

Reducing Medication Errors with Pharmacy Automation



Beloit Memorial Hospital

Location: Beloit, Wisconsin

Beds: 70

Milford-Whitinsville Regional Hospital

Location: Milford, Massachusetts

Beds: 116

This article examines how two hospitals, Beloit Memorial Hospital and Milford-Whitinsville Regional Hospital, have recently experienced the benefits of Omnicell's automated drug dispensing system.

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Bob Beagley, RPh, Director of Pharmacy at BMH

Based on the Institute of Medicine's (IOM) 1999 report, *To Err is Human: Building a Safer Health System*, it's clear that the U.S. healthcare system has a lot of work to do to reduce medical errors and ensure patient safety. In its report, the IOM estimated that as many as 98,000 people die every year due to mistakes in patient care, and that these mistakes cost the healthcare system up to \$50 billion annually.¹

While the IOM's report addressed all types of medical errors, it identified medication errors as an important part of the problem. The IOM estimated that the number of lives lost to preventable medication errors alone is more than 7,000 annually and increases hospital costs by about \$2 billion nationwide.

In its follow-up report, *Crossing the Quality Chasm: A New Health System for the 21st Century*, the IOM noted that many medical errors could be prevented if only clinical data were more accessible and readable and prescriptions were entered into automated order entry systems that could check for errors and oversights in drug selection and dosing.²

Since 1992, Omnicell™ has provided the healthcare industry with a complete line of medication management systems including automated dispensing of controlled substances, floor stock, and scheduled medications. Omnicell Pharmacy Systems incorporate a variety of features that are specifically designed to help healthcare facilities reduce medication errors and improve efficiency.

Two hospitals that have recently experienced the benefits of Omnicell's automated drug dispensing systems include Beloit Memorial Hospital, a 70-bed acute-care hospital in Beloit, Wisconsin, and Milford-Whitinsville Regional Hospital, a 116-bed community hospital located in Milford, Massachusetts.

¹ Institute of Medicine, *To Err is Human: Building a Safer Health System*, Washington, D.C.: National Academy Press, 1999.

² Institute of Medicine, *Crossing the Quality Chasm: A New Health System for the 21st Century*, Washington, D. C.: National Academy Press, 2001.

Pharmacist Shortage Spurs Automation Effort at Beloit Memorial Hospital

For Beloit Memorial Hospital's (BMH) pharmacy, 1999 was a particularly challenging year. The pharmacy was short three pharmacists, and with the ongoing local and national pharmacist shortage, relief was nowhere in sight.

"Being so short-staffed, we were really having a hard time meeting the pharmacy needs of our staff and patients," said Bob Beagley, RPh, director of pharmacy at BMH. "We knew we had to do something, because with the staff shortage, our medication error rates were starting to climb."

Seeking Solutions

To address its increasing medication error rate, BMH established a medication task force. The task force, which included staff pharmacists, physicians, nurses, and members of the hospital's pharmacy and nursing administrations, used failure mode and effects analysis, a key JCAHO standard, to determine all the potential error points in the hospital's medication ordering and dispensing system. Then, using this information, the task force was asked to make recommendations on how to improve the system.

"Our task force recommended implementing an automated pharmacy system," said Beagley. "Based on its analysis, such a system would not only help reduce the steps and potential risk points in our drug ordering and dispensing processes, but would also free our pharmacists from the time-consuming drug dispensing process itself, allowing them more time for clinical interaction with the nursing and medical staff and greater involvement in patient care."

BMH chose Omnicell's automated dispensing system and installed it in January 2000. Today, eight OmniSupplier® cabinets with Pharmacy Drawer Modules populate the patient care areas of the hospital, including the emergency department.

Impact of Automation on Patient Safety at BMH

Overall, it can be said that automation has had a positive effect on patient safety at BMH.

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Bob Beagley, RPh, Director of Pharmacy at BMH

“First, we’ve been able to cut our medication error rate in half, from four errors per 1,000 doses to two errors per 1,000 doses. We anticipate even greater improvement as we continue to expand our automation program here at BMH,” said Beagley.

“We’ve also been able to significantly decrease the number of medications dispensed prior to pharmacist review, which is important in reducing the potential for medication misadventures,” added Beagley. Pharmacist review prior to dispensing the first dose is required by JCAHO and endorsed by the Institute for Safe Medication Practices.

Beagley also commented on additional Omnicell features that help improve patient safety.

“Omnicell’s automation systems have several features that enhance patient safety. Two that we’ve found particularly useful are its Patient Medication Profile and its lighted Sensing Bin drawer. The Patient Medication Profile allows our pharmacists to readily check a prescribed medication against known patient allergies and other parameters, such as the patient’s creatinine clearance, to ensure that the drug is safe for the patient.”

