Robotics surgery has become part of the OR landscape, partly driven by marketing, as competing hospitals purchase robots and advertise them to consumers eager for the latest technology.

“It’s definitely a consumer-driven health care offering,” says Lynda Petty, RN, director of perioperative education, policy, and process improvement at The Ohio State University (OSU) Medical Center in Columbus. OSU was the first hospital to use the da Vinci robot, manufactured by Intuitive Surgical, which remains the only surgical robot brand on the market.

For teaching and academic hospitals like OSU, robotic surgery is almost a requirement, despite lingering questions about its cost and effectiveness compared to standard surgery. For other hospitals, it can be a way to prevent a high-volume surgeon from taking business elsewhere or to recruit surgeons who expect a robot in a hospital’s arsenal.

Whatever your reasons for starting a robotics program, experts say to do your homework if you want to create a thriving program instead of having a robot that gathers dust.

**A program, not equipment**

“Don’t look at this as a new surgery; it must be a program,” says Steve Stout, RN, BSN, surgical services business associate at Poudre Valley Hospital (PVH) in Fort Collins, Colorado. PVH started its robotics program in 2004 and does about 300 cases a year using the robot.

To build that program, Petty says, “You have to have great leadership, a vision and commitment to that vision, recruitment of great physicians, support from marketing, and an excellent OR team.”

More than 25 surgeons use OSU’s 4 robots for specialties including urology, gynecology, gynecology oncology, ENT, thoracic, general surgery, and cardiac surgery, performing about 100 surgeries a month. Petty says the variety of surgical services contributes to the sustainability of the program.

**Commitment is key**

Commitment is key, agrees David Burns, MHA, director of perioperative services for Roswell Park Cancer Institute in Buffalo, New York, which started its robotics program in 2004 and does about 300 robotic cases a year. “You don’t dabble in robotics. If you don’t have that commitment, you are half off the horse.”

A return on investment is possible even in smaller facilities. Vicky Anderson, RN, BSP, manager of surgical services at Saint Luke’s East in Lee’s Summit, Missouri, runs a robotics program in a 4-room OR. “We were able to reach our projected ROI (return on investment) in a reasonable time frame,” she says.
Startup investment

Getting into robotics requires a large capital investment in addition to ongoing costs. A robot costs $1.7 million to $2.2 million, with maintenance costs of about $150,000 annually and additional disposable equipment costs of $1,500 to $2,000 per procedure according to an ECRI Institute analysis of da Vinci Surgical Robot systems costs. You will also need special instrumentation, including enough to do consecutive cases. ECRI Institute estimates the costs for instrumentation alone for startup at about $200,000.

“Be careful about the instruments you buy in the beginning,” Burns cautions. “If you are just doing prostate surgery at first, there are many instruments you don’t need to buy.”

Next is ancillary equipment. For example, robotic hysterectomies require a special type of insufflator and a morcellator for grinding up the uterus, and partial nephrectomies need ultrasound. Anderson recommends renting expensive equipment until you have sufficient volume to justify purchase.

“You have to have an OR table that doesn’t interfere with the robot docking and that goes into severe enough Trendelenberg position for pelvic operations,” adds Petty.

Plan training

“Use your physician training vouchers wisely,” advises Anderson. At Saint Luke’s East, the chief financial officer, the lead for the robotics project, and the medical staff office controlled the vouchers included in the purchase price.

When the surgeon requested training assistance, the CFO checked with the medical staff office about the surgeon’s current volume of surgery where the robot would be used. If the surgeon didn’t have sufficient volume, the CFO might offer partial training reimbursement instead.

The medical staff office also needs to determine credentialing requirements.

“Credentialing was one of the things we struggled with,” says Anderson. “We reached out to other hospitals in our system to see what they were doing. You need to network.”

Plan for staff training

For OR staff, Anderson advises, “Start with a few well-trained staff to begin your program, making sure that the team is firm in their dedication to complete cases that run late, come in on days off, and so on, until the program and primary surgeons are over their learning curve.”

Anderson’s first team consisted of 2 surgical technologists and 2 RNs, who “created room diagrams for each case they would do and worked to be sure the procedure case card had what was needed.” The team recently doubled to provide coverage for breaks, days off, and when a team member’s expertise is needed on another case.

Training for the staff

The manufacturer provides one day onsite training for OR staff.

“We spent the whole day going through cases, draping, installing the wrists (for the robot), and moving the robot,” says Anderson. Later, the team’s lead RN attended a one-week troubleshooting class. Initial training included teaching sterile processing personnel how to properly clean and care for the instru-
ments. Reposable instruments last for 10 cases (after which they stop functioning), so OSU uses hashmarks to track the number of uses.

The first few cases take the longest and are the most nerve-wracking. “It takes 10 to 15 cases to get people relaxed and find a routine,” says Robin Ramsey, RN, BSN, CNOR, director of perioperative services at PVH. Surgeons have to do a “dry run” before performing their first case at PVH.

**Two-day training program**

OSU provides 2 training programs for OR nursing staff, allied health, and administrators: a 2.5-day beginner course and a 1-day intermediate-advanced course that focuses on efficiency and troubleshooting. Lynda Jayjohn, RN, BSN, CNOR, robotic coordinator and nurse manager of robotics at OSU, is the course director. Nurses receive continuing education credits.

