Metro® and ARC Healthcare Technologies work together to provide Northwestern Memorial Hospital with an unparalleled inventory and storage management system

Without a streamlined system in place, inventory management can be a grueling process that results in workflow disruptions for employees and monetary loss for the health care facility. For example, products might expire because too many were ordered; a product might not be in stock when needed because enough weren’t reordered; or a nurse forgot to inform the billing department that a certain product was used on a patient, which results in the patient not being charged. However, an inventory system using radio frequency identification (RFID) technology can put an end to the nightmare like it did for the folks at Northwestern Memorial Hospital (NMH). Once its RFID-enabled inventory management system was integrated, it did not take long for NMH to receive a worthwhile return on investment and for its staff to notice a more efficient workflow.

CHALLENGE

At Northwestern Memorial Hospital, located in the heart of downtown Chicago, virtually every medical specialty is represented by its 1,603 on-site physicians. The hospital has reached Magnet Status, which is the gold standard for quality care. Additionally, it is ranked the #1 hospital in the Chicago metro area and among America’s best hospitals in 13 medical specialties recognized nationally by U.S. News and World Report. However, in 2009, NMH knew it had to devise a solution to cut down on its inventory costs and losses. Prior to instituting the Helios RFID system, the hospital’s IT infrastructure that was managing inventory was not meeting expectations. There was little automation, which made doing inventory an arduous process. One of the main issues was that too much of the same product was being stocked, such as implants, tissue, heart valves, staplers, etc. Therefore, the product packs that were more toward the bottom in the storage bins would become expired, creating waste and unnecessary costs to the hospital. Additionally, during an O.R. procedure, it would not be uncommon for a nurse to forget to document that a certain item was used. This would result in the billing department not billing the patient, and the hospital losing money because products were not properly accounted for.

NMH’s inventory manager at the time was determined to find a way to streamline the hospital’s supply chain management. “I knew RFID was the emerging technology, so I wanted to look at a variety of vendors that supplied it,” stated the inventory manager. “I finally settled with ARC Healthcare Technologies because of the company’s history in the manufacturing sector. ARC was familiar with how to create the custom tracking solution NMH was seeking.” From previous projects, ARC knew its RFID technology would work seamlessly with Metro’s MetroMax™ storage system that NMH already had in place. Therefore, Metro and ARC agreed to work together on this project. “Metro has great equipment that is easy to retrofit for RFID, so it just made a lot of sense to partner,” commented Bill Sharp, President, ARC Healthcare Technologies.

At-a-Glance

**ORGANIZATION**

Northwestern Memorial Hospital, Chicago, IL

**BENEFITS OF METRO/ARC SOLUTION**

• Control and accountability of inventory
• Improved efficiency in workflow and cost savings to the hospital
• Organized storage areas that can be rearranged quickly and with ease

MetroMax™ shelving unit transformed into a catheter cart with items tagged for RFID.
THE SOLUTION

NMH had used MetroMax shelving in its labs, cath labs and O.R. storage rooms throughout the hospital for a few years before looking to implement RFID technology. “We switched from a competing brand because Metro offers a lot more options for moving products around,” said Chris Ouimet, NMH project manager. “MetroMax is the perfect solution that lets us properly fit much more product in our storage areas in an organized fashion, so employees can quickly gather what they need. Additionally, the MetroMax system is also very easy for one person to quickly configure and reconﬁgure.”

Since 2005, NMH has also used the Starsys™ system by Metro in the outpatient facilities because the nurses needed closed-door cabinets. The Starsys units are not currently equipped with the RFID technology. However, ARC has worked with Metro to integrate this solution, as well. It is ready to implement as NMH’s expansion plans continue.

ARC developed its RFID solution for manufacturing plants to track inventory of spare parts. Once the manufacturing market declined in 2003, the company was looking for other markets to penetrate. When NMH and ARC first met, ARC asked, “What is the problem that needs to be solved?” ARC wanted to make sure the RFID system was just what NMH needed. It took about two years to develop the Helios software and hardware to solve NMH’s inventory issues. “It’s all about the solution,” said Sharp.

