St. Barnabas Hospital (SBH) Sets the Pace for Pharmacy Automation

SBH Health System is a community-based healthcare system serving individuals and families in the Bronx, New York, providing inpatient, outpatient and emergency medical, mental health and dental services. St. Barnabas Hospital (SBH), the healthcare system's flagship, is a 461-bed, non-profit, acute care facility that provides primary care and specialty services. As a Trauma Center, SBH is authorized to treat the most critically ill and severely injured patients, and as a New York State designated Stroke Center and State-designated AIDS Center, it provides access to much-needed services in the community.

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In an annual survey conducted on behalf of the Robert Wood Johnson Foundation and the University of Wisconsin's Population Health Institute study on health outcomes and health factors, the Bronx, New York, has ranked low in the State of New York for the past six years. Significant numbers of diabetes and asthma sufferers are indicative of three general issues in the area—lack of preventative health and poor nutrition—and people simply don't go to the doctor.

As a hospital serving the indigent and underprivileged, SBH deals with a multitude of challenges. Yet somehow, SBH has designed one of the most automated pharmacies in the country, managing a 340B med program with nearly 9,000 medication orders and 1,000 IV orders per week.

The Challenge

It all started with the need for space. The hospital's fifth-floor pharmacy was in a space that was separated, fragmented, and severely constrained. With the space issue and processes that were labor-intensive and inefficient, the pharmacy was managing, but there was a great deal of room for improvement:

— All medications orders were hand-written on paper and then had to be transcribed into the Pharmacy Information System—a slow, error-prone process that forced duplication of effort.

— Pharmacy staff had to fill medication orders by hand—with no barcoding or automation to ensure accuracy.

— Because there were no cabinets on each floor, pharmacy staff transported single-dose medications throughout the day, another time-consuming and labor-intensive process.

— There was no bedside barcoding for patient safety.

— There were no processes that provided checks and balances.

— Inventory was not being managed effectively, costing the hospital money and threatening to keep patients waiting if medications were out of stock.

— Cumbersome shelving for medications took up precious floor space in the already overcrowded pharmacy area.

— Hospital pharmacists were spending all their time filling orders in the pharmacy rather than utilizing their unique, valuable skills in patient care.

With clean room requirements that came about with USP 797 and the commitment to providing top quality pharmacy services, SBH made the decision to allocate an awarded-grant toward updating and automating its pharmacy. Since this overhaul would involve a physical move, administrators were presented with the opportunity to assess the entire pharmacy system. They wanted to get "way ahead of the curve," so they asked the question «Where do we want to be in 20 years?» From there, a plan evolved. In addition to automating its processes for efficiency, two other goals were to improve patient safety and better utilize the pharmacists' time and skills.

The Solution

After conducting market research, the administration decided on a best-of-breed approach, selecting components known for excellence and integrating them into a system that would address everything from inventory management to bedside barcoding. The entire system would include many "moving parts", with a medication management software platform serving as its foundation.

Swisslog Healthcare was selected to provide several critical components of a new SBH Pharmacy system: AutoPharm® Enterprise medication management software, three AutoCarousel® vertical carousels, one AutoPack™ oral solid packager, and one AutoCool® +H refrigerated storage unit.

A powerful pharmacy automation platform, AutoPharm Enterprise provides enterprise-wide medication management across the entire health system, allowing for improved inventory control and workflow. In addition, AutoPharm functions as the ideal foundation for other pharmacy and information systems to seamlessly integrate, forming a complete, end-to-end pharmacy operations solution.

AutoCarousel provides heavy-duty, secure semi-automated storage for medications. Driven by AutoPharm, it not only reduces the storage footprint, but by working with AutoPack, Swisslog Healthcare's oral solid medication packager, it also plays a key role in automating the order-filling process, increasing efficiency and reducing errors.

Swisslog Healthcare was chosen as part of an entirely new SBH pharmacy system that also included a robot for preparation of intravenous (IV) medications, Automated Dispensing Cabinets (ADCs) for each floor, bedside barcoding software, and an electronic medical records system.

Ruth Cassidy, a veteran in the industry with years of experience moving from centralized to decentralized pharmacy solutions, was brought in to get the project moving...and move she did. Against the advice of consultants, who recommended a slow, staged rollout, Ruth Cassidy was a firm believer in getting systems quickly operational, to start realizing benefits as soon as possible.

