

DYING BY IRRECONCILABLE NUMBERS

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As each month goes by, some new group or person, wishing to make political capital, is trumpeting the findings published more than 2 years ago by the Institute of Medicine that possibly 90 000 people a year are dying in our hospitals from error.¹ At the same time, we are being regaled with the dire consequences of there being fewer and fewer nurses to care for patients. More patients die when the number of patients being cared for by 1 nurse increases.^{2,3}

Financial Numbers

The medical structure we have in the United States has broken down, or is at least in the process of breaking down. Bankruptcy has become the fate of some of our medical institutions, and others cannot make ends meet. More than 15% of the population is without medical coverage, and the number is increasing. In 2001, about 1.5 million people lost their medical coverage because of layoffs and discontinuation of benefits.⁴ The costs of healthcare insurance are on a steep rise. Employers offering plans are passing more of the burden onto employees. Privately offered healthcare plans seem to be set up to attract a healthy population, avoid high-cost patients, and deny services and innovative therapies to maximize profits, yet insurance companies are leaving the business.

Healthcare costs are expected to rise to 16% of the gross national product at a time when a bellicose national leadership wants to pursue “just” wars and drain the national reserves into an even deeper deficit. Our per capita expenditure on health far outstrips the rest of the world. Why, when there is so much money being poured into the system, is healthcare delivery getting into such a mess? It is hard to get exact figures, but only 50 cents of every healthcare insurance dollar actually goes to the direct benefit of our patients.⁴ Ten cents is taken off the top by the insurers. About 25 cents goes to

company administration, marketing, and profits. (A notable exception is Medicare, which is sustained on a 3% overhead.) Another 15 cents is disbursed to brokers, lawyers, billing systems, and a host of mandated and regulatory functions. The administrative costs of hospitals have become as much as 25% of a hospital budget. Much of this money is spent on showing compliance with regulations that demand unfunded reviews of resource utilization, quality improvement, and credentialing. In addition, senior administrators have come to expect the salaries and perquisites on a level with the captains of industry. The arrival of expensive, new life-saving technologies has increased the need to stretch the funding further. There has been an expansion of organ transplantation, the use of artificial organs, and costly drugs that have shown promise in the treatment of sepsis, hepatitis, AIDS, and cancer.

A “malpractice crisis” has reemerged in some states, as doctors and even some hospitals no longer feel they can afford to provide emergent care because of increasing premiums for liability insurance. The emergency rooms are the repositories of medical care for the growing number of uninsured. This population tends to wait until their conditions are in a more advanced state, and therefore more expensive to treat, before seeking help. Most states correctly mandate emergent care, but collecting reimbursement for it is often difficult and, for some patients, impossible.

It is small wonder, that with half the available money being diverted from patient care, there is such poor value and underfunding of services. The foremost crisis in US healthcare is that there is no real system. The loosely agglomerated arrangements of a multitude of insurers, each with their own rules, schedules of services, red tape, and reimbursement applications are certainly not a system. Angell⁴ has suggested that if all the money paid for healthcare went into a low-overhead single payer system, there would be more than enough to provide for a national health service without the long waiting lists for elective procedures seen in other nations with less well funded services.

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Having more registered nurses at the bedside would seem to be the obvious method of reducing the avoidable mortality and decreasing the morbidity of in-hospital patients. Nursing surrogates, eg, practical nurses and aides, do not seem to make an impact on outcome.² High patient-to-nurse ratios as well as nurses with increased job dissatisfaction and burnout are associated with higher patient mortality.³ An additional burden is compulsory overtime, which has to be used more often because nursing positions remain unfilled.

Nursing salaries have not kept pace with those of other careers for similarly educated people, and opportunities for serious advancement at the bedside are slim. It is difficult to attract people to the nursing profession because of the negative press it is receiving. There is a desperate need to make nursing more appealing. Nationally, almost 1 of every 8 nursing positions is unfilled. Until the shortage is over, nurses at the bedside will continue to be overloaded, to burn out, and to want to retire early. Patient-to-nurse ratios may be mandated or built into contracts by negotiation, but this will not negate the need for patient care. Currently, it is not possible to reconcile the amount of nursing care needed with mandated ratios and the numbers of available registered nurses.

Evidence-Based Numbers

The current arbiter of what constitutes the highest level of evidence in medicine is exemplified in the double-blind, randomized, controlled trial (RCT). This is a difficult model to apply to many clinical situations (which probably accounts for the difficulty in finding high-quality evidence) and may not be the best to apply to safety issues.

