Improving supply chain performance is one of the biggest operational challenges in ORs. Hospitals want to increase charge capture, improve supply replenishment and implant records, improve efficiency, reduce turnaround time, and eliminate supply waste.

Some ORs are turning to automated supply systems with bar coding add-ons like Omnicell’s OptiFlex SS, Cardinal Health’s Pyxis ScanAssist and ParAssist, GE Medical Systems’ Centricity, Meditech’s OR Management, and McKesson’s SupplyScan.

Some systems are in early development for bar coding and interfacing with other hospital information systems, says Helen Blanton, RN, MS, MA, an OR nurse based in Eugene, Ore, who has participated in multiple implementation projects for information systems.

The ultimate process

“When bar coding is linked with the materials management system, this allows tracking from purchase to delivery to patient,” she says. “The ultimate process is when the materials management and surgery systems are compatible so all elements are available in one record that contains patient and supply data.”

“The OR is a dynamic and time-critical environment,” notes Ken Perez, Omnicell’s vice president of marketing. “You need systems that are easy to use that do not hinder workflow or get in the way.”

A typical automated bar coding supply system works like this: A nurse logs into the system, enters the patient ID and removes and scans the supply item. In most systems, software then sends a record to the patient charging system through an interface. For supply items without bar codes, nurses can enter the item into the computer system, but that is slower, experts say.

Supply systems also can be designed so the nurse simply touches the patient’s name on the supply station’s computer screen. The item is scanned using a barcode, data is fed into the information system where the item is billed to the patient, and the resupply order is sent out.

A promising use of bar coding is to track supply use during surgery where there frequently are lost charges and inventory adjustments due to errors in hand counting of supplies.

“ORs want to do a better job tracking supply charges from changes during surgery,” says Charlotte Miller, BSN, MBA, director of surgical services product marketing with McKesson Provider Technologies, St Paul, Minn.

For example, when setting up the room for surgery, the circulator may realize something is missing from the case cart because there was a change in surgery or the supply has not come up to the department yet.

“The circulator has to handpick additional items,” Miller says. “ORs want to be able to track these changes and charge the patient.”

ORs try approaches

In interviews, 3 managers discussed their experiences with planning and implementing bar-coding systems.

Michael Frisina, administrative director for surgical services at Tuomey Healthcare
System, Sumter, SC, began planning in 2003 to incorporate the bar coding system into the OR’s materials management system.

“I wanted to increase revenue and reduce costs,” he says.

In May 2005, the bar coding system was launched in the hospital’s 14 main ORs, surgery center, and cardiac catheterization and radiology labs.

Each day, surgical or supply technicians are responsible for updating any revised physician preference cards in the materials management system. The day before surgery, the materials management and sterile processing department download the OR schedule from the hospital information system and pull supplies for OR delivery. The system automatically places a reorder when supplies are decremented and par levels drop.

“Each case gets its own pull sheet with the bar code, and the patient gets the same bar code that aligns with the particular procedure,” Frisina says.

The circulating nurse is responsible for managing supplies used on an exception basis. For example, “The cart includes 2 large gowns, but 1 is used, or a medium one is needed,” he says. “The nurse uses a touch screen to decrement the large gown and add the medium gown.”

**Checking the interfaces**

Frisina says it’s important for the OR’s inventory management system to interface with the materials management and billing systems.

“We look at the interfaces every day to make sure they are running because they can go down,” he says. “We have an information system analyst, who is an OR nurse, and a certified surgical technologist, who also runs materials management in the OR, to make sure things go smoothly.”

Purchasing and installing the system cost about $436,000:

- software: $217,000
- hardware: $52,500
- license: $35,000
- interfaces: $116,500
- training/travel: $15,000.

Hardware included handheld scanners for each room and compatible computers. Annual maintenance is $5,000.

Expected savings are $50,000 to $75,000 per year from recouping lost charges and through inventory adjustments.

“It is hard to find out the real costs because we have had some volume changes, but we are doing much better,” Frisina says.

The OR’s supply error rate for lost charges—items used but not included on patient bill—dropped from 60% to 5%. For example, on one recent day, the hospital performed 32 procedures with only 1 exception, he says.

“We track each procedure and find the number of errors per case,” he explains. “Each time an item is pulled, it either has to be scanned into the system or added with a drop-in or type-in feature.” If a staff member uses an item and does not scan it or add it to the system, an inventory error is produced that results in a failure to reorder and possibly a failure to charge the patient if it is a billable item.