“Omnicell’s lighted Sensing Bin drawer, which we currently use in our emergency department, is another important safety feature,” added Beagley. “With the lighted Sensing Bin drawer, a green light directs the nurse to the correct drug bin and sounds an alarm if the wrong bin is opened. This feature is ideal for high-distraction areas, such as the emergency department, where the potential for drug dispensing errors is particularly high.”

Out with the Old, in with the New at Milford-Whitinsville Regional Hospital

While a shortage of pharmacists was the main reason for introducing automation at BMH, a completely different set of issues led Milford-Whitinsville Regional Hospital (MWRH) to implement automation.

“We had several issues facing us,” said Sue Otocky, director of pharmacy at MWRH. “First was our aging medication order entry system and unit-dose cart dispensing system. While these systems were great in their time, they’ve become more and more inefficient and ineffective, especially in today’s healthcare environment.”

“Since medications are now located on each unit, access is immediate, yet secure. So there is now a greater accountability for drugs dispensed, and patients receive their medications in a more timely manner.”

Cheryl Bonasoro, Vice President of Patient Care Services at MWRH

Otocky noted that when using such systems, “the turn-around time from order entry to dispensing to the patient takes too long, so patients don’t receive their medications in a timely manner. Furthermore, with unit-dose carts, discontinued medications remain on the floor too long, and their continued presence increases the potential for dispensing errors.”

Another issue the hospital faced was that its pharmacists were spending more and more time in the pharmacy on paperwork than on the wards in clinical activities, such as consulting with the staff or patients.

“Our nursing staff expressed frustration at not having more access to our pharmacists,” said Otocky. “Such interaction among the staff and pharmacists is key to monitoring a hospital’s drug prescribing habits and in reducing the incidence of medication misadventures, but inefficiencies within our pharmacy unfortunately kept our pharmacists off the wards and in the pharmacy dealing with paperwork.”

Automation as a Solution

“We knew automated systems had a lot to offer in streamlining the drug ordering and dispensing processes based on what we heard and saw at various trade shows,” said Otocky.

But what clinched the decision to automate was a report by the Massachusetts Coalition on the Prevention of Medical Errors that highlighted automated pharmacy systems as an important means of reducing the potential for medication errors.

“The coalition’s report really helped to affirm our decision to automate,” said Cheryl Bonasoro, vice president of patient care services at MWRH. “The checks and balances afforded by these systems go a long way toward enhancing patient safety.”

After analyzing the features and benefits of several different automated pharmacy systems, MWRH chose to go with Omnicell. The hospital began phasing in Omnicell Pharmacy Systems in October 2000, and today, 13 OmniSupplier cabinets with Pharmacy Drawer Modules are installed throughout the hospital. Each cabinet, which is linked directly to the pharmacy, contains 300-400 different drugs, depending on the needs of each nursing unit.

Benefits of Automation at MWRH

Omnicell Pharmacy Systems have provided several important benefits to MWRH.

“Since medications are now located on each unit, access is immediate, yet secure. So there is now a greater accountability for drugs dispensed, and patients receive their medications in a more timely manner,” said Bonasoro.

“Automation has also made the entire process of drug management and dispensing much more safe and efficient,” added Otocki. “Each time a drug is removed from the OmniSupplier cabinet’s Pharmacy Drawer Module, the withdrawal is automatically recorded. If the request doesn’t match the dosing schedule, the system will require that the nurse provide an explanation. The system also records forced entries and discrepancies in drug inventories. And when a cabinet’s levels fall below par, a fill report is automatically generated in the pharmacy, ensuring that the wards don’t run out of needed medications.”

Otocki has also found that the new automated system greatly improves the interaction between the hospital’s pharmacists and its medical and nursing staffs.

“Our automated system has allowed our pharmacists to become more decentralized since they are no longer bogged down in the pharmacy with paperwork. Now, our pharmacists can be up on the floor attending clinical rounds with physicians, fielding questions from the nursing staff, or providing discharge counseling to a patient.”

Future Plans

MWRH’s automation program continues to evolve. According to Bonasoro, the next step will be automating the medication administration record (MAR) and adding a computerized physician order entry system to help reduce the risk of error in interpreting a physician’s written order.

“We also intend to make full use of Omnicell’s data collection and reporting features,” added Otocki. “With this information, we will be able to further improve our drug inventory management and, more importantly, better track our medication error rates. This information is key as we work to continuously improve patient safety and our internal efficiency here at MWRH.”



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