



Breaking the mould in patient safety

To achieve real improvements in patient safety we need to look at the whole of patients' care not just specific procedures, argue **Laurent Degos and colleagues**

Patient safety currently revolves around hospital inpatients and has two approaches: adoption of well structured, standardised, evidence based treatment and a safe culture system (reporting, cooperation, etc) with checks and safeguards to reduce the occurrence of medical errors and adverse events. The aim is to avoid and prevent adverse events or injury through health care and to improve overall care.¹ However, despite these interventions, almost 10% of hospital patients experience an adverse event and about 40% of events are preventable.^{2,3}

These high rates would doubtless be higher if out of hospital risks were included. We believe that the best way to reduce in-hospital risks is to start by reducing out of hospital risks that result in hospital admission. We argue that the current scope of patient safety is too restricted and should be extended to cover all obstacles to timely access to appropriate care.

Impact of hospital interventions

Current safety interventions are evaluated using patient safety indicators that have been selected for their feasibility of use and potential efficacy.⁴ Most indicators measure the frequency of adverse events such as surgical site infections, wrong blood type, drug related adverse events, patient falls, and post-operative pulmonary embolism. Other indicators address the causes of errors and assess processes such as the quality of medical records, prescriptions, and handover processes. These indicators are used in accreditation programmes and large scale campaigns inviting healthcare organisations to take part in quality improvement and benchmarking activities.⁵

Improvements have been reported in health professionals' acknowledgment of the importance of quality and safety, their use of adverse event reporting systems and electronic charts, and the handling of dangerous

materials and drugs such as anticoagulants, antibiotics, and anticancer drugs. The greatest improvements have been observed within the framework of dedicated campaigns. But despite all the enthusiasm and effort, clinical results have been disappointing. Although the use of a variety of indicators has resulted in more attention to procedural checks (such as prevention of wrong site, wrong patient, wrong procedure events), there is little evidence for a significant reduction in the numbers of adverse events.⁶⁻⁸ Compliance with even well accepted safety recommendations remains low. Only 55% of surgical patients receive antimicrobial prophylaxis and only 58% of those at risk of venous thromboembolism receive the recommended preventive treatment.^{9,10}

There are at least three reasons for this poor performance: low adherence, narrow scope of interventions, and a limited evidence base.

Adoption of safety programmes

The adherence of healthcare providers to quality and safety programmes remains low as these programmes do not live up to their idea of patient safety. Physicians attach more importance to use of new technology and treatments than to regulations aimed at processes of care. For example, anaesthesia related mortality has decreased about 10-fold over the past 20 years.¹¹ The consensus is that the greatest safety gains have arisen from the introduction of new drugs and techniques in the 80s and 90s (for example, propofol, regional and ambulatory anaesthesia techniques) and from the adoption of new care procedures (preoperative visits, postoperative surveillance). Better compliance with safeguards and rules accounts for only a fraction of these gains, and may even have had negative effects.¹² Similarly, survival after liver transplantation has improved from about 10% at one year in the 1960s to over 70% at five years today. The introduction of ciclosporin in the early 80s increased the one year graft survival from 10% to 55%.¹³ Adoption of a host of safety measures could not have improved medical outcomes as much as ciclosporin.

Scope of interventions

Current safety interventions are too narrowly focused to have a visible impact on national outcomes. Interventions are aimed at acute risks and prevention of rare, severe, or highly publicised errors in the short term (a perfect example is prevention of wrong patient error), even though there are many other sources of chronic, repeated risks outside the hospital, before and after discharge, that are much more common and affect long term outcomes. Individual safety often takes precedence over a strategic vision.