**A surgery center goes live**

Children’s Hospital of Wisconsin, Milwaukee, plans to install a bar-coding system for the OR’s 16 rooms. A sister facility, Children’s Surgicenter of Greater Milwaukee, went live with its bar-coding system in November 2005.

“It works very well,” says Tracy Cleveland, purchasing systems manager in materials services. “Bar coding makes the product lookup much faster. It is a major employee satisfaction issue, especially for common items like sutures. But not all products have bar codes, and staff has to look up those in the charge book or in the system using the manufacturer number or product description. Universal product numbers would help.”

Disagreement over a bar-coding standard for health care has thwarted progress in making widespread adoption of bar coding, experts say. Children’s Hospital generates its own bar codes for supplies.
“We are developing a book of bar codes, initially for orthopedic and other implants,” Cleveland says.

At the Surgicenter, each OR has a computer on a cart with an attached handheld bar code scanner.

When the case is scheduled, materials management staff fill the case cart based on automated preference cards. Items identified on the preference card are decremented from inventory automatically. If surgeons require additional items during the case, the items are scanned or entered into the system, and those items are also decremented from inventory, Cleveland says.

A team effort

“Entry of this additional information is a team effort between the circulator and the surgical tech,” he says. “They ensure that products used are identified and entered.

“This is not a major data entry exercise. It takes seconds to input the data for ear tube surgery,” he says. “For cardiovascular surgery, when cases are long, it takes longer. We track error rates for documentation through cycle counts. If the system indicates there are 10 on the shelf, but there are really only 5, we will investigate to determine what happened to the other 5.” Nurses do not have to scan items on the preference card that are already in the system before surgery. “Nurses only have to document items that are added to the case later,” he says.

If there are items to return to inventory, they also need to be scanned.

“That ensures we do not charge for an item that was not used and that the same item gets ordered for replenishment,” he says.

Reports are available that assist in identifying documentation errors or omissions.

“Once a discrepancy is identified, we can look at what was documented and when. We can also see what is on order. Analysis can be done with an online query, delivered reports, and/or an ad hoc reporting tool. All of the data comes from what has been documented in the software.”

The cost to implement the system was $250,000 to $300,000, which included the servers and software.

“We picked lead technicians and lead clinicians by service and did some orientation and training in advance. We did our rollout in a fairly measured way over 2 years,” Cleveland says. “It worked better giving clinicians the opportunity to know where they fit and to understand it is important to document everything because that drives replenishment.”

Analyze current system

Miller suggests that ORs conduct a process flow analysis to identify current problems in the supply chain before deciding on a bar coding system (sidebar).

“The analysis should start with the current process for supply accountability, inventory, and restocking and work back to see how items are reordered and delivered to materials purchase and resupply,” Blanton says.

Tuomey’s process analysis determined “how much waste we had in the system, how much inventory was leaving shelves, and what adjustments we had to make in restocking,” Frisina says.

Blanton suggests looking at places where bar code scanning would be beneficial and practical.

“Review available vendors and select the top few who appear to offer the needed services,” she says. “Speak with sites currently using their services and see if they really perform as advertised.”

Mistakes to avoid

Rob Sobie, marketing director for Pyxis at Cardinal Health, says hospitals make a number of mistakes in evaluating, installing, and using bar-coding systems.

Selecting unproven systems, ones difficult to use, or those unable to interface with existing systems are common mistakes, Blanton says.

Sobie agrees. “There are some (vendors) who have not developed interfaces with
other products,” he says. “Hospitals need to make sure the system they purchase already has the ability to interface with other hospital systems.”

Another mistake is not including the OR in the selection process.

“Not including surgery is a serious error because only they know the operational impact of implementing such a process,” says Blanton.

Managers also need to challenge the mindset that the OR is somehow separate from the main hospital.

“There must be integration in the supply chain to get all the benefits in cost savings and efficiencies,” says Cleveland.

Blanton says the effort can be worthwhile. “If everything works, you don’t have to chase extra items, your turnaround time will decrease, and waste will decrease because you don’t open things you don’t need.”

— Jay Greene

Jay Greene is a freelance writer in Thompson, Conn.

