



policy points

A Culture of Safety Techniques which have dramatically improved aviation safety may be adapted to create a safer environment for patients in health care.

The Institute of Medicine has proposed such a plan.

BY JEFF ATKINSON



An infusion pump in a hospital's intensive care unit administered an overdose of a drug, causing injury to a patient. It appeared the nurse, who was new to the hospital and had been working long hours, set the pump for the wrong dosage. In some hospitals, the primary response would be to punish the nurse or warn her to be more careful. A more enlightened response would be to examine the hospital's processes for administering medication to determine if failures in the system, and not just one individ-

ual, contributed to the injury.

Inquiries would include:

Was the medication order screened by a computer program or other means to make sure the dosage was appropriate for the patient's weight and condition? Did the nurse receive proper training and orientation when she began work at the hospital? Did the nurse's working hours or fatigue contribute to the error? Does the hospital—or at least each hospital unit—use only one type

of infusion device? Was a protocol or checklist followed before administration of the drug, particularly a drug with a high potential for danger?

"To Err is Human"

Issues such as these are highlighted in the report "To Err is Human—Building a Safer Health Care System" published by the Institute of Medicine at the end of 1999. The 223-page report is published by the National Academy Press,

Washington, DC, and also is available on line at http://books.nap.edu/html/to_err_is_human/ The Institute of Medicine is part of the National Academy of Sciences.

The report, which has generated a substantial amount of media and political attention, extrapolated data from studies in Colorado, Utah, and New York to show that between 44,000 and 98,000 patients die each year as a result of medical errors. Using 1997 as a reference year, the number of patients who died as a result of medical errors exceeded the number of patients who died from motor vehicle accidents (43,458), breast cancer (42,297), and AIDS (16,516).

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The total national costs from preventable medical error (lost income, lost household production, disability and health-care costs) was estimated to be between \$17 billion and \$29 billion per year, of which \$8.8 billion was attributed to health-care costs.

The report recommends a series of actions that should be taken by the health-care profession and government, emphasizing that “no single recommendation in this report should be considered *the answer*.”

“Rather,” the report said, “large, complex problems require thoughtful, multifaceted responses.”

Aviation sets an example

When examining methods to improve safety, the Institute of Medicine looked to the US aviation industry, which improved its safety record markedly over a fifteen-year period. The risk of dying in a domestic jet flight between 1967 and 1976 was 1 in 2 million. By the 1990s, the risk had dropped to 1 in 8 million. Similarly, workplace deaths were cut in half between 1970 (when the federal Occupational Safety and Health Administration was created) and 1996.

Part of the success in reducing death or serious injury was a system for encouraging reports of “near misses.” In the aviation industry, reports of dangerous incidents which did not result in injury could be made confidentially to an agency that did not have direct licensing or regulatory power over pilots or the airlines. (Reports are made to the National Aeronautics and Space Administration Aviation Safety System.)

The incidents are categorized and analyzed in order to reveal latent defects in the aviation safety system, and the information is then disseminated to the industry. In contrast, accidents that did result in death, serious injury, or property

damage are investigated by the National Transportation Safety Board, and reports made to the NTSB are not confidential.

The Institute of Medicine favors a similar two-tier approach to medical safety. Serious adverse events, such as maternal deaths, and death or serious injuries associated with a new device, an operation, anesthesia, or medication would be subject to mandatory reporting using a standardized format. Many states have such a system in place already.

Medical “near misses” (significant errors that do not result in serious injury) would be subject to voluntary reporting. Reports would be kept confidential and could not be used in connection with litigation.

“Studies have shown,” the Institute said, “that less than five percent of known errors are reported, and many are unknown. When punishment is eliminated, reporting soars.”

Confidentiality could be promoted by allowing anonymous reports or by removing identifying information from reports a few days after receipt (giving an investigator time to obtain clarifying information before the identifying information is removed.)

The Institute suggests that Congress pass laws extending to reviews of patient safety the protections now given to peer review. The Health Care Quality Improvement Act of 1986 currently gives participants in peer review immunity from damages if certain guidelines are followed. Under the Institute’s proposal, these protections also would provide immunity and protection from discovery in legal actions for information shared regarding patient safety, including information shared between collaborating institutions.