“We wanted to share our knowledge and to include a curriculum focused on nursing and allied health personnel,” says Petty. Funds from the courses go into the hospital’s educational fund.

A key part of training is patient positioning, particularly for pelvic procedures such as prostate and gynecological surgeries, says Petty: “The patient is in a steep Trendelenburg position, and care must be focused on preventing the patient from slipping head-first off the OR table and the intraocular and pulmonary pressures the patient experiences.”

**The question of profitability**

In addition to the initial investment, ongoing costs of robotic surgery mount up quickly. These include patient positioning aids, proprietary drapes, instrument sheathes, trocars, and expensive ($100 to $300) specimen bags used through the ports to safely remove excised tissue.

Then there is reimbursement.

Because Roswell is a cancer center, private insurers usually reimburse on a per diem basis instead of a fixed amount.

“All of a sudden, a robotics hysterectomy turns 3 days into 1 day, and our reimbursement rate decreases,” Burns explains. The hospital has been able to negotiate custom reimbursement with payers so it doesn’t lose money on most of its cases.

Most hospitals face a different situation. Diane Robertson, director of health technology assessment information services at ECRI Institute, says the Centers for Medicare & Medicaid Services has no national coverage policies for robot-assisted surgery, and no private payers offer additional reimbursement. She sees no trend toward establishing separate CPT codes for reimbursement purposes.

**Case volume needed**

“It’s scary at first because you have invested a lot of money, and you hope the program will be successful,” says Stout. “We found that with strong case volume, you can get a positive return on investment. We started the program by lowering the minute charge to adjust for the learning curve and longer case times. The goal was to not have the total surgical charges be much higher than for a laparoscopic procedure.

“When case times became shorter, we increased the rate; now the robotic procedures are about $1,000 more than the standard laparoscopic procedures.”
Factoring in outcomes

Kim Meeker, RN, MBA, administrative director of surgical services at Mercy St. Vincent Medical Center in Toledo, says to avoid looking at profitability from simply a cost per case in the OR perspective.

“You have to help the finance group understand that the cost is more than what happens in the four walls of the OR,” she says. Our cost per case has actually gone down with robotics.”

Although disposable costs are higher than with traditional surgery, outcomes such as length of stay and blood use decrease. “When you show that it lowers costs and benefits patients, you can get the administrative support you need to market and develop the program,” says Meeker. The medical center’s robotics program started in 2002; the volume is now about 340 cases per year.

Petty notes it’s important to track utilization. “We want each robot to have 2 cases assigned to it each day to maintain profitability.”

Adding robots

Robot models are updated fairly regularly. New robot purchases can create problems because each surgeon wants to use the new robot. Peter Holdsworth, MBA, OR business manager for Roswell, says first-come, first-served doesn’t work because the newer robot is needed for certain types of cases, making scheduling a challenge.

He advises, “Try to negotiate up front how you will handle the purchase of your second robot down the road. Try to set it up so that you would get a deep discount to trade in your original machine for 2 new ones of the same model when volume dictates.”

Roswell went from 129 cases in 2005 to 293 cases in 2009 and purchased the second robot in March of that year.

The pay off

Sustaining and expanding a robotics program require ongoing effort. But the work can pay off. “As a new manager, I wasn’t sure a robot in our 4-room OR was the right way to go,” says Anderson, “but this program has been a staff, surgeon, and patient satisfier. We are very pleased with our investment.”

Robotics may also benefit patients. “We are performing surgical procedures with minimal blood loss, decreased length of stay, positive patient outcomes, and increased patient satisfaction,” says Petty. ✤

—Cynthia Saver, RN, MS

Cynthia Saver, a freelance writer, is president of CLS Development, Inc, in Columbia, Maryland.

Turnover time with a robot

Turnover time for robotic cases can be managed. An average turnover time of 20 minutes is a result of an ongoing effort at Poudre Valley Hospital in Fort Collins, Colorado.

The staff held dry runs of turnovers to identify reasons for delay and then used the Lean management process to eliminate those delays.

“Turnover is a team concept,” says Robin Ramsey, RN, BSN, CNOR, direc-
tor of perioperative services. “We discuss the logistics—who needs to be where doing what and where equipment is placed, even down to the trash can.”

As many as 4 people (2 circulators and 2 surgical technologists) turn over the room, with extra staff coming from those who provide breaks.

Kim Meeker, RN, MBA, of St Vincent Medical Center in Toledo, agrees, noting their average turnover time is 17 minutes (13 minutes for urology cases).

“You need to do things simultaneously, and you need to be detailed. Each person has a role and needs to absolutely understand that role.”

“We don’t have a dedicated room,” says Lynda Petty, RN, of Ohio State University Medical Center in Columbus, “but we have rooms we always work in because configuring the robotic room takes 45 minutes to an hour.”

Help in reducing turnover time can come from unexpected places. “Students from the Fisher College of Business (at OSU) did a Six Sigma project with us,” says Petty. “Part of that was working with the configuration and sequencing of custom packs so time to set up for a case was reduced.”