Tips for evaluating a bar coding system

- Conduct a detailed process analysis on your OR inventory, charging, and replenishment systems.
- Involve staff in the product selection process.
- Make sure technology fits hospital needs.
- Be careful when deciding to become an alpha or beta test site for a new product. Most untested products are not yet fully functional.
- Test systems before purchasing.
- Interview managers at hospitals that have used the systems.
- Go on site visits to see the product in action.
- Discuss integration issues with other departments, including materials management, billing, the emergency department, and intensive care.
- Identify joint objectives with materials management and work on the project collaboratively. Departments should be in agreement on the system and process.
- Identify and create common nomenclatures, measurements, and item descriptions. This may require negotiation and should be done before physician preference cards are revised.
- Train and educate the staff on the use of the system. Have staff attend presentations and demonstrations so they understand how accurate and timely documentation will drive replenishment and charge capture.

Overcoming staff resistance to bar coding

The most common objection from staff about bar coding is, “This will interfere with patient care.” Some strategies:

Get staff involved

Have them attend presentations and demonstrations so they can see what is being proposed, says Helen Blanton, RN, MS, MA, an OR nurse based in Eugene, Ore, who has participated in implementing multiple information systems.

“Staff dissatisfaction will negate a decision like bar coding, but early involvement and ownership will assist acceptance if staff know their concerns were heard and considered,” she adds.
Educate the staff about costs

At Tuomey Healthcare System, Sumter, SC, Michael Frisina, administrative director for surgical services, staged a major educational process before purchasing bar coding equipment.

“We showed nurses the financial losses month by month and told them that if they all want pay raises and new capital equipment, we have to make these changes,” he says.

He also showed the staff how much it costs when supplies are unnecessarily opened.

He asked them, “If you were paying for supplies yourself, how much would you pay to open them and when?”

Identify change leaders

“We identified people who expressed interest in the use of technology, and these lead clinicians became examples for the rest,” says Tracy Cleveland of Children’s Hospital in Milwaukee.

Bar coding: Where does it stand?

When you go to Wal-Mart or Albertsons, every product you buy has a bar code. All the clerk has to do is swipe the items to check you out.

How convenient—and accurate—it would be if OR staff could do the same when adding supplies and instrument sets to OR cases.

Most ORs aren’t there yet. There are 2 major obstacles:

• Most supplies still don’t come from the manufacturer with bar codes on individual items. Facilities that want to use bar coding have to generate their own bar code labels for many items.

• Health care still does not have a uniform product numbering registry to identify items in health care.

Bar coding at the unit level is a chicken-and-egg problem, explains says Bob Hankin of the Health Industry Business Communications Council (HIBCC), which develops bar code standards for health care.

Manufacturers label cases for distributors and purchasing departments. But the companies figure most facilities’ departments still don’t have bar-code scanners, so they don’t bar code individual items—and departments don’t get scanners because most products they use don’t have bar codes.

Lack of a universal product file

There’s also not a common file for identifying products. Health care does not have a common registry, or a medical-surgical product data utility (PDU), says Joe Pleasant, chief information officer with Premier.

“Health care needs a product data utility like other industries have,” he says.

“PDU is a (universal) file where all products are registered.”

It works like this: Each product is assigned a unique identifier. When the bar code on the product is scanned, data is sent to a computer, where it is read and recorded in materials management information systems. As new items are introduced, manufacturers enter their universal product number (UPN) and supporting data into the PDU.

“Lots of hospitals are interested in automating, but because we don’t have this registry, they either aren’t doing it or are using their own bar coding system,” Pleasant says. Read about PDU at www.chestandards.org/pdu/pdumain.htm.

Two bar coding formats

Health care has 2 bar coding formats.

• HIBCC has developed bar code standards specifically for health care. Hankin estimates about 85% of medical devices use the HIBCC code formats.
• GS1 (formerly Universal Product Code), traditionally used in retailing, is also used in health care.

“Anytime you go to a grocery store you see a UPC code—that is a GS1 code,” says Pleasant, co-chair of the PDU committee for the Coalition for Health Care eStandards (CHes), Ann Arbor, Mich. CHes’s position statement on PDUs is at www.chestandards.org/faqs/CHespositionstatement.pdf.

HIBCC and GS1 formats are compatible but have different registries and UPNs because of manufacturer preferences, Pleasant says. “We need a uniform product numbering system,” he says. “The industry has not agreed on a common registry to read HIBCC and GS1 bar codes.”

Over the last 2 years, the US Department of Defense (DOD) has been testing a PDU it developed. CHes is discussing testing the DOD’s PDU in hospitals, he says.

“It is possible that the government needs to dictate this because there are so many conflicting groups that are not interested in having this occur,” Pleasant says. “Some groups do not want health care organizations to be able to compare products.”