Hospital care, although important, represents only a fraction of a patient's use of healthcare services. Studies have shown that about 19% of patients have an adverse event within a month of hospital discharge and that 25% experience a drug related adverse event within four weeks of receiving a primary care prescription.^{14 15} A systematic review and meta-analysis published in 2002 found that a median of 7.1% of hospital admissions were for drug related problems arising outside hospital, 59% of which were preventable.¹⁶ In the 2005 French national study of adverse events, 3.5% and 4.5% of admissions to general medicine and surgical departments, respectively, were due to an event occurring outside of hospital.¹⁷ Attempts to promote event audit (such as the quality and outcomes framework in the

United Kingdom) and to reduce the occurrence of drug related events in primary care are ongoing, but they are fewer and smaller than hospital initiatives.^{18 19}

Evidence base

It is uncertain whether the safety interventions deployed are scientifically sound. Few of the studies of organisational or national safety interventions have used prospective study designs or hypothesis testing.²⁰ Measurement and assessment have not been high enough up the agenda.⁸ In addition, interventions and recommendations tailored for hospital care may not be appropriate for ambulatory and primary care.

Need for a broader approach to patient safety

Easy access to care is a sign of a quality service. Most debates on access have been dominated by political issues tackling health inequalities.¹⁸ However, effective access is much broader than this and should include other areas that affect patient safety such as any gaps occurring in a patient's care. This may include access to out of hospital carers, appropriate referral by general practitioners to specialists, timely and efficient admission to the right hospital department, effective reconciliation of drugs, and continuity of care after discharge from hospital. Access should ideally be patient centred and include availability, appropriateness, preference, and timeliness. One or more of these characteristics is often missing in patients' healthcare experiences.²¹

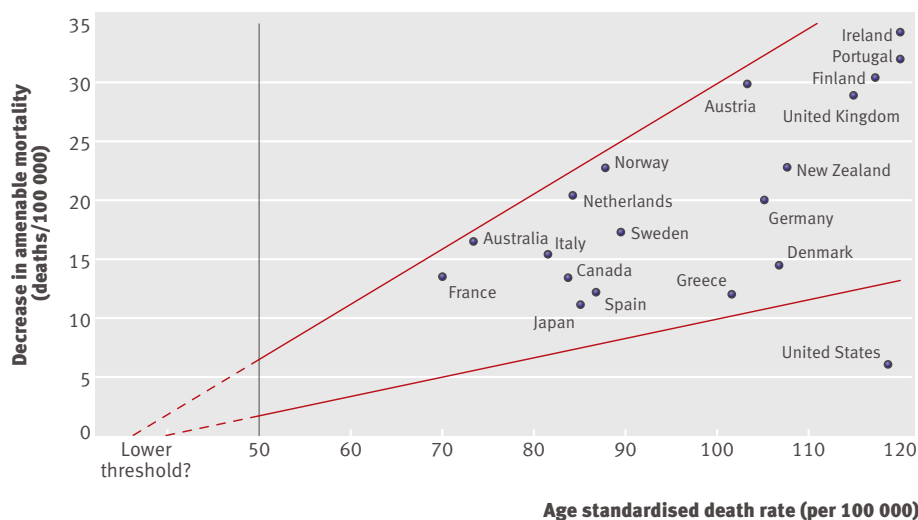
Safety may be defined as increasing the patient's chance of receiving appropriate care that is in line with evidence based medicine.

Any obstacle to such access is considered as a loss of chance and a potential failure of the healthcare system.

Measuring safety related errors in access to care

Measuring errors due to absence of adequate care is not easy. Two sets of indicators can give some idea of the risk associated with inappropriate access to care: a set of global indicators for mostly chronic conditions and a set of patient safety indicators for mainly acute conditions.

The first set includes amenable mortality, which is widely used in Europe, and hospital discharges for avoidable hospital conditions, which is used in the United States and is considered to be a valid measure of access to timely and effective primary care.²² An effective primary care system minimises mortality from preventable conditions and can reduce hospital admissions for disease flare ups—for example, in congestive heart failure, pneumonia, diabetes, and asthma. Amenable mortality is a summary measure that captures the consequences of poor access to clinical prevention, primary care, and specialty services.²³ For 2002-3 in 19 OECD countries, it accounted for an average of 23% of total mortality in males under 75 years of age (15-27%) and 32% in females (25-36%). The figure shows the relative improvement in amenable mortality between 1997-8 and 2002-3. As expected, the improvement was much bigger for countries with poor results in 1997-8. The figure also suggests that there is probably a lower threshold beyond which the death rate cannot improve.



