

FUSING TECHNOLOGY WITH REWORKED PROCESSES

MOUNT AUBURN HOSPITAL

- ◆ Cambridge, MA
- ◆ 205 beds
- ◆ www.mountauburn.caregroup.org

Mount Auburn Hospital is a not-for-profit regional teaching hospital closely affiliated with the Harvard Medical School.

STEEEP

Safe

Medication errors have been reduced significantly, with the overwhelming majority causing no harm.

Efficient

Hospital patients typically get a medication within nine minutes of it being ordered.

THE PROBLEM

Medication errors are among the most common medical errors, harming at least 1.5 million people every year, according to the Institute of Medicine (IOM). The extra medical costs of treating drug-related injuries occurring in hospitals alone amount to approximately \$3.5 billion a year, without accounting for lost wages, productivity or additional health care costs. When Jeanette Clough took the helm at Mount Auburn Hospital in 1998, she made medication safety an organizational priority.

THE SOLUTION

The hospital has put in place a number of systems—including a medication administration system, computerized physician order entry, smart pumps and bar coding—to reduce medication errors. With that technology, hospital officials painstakingly implement workflow and process changes before and after a system is put in place to maximize technology’s ability to reduce human error and keep patients from harm.

RESULTS

- » Medication events per million medications administered fell from 0.000059 in July 2006 to 0.000011 in July 2008, with more than 95 percent of events classified as near misses or resulting in no harm; the remainder were events resulting in temporary minor harm, or Level 2 events.
- » Mount Auburn Hospital has not had a Level 4 medication event (an error that results in permanent functional impairment, disability or death) in more than five years or a Level 3 event (an error resulting in major injury or functional impairment) in more than three years.

BACKGROUND

Mount Auburn Hospital President and CEO Jeanette Clough has no tolerance for medication errors. “Patients who come to our hospital are already worried about their health. They should not have to cross their fingers hoping that they will not be harmed by a medication error,” Clough states. Because of the prevalence of medication errors, Clough figured she could make an impact in changing processes and personnel workflows, while using technology to further reduce this threat.

In the last 10 years, Mount Auburn has been trying to snuff out medication-related mishaps, spending about \$3 million on medication administration, ordering and other systems so that physicians have all pertinent patient information in one place when ordering a medication to reduce potential prescribing errors. It also minimizes the number of steps in the process where errors can occur—including transcribing handwritten orders, faxing orders to pharmacy and dispensing mix-ups.

Mount Auburn’s approach to reducing drug-related errors includes: mapping processes; flowcharting steps and looking at errors; prioritizing opportunities to improve; getting pharmacy to review every medication order; and using and prioritizing technologies that can help reduce error risks.

TEAM MEMBERS

» **Susan Abookire, MD**
Chair, Department of
Quality and Patient Safety

» **Jeanette Clough, RN**
President and CEO

» **Eileen Dillon, RN**
Executive Director of
Performance and Quality
Improvement

» **Mary Lark-Dupont, RN**
Manager of Infection
Prevention

PRINCIPLES OF PERFORMANCE EXCELLENCE

Reducing Process Variation

Before medication-related systems were put in place, the hospital implemented several steps to minimize human mistakes. “I believe in uniting technology with processes so the risk of human error is minimized,” Clough says. “Having the technology has made a huge difference but it is the people who design the system that make the technology effective,” observes Eileen Dillon, RN, executive director of performance and quality improvement.

One of the first things Mount Auburn did was boost the presence of its existing multidisciplinary medication safety team by adding physicians. That led to protocols for the use of certain high-risk medications, such as heparin. The protocols guided physicians in issuing orders for certain medications and for nurses, for example, getting patients’ labs drawn, Dillon says. The hospital also began reviewing and classifying medication errors on a 0-to-4 scale, with 0 representing a near miss with no harm to 4, which involves death or severe harm.

Before automating inpatient medication administration, hospital officials “flow charted” the entire medication delivery process. “It was more than 85 steps from order-to-mouth,” Clough says. Approximately half of those steps were cut from the process. One big area of reduction was no longer having anyone take, write or transcribe orders, thanks to CPOE. “Reducing the number of steps reduces potential errors,” Clough says.

Before implementing CPOE, for example, the hospital undertook a “Never Guess Again” initiative, which allowed nurses and others to stop the line if they could not read a physician’s order. “Nurses would ask each other, ‘what do you think the doctor meant,’” Dillon recalls. “It was unacceptable for nurses or secretaries to try to guess what the order said,” Clough says. As part of the effort, nurses and secretaries could beep or call physicians for clarification. “It gave the staff a sense of empowerment,” Clough recalls. “It gave medical staff a sense of medication safety within the organization.”

When implementing a medication delivery system, CPOE, smart pumps or bar coding, hospital officials redesign processes to encourage automation, as well as obviate potential harm and provide sequential reliable delivery. When the Pyxis medication management system was implemented, for example, double checks were instituted at points of the drug administration process, such as when patients received intravenous drips; two nurses have to verify the drug, patient and amounts before medication is given.

Eliminating Defects

The medication safety team reviews near misses and identifies improvement opportunities as each new technology is implemented. A failure mode effects analysis is conducted to predict what could happen and to assess whether or not the technology matches the workflow. When the medication distribution system went live on all floors, for example, the pharmacist would receive the orders electronically before filling the

trays that would be put into the automated distribution system. While the system reduced the chances of nurses providing the wrong patient the wrong medicine, there was no guarantee the pharmacist didn’t put a medicine in the wrong box. “That was a potential failure of the new system,” Clough says. Meanwhile, the team also facilitates conversations at all levels of the organization so that staff have occasions to provide feedback. While implementing a new process or technology, the team debriefs every morning and provides feedback to staff.

CONTINUAL IMPROVEMENT

The processes the team has implemented each time workflow is reorganized or a technology is implemented illustrate Mount Auburn’s commitment to continuous improvement of medication safety. Hospital officials aren’t done yet with automating the medication delivery process. Mount Auburn is converting to new patient wristbands in order to enhance its bar coding and medication administration systems. Clough also says the hospital continues to encourage reporting of errors or near misses. “If we have near misses or errors, it is critical we know where they are,” she says.