Editorial

Promise and Pitfalls of the Electronic Health Record

By Richard H. Savel, MD, and Cindy L. Munro, RN, PhD, ANP

In past pages of the *American Journal of Critical Care*, we have written with enthusiasm about new technologies in the intensive care unit (ICU). In one editorial in particular,[1] we focused on the value of small, powerful handheld and tablet devices in the ICU setting. But one use of health care technology that has been getting a bad rap lately is the electronic health record (EHR).

Whereas Moore's law states that computing power doubles every 18 months or so, this has not been the case for EHRs in the ICU.[2] We have found that many of the problems facing bedside critical care practitioners who worked with EHRs in the mid-1990s remain largely unchanged today, more than a decade and a half later. In this editorial we will point out some of the promise and value of EHRs as well as areas in desperate need of improvement.

The Tower of Babel: Multiple Systems, Some Still Don't Talk With Each Other

From a clinician's perspective, a serious problem in the field of medical informatics has to do with the fact that, before computers, the medical record consisted entirely of paper. Orders and notes were written on paper, documentation of the medication administration record was on paper, and documentation of vital signs, ventilator settings, lab values, urine output, continuous infusions, and other data all were on paper. Everyone knew how to use paper and it required little to no training. Although problems still emerged—charts could be difficult to find, for example, or, consistent with the stereotype, physicians' handwriting might be difficult to decipher—overall the flowsheets were designed to match clinicians' workflow. Plus no log-in was necessary!

Now things are very different. In theory, the EHR can bring together disparate systems: a lab system, a pharmacy system, a system for documenting vital signs, and a pathology and radiology system. However, in many hospitals the advent of the EHR has failed to unify these various systems into one with a "single sign-on," which is the holy grail of medical informatics. Clinicians are forced to fill in the gaps, coordinating multiple passwords to multiple systems to "re-create" the unified chart that existed in the days of the paper medical record.

The Transition: What Is on Paper, What Is in the Computer

Very few medical institutions are completely paperless. During the transition phase, which can

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last for years, some information can be on paper in “the chart” while other information will be on the computer. Bedside clinicians and patients themselves are often left in the middle.[3]

The problem with this kind of situation is that it requires significant investment and training on the part of the institution. Ongoing training can be costly, and there may be an administrative perception that a more cost-effective approach would be to wait until the product is in place before commencing with institution-wide training. Nevertheless, institutions, especially teaching hospitals with a continuous influx of trainees, should focus some of their resources on clarifying and identifying the precise location of all parts of the medical record as they transition from paper to computer.

As the literature suggests, handoffs are critical in the ICU, and a concerted effort by all clinicians must be put into their clear and effective execution. Having the chart exist in multiple formats simultaneously (i.e., electronic and paper) potentially complicates the handoff, creating an unsafe situation for some of our most vulnerable patients.

Some Things Were Better on Paper

One of the more controversial aspects of EHRs is charting. Many believe that electronic charting increases the time away from the patient, but the literature is unclear about whether switching from paper to electronic charting increases or decreases time spent charting crucial clinical data.[4-11]

In addition to these workflow issues, having the vital signs, medicated drips, ventilator settings, and laboratory values in a computer as opposed to on paper does not necessarily make it easier for the clinician to pick up on trends. Simply computerizing something does not make it easier to comprehend or necessarily better or safer for patients. Transitioning information from paper to computer format requires an understanding of the workflow of those who may be entering the data, as well as deep knowledge of the clinicians who will work with the data to help present it in a meaningful way to enhance rather than impair the health care process.

Wag the Dog: Technology Forces Clinician Workflow Changes

This issue of the EHR changing workflow cannot be overemphasized. Clinicians often become fatigued by changes going on around us over which we have no control. In the face of change, we do what we do best as ICU clinicians: we adapt.

We go about our days trying with all our might to do our best for patients. We do our best, for example, to work around the computer in the corner that we know is slow—the one we have asked repeatedly to be fixed. We do our best to work around confusing screens. We talk to each other (which is a good thing) so we’re sure that any confusion brought about by computer systems is resolved quickly.

We should be able to give constant feedback to administration and information technology (IT) in our hospitals to make things better. No matter how good any one of our hospitals may be regarding the status of information technology, we must always strive to remind administrators that the ultimate goal of clinical IT systems is to make our jobs easier and patient care better and safer.

One immense challenge is that the ICU is fast paced and traffics in huge volumes of data. It’s an area where technological improvements made during the last decade should improve things for us. After all, if there’s one thing ICU clinicians cannot stand, it’s working with a slow system of any kind. That sort of thing is easy to report to administration. Interfaces between systems should be enhanced to decrease the amount of data bedside nurses need to enter into the computer. Bedside monitors should interface directly with EHRs, and “smart pumps” should enter data in a similar fashion, allowing bedside nurses to do what they do best: provide care to patients.

Conclusion: Is There Hope?

Computers are not going away from the bedside any time soon; they will continue to be used and used meaningfully.[12] We must keep reminding those who mandate and install these programs that technology is there to make our jobs easier and

About the Authors
Richard H. Savel is coeditor in chief of the *American Journal of Critical Care*. He is director, surgical critical care at Maimonides Medical Center and professor of clinical medicine and neurology at the Albert Einstein College of Medicine, both in New York City. **Cindy L. Munro** is coeditor in chief of the *American Journal of Critical Care*. She is associate dean for research and innovation at the University of South Florida, College of Nursing, Tampa, Florida.

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safer and to improve patient care. We cannot ignore something that isn't working; we must pass our observations on to hospital administration and the IT department. Systems that are obviously poorly designed or flawed to us at the bedside may seem to work perfectly from the perspective of hospital leadership.

We owe it to our patients and colleagues to hold regular multidisciplinary meetings in which the status of the EHR is discussed and appropriate feedback is given to the IT group at the institution. Computers can help to improve care in the clinical environment, but it is wrong to assume that care is automatically improved just because computers are there.

The statements and opinions contained in this editorial are solely those of the coeditors.

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None reported.

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