Improvement in amenable mortality for males aged 0-74 years in OECD countries between 1997-8 and 2002-3 (based on results published by Nolte and McKee²³). The lines indicate the borders of the disparity of results between countries. These can be projected (dotted lines) to suggest a threshold below which the amenable mortality could not be further reduced

The second set of indicators concerns timely and effective access to hospital for mainly acute diseases. The following three examples show the link between access and patient safety.

Acute myocardial infarction—One year mortality decreases with early revascularisation of coronary arteries compared with out of hospital thrombolysis and in-hospital thrombolysis or angioplasty.²⁴ However, benefits are dependent on a care pathway offering direct access to the hospital cardiologist and bypassing the general practitioner or emergency department saves time and lives and reduces long term effects.²⁵

Stroke—For stroke victims to benefit from early thrombolysis requires rapid, synchronised, action, maybe with advice obtained by video conference. Transferring the patient to a specialised unit may seem the safest option but can result in loss of precious time.^{26 27}

Hip replacement—Patients require appropriate care after discharge from hospital. In Sweden, an integrated care pathway offering rapid preoperative attention, continuity, and an accelerated training programme tailored to the patient's needs significantly reduced inpatient complications and 30 day readmission rates.²⁸

Causes of shortcomings in integrated care, referrals, and access

In countries without universal health-care systems, poor access to care is often considered to be a problem confined to people without health insurance. Financial obstacles can aggravate diseases and the risk of adverse events. Many studies have shown that poorly insured people face a double risk. They have less access to care and, when they do gain access, their disease and disability are more severe.^{29 30}

However, most adverse events relating to poorly integrated care, inappropriate referral, and poor access are due not to financial but to organisational issues such as lack of timely access to the right healthcare practitioner and intervention. In-hospital and out of hospital risks tend to potentiate each other, especially in chronic diseases. For example, patients with chronic kidney disease are at a significantly higher risk of adverse events from inpatient care.³¹ The number of hospital admissions increases when waiting times are long and the hospital is far away and does not offer the specialists and imaging techniques required.

Such avoidable hospital stays are often associated with adverse events and are on the increase.³²

Implications of broader definition of patient safety

The above broader view of patient safety that includes access to care has at least two advantages. It enables the cumulative measurement of the global negative outcomes over a given period of a patient's life such

as short and long term complications rates, short term (30 or 60 days) post-discharge mortality, amenable mortality, avoidable hospital admission, and health expectancy. Health-

care providers should find such global measurements more meaningful and useful and thus be more likely to engage with them. The broader view also offers an opportunity to go beyond the person approach and address the system approach fully, thus breaking the mould of the usual medical silos and tackling interfaces and flows rather than dedicated protocols.

This broader view of patient safety, however, also has theoretical and methodological implications. The concept of ineffective access is closely associated with failures in the integrated care pathway. Negative outcomes often result from accrued poor performance over time, with some acceleration here and there during acute episodes. Many failures are due to poor strategies and errors of omission (not taking a decision) rather than errors of commission (performing a specific care procedure incorrectly). The measurement and analysis of global negative outcomes thus requires a technique that does not seek a causal factor in the last protocol applied but considers adverse events throughout the patient's care.

We suggest defining a new category of adverse events—integrated adverse events. These are not necessarily related to a single event but to repeatedly making poor strategic choices and to poor organisation of care, thus causing delays in appropriate care. For example, in one US study, clinicians reported missing clinical information in 13.6% of visits, including laboratory results (6.1% of all visits), letters (5.4%), radiology results (3.8%), history and physical examination (3.7%), and medications (3.2%). The missing information was considered to be at least “somewhat likely” to affect patients adversely (44%) and to result potentially in delayed care or need for additional services (59.5%).³³ Another US study based on

insurance claims concluded that diagnostic errors that harm patients were typically the result of multiple breakdowns involving individual and system factors.³⁴ The most common breakdowns in the diagnostic process were failure to order an appropriate diagnostic test (55%) and failure to create a proper follow-up plan for transition of care (45%).

