

# Case Study

## At a Glance

### Organization

Evergreen Hospital  
Medical Center  
Kirkland, WA

### Solution Spotlight

- ROBOT-Rx®
- AcuDose-Rx®
- Packaging Solutions
- MedDirect™

### Critical Issues

- Reduce the risk of medication errors
- Position for bar code medication administration
- Support existing nurse server model
- Reduce laborious cart fill and first dose operations
- Improve efficiency in a tight labor market

### Results

- Improved medication dispensing accuracy to 99.9%
- Conducted nearly 24,000 clinical interventions annually, saving approximately \$1.9 million
- Cut first dose fill labor by 78%
- Reduced cart fill labor by 72%
- Decreased crediting labor by 50%
- Strengthened narcotics management

## Evergreen Hospital Medical Center Nursing, Pharmacy Benefit from ROBOT-Rx Medication Dispensing Solution

### Overview

Officials at Evergreen Hospital Medical Center sought to prepare for bar code medication administration and improve efficiency of medication delivery to nurse servers. By implementing the ROBOT-Rx® system, the hospital increased dispensing accuracy to 99.9 percent; cut cart fill labor by 72 percent; and realized nearly \$2 million in annual savings via 24,000 pharmacist-patient interventions.

### Challenges

Located on the outskirts of Seattle, the 250-bed Evergreen Hospital is a community-based facility serving a growing population of more than 400,000 people. For more than 15 years, nurses at Evergreen Hospital Medical Center were accustomed to retrieving unit-dose medications from nurse server units. To fill the nurse servers with unit-dose medications, the pharmacy performed a daily manual cart fill. Selecting and checking the 1,125 daily doses took nearly 15 hours for technicians and pharmacists.

"The nurses liked the convenience of having scheduled and common PRN medications as close as possible to the bedside, as opposed to walking to the medication room down the hall," explained Bob Blanchard, director of pharmacy. "It's good for nursing workflow and safer, but the cart fill was a very labor-intensive process for pharmacy." Faced with

increasing labor shortages and higher labor costs, Blanchard sought to streamline processes through automation. But he also wanted to balance automation with the desire to continue using nurse servers.

### Answers

After an extensive review of various medication distribution models, Evergreen chose to automate existing processes. "We already were successful in terms of delivering unit-dose medications to the bedside," explained Blanchard. "It became a matter of streamlining pharmacy operations so that our staffing is most efficient. The ROBOT-Rx® system is the obvious solution." The ROBOT-Rx system automates medication storage, dispensing, returning, restocking, and crediting.

Evergreen began by packaging medications in bar-coded, unit-dose form using McKesson equipment. "Because the packaging looks similar, we wanted to get nurses accustomed to using it—to be able to distinguish what a Protonix dose looks like versus a digoxin, for instance. It was a smooth transition." After building its bar-coded medication stock, Evergreen went live with ROBOT-Rx in March 2004. "At first, we conducted a short trial with our pharmacists checking every dose the robot dispensed," explained Blanchard. "Now we do a daily 10 percent random check, with approval of the state Board of Pharmacy."

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**Bob Blanchard**

*Director of Pharmacy*

*Evergreen Healthcare*

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The hospital uses ROBOT-Rx for 24-hour cart fill, automatically dispensing to envelopes imprinted with the patient's name and bar code. The patient-specific envelopes are then transported via carts to the nurse servers. The robot also fills first doses, transported either by pneumatic tube or via messenger.

To further address medication safety and tracking in patient care areas, Evergreen installed 24 AcuDose-Rx® medication dispensing cabinets. The AcuDose-Rx cabinets store narcotics, floorstock, and PRN medications. Previously, narcotics were secured in the medication room and required extensive manual documentation.

"The narcotic counts were done three times daily, at each shift change," said Blanchard. "Now, with the AcuDose-Rx cabinets tracking usage, nurses do it once per week." Also, because all medications in the AcuDose-Rx cabinets are bar coded, dispensing, monitoring, restocking, and charge capture are greatly enhanced, Blanchard noted.

## Results

Today, the ROBOT-Rx accounts for 95 percent of all unit dose medications dispensed by Evergreen's pharmacy. This has dramatically impacted medication safety, productivity, and cost containment. At the same time, Evergreen Healthcare has experienced significant growth: a 29 percent increase in average daily census, and a 53 percent increase in doses dispensed per day.

According to Blanchard, the automation systems easily have absorbed all of the workload increase. In fact, since implementing ROBOT-Rx, the pharmacy requires 58 percent fewer technician FTEs and 61 percent fewer pharmacist FTEs for medication dispensing and checking duties. Those FTEs have been redirected to other activities. The number of hours dedicated to clinical pharmacy has doubled. Explained Blanchard, "We now have pharmacists assigned to conducting clinical activities on every floor." Pharmacist interventions from May

2006 to May 2007 averaged nearly 2,000 per month, for a total approximate value of \$1.9 million.

Automation also has prompted process improvements. Cart fill duties moved from day to night, freeing FTEs for emergent duties. Technician time for first doses dropped from 9.33 to 2 hours per day; pharmacist time for first doses dropped from 5.3 to 2 hours per day. Using bar-code scanning, medication crediting now occurs immediately after cart fill, rather than several days later using manual processes. And, importantly, the ROBOT-Rx system and AcuDose-Rx cabinets provide a real-time inventory control that the hospital didn't have previously.

"Nursing workflow stayed exactly the same, which is critical to our overall success," said Blanchard. "We're just using robotics in the pharmacy for tasks that were previously performed manually, and using people for more critical tasks." Another time-saving tool is the MedDirect™ imaging system for medication order transmission. Explained Blanchard, "MedDirect reduces paperwork, improves communications with nursing, enables us to prioritize orders electronically, and helps us easily identify potential problems early on in the medication order process."

## Conclusion

"At Evergreen, productivity is a key organizational imperative," said Blanchard. "We report our productivity on a regular basis. The robot and the cabinets have contributed substantially to documented improvements. If I'm over budget in staffing for a particular month, or with pharmaceutical purchases, I'm able to offset those by the time savings and charge capture savings generated by ROBOT-Rx, by AcuDose-Rx cabinet transactions, and by the number of interventions completed by our clinical pharmacists. Automation enables us to make dramatic improvements across the board."