

# Editorial **Comment**

# JAMIA

## Information Systems Can Prevent Errors and Improve Quality

When you have a doctor, a patient, and a drug, there is much room for misunderstanding.

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The need to improve the quality of health care, prevent errors, translate good science into practice, and make patients and consumers partners in care has never been more pressing. Studies suggest that, at any given time, about a quarter of outpatients are subject to medication errors<sup>2</sup> and, on average, a patient in an intensive care unit has to endure one health care error per day.<sup>3</sup> Medical mistakes are blamed for as many as 98,000 lost lives annually,<sup>4</sup> representing the eighth leading cause of death—exceeding diabetes (64,751), motor vehicle accidents (43,458), and breast cancer (42,297).<sup>5</sup>

The landmark quality classification of Donabedian<sup>6</sup> offers measures not only for improvement in care but also for computerization—measures of structure (like number of terminals per resident), process (like rate of hospital admissions), and outcome of care, including health status parameters (like hemoglobin A<sub>1c</sub>), measures of social functioning (like school absenteeism), and measures of patient satisfaction (like reported pain relief). Obviously, computers must contribute to better outcomes, and this has to be demonstrated in clinical studies.

A closer look at the health care quality research often reveals components of a courtroom drama. Specially trained nurses read many patient charts and select suspect cases. The picks are forwarded to clinician-investigators who judge these cases by putting them into categories like “preventable error” or “no error.”

- Although patients may be horrified by the resulting data on health care errors, the legalistic analyses do not say much about what patients can do to protect themselves. This is a Dracula story without the oak stake.
- Physicians also have difficulty interpreting the dramatic tables and statements like “inadequate management of pneumonia.”
- Most important, science is bypassed in spite of all the good intentions. Expert consensus is widely recognized as the weakest and shakiest type of evidence in linking procedures to outcomes.

Obviously, more actionable research is needed to serve patients. Building on the Institute of Medicine’s Special Initiative on Health Care Quality,<sup>7</sup> AMIA took the initiative and organized a Spring meeting to bring key stakeholders together for an exchange of ideas and to advance our collective understanding of information needs created by health care improvement projects. The meeting focused on preventing health care errors through better patient records, standards, and vocabularies; changing clinical practice patterns with computerized decision support; developing health care quality score cards and population-oriented clinical statistics; and supporting patients as co-producers of quality care.

In this issue of the Journal, David Bates et al.<sup>8</sup> summarize the discussions on patient safety and computerization by pointing out that many errors, including medication errors, could be prevented by systems that demand values in all required fields, such as dose, route, or frequency. Such systems could also deliver messages when action is needed or about to be taken. Computerized order entry systems can also prevent unnecessary laboratory tests or harmful medication. Have you ever struggled with the illegible handwriting of physicians? A growing number of observers call for the use of computerized ordering.

Health care no longer is contained in an office or building but includes activities at home, at work, and while grocery shopping. Bonnie Kaplan et al.<sup>9</sup> raise the question, Are our systems up to this challenge? Their paper advocates that, among other necessary adjustments, certification and self-regulation, instead of only government regulation, are needed to ensure information accuracy and help users evaluate credibility.

Studies show that it takes an average of 17 years to implement clinical research results in daily practice, a remarkably slow and inefficient process.<sup>10</sup> Only the use of up-to-date computerized information systems will change this situation. Most hospitals and health care institutions prominently feature buildings and other facilities, but it is time to redirect attention and pride. Patients and health care improvement need timely delivery of valuable clinical knowledge and prevention of health care errors at the point of care. An ounce of computerized prevention is worth more than a ton of cure offered by legalistic analyses after the mishap.—E. ANDREW BALAS, MD, PHD

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