

RFID Lab Inventory System Saves \$465K in First Year

► By automating inventory management, lab freed staff for other duties and reduced errors

►► **CEO SUMMARY:** *Seeking ways to automate every aspect of work flow, the clinical laboratory at St. Francis Health System in Tulsa, Oklahoma, implemented a unique automated laboratory inventory management system that utilizes RFID. In the first four months, the system helped the hospital cut the value of inventory on hand by \$296,000. Another direct cost savings was a 75% reduction in staff time required for inventory control. Payback from this investment was swift and lab administration says it is saving more than \$169,000 each year because of this system.*

WHAT IF YOUR CLINICAL LABORATORY could immediately cut lab costs by about \$300,000 and then save almost \$169,000 annually, simply by managing inventory more effectively? “Of course you would want to do it!” declared Sharon Cox, MT(ASCP)SC, Core Laboratory Supervisor, at **Saint Francis Hospital**, in Tulsa, Oklahoma.

During her presentation at the *Executive War College on Lab and Pathology Management* in New Orleans last month, Cox explained the value of a new inventory control system that uses radio-frequency identification (RFID) technology. “This system not only saved our lab almost \$500,000, in the first year,” she noted, “but it also cut inventory management costs by 40% annually when compared with previous spending for inventory control.

“The good news doesn’t stop there,” said Cox. “In addition, the inventory control system has achieved a 96% reduction in costly inventory errors while also cutting staff time devoted to inventory.

“Completing the annual inventory reconciliation process used to take two of us 10

hours each,” she explain. “Now it takes only 15 minutes. Obviously, going from 20 hours to 15 minutes is impressive. But what is more important is that the staff can now devote that time to more meaningful work.”

These cost savings and productivity improvements came within months following the lab’s implementation, in November 2013, of Inventory Manager, the new inventory management system from **Abbott Laboratories** in Abbott Park, Illinois.

► Fewer Errors, Lower Costs

“In the first four months, the system helped us decrease the value of inventory we keep on hand by \$296,000,” said Cox. “Also, we cut staff time associated with managing inventory by 75%, even as our inventory error rate dropped from 27% to 1%.

“The industry standard for getting a return on investment from a new system is typically six months or more,” she added. “But our lab got this installed in a week and almost immediately started to save money and staff time.

“In addition to cost control, there are other important features in this system that

help us run the lab more efficiently than we have in the past,” she noted. “For example, at the start of every day, we know exactly what our stock levels are and the expiration dates on our supplies.

“That means I don’t have to worry about getting a phone call from the lab late at night about something being out of stock,” said Cox. “Med techs like the system because they no longer go to replenish a reagent and find that it is past its expiration date.

➤ Volume Requires Automation

“Many lab managers overlook the opportunity to improve inventory management,” she added. “For one thing, it generally requires a lot of staff time. And, until now, few hospitals had found ways to automate inventory processes, despite the need for labs to do so.

“Our lab illustrates the opportunity,” stated Cox. “To serve the two-hospital St. Francis Health System, we have nine labs and run about 8.8 million clinical lab tests every year, including 6.8 million clinical chemistry tests and about 1 million immunoassays. We draw about 5,000 to 5,500 tubes every day, and all those tubes have to be transported to the core lab. Just running those tests requires a large amount of reagents and consumables every day as well.

“Our lab’s ongoing goal is to automate as many parts of the lab testing process as possible,” commented Cox. “This is also consistent with our health system’s big focus on quality improvement. We constantly strive to reduce errors while improving efficiency.

“That’s why we have dashboard systems, remote monitoring of our instruments, and a lot of big screen monitors in the lab,” she continued. “It’s much easier for our staff to look at a graph on the screen quickly than it is to look at a spreadsheet. For three years now we’ve been following moving averages in a continuous process to reduce errors coming off of our assays.

Using Automation to Make Lab Staff More Productive

“OUR NEW AUTOMATED LABORATORY inventory management system is simple to manage,” noted Sharon Cox, MT(ASCP), Core Laboratory Supervisor, at Saint Francis Hospital. “Once a week, we put in an order for reagents and supplies to Abbott. We generate that order every Monday at 2 am. That purchase order goes electronically to Abbott via electronic data interchange.

