

END-TO-END BAR CODE AUTOMATION REAPS SIGNIFICANT RESULTS

AT A GLANCE

ORGANIZATION

Shore Memorial Hospital
Somers Point, NJ

300 beds

- Cardiovascular Services
- Orthopedic Services
- Neurosciences
- Oncology Services

SOLUTION SPOTLIGHT

ROBOT-Rx®; AcuDose-Rx®;
MedCarousel®; Fulfill-Rx™;
NarcStation™; MedDirect™

CRITICAL ISSUES

- Reduce the risk of medication errors
- Prepare for bar-code scanning medications at the bedside
- Improve medication order-to-floor turnaround times
- Standardize and improve inventory tracking
- Improve efficiency in a tight labor market
- Implement best practice and process improvement to reduce costs

RESULTS

- Improved medication dispensing via ROBOT-Rx to 99.9% accuracy
- Lowered cart fill time by 44%
- Reduced the number of missing medications by 37%
- Cut inventory costs by 23%, saving \$144,000
- Increased medication inventory turns from 10 to 17
- Improved charge capture
- Enhanced narcotics management

Profile

Shore Memorial Hospital, the flagship of Shore Memorial Health System (SMHS), is a not-for-profit, 302 licensed-bed medical facility that is a regional leader in high-technology acute care. SMHS has clinical affiliations with the University of Pennsylvania Health System, expanding medical services and programs in the fields of cardiac, cancer and neurological care. Similarly, SMHS shares clinical affiliations with the Children's Hospital of Philadelphia, world renown for its highly specialized pediatric care.

Challenges

At Shore Memorial, hospital officials established a multi-disciplinary committee to advance medication safety. The Medication Safety Task Force included representatives from the pharmacy, nursing, administration, finance, and clinical informatics departments, as well as physicians.

Overall, the Medication Safety Task Force set forth four key goals:

- Reduce medication errors by implementing automation and bar coding systems
- Standardize inventory across the health system
- Improve inventory tracking for both floor stock and patient-issued medications
- Redeploy staff for clinical activities through improved efficiency of workflow, documentation, and utilization management

On a practical level, the pharmacy department also sought to integrate bar code technology to improve quality and patient safety; to improve medication turnaround times; and to improve charge capture and reduce costs.

At the time, Shore Memorial's 12 staff pharmacists and 18 pharmacy technicians spent nearly all of their workday in the central pharmacy manually processing orders and filling medication orders. Volume was approximately 2,300 non-I.V. doses per day.

"Having previous experience with pharmacy automation systems, I felt that it was the essential foundation for achieving our goal of bar-code scanning medications at the bedside,"

said Barbara Giacomelli, Pharm.D., Director of Pharmacy. "Automation systems also impact productivity and help reduce costs."

Answers

The Medication Safety Task Force completed an exhaustive evaluation process, studying existing and available information systems, workflow and distribution processes, and automation technology. The group considered a variety of bar-code solutions and systems, including robotics, automated dispensing machines, and point-of-care technology, and how each fit into the organization's long-term strategic plan. A cost/benefit analysis was completed for each component and for the end-to-end medication order and distribution system. Following clinical and financial reviews, the hospital leadership approved the recommendations made by the Medication Safety Task Force.

"To achieve pharmacy and organizational goals, we sought to apply best practices and implement process improvement," said Dr. Giacomelli. "We saw bar-code technology as a best practice imperative—as a means to provide systematic methods for identifying patient, product, and employee. Bar-code technology has proven accuracy in healthcare and in other industries, and has multi-functional capabilities. You can use bar codes for identification, charting, and billing functions."

