THE BIG PICTURE

System-wide strategic planning for a multi-robotic surgical program

BY KATHERINE WATKINS, RN, MSN
MARIJA BJEGOVICH-WEIDMAN, RN, MSN
BRUCE VAN CLEAVE, MD
PETER JOHNSON, MD
GREGORY BANASZYNSKI, MBA
JOSEPH MIRRO, MD

In Brief

In 2010 the senior leadership of Aurora Health Care launched a System Robotic Surgery Steering Committee with a goal to maintain a standard of robotic surgery practices across the health system. The Steering Committee was established with a mission to unite key stakeholders across the system to provide consistency in standards and policies that promote safe, high-quality patient care and strategic oversight for existing and future robotic surgery programs. The Steering Committee is accountable for the development and oversight of a standardized approach to training, proctoring, and credentialing of surgeons; development of a clinical outcomes database; system and site-based programs oversight; and an annual strategic evaluation and planning process.

Surgical technologies have evolved to offer patients less invasive procedures that have been shown to improve pain levels, decrease time spent in the hospital, and improve outcomes—allowing for a better patient experience. Intuitive Surgical introduced the da Vinci Surgical System (da Vinci robot) to the United States in 2000.[1] The robot provided a wide range of motion compared to laparoscopic technologies and set out to change the way surgeons operate. According to Intuitive Surgical, more than 200,000 da Vinci robotic-assisted procedures were performed in 2009 (a 51 percent increase from 2008).[1] A majority percentage of the cases were prostatectomies, with hysterectomies being the fastest growing procedure (a 130 percent increase from 2008).[1] Hospitals that purchase robotic devices may initially see growth in patient referrals due to patient demand and little diffusion of technology. However, as more facilities implement robotic surgery programs, the novelty of the technology will fade and demand will stabilize.

At the present time, the state of Wisconsin has 25 robotic surgery programs with a total of 29 robots. Aurora Health Care leads robotic surgery programs across Wisconsin and is responsible for 5 of the 25 programs with a total of 6 da Vinci robots. Aurora Health Care acquired its first da Vinci robot in 2001 primarily for cardiac surgery use. Over time, more surgical disciplines incorporated the new technology into their practices. Currently, approximately 78 percent of da Vinci procedures across Aurora Health Care are cancer related.

In an effort to develop a system-wide strategic plan versus a hospital-specific plan, Aurora Health Care senior leadership launched a System Robotic Surgery Steering Committee to strategically evaluate its current programs and develop objective criteria for future adoption in order to remain a high-quality and competitive leader in robotic surgery. The Steering Committee is charged with providing strategic oversight for Aurora's existing and future robotic surgery programs, including training and credentialing, quality outcomes tracking, and a defined process for strategic evaluation and planning.

Table 1. Training & Experience Requirements for Robotic Surgery Applicants

RESIDENCY AND FELLOWSHIP TRAINED APPLICANTS
Applicants who completed a structured curriculum in minimal-access procedures and therapeutic robotic devices during residency or fellowship will provide a case log and a letter of recommendation from the program director verifying the applicant's competence in the performance of da Vinci robotic gynecologic procedures. The case log must document the applicant's role in each robotic case (primary surgeon, assistant surgeon, and observer). A case log of between 10 and 20 cases is required. The department chief will determine if the case log is adequate or if additional cases should be performed with a preceptor before robotic surgery privileges are granted.
EXPERIENCED APPLICANT
Experienced surgeons who were not trained in da Vinci surgical robotics during their residency or fellowship but have mastered robotic procedures, and currently hold robotic surgery privileges at another hospital, will provide documentation of successful completion of a surgical robotics hands-on training practicum on robotic surgery resulting in a certificate of completion. Experienced surgeons will also submit a case log of at least 10 robotic surgery cases performed as the primary operator during the past year, and a letter of recommendation from the department chief or section chair at the hospital where the cases were performed, verifying the applicant's competence.
PRECEPTOR PATHWAY
Surgeons who wish to pursue da Vinci robotic procedures training at an Aurora Health Care hospital will do so through a formal preceptorship. Robotic surgery preceptorship proposals shall be forwarded, as applicable, to the medical director of Surgical Robotics, chair of the Site-Based Robotic Surgery Steering Committee, and/or the appropriate department chief or section chair at each Aurora Health Care hospital to which the applicant is applying.

