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How Health IT-Related Errors Hurt Patient Safety

New analysis explains how the occasional glitches with EHRs and related systems can get out of hand.

By Ken Terry, InformationWeek | July 26, 2011
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As an Institute of Medicine (IOM) committee considers how medical errors related to health IT affect patient safety (http://www.nytimes.com/2010/12/14/business/14records.html), a new analysis published in the Archives of Internal Medicine defines these errors, breaks down their "sociotechnical" sources, and suggests some fixes. "These errors, or the decisions that result from them, significantly increase the risks of adverse events and patient harm," write Dean Sittig and Hardeep Singh in the Archives article (http://archinte.ama-assn.org/cgi/content/abstract/171/14/1281). The reason, they explain, is that "there are often latent errors that occur at the 'blunt end' of the health care system, potentially affecting large numbers of patients if not corrected."

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In an interview with InformationWeek Healthcare, Sittig, a professor at the University of Texas Health Sciences Center in Houston, explained that problems in a health information system are usually caught fairly soon. But, because they may affect an entire hospital or a multi-hospital system, they can cause a lot of harm in a short time, he said.

"If you go live with a new [computerized physician order entry] system at noon, you may not notice what's wrong for half an hour; but during that time, 100 or 200 orders could be entered in it."

With evidence of computer-generated errors mounting, the IOM in December appointed a Committee on Patient Safety and Health Information Technology to conduct a year-long study of the topic and make recommendations.

The good news, Sittig said, is that electronic health records and other health IT systems "are helping to avoid 10 times as many errors as they're causing. But these systems are not without problems."

Sittig and Hardeep's paper cites eight categories of potential errors in health IT systems. These include not only design flaws in the software, but also human factors that can lead to mistakes. These errors can occur when a system or any of its component parts is unavailable for use, malfunctioning, or used incorrectly, or when two systems interact in unpredictable ways, leading to data being incorrectly entered, displayed, or transmitted.

One example of the latter might occur, Sittig said, when something is wrong in the list that is mapped from the CPOE system to the hospital pharmacy system. In that case, every order would have an error in it. Similarly, the introduction of a new dietary-tracking system might cause changes in the other hospital systems.

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Ideally hospital computers would monitor themselves, Sittig noted. That's what happens in commercial airliners, which have redundant onboard systems. The retired space shuttle has four computers, plus a fifth that compares their output, he said. If all four computers don't get the same result, an alarm is sounded. But we don't do that in healthcare, he pointed out.

Even if we did, physicians have a tendency to override alerts in EHRs if those alarms make it too difficult for them to do their work. Sittig, who is an expert in clinical decision support, regards that as part of a larger issue.

"When your computer system doesn't fit in with your workflow, that can cause a lot of errors. I don't know whether the decision support is any more or less of a contributor to those types of problems. But there are a lot of issues where the clinical workflow and the workflow the computer wants you to do don't match. And that causes a lot of problems, because it causes people to chart on paper and do things other than what's anticipated. People have to do extra cognitive processing, and that's likely contributing to more errors. So the fact that we're still trying to match computer workflow to real workflow is an issue."

Another safety problem, Sittig added, comes from the fact that, in most hospitals, it can take two to three years--and sometimes as long as five years--to convert fully from paper to electronic records. During that transition period, documentation is split between the EHR and the paper charts, and what's recorded in one medium might not be the same as what's documented in the other. "That's a difficult situation," Sittig observed.

This is not Sittig's first foray into the health IT safety debate. In a recent commentary (http://www.informationweek.com/news/healthcare/EMR/231001629) in the Journal of the American Medical Association, Sittig and Ryan Radecki, MD, argued that the 2011 National Patient Safety Goals of the Joint Commission should be incorporated into future Meaningful Use criteria and certification requirements for EHRs.