Shore Memorial's overall solution included:

- The ROBOT-Rx® system to automate medication storage, dispensing, returning, restocking, and crediting functions. "We wanted a robotics backbone for our bar code strategy," explained Dr. Giacomelli. "The nurses felt strongly that they wanted a strategy where they could wheel a cart or another device with medications to the bedside, rather than walking back and forth down a hall to obtain medications." The hospital uses ROBOT-Rx for 24-hour cart fill and first doses, and is considering using it to fill for an affiliated nursing home. The ROBOT-Rx system automatically dispenses to patient-specific envelopes, which are transported to carts located on the nursing units.

CASE STUDY

SHORE MEMORIAL HOSPITAL

ROBOT-RX® • ACUDOSE-RX® • MEDCAROUSEL® • FULFILL-RX™ • NARCSTATION™ • MEDDIRECT™

"We've embraced best practices and process improvements to enhance medication safety and reduce our costs. Bar-code automation technology has put us in position to accomplish that."

Barbara Giacomelli, Pharm.D.,
Director of Pharmacy,
Shore Memorial Hospital

- Profile-dispensing AcuDose-Rx® automated medication dispensing cabinets. In addressing patient safety and medication tracking in patient care areas, the hospital installed 30 AcuDose-Rx cabinets for dispensing narcotics, floorstock, and PRN medications in inpatient, outpatient, and ancillary areas, such as OR and ER. "Because all medications in the AcuDose-Rx cabinets are bar coded, functions such as dispensing, monitoring, restocking, and charge capture are greatly enhanced," said Dr. Giacomelli.
- The MedCarousel® system, which utilizes rotating shelves and pick-to-light technology to semi-automate medication picking. Shore Memorial uses MedCarousel to fill the AcuDose-Rx cabinets and for any non-ROBOT-Rx first doses. Its high-powered inventory management software also allows Shore Memorial to improve inventory turns and reduce medication costs.
- Fulfill-Rxsm inventory optimization software to automate medication re-ordering. Said Dr. Giacomelli, "Fulfill-Rx creates a daily order list based on par levels, and also a list of medications that should be packaged for ROBOT-Rx."
- NarcStation™ inventory management system for controlled medications in the hospital pharmacy. NarcStation ensures compliance with government regulations for narcotics with real-time reporting methods and raid information retrieval.
- The MedDirect™ system for order transmission. Using Web-based imaging technology, MedDirect captures images of paper orders at the hospital's 23 nurse workstations, and transmits them to four workstations in the pharmacy. Orders are linked to the patient profile and can be digitally enhanced, streamlining order entry and reducing transcription errors. "A nice safety feature is that MedDirect alerts us when a nurse dispenses a medication from an AcuDose-Rx cabinet for an order that hasn't been approved. This continues to

close the loop on ordering and dispensing safety," Dr. Giacomelli explained.

Shore Memorial uses two FTEs to prepare the unit-dose, bar-coded medications dispensed by ROBOT-Rx, MedCarousel, and AcuDose-Rx cabinets.

Results

Shore Memorial followed a two-year implementation cycle. Now, all of Shore Memorial's medication order and dispensing systems are rooted in bar-code scanning technology and enhanced workflow. As a result, the hospital has reaped significant benefits impacting patient safety, workforce productivity, and financial performance.

Overall, the hospital reported:

- Improved medication dispensing via ROBOT-Rx to 99.9 percent accuracy
- Reduced cart fill time by 44 percent
- Reduced number of missing medications by 37 percent
- Slashed inventory costs by 23 percent, saving \$144,000 annually
- Improved inventory turns from 10 to 17
- Improved charge capture
- Reduced errors by minimizing the number of manual tasks to dispense medications
- Realized better dispensing management of narcotics

Conclusion

Said Dr. Giacomelli, "By increasing our productivity through automation, we have been able to redeploy our pharmacists to provide more value-added, patient-focused, clinical work. For instance, we assigned one pharmacist who previously was involved in cart check duties to process medication orders in the emergency department 10 hours per day."

"The feedback from the nurses and from the medical staff has been very positive. They now see the pharmacists making a difference in the patient care areas, and the pharmacists feel more a part of the healthcare delivery team."

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