To Err is Human – But to Err Repeatedly is....????

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The U.S. Institute of Medicine report [1], a decade ago, on the frequency of preventable deaths in the American health care system sent shock waves throughout society. Many experts in the field believe that the scandalous figures represent an underestimate of the magnitude of the problem. In Israel, Donchin [2] courageously examined prospectively the frequency of potentially fatal errors in his own intensive care unit, finding an average of 1.7 errors per patient daily. A recent survey of intensive care units in 27 countries reported 74.5 errors in parenteral drug administration per 100 patient-days [3], and this was criticized [4] as representing significant under-reporting.

The growing complexity of medical care, the multiplicity of procedures and medications, the shortening of hospital stays and of time per ambulatory patient visit, the large number of individuals interacting in the care of the patient, and the increasing economic pressures have contributed to the increase in the frequency of dangerous errors in daily patient care. All indications are that the present trends will worsen unless major changes are introduced to stem the tide of medical error.

The public too has become much more aware of the problem and is no longer willing to tolerate the unconscionable toll of human life and suffering, much of which is preventable. Government agencies and insurance companies have begun to consider non-reimbursement for hospital stays caused by what they consider preventable illnesses or complications [5].

In spite of the decade that has passed since the publication of the Institute of Medicine report there is the general feeling that too little has changed from the point of view of reducing the number of preventable deaths [6].

The natural, and virtually instinctive, reaction of many administrators, legislators and the media is to identify the individual who was "responsible" for an error and punish him/her in one way or another. Disciplinary actions and malpractice suits are examples of this approach. Unfortunately, there is little evidence that such steps have any significant impact on the overall incidence of medical errors. The title of the Institute of Medicine report clearly reflects its position that the focus should not be on the erring individual, who is usually a competent and careful individual, but rather on the second half of the title – "building a safer health system."

Another appealing and relatively simple reaction to an error is the creation of an administrative guideline intended to remedy the perceived problem. Physicians faced with a growing array of guidelines and instructions, and already drowning in a flood of paperwork, only occasionally change their daily habits as a result of a new administrative edict. A recent journal article [7], accompanied by a photograph of the pile of guidelines received by a British physician over a short time period, appropriately labeled the collection "Tower of Babel."

It has become clear that creating that safer health system is a complicated multidisciplinary task that requires a radical cultural change. A consortium of leaders in the patient safety field [8] described the first "quantum leap" in the developing "safety culture" as the limitation of blame. Systems thinking, transparency, accountability and teamwork are among the other changes that are required.

The anesthesia field has set an example of dramatic improvement in patient safety over several decades [9] by systematic examination of their procedures and system-wide changes that made previously common fatal errors almost impossible. Two such examples are the ensuring uniformity of the direction of knob rotation in all anesthesia machines when regulating the concentration of anesthetic gases. Another major change was that of changing the connections from the anesthesia machine to the various gas lines so that it became impossible to connect the oxygen line to the anesthetic gas line. These and other similar changes would seem so obvious, but many years passed before they were put into effect. It took considerable media publicity and a major culture change in the field for these changes to be introduced.

In another area of endeavor the removal of ampules of potassium chloride from resuscitation carts next to ampules of sodium chloride has saved many lives.

There are certain errors that have been labeled "never events," those that should *never* happen. These include wrong site, wrong procedure, and wrong patient operations [10]. Similarly, giving the wrong type of blood is an example of a "never" event. Introduction of detailed procedures to be followed without exception using checklists can virtually eliminate such errors, in a manner similar to the kind of checklists used with great success both in the commercial aviation industry and in combat aviation. A

recent letter to a medical journal [11] by a physician, a former fighter pilot, described the procedure followed by a fighter pilot of *invariably* ticking off the checklist taped to his thigh before takeoff and pointing out perceptively that the pilot, unlike the physician, knows that his own life depends on faithful compliance with the checklist.

The introduction of checklists in 108 intensive care units in the state of Michigan has resulted in the most dramatic reduction in catheter-related bloodstream infections, one of the major cause of deaths in intensive care units [12] and now shown to be properly classified as an almost "never" event.

Physicians have, in the past, not readily adopted such steps as checklists, viewing them as somehow infringing on their professional autonomy [13], but the data are compelling and convincing that all human beings make mistakes and forget important steps even when not stressed and under time pressure. Simple, but annoying, mechanisms such as checklists can definitely save lives as they do daily in aviation and industry.

It has become increasingly clear that there is no simple unidimensional solution to the patient safety problem.The leaders in the field recently [14] called for a public-private partnership to reduce health care hazards similar to the Commercial Aviation Safety Team in the United States. This joint effort involves government officials, representatives of industry, and the health professions. The problems are clearly beyond the scope of the medical profession alone, but it is incumbent on the medical profession to take a leadership role in dealing with the issues. Firstly one needs to create a "culture of safety"; in the United States the Veterans Administration Health Care System has set a major example in this direction [15]. Quality improvement is important enough to represent a legitimate and respected career pathway in academic medicine [16] because such academic leaders are essential for real change to occur.

The epidemic of medical errors must not be allowed to continue. The medical profession must meet the challenge.

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