MetroMax was the optimal solution to be retroﬁtted for RFID because of its corrosion-proof, polymer shelving; built-in Microban® antimicrobial protection that keeps the shelves clean and its ﬂexibility to adjust the shelves for the particular products being stored. “The enclosure panels that go around the unit make it perfect for mounting the rack for the RFID antenna,” commented Sharp. “Many of Metro’s competitors use stainless steel shelving, which is difﬁcult for RFID technology because the unit is not as ﬂexible since the size and dimensions are restricted due to the metal. RFID does not play well with metal.”

There are many variations of RFID, but the one that ARC created for NMH uses a UHF chip in an antenna that is very thin and can be integrated onto a product label. When an item is ﬁrst received into the hospital, the manufacturer’s bar code label is scanned, and the associated lot number and serial number are assigned a unique identiﬁer (UID) by the Helios software. This becomes the item’s “license plate” number. A RFID label is then printed and placed on the item. Now, when the item is moved throughout the hospital and placed in a RFID-enabled cabinet, cart, doorway portal, scanned at a check-in/out kiosk, or scanned in an O.R., its location is updated. The Helios database is where the information regarding product expiration dates, inventory levels, reorder amounts, and billing is kept, recorded and reviewed. In addition, by using a badge reader, the system can track who removed the item or returned it if it was not used. Further, if an item is received that is already expired, special permission will be required to put it into the system. An inventory report is run at the end of each day. If the report shows an item was not returned, it can be located. Other reports can also provide information on whether or not an item was billed to the patient. The database contains the par values of each item, so when it is necessary for the item to be reordered, a requisition or purchase order will be generated and passed to the purchasing system.

As an example, when a nurse takes multiple items out of a secure cabinet for a procedure, the cabinet is re-inventoried. Whatever is not returned is validated with the billing department.

BENEFITS TO NMH

The cooperation between Metro and ARC was beneﬁcial for NMH because the hospital was able to improve its workﬂow and realize a healthy return on investment (ROI). “Working with Metro and ARC was a really nice way to deploy the RFID functionality across the NMH campus,” said NMH’s previous inventory manager. “We worked together on some custom projects, and at the end of the day, it lets us make the best of both worlds in a cost effective way.”

Improved workﬂow: The RFID system used at NMH has greatly improved the hospital’s workﬂow for a variety of reasons.

• When items are relocated or new items come in, the RFID system has the ability to scan up to 60 items at once. This makes it very quick and easy to get new items into the system and all items where they need to go quickly.

• MetroMax shelving has allowed NMH to organize its storage rooms in ways that work best for the available space and inventory in each room. “It isn’t difﬁcult to move MetroMax back and forth to ﬁt our needs across all areas of the hospital,” commented Chris Ouimet. In fact, a few MetroMax units have been turned into catheter cabinets. ARC made the hooks, and the product was tagged using RFID.

• Doing inventory and reordering products was a cinch once the RFID technology was in place. What used to take 15 people, is now reduced to three or four, which has freed resources to perform other duties.

ROI: It didn’t take long once the RFID system was implemented for NMH to begin getting a return on their investment. With the ability to track items, the hospital’s revenue grew substantially because patient charge loss was no longer an issue. This, coupled with a reduction in product loss because items were no longer being reordered when they weren’t needed, resulted in a $3.75 million ROI in the ﬁrst year. RFID was used at NMH. At the present time, the RFID system has reduced the expired product cost to practically $0.

Additionally, the design of the MetroMax shelving made it simple for ARC to install the RFID system with little to no down time. This attribute of MetroMax also played a role in saving the hospital money because NMH did not require costly customization or redundant hardware.

THE FUTURE

Since Helios was implemented at NMH, the hospital has purchased additional MetroMax units and its accessories, along with reconfiguring more supply and storage areas with the shelving system since it works so well with the RFID technology.

To support the hospital’s continued growth, NMH is currently in the process of reconfiguring more of its supply and storage areas with MetroMax shelving equipped with ARC technology. NMH plans to phase out the very few wire shelving units left. As RFID technology evolves, ARC has been engineering advanced methods to continue employing the technology throughout the hospital.

IN SUMMARY

By working together, Metro and ARC provided a solution for Northwestern Memorial Hospital that has greatly reduced unnecessary costs, saved the facility millions of dollars, streamlined workﬂow and has given NMH a state-of-the-art inventory management system. With the implementation of RFID technology, NMH has set the bar high for its fellow healthcare facilities.