« **...what I told the CFO and the Board of Directors of finance when they wanted their return on investment, was that the tracking of medication because of Swisslog Healthcare and automated base cabinetry, I could reduce their budget by one million dollars...**

Once we finished implementing, we did actually succeed in reducing the budget by a million dollars...»

How It Works

SBH's new pharmacy management system is a shining example of automation and integration working at its best, with each component doing its part to help make the job easier for the humans involved, not to mention removing much of the risk.

— The physician enters an order in the Computerized Physician Order Entry (CPOE) system, the order is verified by a pharmacist and dispensed from the Automated Dispensing Cabinet (ADC) as appropriate.

— Throughout the day, the ADCs on each floor send messages to AutoPharm reporting critically low inventory levels and stock-outs for scheduled replenishment.

— The assigned pharmacy staff retrieves the stock-out label using the AutoCarousel, a system which reads the barcode on the label, spins to the appropriate shelf, and displays the medication name, making stock replenishment fast, easy, and accurate.

— The staff then delivers the selected medications to the appropriate ADCs, ensuring that every ADC is sufficiently stocked throughout the day.

On the back-end, Swisslog Healthcare's technology manages interfacing with the IV robot, receives inventory, suggests wholesale orders when appropriate, and serves as a perpetual inventory tracking system—including the inventory in AutoCool +H, AutoPack, AutoCarousels and static shelves.

The Results

If you've ever spent time in a hospital pharmacy, the words "quiet and well organized" do not immediately come to mind. But the pharmacy at SBH is exactly that: calm, quiet. The robot makes IVs, the carousels spin and the pharmacy technicians replenish the inventory.

Although a quiet pharmacy wasn't the major goal, it's the pleasant outcome of the new SBH highly automated pharmacy environment. The new system is working well, evidenced by the apparent lack of chaos and panic. But if you find that amazing, consider the other benefits SBH has realized:

— The new pharmacy is well organized and efficient, thanks in part to the Swisslog Healthcare carousels.

— The pharmacy reduced its budget by $1M in 2014 with the implementation of a decentralized system, decreasing the number of expired medications and inventory returns.

— The pharmacy has significantly tighter control over its inventory: «We know exactly where everything is, and we can account for everything,» Ruth continued. In addition, the pharmacy no longer outsources any of its compounded medications, greatly reducing both risk and costs.

— Even with the cost of medications going up 24% according to ASHP in 2015, the SBH pharmacy has been able to stay on budget. However, in the odd instance where they have gone over budget in one quarter, they have been able to end the year under budget, thanks to powerful visibility provided by AutoPharm Enterprise.

Perhaps the most exciting developments—which offer far reaching benefits to patients—are:

1. Getting the pharmacists "out of the basement" or in the case of SBH, off to the 7th floor. Because the pharmacy technicians have been empowered by the system to fill the stock-outs, the pharmacist's only job is to check them before the medications leave the pharmacy. This not only makes better use of the pharmacy technicians' time and skills, but it also frees the pharmacists to become an active part of patient care teams and using their skills to contribute to patient care in a much more direct way. With pharmacists actively participating as part of the patient care team, medications are used to their utmost benefit.

2. Reaching beyond the hospital walls. The new system has enabled SBH to offer Transitions-of-Care programs that educate hospitalized patients and the community. The initiatives include bedside medication deliveries (Meds-to-Beds Program) and Ambulatory Clinic Services. These programs were designed to prevent hospital admissions and re-admissions, which they have: re-admissions have dropped by 25%.

«We're celebrating the 150th anniversary of St. Barnabas Hospital," Ruth says, "and we have a lot to celebrate.»

Next Steps

With such success, has Ruth and her team completed their work? Absolutely not. She sees the success of the automated pharmacy system as the spur to be more proactive and innovative in approach. She is in the process of starting a pharmacy residency program and is working with the State of New York on a certification program to empower pharmacy technicians. Plus, preparation is in full swing for USP 800, which is coming soon.

Swisslog Healthcare

At Swisslog Healthcare, we strive to lead change for better care. At the core of this vision is a focus on improving workflows and reducing the time clinicians spend doing repetitive tasks—enabling more time to care for patients and residents. Our solutions and services extend across the continuum of care, including transport, medication and supply chain management for long-term care facilities, consolidated service centers, hospitals and health systems.

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