key messages

- Prescribing error is unacceptably frequent.
- Prescribers from all professions should be trained and proven competent.
- Technology should be used to guide the prescriber to the correct prescription for that patient.
- The importance of prescribing needs to be raised and champions of medicine use are needed.
- The role of the doctor will increasingly become to direct therapy delivered and monitored by others.

conditions will become more the work of nurses and community pharmacists.

Practices and hospitals will have a "director of prescribing", who will monitor and develop prescribing and prescribers. They will have the power to change staff and systems. Until such fundamental differences in structure and culture are achieved, the benefits of devolving prescribing will be limited.

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Authors' affiliations
N Barber, The School of Pharmacy, 29–39 Brunswick Square, London WC1N 1AX, UK
M Rawlins, Wolfson Unit of Clinical Pharmacology, University of Newcastle, Newcastle upon Tyne NE2 4HH, UK; National Institute for Clinical Excellence, MidCity Place, 71 High Holborn, London WC1V 6NA, UK
B Dean Franklin, Academic Pharmacy Unit, Hammersmith Hospitals NHS Trust and The School of Pharmacy, Hammersmith Hospital, London W12 0HS, UK

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"Doing prescribing": how might clinicians work differently for better, safer care

G Elwyn, A Edwards, N Britten

Prescribing medicines is a cornerstone of medical practice. There is, however, ample evidence that the prescribing process is far from ideal when viewed from the perspective of patients who wish to understand why they should take medicine, what potential harm they might face, and how they might integrate medicine taking into the pattern of their life, beliefs, and attitudes. Misalignment between clinicians and patients about medicine taking leads to a multitude of problems. Recently, a concept known as concordance has been suggested, where the prescribing interaction is seen as a process where both the patient and professional views and beliefs about medication, and the associated harms and benefits, are shared and negotiated. This interaction depends on a communication process that is becoming known as shared decision making between clinicians and patients. Although there is as yet little evidence that this approach leads to improved clinical outcomes, ethical principles and the core values of medical practice suggest that involving patients in the prescribing process will lead to better, safer care.

See end of article for authors' affiliations

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Correspondence to:
Professor G Elwyn,
Primary Care Group,
Swansea Clinical School,
University of Wales
Swansea, Grove Building,
Singleton Park, Swansea
SA2 8PP, UK; g.elwyn@
swansea.ac.uk
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A large amount of clinical work involves prescribing, yet we know that a significant amount of prescribed medicine is not taken, or incorrectly used. From the evidence available, we can safely presume that few patients adhere to prescription guidance.[1] It is also clear that medicine taking is influenced by patients' beliefs and attitudes.[2] This is particularly true for preventative (and thus largely asymtpomatic conditions), as opposed to curative treatments, and for drugs that have side effects or other drawbacks. As recognition for patient autonomy increases[3] we are slowly becoming more aware, and respectful, of intentional dissent, where patients decline certain medications on the basis of having been better informed. There has been an important shift in attitude in recent years towards the paradigm of concordance, a paradigm that offers significant opportunities for clinicians to work differently to achieve safer care. Concordance describes a situation where clinicians have identified patients' perspectives, the importance of therapy (if appropriate) has been explained, and an understanding of the consequences of both adherence and non-adherence leads to an agreement about how medication will be used, if at all. This article outlines what is known about

how best to achieve this agreement, and how to identify the subset of informed patients who do not value specific options and enable them to avoid them. We aim to summarise the evidence about how this task could be improved.

EVIDENCE BASE FOR THIS ARTICLE

Although there is a substantial body of work that has examined medicine taking, it is a complex area to research. There are few well conducted randomised controlled trials of interventions to help patients follow prescriptions of medications.[4] This article is based on a number of reviews in this field,[1 4 5] and a recent systematic review of concordance.[6] Readers should be aware that there have been terminology changes in this area, which have mirrored an increasing rejection of the implicit power gradient in the term to prescribe. The authority laden term compliance gave way to the view that patients adhered (or not) to medication plans. More recently, the term concordance has been used to describe an agreed plan between patient and clinician about the use of medicine,[7] one of the results of a shared decision making process.[8]

WHAT IS KNOWN ABOUT THE PRESCRIBING PROCESS

Although the concept of patient centredness has strongly influenced educational curricula, training in the skills of doctor–patient communication has largely concentrated on history taking and diagnosis. Until recently, less attention was being paid to decision making tasks, and it is clear from recent research that patients are rarely involved in these processes.[9 10]

Cox et al[6] found that doctors initiate discussions about medication but then dominate the interaction. They do not always use the name of the medicine they prescribe or offer descriptions of how new medicines differ in mechanism or purpose from those previously prescribed. They do not usually check patient understanding or explore concerns about medication, and when they encourage patients to ask questions, patients seldom do so.[6] There is some evidence that clinicians rarely discuss their patients' ability to follow a treatment plan, despite estimating that they do this in about half of their consultations.[6] In consultations, the benefits of therapy are discussed more often than harms, precautions, or risks, although patients view these latter topics as essential.[6] Even under formal examination conditions, with added value given to the task of sharing management options with patients, general practitioners fail to demonstrate these attributes on videotape.[11] In

summary, clinicians fail to explore the beliefs and hopes of patients about medications, and rarely inform patients about the pros and cons of treatment options. This leaves the territory ripe for misunderstanding, for unaddressed concerns, and for patients to be ambivalent about prescribed medications.[12] [13] It is certainly not a sound foundation for informed decisions supported by negotiated, well understood treatment regimes.