A key to the success of the Steering Committee was the strategic invitation of key stakeholders from across the organization. Steering Committee members included:

- Aurora's chief medical officer (CMO)
- Market executive vice president (EVP)
- A system-wide clinical program representative
- A surgical specialty representative
- Site surgical services
- Site medical administrators
- Medical group leadership.

Ad hoc members included the vice president of Medical Staff Services, the director of Finance, and a Data Warehouse representative. The chief operation officers of Aurora Health Care appointed the Steering Committee Co-Chairs: the CMO and Market EVP. The health system's service line leader for cancer helped to facilitate the Steering Committee.

The co-chairs then selected the Steering Committee members to ensure equal representation from each of Aurora's site-based robotic surgery programs. Each site was required to have physician representation. The Steering Committee developed four subgroups that would focus on key initiatives for robotic surgery: Training and Credentialing, Quality, Strategic, and Communications.

Training & Credentialing

The Training and Credentialing Subgroup had two objectives: 1) to develop recommendations to Aurora Medical Staff Credentialing of criteria necessary to obtain and maintain robotic surgery privileges and 2) to develop evaluation criteria for supporting training of Aurora physicians in robotic surgery. The ultimate goal was to set standards that support safe, high-quality, cost-efficient surgical care across Aurora.

The Steering Committee developed a standardized set of guidelines for training and credentialing surgeons interested in robotic surgery based on the SAGES/MIRA recommendations and input from the Training and Credentialing Subgroup (see Table 1, above). Surgeons who are granted robotic surgery privileges are also asked to participate in the organized peer review process for robotic surgery at each hospital where robotic surgery privileges are exercised (see Table 2, at right). Renewal of robotic surgery privileges will occur at the time of biannual reappointment and will be based on unbiased, objective results of peer review and the organization's quality assurance mechanism.

Quality Metrics

The Quality Subgroup was tasked with developing metrics to ensure that the Robotic Surgery Programs delivered the highest

continued on page 35

Table 2. Peer Review Screening Criteria
Post-operative length of stay >3 days
Re-operation during same admission
Readmission within 30 days of surgery
Post-operative blood loss requiring transfusion
Collateral organ and tissue damage
Prolonged operating time—surgical specialty to determine definition of timeframe based on surgical procedure
Post-operative wound infection

Table 3. Prostate Measures
PREOPERATIVE MEASURES
Age
Race
BMI
Patient origin information using zip code
Robotic surgery patient's prostate volume by ultrasound
Gleason score
PSA
INTRA-OPERATIVE MEASURES
Number of nodes removed when applicable
Complications
–Bowel injury
–Rectal injury
–Ureteral injury
–Bladder injury
Conversion rate to open
Positive margins
POST-DISCHARGE MEASURES
Bleeding requiring transfusions (<30 days post)
Readmission (within 30 days)
Patient reported continence—pads per day at 1, 6, 12, 18, and 24 months (currently not inputted into database)
Patient reported potency—SHIMS, drugs used at 1, 6, 12, 18, and 24 months (currently not inputted into database)
PSA at 6, 12, 18, and 24 months and at annual follow-up

Surgeons who are granted robotic surgery privileges are also asked to participate in the organized peer review process for robotic surgery at each hospital where robotic surgery privileges are exercised.

AURORA HEALTH CARE AT-A-GLANCE

Established in 1984, Aurora Health Care is Wisconsin's largest not-for-profit healthcare organization with sites in more than 90 communities throughout eastern Wisconsin, including 15 hospitals, 155 clinics, and 82 community pharmacies. More than 3,400 physicians are affiliated with Aurora Health Care, including more than 1,100 that make up Aurora Medical Group. Aurora offers inpatient care at 14 acute-care hospitals and one psychiatric hospital. Approximately 115,000 surgeries are performed annually at Aurora hospitals.

