Supply chain

Automated inventory frees up nurses

With a swipe of a barcode, a perioperative nurse documents supply use in the patient’s record, helps create an accurate patient bill, and starts the process to reorder the product.

Kaleida Health, a 5-hospital network serving western New York State, has pulled off what many organizations strive for, an integrated automated supply replenishment system for perioperative services and other clinical departments. Kaleida believes it is one of the few organizations in the country to have a fully integrated, barcode-driven system.

Technology, of course, has enabled the project. But just as important is a cohesive team that works across departmental lines, notes Rick Tresmond, director of materials management.

In 2000, like many organizations, Kaleida had a cumbersome system that required too much nursing time. Nurses had to record supply usage on charge sheets. A billing person had to submit the charges. Supply levels were checked and orders placed manually. The manual system resulted in delays in posting charges and getting accurate decision support data. A physical inventory was performed once a year, and materials management staff kept their fingers crossed that a big adjustment wasn’t needed the following year when the inventory was repeated.

Replacing paper

The paper-driven system needed to be replaced. The goal was an automated system that would be able to replenish supplies by having nurses capture data during cases by scanning barcodes (sidebar, p 17).

Today, all 5 of Kaleida’s surgical sites are on auto replenishment. In all, 15 clinical departments are up, including cath labs, angiography, and GI labs, accounting for about $10 million in inventory and $35 million in spending annually.

Senior leadership supported the project even though they knew it would be labor intensive in the beginning, and Kaleida was in a financial turnaround.

“Our leadership team really understood the importance of understanding our supply chain and being able to give nurses and directors the information they need to make good business decisions,” Tresmond says.

To convince senior leadership the effort could pay off, Tresmond and his team started with a grassroots inventory project that reduced inventory by 30% and with an overall reduction of $1.3 million. After the CFO agreed to back the project, Tresmond set out to get buy-in from clinical department directors.

“The philosophy of materials management is that we want the nurses to focus on patient care. We take as much responsibility for supplies as we can to take the burden off of them,” Tresmond says.

He pointed out the countless hours that nurses and administrative personnel could save if the process was more automated. He was also honest about the amount of time and change involved.

“I tell them that the first 30 to 60 days are going to be a little rough,” he says. But he assured them the nurses would have support from their perioperative IT coordinators and materials management.

“When we go back 60 days later and talk to the nurses, they love it. That’s because when they scan their items, and if it doesn’t work, they hand it to the materials person, and we fix it.”
Support for nursing staff

Scanning barcodes wasn’t a big transition for circulating nurses. Most supplies for a case are already listed in the preference card, which is automatically brought into the patient’s electronic record when the nurse selects the case. (Preference cards are kept up to date with the materials management system daily, as described in the sidebar.)

The only items nurses need to scan are those added to the case. Documentation is done on wireless, stand-alone PCs.

“The billing and inventory replenishment are all built on the clinical documentation,” says Tresmond. “We used to say to nurses, ‘You need to charge for it.’ Now we say, ‘You need to document it in the clinical record,’ which is what is important to nurses.”

Nurses were already familiar with how to look up supplies in the system using model numbers, notes Hollis Strassle, RN, perioperative coordinator for Kaleida’s Women’s & Children’s Hospital of Buffalo.

Nurses also have backup. Each surgical site has a perioperative RN IS coordinator who has experience with the online OR clinical documentation system, Surgical Information Systems (SIS). Each site also has at least one materials management employee on call 24/7.

If a product doesn’t scan or the nurse can’t find a supply in the system, the nurse simply hands the package to the materials staff.

“We’ll come back with a valid product number and charge code and make sure to tell them how to get the product into the clinical documentation,” Tresmond says.

“We’re like ducks paddling like crazy under water in the early stages of implementation to make it seem smooth on the surface. But it’s important that we don’t add any workload on our clinical staff.”

Getting nurses’ buy-in

Millard Fillmore Gates Circle Hospital in Buffalo was one of the first to go live with barcoding in the OR. To prepare the nurses, “we teased them a little bit,” says Sue Bohn, RN, BSN, CNOR, perioperative coordinator.

“We put the barcode readers in the rooms, and the nurses would say, ‘When can we start using these?’"
The nurses were already used to searching for items using the model number.

“Once all of the barcodes were loaded, they could start using the scanners, and they were loving it. We started calling ourselves Home Depot for a while.”

Once 2 Kaleida sites had gone live, it was easier to convince the others it could be done.

Each surgical site decides what quantity of supplies will be included in auto replenishment and how the data will be captured. For supplies such as orthopedic screws and plates that don’t easily lend themselves to barcoding, the OR can select methods such as developing barcode books or sheets that can be scanned. Keeping this up to date is challenging because products and catalogs numbers change frequently.