THE PATIENT PERSPECTIVE

The acquisition of a role as one who takes medicine can be a difficult transition. But it seems that many clinicians do not engage with patients' perspectives,[12] viewing the provision of a diagnosis as substantiation enough that medication is a good thing. There is no doubt that medication is essential to many; taking insulin, hypoglycemic therapy, and thyroxine is vital for millions. Patients rely on taking medicine to curb angina, restrain Parkinson's disease, control asthma, and control other inflammatory diseases in order to maintain reasonable lives. Even so, many patients with chronic illnesses have ambivalence about medication and experiment with titration and drug free intervals.[14] Given then that patients are circumspect about taking medicine, it is likely that this behaviour will be even more marked when the benefits are less clear, distant, and not of immediate effect. Examples of such situations include the control of blood pressure and the lowering of cholesterol levels. Gaining an understanding of the harms and benefits of using medication for these problems may not go hand in hand with public health interest in reducing population risk and commercial aspirations to obtain returns on investment. If the substantial and modifiable issues of personal risk (body mass, exercise levels, and smoking) were to be addressed first, then the numbers needed to treat for mild hypertension and the primary prevention of cardiac disease are not as persuasive as they might currently appear.[15]

What could be done

The prescribing interaction is imbued with powerful chemistry; emotional undercurrents that include hope, trust, belief, and confidence. These are the active ingredients (in part at least) of the placebo effect, so we would do well not to abandon the positive hope inducing elements of consultations. But the prescribing process has to change for concordance to be achieved. It is no longer tenable for doctors to prescribe without completing four tasks that seem to be largely neglected: eliciting and exploring patient views, and informing and involving them in the process. In essence, these are skills of sharing decisions (Box 1).

Patients' perspectives on using medicines differ from those of professionals, and as patients may be reticent about voicing their perspectives, these should be elicited early. For example, it is known that patients are inhibited from disclosing prior self treatments, including complementary therapies. Such disclosure is affected by patients' perceptions of the legitimacy of self treatment, which can only be circumvented if clinicians discuss this area directly.[17] Patients' expectations for prescriptions are influenced by their attitudes to medicines,[2] but patients' views may not be explored or revealed.[12] If a patient does not want to take a medicine for a particular problem, this needs to be acknowledged and the reasons discussed. Patients may have a range of concerns about medicines which may or may not correspond to adverse reactions or side effects acknowledged in pharmacological texts.

When is a patient informed

Does the process of identifying options and sharing information constitute the achievement of informedness? Critics would object, saying that the key outcome is not giving

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Box 1 The clinician's competences of shared decision making[16]

- Problem definition—clear specification of the problem that requires a decision from the perspective of both patient and clinician.
- Portray equipoise—that professionals may not have a clear preference about which treatment option is the best, in the context of the patient's priorities.
- Portray options—one or more treatment options and the option of no treatment if relevant.
- Provide information in preferred format—identify patients' preferences if it is to be useful to the decision making process.
- Check understanding—of the range of options and information provided about them.
- Explore ideas, concerns, and expectations about the clinical condition, possible treatment options, and outcomes.
- Checking role preference—that patients accept the process and identify their decision making role preference.
- Decision making—involving the patient to the extent they desire to be involved.
- Deferment if necessary—reviewing treatment needs and preferences after time for further consideration, including with friends or family members, if the patient requires.
- Review arrangements—a specified time period to review the decision.

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information, not even information exchange, but patient understanding, that is, do patients comprehend the pros and cons of the therapeutic decision? Researchers have posited that the relevant issues constituting a measure of comprehension (understanding) are the identity and characteristics of relevant health outcomes. Such characteristics include benefits, possible harms, their seriousness, their probabilities, as expressed in absolute and relative terms, and the factors that influence individual susceptibility and the difficulty of avoiding harmful consequences.[18] Some researchers have sought to identify informed decisions as evidenced by consistency between patients' knowledge, attitudes (to tests or treatments), and their decisions—a so called rational decision making model. However, it is patients, not decisions, whose informedness should be enhanced. This is achieved when decision making (a process not an outcome) is based on an accurate assessment of the information about the relevant decision alternatives and their consequences, an assessment of their likelihood and desirability in accord with the individual's priorities, and importantly a trade off between these factors,[19] see Box 2. If this is done, then it enables patients to make reasoned choices about both taking and not taking treatments.