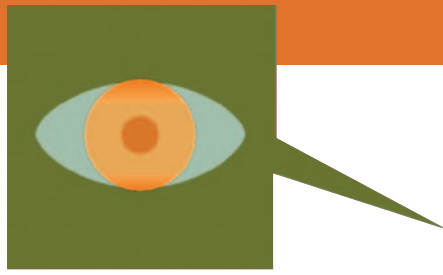
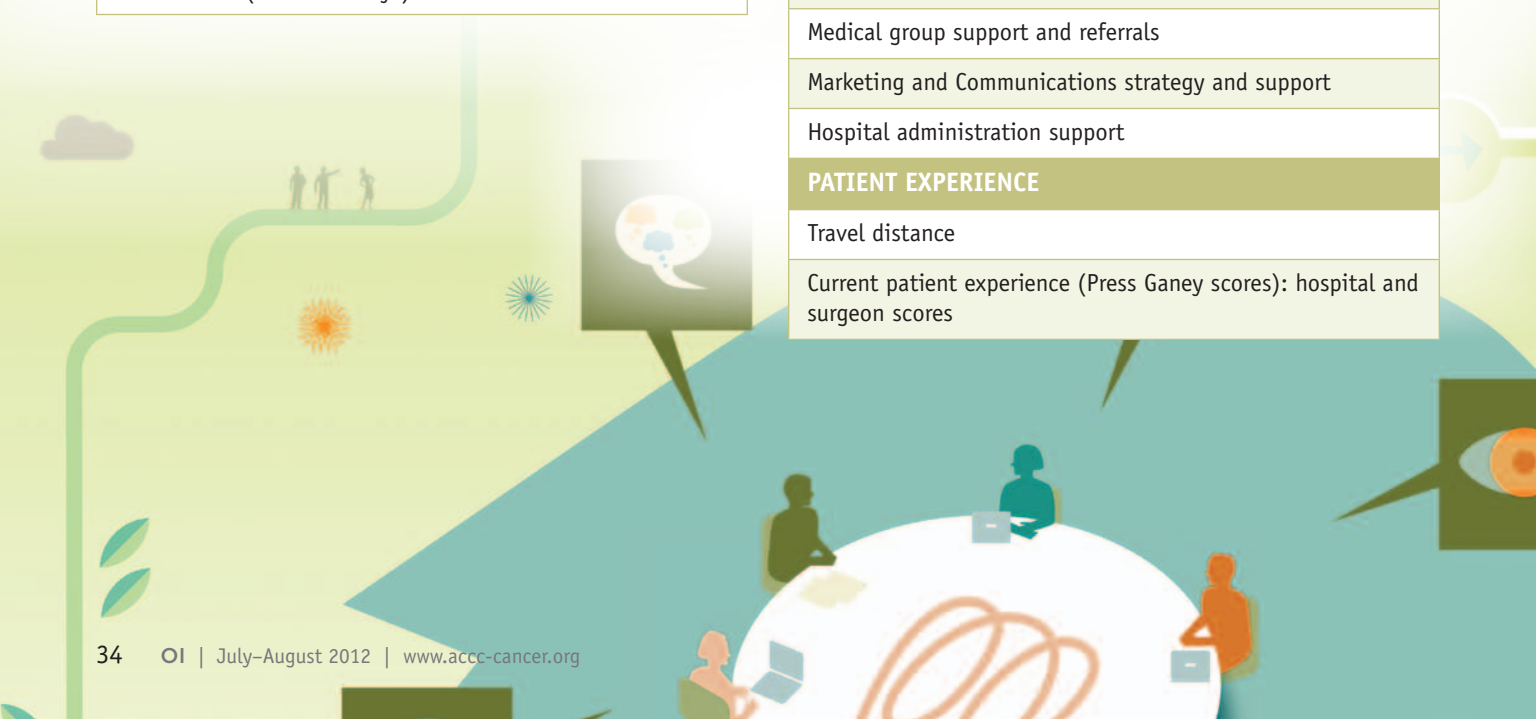


Table 4. Endometrial Measures

PREOPERATIVE MEASURES
Age
Race
BMI
Patient origin information using zip code
INTRA-OPERATIVE MEASURES
Number of nodes removed
Unilateral, bilateral, or no salpingo-oophorectomy
Complications
–Bowel injury
–Rectal injury
–Ureteral injury
–Bladder injury
Conversion rate to open
POST-OPERATIVE MEASURES
Pathologic staging
Pathologic history and pathologic grade
Positive margin rates
Bleeding requiring transfusion
Infection rate
Length of stay
POST-DISCHARGE MEASURES
Bleeding requiring transfusions (<30 days post)
Readmission (within 30 days)

