

Care Alerts vs. Best Practice Advisories

Clinical Decision Support Tools Create Epic Debate

Mike Jones pulls a thick book from an overhead cabinet in his Leprino Building office and thumbs through it before pausing.



Mike Jones and Kathy Smith, pictured in March 2009. The two are among those deciding on how to make the best use of Epic's clinical decision-making tools.

Jones, a clinical pharmacy specialist at University of Colorado Hospital who is working on the Epic Systems project, can't immediately find the quote he's looking for. It's from William Hersh, MD, chairman of the Department of Medical Informatics and Clinical Epidemiology at Oregon Health & Science University. But he paraphrases it easily.

"He said the main reason for an electronic

medical record is to do clinical decision support," Jones says. "When I read that, it was music to my ears."

Small wonder. Jones and colleagues in Pharmacy and Nursing Informatics already have devoted considerable effort to building and deploying electronic alerts to help pharmacists, nurses and other providers make good clinical decisions. Their alerts keep them on top of vital patient safety tasks, such as administering pneumonia vaccine to patients who need it.

In effect, these and other "Care Alerts" push knowledge to the front of a provider's seemingly endless queue of clinical details, offering prominent reminders to order tests, check for interactions, identify patients at risk and so on (*Insider*, March 3, 2009).

What the future holds. His work with Care Alerts, however, also places Jones, along with physician champions CT Lin, MD and Jonathan Pell, MD, and nursing informatics specialist Kathy Smith, RN, and others, in the middle of a complex, ongoing discussion about what will happen to clinical decision-making support when the hospital converts to Epic, the \$67 million system that will replace dozens of existing, essentially freestanding information systems with an integrated electronic medical record (or EMR).

Much has been made of the advantages Epic offers over the existing fragmented information system, and rightfully so. A single EMR available to clinicians, support staff and other employees throughout the organization promises to reduce duplication, improve communication and, most importantly, minimize the risk of missing vital patient information during hand-offs from one department or facility to another.

But as the work of Jones and colleagues shows, there are things the hospital can do today that it can't do as easily with Epic – at least for now. Specifically, the methodology Jones uses to develop customized Care Alerts can't be used in Epic.

Care Alert advantages. The Epic system calls its decision support alerts "Best Practice Advisories," or BPAs. They notify clinicians when they need to tend to important tasks, such as reviewing a patient's allergies, writing orders, and completing charting. At present, however, *creating* a new BPA is a more cumbersome process than the one Jones now uses to create a Care Alert.

"The architecture in Epic is different," Jones explains. The system for developing Care Alerts hinges on a single "clinical rules engine" that Jones uses to develop "medical logic modules," or MLMs. They, in turn, pull data from the electronic record to identify patients who meet criteria for a particular condition. The system then generates a Care Alert to key patient providers.

For example, the MLM for the pneumonia vaccination Care Alert contains a “trigger?” an order for a selected set of antibiotics used to treat community-acquired pneumonia. From that point, the MLM follows a series of exclusion or inclusion criteria to evaluate each patient who might need to be vaccinated. If a patient meets all the inclusion criteria, pharmacists receive a Care Alert to write a vaccine order, if it is clinically appropriate.

“It’s a self-contained, centralized system for writing rules,” Jones explains. “In Epic, the system is decentralized. To write a single rule, we have to touch multiple applications.”

In addition, Jones uses mathematical algorithms to develop Care Alerts, something he currently can’t do with BPAs.

“That’s a downside,” he says, adding that there could be work-arounds in the Epic system. “It’s not going to be as easy to do mathematics, but we’re trying to find ways to do it.”

Not cut and dried. The discussions about the relative strengths of BPAs and Care Alerts aren’t black and white, Jones emphasizes.

“There are trade-offs. There are functions we can do with BPAs that we can’t do today,” he says. “For example, we’ll be able to list orders that need to be written, and physicians will be able to simply click on them and write them.” After a clinician verifies he or she has taken care of the BPA, moreover, it’s cancelled so others don’t see it again and again, he adds.

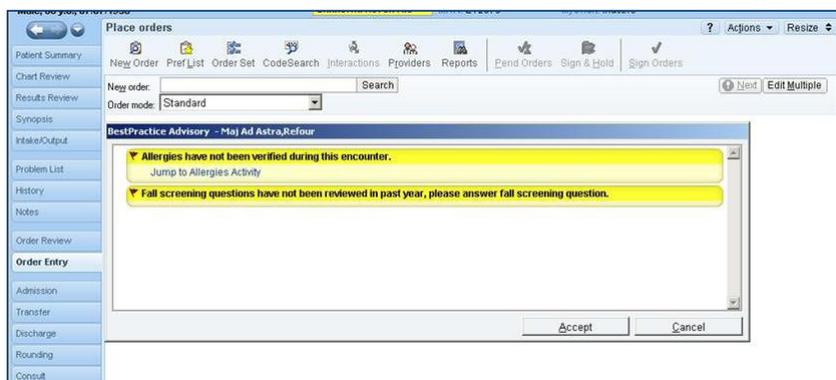
“We don’t have any way of turning off Care Alerts,” Jones says.

Meanwhile, a BPA Governance Committee that includes Jones, Lin, Pell, and a growing list of other hospital leaders is deciding on what BPAs to include when the Epic system goes live. Jones says Epic has a total of about 220 BPAs available. The “model system” Epic built for UCH included 39 that were “turned on,” but the committee subsequently turned off 20 of them.

“We’re reviewing the rest to see whether we should consider turning them on,” Jones notes. The task is to identify the BPAs that deliver the biggest pay-offs in improving patient safety, clinical efficiency, reimbursement, and regulatory compliance. The committee is also accepting and will evaluate requests from teams for additional BPAs.

A question of resources. Some of the questions are thorny and have generated considerable discussion among committee members. For example, it’s well known that metformin, an oral antidiabetic agent, can cause renal failure in patients who receive contrast dye for computed tomography (CT) procedures.

Those patients should be taken off metformin for at least 48 hours before the contrast and stay off it until they have their serum creatinine checked to rule out kidney damage, Jones explains. The contrast dye-metformin interaction also increases the risk of lactic acidosis, a potentially fatal condition that raises acid levels in the blood and damages cells.



An Epic BPA will make it easy for clinicians to check patient allergies.

“We know some of these patients fall through the cracks,” Jones says. A “good BPA” would alert clinicians not to restart patients on metformin if a test measuring glomerular filtration rate— the best indicator of kidney function – is too low. That BPA, however, would require a “discrete” glomerular filtration rate value for an individual patient, not a range. It is something that the Clinical Lab currently doesn’t provide, although Jones believes it might be able to.

“The question is, can we return a specific value to capture in the BPA,” Jones says. “We would have to work with the lab to get that information.”

But the discussion points up dilemmas, Jones adds, about the best use of the Epic team’s – and the organization’s – limited resources.

There is sentiment on the Epic team, he notes, for first “getting practitioners up and running” in a relatively simple environment before adding more functionality. “If we decide to ‘turn on’ a BPA or build a new one,” he asks, “do we do it before or after we go live?”

Whatever the decision, he adds, patient safety will trump all other concerns. "If a BPA involves a patient safety issue, we'll go after it," he says. Safety issues can be missed, simply because of the sheer volume of data that confront clinicians. That's where clinical decision-making tools can play an essential role in patient care, he notes.

"They can forget to call; they can forget to follow up," Jones reflects. "We're trying with Epic to help clinicians do the right thing."