The Institute suggests that there be flexibility in implementing this system since many useful programs are already in place, particularly in the area of medications. By compiling and increasing the number of

reports of “near misses,” medical analysts will be better able to identify safety problems and disseminate information in order to reduce future problems.

Agents for improvement

Another proposal is for Congress to create a Center for Patient Safety within the Agency for Health Care Policy and Research. The Center would set goals for patient safety, track progress in meeting the goals, and disseminate “best practices” and other information about patient safety.

The Institute recommends that initial funding be set at \$30 to \$35 million and that funding grow to at least \$100 million per year—an amount the Institute says is approximately one percent of the \$8.8 billion in health-care costs attributable to preventable medical errors.

“Achieving steady improvement requires that adequate resources be sustained over a sufficient period of time,” the Institute said, also noting that reports are more likely to be made if the persons providing the information see that the information is actually being used.

In addition to actions by health-care providers and the government, the Institute of Medicine also recommended that professional associations and purchasers of health-care increase their focus on safety issues. Among the organizations currently studying safety issues is the National Patient Safety Foundation formed by the American Medical Association in 1997. The Joint Commission on Accreditation of Hospitals and Health Care Organizations (JCAHO) has a Sentinel Event Policy which requires health-care organizations to determine the root causes of adverse events and adopt systems to reduce such events.

Commitment to safety

If safety programs are to be effective

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within a health-care organization, the Institute says there must be a commitment by top management to create a “culture of safety.” Committees charged with examining and improving safety should include senior leadership. Among the primary goals of the safety leadership team should be: (1) estab-

lishing nonpunitive systems for reporting and analyzing errors; (2) standardizing and simplifying equipment, supplies, and processes; and (3) establishing interdisciplinary training programs, including simulations.

Response to the report has been swift. The JCAHO plans to begin making random unannounced inspections to health facilities with an added emphasis on safety issues. Large employers, including General Motors and General Electric, have formed an organization called the Leapfrog Group to encourage employers to steer workers to hospitals that make fewer mistakes. And President Clinton and other government leaders have announced plans to increase focus on patient safety issues.

If the increased focus on safety is sustained, it may be possible to reach the Institute of Medicine’s goal: a reduction of medical errors by 50 percent over five years. ■

Medication Errors More than 7,000 patients die each year due to errors in medication. (That is more than the approximately 6,000 people killed in workplace injuries.) Because of the prevalence of deaths and injuries related to medication, the Institute of Medicine’s report, “To Err is Human— Building a Safer Health System,” presented multiple suggestions to improve safety in the delivery of medication. These include:

- Increased vigilance of (and prohibition of) look-alike and sound-alike drugs. For example, more than 100 errors have been reported in the use of Celebrex (for arthritis) because of that drug’s confusion with Cerebyx (an anti-seizure medication) and Celexa antidepressant.
- Use of protocols or checklists before administration of high-alert drugs, such as heparin and insulin.
- Availability of laminated cards indicating standard doses for medications and chemother-

apy, with conversion formulas for pediatric use.

- Utilization of computer programs that will not allow entry of a prescription order unless information about the patient’s allergies, weight, or condition have been entered.
- Direct computerized entry of prescriptions (in order to reduce transcription errors and mistakes in reading handwriting).
- Use of standardized equipment rather than different types of equipment performing the same function.

- Having default mechanisms on infusion pumps set so that the pumps will go to a safe mode (usually shutoff instead of free flow) in the event the pump fails.

- Not keeping concentrated solutions (particularly potassium chloride) on the patient floor; having the pharmacy fill orders and provide the appropriate solutions for patient use.

- Avoiding stocking different strengths of drugs in the same place. If such stocking is necessary, labeling the stronger drug conspicuously, such as with orange tape.

- Having patients with drug allergies wear color-coded wrist bands.

- At teaching hospitals, having pharmacists participate in rounds.

- Expect that new technology will introduce new errors, including technology to prevent errors. ■

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