Table 5. Strategic Subgroup: Objective Criteria to Guide Markets for Evaluations

MD CHAMPION
Robotic training in fellowship
Attendance in specialty courses and training
Minimally invasive surgery (MIS) experience
Strong interest
ACTUAL OR POTENTIAL VOLUME Incidence of:
Prostate
Benign GYN hysterectomies
GYN oncology
ENT diseases
Esophageal disease
General surgery procedures
Complex mitral and tricuspid valve procedures
Kidney transplant donor procedures
Kidney cancer
MARKET DYNAMICS
Population growth
Market competition
Aurora's market position
Aurora's short- and long-term market strategy
MARKET SUPPORT
Geographic draw and market buy-in
Medical group support and referrals
Marketing and Communications strategy and support
Hospital administration support
PATIENT EXPERIENCE
Travel distance
Current patient experience (Press Ganey scores): hospital and surgeon scores



continued from page 32

level of safety and quality of patient care. Initial responsibilities included defining, monitoring, and reporting quality standards for robotic surgery by surgical specialty, and developing a plan for a robotic surgery database and resources for ongoing maintenance of data extraction for reporting. Ultimately this group will be responsible for addressing patient outcomes and providing measures for evidence-based practices that support quality for a robotic surgery program. These data will serve as the driver for the Steering Committee's recommendations to Aurora Health Care senior leadership in guiding decisions that are supported by evidence-based data.

The decision was made to develop a system-wide robotic surgery database focusing initially on endometrial and prostate cancer. The database was supported by philanthropic funds from the Vince Lombardi Charitable Board. Data were pulled from the tumor registry, medical records, laboratory and pathology, and the cost accounting systems. Quality metrics defined include data from pre-, intra-, and post-operative measures (see Table 3, page 33 and Table 4, at left).

Strategic Planning & Communications

The Strategic Subgroup focused on developing a consistent objective evaluation of current and future robotic surgery technology across Aurora sites, including a process of ongoing evaluation and re-deployment of existing robotic surgery technology (see Table 5, at left).

With the health system's six da Vinci robots, the Strategic Subgroup worked to develop strategies to support adoption and growth of minimally invasive surgery, while being mindful to demonstrate value, quality, and cost-effectiveness. The subgroup developed criteria for evaluating robotic surgery model upgrades to provide guidance for decision-making based on volumes of actual and potential cases by type (urology, gynecologic, etc.), market support, and patient experiences.

Looking to the future, the Strategic Subgroup discussed the newest technologies in robotic surgery, which include the use of a robotic simulator to assess surgical proficiency and aid in the training process. Aurora currently does not own a simulator. Future recommendations from the Strategic Subgroup will include consideration of use and efficacy of a simulator as a tool for annually assessing the competency of surgeons who use the surgical robot.

The Communications Subgroup focused on consistent messaging through public relations and internal and external media outlets, including Aurora website pages. The future strategy of communication efforts will include transparency of our quality outcomes results on the Internet and to consumers seeking information on options through our second opinion nurse call line.

Looking Ahead

The future of Aurora's Robotic Surgery Program will focus on a system-wide approach to the decision-making process versus the original focus, which was site based with a goal to maximize the potentials of individual robotic surgery programs. The development of the system-wide Aurora Robotic Steering Committee allowed for key stakeholders to make recommendations on how robotic surgery programs would be implemented at each site safely and uniformly with high-quality patient care. OI

—Katherine Watkins, RN, MSN, is currently director of Quality Improvement Initiatives for the American Heart Association; Marija Bjegovich-Weidman, RN, MSN, is system-wide cancer director for Aurora Health Care; Bruce Van Cleave, MD, is executive vice president and chief medical officer of Aurora Health Care; Peter Johnson, MD, is medical director of GYN/ONC at Aurora Health Care; Gregory Banaszynski, MBA, is executive vice president of Market Groups for Aurora Health Care; and Joseph Mirro, MD, is currently president of Western Michigan Cancer Center. Aurora St. Luke's Medical Center, Cancer Center was a 2011 ACCC Innovator Award Recipient.

Reference

1. Intuitive Surgical. Why da Vinci Surgery? Available online at: *http://intuitivesurgical.com/hospital-programs*. Last accessed June 20, 2012.

Acknowledgment: **Special thanks to the Vince Lombardi Cancer Foundation for supporting the robotic-assisted surgery database project.**