ACHIEVING CONCORDANCE BY SHARING DECISIONS ABOUT THERAPY

Treatment options may be as simple as to take or not take a medication. When clinicians have addressed patients' concerns, patients understand the potential harms as well as the benefits of the medication, and, as important, the consequences of not taking the medication. The foundation is then laid for involving them in the decision itself. Research

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Box 2 The characteristics of informed decisions

An informed decision about treatments is one based on:

- an accurate assessment of the information about the relevant decision alternatives and their consequences,
- an assessment of their likelihood and desirability in accord with the individual's priorities,
- a trade off between these factors

Key messages

- There is extensive variation in the way patients take medicines, which puts patients at risk and leads to significant harm in many cases.
- Medicine taking is strongly influenced by patients' beliefs and attitudes.
- Concordance describes a process where patients and professionals exchange perspectives and beliefs, and achieve agreement about the need (or not) for therapy.
- This process requires that patients are involved in decision making processes.
- Ensuring that patients use medicine effectively may require additional supportive interventions.
- Engaging patients in prescribing decisions so that they understand the risks and benefits of taking and not taking medicine will lead to better, safer care.

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into the roles patients wish to take in healthcare decisions is in its infancy. As it develops, it will assess how these roles develop, in both the sense of increasing personal confidence and as patients become expert at managing their condition during their disease career. Significant advances are being made in the study of actual consultations using discourse and conversation analysis.[20] Such analysis shows that mutuality by patients and doctors is an achievement of both parties and requires the active participation of patients.[21] There is no doubt, however, that the roles patients do play and those they wish to play are not fixed. They sometimes wish to take on more responsibility than at other times—a reflection of genuine autonomy, but one that is also rooted in a context of an individual's social network or circumstances, and not operating in isolation.[22] Clinicians need to be aware of changing views about the part medication plays in the undulating patterns of illness and personal perspectives on life. Concordance in other words is a dynamic concept that will require exploration on a repeated basis.

Ascertaining whether patients wish to take part in the decision making process is a critical step. While this may be necessary at various specific decision points (for example, for tests or referrals), taking medication is the ultimate expression of personal decision making and agency. It is something we do to ourselves, so taking medicine regularly is a decision repeated, often indefinitely. An understanding of patients' perspectives is relevant for prescribing even when patients do not want to take part in decision making. Unless clinicians take time to establish patients' underlying conceptions, the chances of supplying prescriptions laden with ambivalences, misunderstandings, and ultimately low motivation for maintaining the regime are rife. Achieving at prescribing interactions where patients are well informed, and satisfied with decisions (whether it is to accept or decline intervention) is, conceptually and pragmatically, a better outcome. Detailed research on this area is required.

RECENT DEVELOPMENTS

As the recent history of guideline implementation informs us, exhortations have little impact, however prestigious their provenance. There is some evidence that practitioners can improve their communication about medicines and become more skilled at involving patients in decisions and that patient knowledge can be improved.[6] But these tasks take time. It is not proven that these attributes can be sustained in the pressure of clinical settings.[6] Multiple interventions, which include the use of patient groups to inform, educate, and self manage, holds promise.[23] Using administrative staff to monitor medication use[24] and building fail safe repeat prescribing reviews (of under and overuse) are areas that need to be examined in more depth. In the United Kingdom, the Medicines Partnership Task Force is supporting concordance facilitators who can lead local initiatives[25]; an educational resource that helps prescribers to monitor their prescribing has been developed.[26]

POSSIBLE DIRECTIONS

Health care has to come to terms with the issue of agency, that people behave autonomously. But as Ahearne points out "we fail to recognize that the ways in which we conceive of agency have implications for the understanding of personhood, causality, action and intention".[27] This is critical in prescribing decisions and behaviours. Doctors who start from the position of recognising, respecting, and enhancing the agency of patients, will, as well as legitimise their own agency as experts, practice differently so as to produce more autonomous patients. To what extent the enhancement of patient agency depends on attitudinal shifts among healthcare professionals, or on the development of widespread patient decision support technologies, is not yet known. Probably both require interventions and innovations to achieve and enhance greater patient engagement in the process of deciding about medicines. This does not need to follow to adherence to treatments—rather, concordant decisions to take or not take treatments must be seen as more desirable. Concordance represents a process by which decisions are made, not necessarily linked to a behavioural outcome. If we achieve such levels of informedness we will have gone a considerable way to involving patients effectively in treatment decisions. Engaging patients in the process in this way is likely to achieve better results for the clinician–patient relationship and lead to better, safer care for patients.

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Authors' affiliations
G Elwyn, A Edwards, Primary Care Group, Swansea Clinical School, University of Wales Swansea, Grove Building, Singleton Park, Swansea SA2 8PP, UK
N Britten, Institute of Clinical Education, The Peninsula Medical School, St Luke's Campus, Heavitree Road, Exeter EX1 2LU, UK

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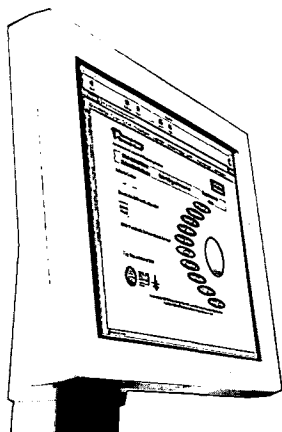27 **Ahearn LM**. Language and Agency. *Annual Review of Anthropology* 2001;**30**:109–37.

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