Customized Integration

When Beaufort Memorial Hospital (BMH), in Beaufort, SC, installed Cardinal Health's Pyxis ProcedureStation system of secure storage supply cabinets that document usage, inventory and replenishment of supplies, the facility recognized something was still missing.

"Most OR systems base their charts on the surgeon preference card, like a recipe card, that just says for this procedure, you're going to need these supplies," says Kathryn Charles, Information Systems Analyst at BMH. "Anything over and above what's on that card is noted in the case record as an exception, relying on the nurse to say what he/she used in addition to that basic recipe card to document the supplies.

In many cases, says Michael Perugini, Product Manager for the Pyxis ProcedureStation system at Cardinal Health, this means the nurse wades through drop down menus of an average of 12,000 to 15,000 OR product SKUs used in the OR to indicate additional products, such as implantable devices, used during the surgery. In most institutions, 60 to 70 percent accuracy in documentation is found at best, he says, because the process is largely manual and time consuming with nurses typing in lot and serial numbers for implants. Furthermore, Perugini says, the OR is the largest cost department in a hospital, accounting for 50 percent of all supplies used and 30 percent of total expenses. Therefore, with 197 beds, accurate supply documentation is important for BMH financially.

"In our case, [with Pyxis ProcedureStation] we had all the supply data, but we didn't have the cost of the supplies," Charles says. "We knew the average time of the procedure and supplies used on the preference card, but we were not capturing the exceptions item returns, additional supplies used in the Picis record, so we were not able to get the actual cost of the procedure." To improve this process, Charles and the staff at BMH decided to integrate their Pyxis ProcedureStation system with the Picis OR Manager operating room information system to enable nurses to document all supply information in the OR quickly in one location, spend more time with patients and to capture data more quickly for case costing.

Mapping The Process

Integration began with a meeting between the company's Lean Six Sigma experts and BMH staff to conduct a value stream mapping exercise to break down the patient flow process and identify opportunities for improvement.

"I think it was very enlightening," Charles says, "because you break down the components of the process. One person is making copies of an implant record, and faxing them to someone in materials management who is not using those papers at all because she's waiting for another day for a report to come out. We found there was a whole process that was taking place that wasn't even being used, but just

because we had done it for so long, nobody realized that the person on the other end wasn't taking advantage of it. So we eliminated that process."

After the initial value stream mapping, the Pyxis® and Picis systems were integrated to address the issues identified by BMH during the exercise. Nurses trained on test systems in the OR before the integration went live in January 2009.

At the end of February 2009, staff at Beaufort partook in a second value stream mapping exercise for a "before and after image." According to Rusty Frantz, General Manager for Pyxis® Supply Technologies at Cardinal Health, changes included cleaning up the item master and ensuring standard taxonomy in preference cards to provide actionable usage data that enables back-end updating of preference cards, facilitates case pick accuracy and saves nurses time.

"We found out that nurses were looking for inventory items and implant items under multiple locations," Charles says. "We've made a lot of modifications, including just putting the location on the charge sheet for that particular group of items so the nurse doesn't have to do multiple searches to find an item."

Now, with BMH's integration, when a patient is scheduled for a surgery, Picis OR Manager communicates case information to the Pyxis ProcedureStation system and automatically pre-loads it with supplies from the preference card for that case.

"The nursing staff pulls the basics," Charles explains. "When the interface takes place, it basically zeroes everything out to a clean slate, and as additional supplies are picked, it populates the supply portion of the case record. So even though there is a preference card, you still rely on that machine for everything that is pulled, returned and pulled in addition."

According to Perugini, an OR nurse or staff member logs into Picis OR Manager, selects the patient and that patient's chart, and case information will show up on the screen. At the Pyxis ProcedureStation, the nurse scans additional implants or supplies used, returned and wasted before, during and after surgery. When the nurse pushes the "Take" and "Return" buttons, it populates the Supply Exception Noting screen in Picis OR Manager with the supply information, eliminating the need for nurses to double-document supplies used in the procedure on the patient's chart and for billing and case capture records.

Seeing Results

Since integrating, BMH has seen a 62 percent reduction in supply withdrawal and documentation process time, Frantz says. "Processing time for the nurse," Charles says, "has improved about 50 percent."

Additionally, BMH reduced time spent by nurses in the surgical suite by approximately 10 minutes per implant case. This is a valuable improvement when one considers that a 2007 report by the federal Agency for Healthcare Research and Quality (AHRQ) reported that increasing the hospital's workforce by one full-time RN per patient day will save the lives of six patients per 1,000 surgical procedures.

Additionally, the hospital has seen a 33 percent reduction in documentation time for implants and reduced back-end reconciliation and supply utilization data by 50 percent. Integration can help reduce errors associated with manual documentation, Perugini adds, and comply with the Joint Commission standards of recording and archiving implant information to identify individual patient's years later in case of a recall.

Cost capture has also improved at BMH, Charles says. For example, a posterior lumbar procedure done before the integration had a reported cost in the Picis reporting system of roughly $5,500. After integration, the actual cost was found to be $13,600, when accurate documentation of implants and additional supplies pulled during surgery were totalled. In the end, implementing the integration system has helped BMH, but it is an ongoing project, Charles admits.

"Implant documentation should continue to get better," she says. "I don't want to sugar coat it, though, because we still have a number of things to work on." For other facilities considering integration with the Pyxis supply system, which could be integrated with other OR information systems, not just Picis, Charles advises to be sure to have the commitment from OR professionals and other hospital staff to develop the system right.

"Make sure you get the right people involved, and by that I mean some dedicated people from the OR, someone who knows the materials management aspect of it, technical support from IT and someone who is going to be committed and dedicated to the project to stay on top of it, because without someone on the hospital side working with the two vendors, it just doesn't work well," she offers. "You have to have a central point of communication. That central contact has to make sure all those other people are involved and engaged in the project. Sometimes that's difficult, but it's very, very critical."

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