



## **Information systems improve hospital emergency departments**

By David Rath

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Anyone who has spent time in a hospital emergency department (ED) or even watched television shows about them realizes that they present a daunting knowledge management challenge. In many EDs, a physician might oversee the treatment of up to 15 patients simultaneously. Triage and moving those patients through the ED and capturing the necessary clinical and administrative data require speedy communication and cooperation among clinicians, administrative staff members and personnel in other parts of the hospital.

Traditionally staff members have relayed information about patients through verbal communication, paper charts and visual tools such as white boards. But as both hospitalwide clinical information systems and specialized ED information systems (EDIS) have grown more sophisticated, many hospitals are replacing the white boards and paper charts with automated tracking systems and computer displays.

Some systems not only give up-to-the-second information on patient status and location, but also track workflow measures such as time to triage, which EDs can use to provide feedback to clinicians.

Yet, despite the efficiency gains promised by automation, the product testing, choice and implementation can be difficult. Often emergency department officials and hospital CIOs face a tough choice between the emergency department module of the hospitalwide clinical information system already in use and a smaller, best of breed system designed specifically for emergency departments. The first option offers easier integration with other software such as laboratory systems and electronic medical records; the second promises more features designed specifically for EDs and customization options.

A few years ago, several small to midsize vendors began creating clinical documentation software specifically for EDs that spoke to physicians' needs, explains Dr. Todd Rothenhaus, senior VP and CIO of the Caritas Christi Health Care System in Boston. Larger health information system vendors were typically adapting software code already in place in the intensive care unit for use in the ED, and it wasn't as appealing to physicians.

Yet Rothenhaus, who is both a CIO and an emergency room physician, says there are considerable challenges to buying a separate system for the ED and integrating it with the hospital's main software system.

"You have to write a lot of interfaces, and most hospitals don't have a deep bench to do that," he explains. "You might have nursing notes that include medication history and allergies that you want to become part of a patient's record for those 20 to 30 percent of ED patients who are admitted. How do you get that to flow into the hospital clinical information system? That's a hard interface to write now." It's much easier to use a module from the larger system vendor, and those modules are getting better all the time, he adds.

One CIO who agrees with Rothenhaus on that point is Andrew Fowler, who heads up IT operations for the seven-hospital Methodist Le Bonheur Health System headquartered in Memphis, Tenn. In 2003, Methodist chose to roll out an emergency department module called FirstNet from its clinical information system vendor Cerner. FirstNet facilitates triage, patient tracking and basic emergency department functions.

"We made a strategic decision to go with as integrated a clinical product as we could," explains Fowler. "From the time you appear in the ED to when you are admitted as a patient, we now get that continuity in one database. With niche products, you end up writing interfaces between products, and you run the risk of losing valuable information or entering something improperly. You need one source of the truth."

Fowler stresses that hospitals should be prepared to take advantage of workflow changes the EDIS offers to eliminate manual tasks. "I would say that process engineering is 50 percent of the work, and if you don't do it right upfront, you end up redoing it," he adds.

Devoting enough resources to training is also key to a successful implementation. "And the training has to be focused on workflows, not technologies. If you focus just on the technology, you're putting the onus on the user to figure out how it applies in their job," Fowler adds.

### **No more pulling charts**

Planning a move to a much larger space was the impetus for the emergency department at Riverside Regional Medical Center in Newport News, Va., to switch from paper records to an emergency department information system.

"We knew that our old system based on paper was not going to work in this larger space that was going to be more decentralized," says Dr. Gary Kavit, medical director. "We thought we would be in big trouble without an electronic system. Plus, a long-range goal was integrating with a larger electronic medical record for the whole hospital."

Six years ago, he says, there were few promising offerings from clinical information system vendors, and he believed several smaller software companies were making promises they wouldn't be able to deliver on. "We were skeptical about what several vendors were promising," he says. "We were being overwhelmed by vaporware."

Attending a 2002 Las Vegas trade show, Kavit was impressed with the simplicity and intuitive interface of ED PulseCheck from vendor Picis, and he convinced hospital administrators to invest in the software. Over the next two years, Riverside gradually rolled out the Picis system in its 42-bed, 45,000-square-foot emergency department. It features customizable templates for clinical charting and a revenue management component to ensure accurate and compliant charge capture during clinical documentation.

Riverside has worked on interfaces to improve data sharing between the ED and lab, radiology and other information systems, including the Siemens Soarian clinical information system. It claims to have achieved a 40-minute decrease in average patient turnaround time and a significant reduction in incomplete patient charts.

Moving toward totally electronic charting has decreased labor costs, says Renee Roundtree, VP for trauma and emergency services, who adds, "We used to have information go back and forth from paper to electronic and back to paper five times. We have eliminated most of that inefficiency."

Lost and incomplete charts used to cost a great deal of time, effort and money to find and complete. "We eliminated four to five clerical positions just pulling charts," she says. "And there is a satisfaction issue for physicians. They are no longer hunting for charts or being called at home and asked to come in to fill in an incomplete chart." Because the system is Web-based, if physicians do need to fill in something, they can do it from home.

Kavit adds that the Picis system allows ED physicians to deal with patient complaints much more rapidly. "Previously to look up a record about a complaint on paper might have taken two days. Now I can look at the record in three minutes and get back to them right away," he says.

### **Progress at Einstein**

By deploying a best-of-breed product, Dr. Albert Villarin Jr. says his hospital ED is making important patient safety and efficiency gains.

Villarin, chief medical informatics officer for the Albert Einstein Healthcare Network in Philadelphia, says he began looking at automation in 2003 when Albert Einstein Medical Center's level 1 trauma center was planning a \$10 million expansion.

"We realized that in the larger department, we would need a heads-up display to see where everyone is," he says.

Using the Amelior EDTracker platform from Patient Care Technology Systems, staff members now have Web portal access to patient health information that used to be in paper charts. The system also monitors the location of patients and staff members through the use of ultrasonic badges clipped to their collars.

Villarin says the system allows staff members to match patients to available providers and address bottlenecks that may delay treatment.

"We have cut throughput time by 40 percent," he stresses. For instance, the department used to waste time waiting on calls from hospital admissions.

"With the EDTracker interface, that is all automated and we don't have to spend that time on the phone," Villarin says. "We found that patients spent 30 percent of the time in the ED waiting for something to happen. We focused on decreasing those wait times."

Because the tracking software maintains a time-stamped record of patient flow data, the ED can generate reports on patient flow and bottlenecks that provide feedback for ongoing quality improvement.

"Now we are applying what we learned in ED to the rest of the hospital system," Villarin says. "In the operating room, they see what we can do with tracking. The word is out. We in emergency are the leaders of this movement."