“By 6 am every Monday, the warehouse has our lab’s order for the week and it starts to fill that order,” she said. “All our products get two-day shipping. As those products leave the warehouse, a manifest is transmitted to us electronically that contains all the reagent lot numbers and expiration dates.

“Two days later when those products tagged with RFID chips hit the receiving dock, a portal on the receiving dock detects all those items automatically,” she explained. “The system checks those products into our lab’s inventory system and sends a receipt message to the Abbott software. It also sends a message straight into the hospital’s SAP accounting system.

“The software automatically detects any discrepancies between what’s on the electronic manifest and what products are actually received at the lab,” stated Cox. “That’s our first way to pick up an error.

“On the loading dock, our receiving personnel simply need to put that inventory on a pallet,” she continued. “That pallet then goes up the freight elevator into the hospital where we have a series of portals and RFID readers. Thus, at any point between receiving and the lab, we know where those products are within the hospital.

“When that product is used, the software updates the inventory list and messages are sent into SAP and to the Abbot software,” she noted. “At the end of every week, we generate a new purchase order that is electronically transmitted to the supplier.”

“So it was natural to look at inventory management as an opportunity to automate to reduce errors, save money, and free up staff time,” she said. “Inventory costs are huge just for reagents and consumables.

“Before installing the inventory system, we had almost \$1 million in immunoassay reagents sitting in our refrigerators,” explained Cox. “That’s how much we needed to have on hand. Reagents for immunoassays are the most expensive product we have in our laboratory. Those reagents are high-dollar items, so it is essential to have an accurate inventory.

“Plus, inventory is not only costly, but it takes up a considerable amount of storage space, which we lack, and we don’t have a big walk-in refrigerator,” Cox explained. “Without much storage space, we had to get reagents shipped in each week.

“Further, before we implemented automated inventory control with RFID, we had a completely manual process,” she recalled. “Staff would break down those weekly shipments and put the inventory into storage. That manual process had a 27% error rate, which was costing us \$68,000 every year.

“Why was the error rate so high?” asked Cox. “Because we had to affix a label to every item that came into our lab. Anytime staff touches something, the potential for human error exists.

► Manual or Automatic?

“Most labs have one of two manual methods of inventory,” she said. “First, staff members may take a clipboard and go into the refrigerator to identify what inventory items need to be ordered. Most labs use this method, either weekly or monthly. Second, some laboratories have barcode systems, which are automated. But barcodes require direct line of sight from the barcode reader to the barcode.

“We wanted to automate the entire inventory process and so Abbott made us a beta site for their Inventory Manager system,” stated Cox. “It uses an RFID label

and a unique, serialized global identification number for each product. Now, every item that’s shipped to us is labeled at the warehouse and arrives at our lab pre-tagged. That removes 100% of the errors.

“Now, the beauty or the genius of RFID is the staff does not need to maintain direct line of sight with reader and bar code when scanning supplies into the system,” explained Cox. “Moreover, a refrigerator turns out to be one of the best conduits for RFID technology because it’s a big metal box. Within a refrigerator, the RFID radio waves bounce off the walls and come back through the products. Thus, read rates are 100% in a refrigerator jam-packed with reagent boxes.

► Automated Check-In

“Thus, we have completely automated the entire inventory cycle for these products from the time they are received until we use them and generate a new purchase order at the end of the week,” emphasized Cox. “The only human intervention required is when the product gets into the core lab where staff unboxes that inventory and puts it away.

“Another useful feature is that we have an electronic receipt of all of the lot numbers and each product has a unique identification number so we can tie specific patient results to that number,” observed Cox. “That gives us an important traceability in our system that allows us to more precisely track our costs of care.

“The electronic manifest in the inventory system tells us exactly when every wedge pack of reagents is shipped in and when each one is used as well. When each wedge pack is used, we know every patient for which it was used. Thus we can match that use to costs and to inventory. This feature is particularly useful if a reagent manufacturer recalls a reagent because we can track our use by patient.”

TDR

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