

# PHARMACY

## Purchasing & Products

### Case Study

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## Supporting Bedside Verification With Centralized Bar Coded Medication Distribution

**SERVING CENTRAL PENNSYLVANIA AND THE SURROUNDING AREAS,** PinnacleHealth System is an integrated health care system, consisting of three acute-care hospitals comprising more than 600 licensed beds. Beyond our emphasis on med-surg, we have several highly specialized programs that have their own distinct pharmacy needs, including heart and vascular, women's health, oncology, transplant, and a neonatal intensive care unit.

To support the health system's plan to improve quality and patient safety, we implemented a bedside scanning system this past year. To ensure that this initiative provides significant safety improvements, more than 90% of medication doses are delivered to the patient with bar codes. While our IT systems and procedures continue to evolve, this milestone has been accomplished through the collaboration of internal departments, as well as vendors selected for their appropriateness and flexibility. This collaborative approach allowed us to centralize bar coding and supply chain functions in one location that serves all three acute-care hospitals.

The major elements of our medication-management solution were determined several years ago based on long-standing, positive vendor relationships. For many years, Pinnacle Health had outsourced its IT needs to Siemens, making the company our medication-management system vendor of choice. We use Siemens Pharmacy and Siemens Med Administration Check (MAK) for bedside scanning, charting, and advanced clinical decision support. Additionally, we sought to maintain our working relationships with Cardinal Health for our decentralized Pyxis cabinets and Amerisource Bergen as our pharmacy wholesaler.

#### Selecting Bar Code Repackaging Vendors

The essence of a successful bedside scanning system is the availability of accurately bar coded medications that can be reliably scanned at the patient's bedside. The philosophy behind our bar coding initiative was this: safety and accu-

racy first, followed by economy and practicality. After determining which medications could be purchased with readable manufacturers' NDC bar codes, we sought to fill the gaps with centralized internal packaging.

Our next step was to choose a suitable vendor. We specifically sought an integrated system that worked from one database and included a carousel, high-speed packager, and labeling software. After evaluating several potential vendors, including some we were already using, we chose Talyst. Among the qualified vendors, Talyst stood out as particularly creative, flexible, and open-minded when it came to helping us achieve our goals.

A variety of technological solutions was needed to bar code the vast array of dosage forms our acute-care patients require. As a result, we are using Talyst's AutoPack to package most oral solids that cannot be purchased with manufacturer bar codes. We use the high-speed packager to produce single-dose packets that have machine-readable bar codes, as well as human-readable labeling. For select medications – i.e., those with allergenic or biohazard qualities – we use Medi-Dose's MILT manual packaging system.

For injectables and irregularly shaped items, such as ampoules, vials, and eye drops, we use Talyst's AutoLabel printers and labels. One printer produces circular labels with the same information set as that of the AutoPack. The other printer delivers a transferable flag label designed especially for vials of injectables. Compounded sterile products are bar coded utilizing labels generated by the Siemens Pharmacy system.

#### Work Process Improvements

In our hospitals, the interdisciplinary push toward bar coded medication delivery made all the difference. By engaging administration, nursing, and IT as partners from the outset, we succeeded in having all parties jointly own the process along with pharmacy. This team approach translates to practical applications such as determining, at the outset, where bar code labels are best

## The Systems Scoop

### Pharmacy Information System



Siemens Pharmacy

### Drug Storage and Retrieval/Inventory Management



Talyst AutoCarousel and AutoPharm software

### High-Volume Oral Solid Packaging



Talyst AutoPack

### Packaging Ampoules, Syringes, and Other Irregularly Shaped Items



Talyst AutoLabel

### Stocking Decentralized Dispensing Cabinets



Pyxis PARx

### Decentralized Dispensing



Pyxis MedStation

### Bedside Medication Verification



Lionville iCart

Siemens MAK

tent manner across all of these systems. When changes in the Siemens master file occur, they are sent to the downstream databases (Pyxis and Talyst) and are “trapped” for final review and release by a pharmacist system administrator. We are confident that this system-wide consistency of the medication description in electronic, paper, and label formats contributes significantly to the safety of our patients.

### Conclusions

Building a successful bedside verification system requires substantial preparation and input from a variety of sources. Our experience reinforces that bar coding medications is not just a pharmacy issue. Nursing and IT have equally vital roles to play. It is very helpful for nursing, pharmacy, and IT to intimately understand each other’s daily processes, as well as recognize each other’s limitations.

It is also important to recognize that an automated process does not exonerate pharmacists from performing necessary checks and balances. Established pharmacist checks throughout the process ensure packages will scan correctly at the bedside. This has reinforced our conviction that high-level, detail-oriented people are best suited to this project.

placed on each medication, thereby ensuring proper handling at the bedside. Bedside scanning is accomplished using laptop-style computers on wheels (COWs) and wireless hand held scanners. The nursing staff has been instrumental in determining the optimal timing and workflow to achieve a smooth process from the Pyxis units to the bedside.

Finally, it is unrealistic to expect a vendor to build your system alone. The process requires a lot of shared brainpower. These systems are mere templates and must be molded to meet an individual health system’s goals. Choosing a vendor that has the capability to help you implement your vision is critical.

That said, there is no question that our bedside verification initiative has had a positive bottom-line impact on patient safety in our health system. Although the effort required to implement such a system is significant, every day, we see advantages that make it worthwhile. ■

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In the central pharmacy, the Talyst AutoCarousel and its accompanying AutoPharm software for real-time inventory management provide a quick dispensing solution with bar code verification as medications are stocked into the carousel and, again, as they are dispensed. The Talyst-produced label is used to scan medications, via Pyxis PARx, into each Pyxis MedStation. AutoPharm also plays a key role in our daily communication with AmerisourceBergen by automatically generating a daily electronic order to the wholesaler, based on preset par levels.

### Database Consistency

Centralizing databases proved to be a major challenge. Recognizing that using multiple vendors for pharmacy and inventory systems can result in wide variation in our data stream and labeling, we created one database, utilizing the Siemens formulary, to govern the entire medication delivery system.

We use Siemens Pharmacy as our master system to populate like data fields in both the Pyxis and Talyst databases. This process ensures that information for trade and generic name, dose, route, and dosage form appears in a consis-



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