Conclusions

Most current safety interventions are an ethical, emotional, and insurance driven response to specific incidents in hospitals. We need to move from this reactive approach to a more proactive and integrated approach. It is well known in the field of complex system control that professionals losing control of a situation tend to tackle just that part of the overall problem where no error is possible. The rest of the problem and its final outcome are left to so called “collective” action.³⁵ Such an attitude threatens patient safety. Creating champions with an outstanding safety record in their narrow technical field may actually hide a gradual deterioration in the system as a whole. A growing number of patients will have difficulty in accessing these top professionals.

We recommend eliminating the divide between hospital safety interventions and out of hospital care strategies. A broader view of patient safety will mean that adverse events no longer relate only to episodic errors and failures in procedures at specific times but also to cumulative failures throughout a patient's journey within the health system. The emphasis moves from process errors and single outcomes with relatively little influence on long term prognosis, to the accumulation of poor referrals and poor access that have a big effect on overall outcome.³⁶ Patient safety interventions should no longer be assessed just by counting adverse events but by measuring the effect of opportunity losses on patient outcomes, notably in terms of avoidable hospital admissions and amenable mortality.

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We thank Tiitu Ojasoo for her helpful comments, suggestions, and editing and Victor Rodwin and Philippe Michel for support and encouragement.

Contributors and sources: LD has been strongly influential at scientific and political levels in pioneering an integrated approach to patient management in France. RA has long experience in research and development applied to the safety of complex systems in health care and in industry. LD and RA wrote the article, which was critically read by JB, JC, and CB. CB also contributed to the strategic orientation of the article. LD is guarantor.

Competing interests: None declared.

Provenance and peer review: Commissioned; externally peer reviewed.

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Cite this as: *BMJ* 2009;338:b2585.

ANSWERS TO ENDGAMES, p 113. For long answers use advanced search at bmj.com and enter question details

CASE REPORT

A maths student with psychiatric symptoms

- 1 The patient has obsessive compulsive disorder.
- 2 The prevalence of obsessive compulsive disorder in the UK is between 1% and 3%.
- 3 Selective serotonin reuptake inhibitors or clomipramine are the best types of medication to treat this disorder.
- 4 The National Institute for Health and Clinical Excellence recommends cognitive behavioural therapy, including exposure and response prevention, for patients with obsessive compulsive disorder.

STATISTICAL QUESTION

Choosing a statistic

- a) i: Student's *t* test
- b) g: Cox regression
- c) h: Correlation coefficient (*r*)
- d) f: Fisher's test of exact probability

PICTURE QUIZ

A 2 year old with fever and cough

- 1 The chest radiograph shows near complete opacification of the right hemithorax, with preservation of lung volumes and absence of air bronchograms. These signs are in keeping with a large right pleural effusion with no mediastinal shift. The patient had no significant secondary scoliosis.
- 2 Ultrasound scan of the chest, blood culture, and a full blood count should all be performed. In addition, electrolytes, serum albumin, and C reactive protein concentrations should be measured.
- 3 This patient has a parapneumonic effusion/empyema (thick fluid with loculations/overt pus).
- 4 *Streptococcus pneumoniae* is the most common isolated cause for a parapneumonic effusion in developed countries.
- 5 The specific treatment a child currently receives is dependent on unit expertise and local practice. Approaches include:
 - Chest drain with or without fibrinolytics—the preferred initial approach for most paediatric centres in the United Kingdom
 - Mini-thoracotomy—preferred by only a few centres in the United Kingdom
 - Video assisted thoracoscopic surgery with drain insertion—available in a few centres in the United Kingdom
 - Open decortication—used as a late stage operation in most paediatric centres in the United Kingdom
 - Thoracocentesis—not recommended in children.