Team approach

Strong teamwork is a major reason why Kaleida was able to implement an integrated system successfully, Tresmond emphasizes. Most hospitals have a vertical organization chart with a chain of command.

“This project is different—there is more of a horizontal integration,” he says. Though team members report to their superiors, “for this project, we report to each other. We brainstorm and shoot out ideas constantly. If we try something, and it doesn’t work, there are no repercussions.”

In addition to Tresmond, the team includes staff from clinical and financial information systems, nursing coordinators from the clinical departments, purchasing and chargemaster staff, and materials management staff who manage daily operations. They meet weekly, more often if necessary, and report quarterly to a steering committee and the CFO.

Syncing databases

A key piece of the process is daily syncing of the supply databases, called “item master replication.” The 3-way process, developed by Rick Binder, systems analyst, compares the SIS and Lawson item masters to identify any differences. The item masters are also harmonized with the charging and clinical support databases.

Initially, before going live, the perioperative nurse IS coordinators have worked through the time-consuming process of cleaning up the OR item master and making sure every item is identified with both OR and materials management data elements.

Kaleida uses the manufacturer’s barcode for about 95% of products. For the few that don’t come barcoded, Kaleida generates its own barcodes. A more recent challenge are the 2-dimensional barcodes, which look like dots in a square. So far, only a few vendors are using these, and Binder and the group are working on a solution.

What’s the cost?

The cost of hardware for barcoding is negligible, about $150 per barcode reader. Most of the software and the computer workstations were already installed. The greatest cost is the labor to get auto replenishment ready to go live.

“We’ve probably added 5 or 6 FTEs for auto replenishment itself,” Tresmond says. “But what we’ve done is redirected our resources. We haven’t increased our labor costs by much, but we have added value to the supply chain.” Materials management staff who once processed orders now spend time on other duties. RNs and billing staff who used to write and enter charges are freed for other responsibilities.

A lot of the return on investment is intangible. “There are so many process improvements, you can’t even list them all,” says Russ Reimondo, director of financial and resource management IS&T.

One example is the ability to identify slow-moving inventory items, stop reordering them, and redirect them to other Kaleida hospitals that need them.

Tresmond has documented over $750,000 worth of inventory redirected from January through September 2007.

“This is one example of the kinds of programs we’ve put together to make everybody’s life better without increasing the workload,” he says.
How auto replenishment works
The steps for setting up and maintaining Kaleida’s auto replenishment system.

Setting up the supply inventory system
• Using Lawson software, each disposable supply is given a materials management number and bin number. The manufacturer’s barcode is also scanned into Lawson.
• Items are forwarded to the purchasing department, which verifies pricing, unit of measure, and contracts.
• Items are forwarded to the chargemaster team to ensure each item has a unique charge code and billing code.
• Meanwhile, perioperative IS coordinators cleaned up the OR item master and made sure every item was identified with both the OR and materials management data elements.
• When these steps are completed, the materials management staff works with the OR staff to set reorder levels.
• Once every item in the OR inventory matches in the OR item master and Lawson item master, a physical inventory is conducted and the counts loaded into Lawson.
• The morning of go live, a report is automatically generated to show what will be ordered that day.
• Lawson compares the amount on hand with the reorder points and identifies items below the reorder point for order placement. The order points are reviewed with the department and changed when necessary.
• Once reviewed, the order is sent automatically to the purchasing department where the order is placed by EDI (electronic data interchange), autofax, or in rare cases, by phone.
• Recently, a paperless process was developed for adding a new item to Lawson. The process ensures the product has a charge code, proper pricing, and approval from clinicians. The process, which previously could take up to a month, has been reduced to 5 days.

Daily reconciliation
• The system includes a daily reconciliation process called “item master replication,” which syncs data in the Lawson system with the data in the clinical support, chargemaster, and clinical department systems.
• An additional process run daily compares data on physician preference cards to data in Lawson so cards are always synchronized with the materials available for use. This enables the system to generate accurate pick lists and reduces the times nurses must leave the room during a case to get supplies.

Documenting supplies at point of use
• During a case, the circulating nurse documents chargeable supplies not on the preference card using barcoding technology. The nurse scans the barcode, and the product is documented in the electronic record. For low-cost nonchargeable items such as sponges and dressings, inventory is maintained by materials management personnel using par levels.
• After a product is scanned, the product is charged for, and the inventory is debited behind the scenes without human intervention.
• If any product sent through the system doesn’t match or the quantity is insufficient to debit the amount identified, the auto replenishment operations team is notified and works to resolve the issue.