Medication Safety Issue Brief

Using Automation to Reduce Errors

2 of 6 in a series

The potential of technology to avert medication errors is the focus of part two in a six-part series designed to help senior management reduce mistakes in their hospitals. The American Hospital Association, the American Society of Health-System Pharmacists and *Hospitals & Health Networks* developed this project with the generous support of McKessonHBOC. Tear out this card for future reference. Additional copies are available in PDF format on the ASHP and *H&HN* Web sites (www.ashp.org and www.hhnmag.com). ASHP members can also call the ASHP's fax on demand service.

• SUMMARY

The medication-use system in hospitals is inherently complex. There can be more than 100 steps from the time a prescription is written to the time a patient receives the medication. Technology has the potential to reduce medication errors by reducing complexity, avoiding over-reliance on memory, simplifing key processes, and, if designed and implemented properly, increasing efficiency. It can also be a cost-effective tool for improving quality. This briefing examines issues in selection and implementation automation.

• ISSUE BRIEF

Mounting evidence shows that certain technology can substantially reduce medication errors. Yet, some hospitals that make the investment are disappointed because systems can be unwieldy, while components such as prescriber order entry and automated medication distribution systems are often removed from patient areas, cumbersome, and difficult to use.

The experiences of these hospitals provide clear lessons for others who may consider purchasing the technology. Most critical, experts say, is to include all affected departments in the planning process, from pharmacy and nursing to information systems and engineering.

One of the most important first steps is to appoint a team of representatives from each department who are expected to use or interact with the new system and determine the institution's automation needs. It is not uncommon for a decision to be made by only one department regarding the purchase of new automation without input from other departments. That approach can lead to such undesired consequences as more errors, under-use, or non-use of the system by physicians, nurses, pharmacists and other key users.

Another way to coordinate the process is to appoint a medical information officer (MIO), a clinician with technology know how. As a fellow clinician, the MIO is positioned to persuade skeptical clinical staff to invest time and energy to learn a new system. Experts caution, however, that there is no easy fix. Oversight teams and MIOs, are most effective when there is an organization-wide commitment to patient safety, including senior managers.

Hospitals should be realistic about what they expect from technology, says Victor Perini, director of pharmacy at Methodist Healthcare Central Hospital in Memphis, Tenn. "There are a lot of misconceptions out there about the ability of one device by itself to reduce errors," says Perini, whose hospital uses a robotic drug distribution system and is planning prescriber order entry. "No single one of them will eliminate all errors . . . they have to work synergistically to accomplish that."

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The Medication Safety Issue Briefs are a joint project of the American Hospital Association, the American Society of Health-System Pharmacists and *Hospitals & Health Networks*, and are made possible through the generous support of McKessonHBOC.

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ACTION *Agenda*

- Develop a "vendor assessment tool" to compare each bid in various categories such as prescription, transcription, dispensing and administration.
- Take a brutally honest look at how things are done and consider eliminating unnecessary steps. It might take an outside party with knowledge of workflow and process reengineering.
- To entice physicians into learning a new system, ensure that it will save them time while improving quality. One way is to build standardized orders that can be made with a single mouse click.
- Measure what you do, such as tracking medication use (number of orders per hour) and errors (missed orders) for the first time so that you'll know how well new error-reducing technology performs.
- Choose a "champion" in each department to encourage others to adopt the new system.
- Before inviting vendors to demonstrate their products, know what you need, and be sure all users and departments were involved in drawing up that list.
- Keep top administrators and the board of directors up-to-date on the progress of choosing a system.
- Once nurses, pharmacists and doctors are trained on a new system, plan regular training updates.
- Choose an order entry system offering evidence-based diagnostic and therapeutic information when an order is written. Other useful features: touch-screen monitors, off-site order entry and an alert system for overdue interventions.

Putting all the pieces together can be complex, and requires both technical knowledge and a big-picture view. "There is good technology out there," says Kasey Thompson, who heads the ASHP's Center on Patient Safety. "But don't automate blindly. Don't just buy it and plug it into the wall and hope it improves safety." Some hospitals use automation experts to implement these projects. Ongoing training of everyone using the technology is essential, Thompson says. "There must be a commitment by the staff for continual improvement to make sure the system is doing what it is intended to do—improve safety."

● CASE STUDIES

Vanderbilt University Medical Center, Nashville, Tenn.: Vanderbilt's built-from-scratch physician order entry system was designed and overseen by two doctors from the Netherlands and a physician who leads Vanderbilt's informatics department. That's the key to its success, says pharmacy director Jim Knight. The system interfaces with pharmacy, laboratory, medical records, billing, and radiology, and provides information on dosing and potential adverse drug reactions at the time of prescription. "What we've done is cut out all the errors that come from the physician's side of ordering, and the confusion with drugs that sound alike and look alike," Knight explains.

Vanderbilt officials actively solicited complaints and suggestions from physicians to improve the system. A complaint box is included in each screen, and every comment gets an e-mail response. Complimentary food also encourages feedback. "Residents get pizza as long as they bring a suggestion of how to improve the system," Knight says. After seven years, those pizza parties still garner important insights for the informatics staff.

Children's Hospitals of Minneapolis: Often an automated medication system bought off the shelf needs tweaking, which is what pharmacists at St. Paul Children's Hospital discovered when an automated dispensing unit was installed on the nursing floor. Children's medication doses can be quite different from those for adults, so the pharmacists developed a set of standardized dosing patterns for commonly used drugs for children, says Mark Thomas, director of pharmacy for Children's Hospitals of Minneapolis.

Hospitals considering automation should make a complete survey of their current processes to understand what could benefit from a change. "You don't just put in automation without giving due diligence to what the process already is," Thomas says.

● ADDITIONAL RESOURCES

AHA Guide to Physician Order Entry Systems, http://www.aha.org/medicationsafty/PoeExecSumA1115.asp ● Fact Sheet: Computer Physician Order Entry, The Leapfrog Group, http://leapfroggroup.org/FactSheets/CPOE_FactSheet.PDF ● A Call to Action: Eliminate Handwritten Prescriptions Within 3 Years, Institute for Safe Medication Practices white paper, www.ismp.org ● ASHP national survey of pharmacy practice in acute settings, 1999, American Journal of Health-System Pharmacy, Oct. 1, 2000, http://www.ashp.org/public/pubs/ajhp/vol57/num19/