We are grateful for the insightful views of the English intensivist, Mervyn Singer.⁵ In a section titled, "Lies, damn lies and meta-analysis," he warns that misleading conclusions can easily be drawn from lumping together data from underpowered investigations. As examples of this, he cites the unsettling meta-analysis that warns against the use of albumin during resuscitation⁶ as well as another study showing the superiority of sucralfate to an H2-blocker in reducing ventilator-associated pneumonia.⁷ Both studies led to at least regional changes in practice. The use of albumin was found to be no better or worse than crystalloids in a subsequent meta-analysis,⁸ and a prophylactic H2-blocker turned out to be superior to sucralfate for patients receiving mechanical ventilation in a national RCT.⁹

Consensus groups may be even worse. Despite an overwhelming lack of evidence for improved outcome with the use of pulmonary arterial catheters, and some evidence that they might be harmful, a Consensus

Statement¹⁰ was endorsed by the Society of Critical Care Medicine, the American Thoracic Society, and the European Society for Intensive Care Medicine that recommended their continued use!¹¹

Whether or not you agree with the extrapolation of the data published in *To Err Is Human: Building a Safer Healthcare System*,¹ it is a testament to an alarming situation. There are too many poor outcomes occurring to in-hospital patients due to probably avoidable error. Shortly after publication, an interagency federal government group listed more than 100 action items to be undertaken by federal agencies. The Agency for Healthcare Research and Quality undertook "the development and dissemination of evidence-based, best safety practices to provider organizations."^{12,13} Under this agency's Quality Evidence-Based Practice Program, the University of California at San Francisco - Stanford University Evidence-Based Practice Center was commissioned 2 years ago to review the scientific literature regarding safety improvement. The result was *Making Healthcare Safer: A Critical Analysis of Patient Safety Practices*,^{12,13} an impressive and comprehensive review of our practices. The Evidence-Based Practice Center defined a patient safety practice as "a type of process or structure whose application reduces the probability of adverse events resulting from exposure to the healthcare system across a range of diseases and procedures."

The editors of *Making Healthcare Safer* have pointed out from the start that the RCT may not be the best method of examining safe practices because it is impossible to double-blind nurse staffing levels or computerized physician order entry. The current outcome studies do not account for "near misses," which are taken very seriously in accident prevention in aviation. Many practices are "multidimensional," ie, they have many parts, and sorting out what parts work is "challenging." Some bad occurrences are too infrequent to bear meaningful statistical analysis. It is often difficult to establish with sound epidemiological criteria the cause of a bad outcome and the possibility that fatigue is overrepresented as a source of error.

The editors also came up with 11 "clear opportunities for safety improvement," most of which bear great relevance to critical care practice. The use of prophylactic measures to prevent venous thromboembolism and β -blocking agents to patients at risk during the perioperative period and in the ICU have become well established. The use of maximum sterile barriers during insertion of central venous catheters, and the use of antibiotic-impregnated catheters to prevent catheter-related infections are not well-established practices. The use of ultrasound guidance for central venous catheter insertion is backed by 10 studies with level 1

study design.^{14,15} The acceptance of this as a universal standard of care may be more difficult, as all of the studies were conducted in training institutions where catheter insertion is often done by medical trainees; therefore, the study did not address the outcomes of experienced practitioners. It has long been established that experience (eg, more than 50 catheters) can be related to minimal complication.¹⁶ This point will doubtless be argued by those who do not wish to spend approximately \$10 000 for an ultrasound apparatus.

Other clear ICU opportunities are seen in the continuous aspiration of subglottic secretions to prevent ventilator-associated pneumonia, the expeditious administration of enteral nutrition, and the use of pressure-relieving bedding materials.

Other practices highly rated for further research include glucose control and supplemental perioperative oxygen to prevent perioperative infections, regionalization of specific “surgeries” to high-volume centers, nurse staffing, computerized physician order entry, the use of antibiotics and limitation of antibiotic therapy, hand washing, and continued investigation of some of the clear opportunities for safety improvement already established.

Conclusion

We are losing patients who would survive in a safer healthcare system. There is enough finance allocated in the United States to fund universal first-class healthcare, but when it became a commodity, middlemen managed to siphon off nearly half the money and maintain an inefficient, factitious nonsystem devoted to a bottom-line profit rather than patient care. Lower patient-to-nurse ratios have been shown to reduce patient mortality, which is hardly surprising. Round-the-clock surveillance at the bedside by a trained individual who can spot and react to early deleterious changes in a patient’s status provides the best possible safeguard. Unfortunately, mandating fixed patient-to-nurse ratios will not instantaneously produce more nurses. A major priority of our society must be to make nursing more attractive, or soon there will be a complete breakdown in the care of the sick.

There are established practices that will increase patient safety, as sanctioned by quality evidence. A climate of safety awareness is probably the best approach to improving patients’ outcomes, as the traditional method of using the RCT is often not applicable. In the field of accident prevention, the RCT is not used at all.

The way out of our problems is not to shore up a broken system, but to build a new one.

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From the Editors:

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