



Date: Fiscal Year 2009
 To: Hospital Executives
 From: Kathryn Barry, MPH, MSN, RN
 Health Policy Specialist for *Intuitive*[®] Surgical
 Re: Planning for Long-Term Success with a Robotic Surgery Program

As the healthcare industry awaits transformative changes from the likelihood of healthcare reform, leading-edge hospital executives are proactively aligning their strategic plans in anticipation of new healthcare financing principles. While the desire to provide higher quality at lower costs with greater perceived value is nothing new, changes to how healthcare providers are reimbursed are likely to occur in the very near future.

Currently, our healthcare financing system pays for healthcare like a factory assembly line, rewarding quantity over quality.¹ As a result, hospitals have become reliant on their cost-accounting systems to make long-term, strategic business decisions. From a health policy perspective, Medicare's budget-based decision making process — where higher costs lead to higher reimbursement regardless of outcome — is seen as an ineffective model for future healthcare investments.

As the Health Policy Specialist for *Intuitive* Surgical, I am often asked to share information and education about laparoscopic robotic surgery consistent with decisions made by the American Medical Association (AMA), Centers for Medicare and Medicaid Services (CMS), American Urologic Association (AUA), American College of Obstetricians and Gynecologists (ACOG) and leading U.S. payers. The purpose of this memo is to summarize key points that have helped hospital executives evaluate the clinical and financial issues associated with implementing a robotic surgery program in this changing climate.

Strategic Acquisition

Acquiring the *da Vinci*[®] Surgical System is a strategic initiative that should be associated with a three-to-five-year business plan. Return on this investment depends upon both the volume and complexity of laparoscopic surgical procedures routinely performed with robotic assistance. To build a business plan that accurately forecasts the potential increase in patient referrals, the hospital's Finance Department must first grasp the clinical significance of robotic assistance (Table 1):

Table 1: Clinical Significance of Robotic Assistance*
With robotic assistance, surgeons gain enhanced capabilities and precision simulating an open surgical environment but with a minimally invasive approach.
Technical Advantages: Compared to conventional rigid laparoscopic instruments, robotic surgeons gain seven degrees of freedom with wristed laparoscopic instruments, a 3D HD view of the surgical field, 10x magnification, motion scaling, elimination of hand tremor and significantly improved ergonomics.
Potential Surgeon Benefits: The technical edge of robotic assistance provides surgeons capabilities beyond the limits of the human hand. This has permitted a laparoscopic option where previously a minimally invasive approach was the exception. Surgeon adoption of robotic assistance is motivated by the desire for improved visibility, improved precision of dissection, time-saving intracorporeal suturing for water-tight anastomoses and access and maneuverability in tight pelvic spaces. Handling, examining and excising potentially cancerous tissue; accessing difficult-to-reach lymph nodes; avoidance of intra-operative conversions and elimination of post-operative wound infections are the main drivers of surgeon adoption.
Potential Patient Benefits: From the patient's perspective, the well-known advantages of laparoscopic surgery — such as fewer days in the hospital, less pain, avoidance of a large abdominal incision, decreased

¹ Senator Gregg (R-NH). Proposal to help revive healthcare system. Press Release. June 2, 2009.

risk of blood transfusion and quicker return to normal daily activities — are the main drivers of consumers seeking robotic surgery. Informed patients also understand that the potential advantages of robotics in the hands of skilled laparoscopic surgeons can result in measurable improvements in clinical outcomes.

* Evidence of comparative clinical benefits, including reprints and bibliographies, is available upon request.

A successful robotics program is much more than the sum of total procedures performed each year. Maximum utility and efficiencies are gained when the *da Vinci* Surgical System is kept busy. From a strategic planning perspective, the goal should be to pursue a plan that encourages robotic cases every day. Hospitals typically launch their robotics programs in Urology, then expand into Gynecology for benign and/or oncologic pelvic conditions. Additional surgical specialties may include Colorectal, Thoracic, Cardiothoracic and Pediatrics. The mix of surgical specialties is uniquely determined by surgeon interest and the strategic service lines that the hospital seeks to attract new referrals. Early collaboration with interested surgeons is needed to realistically forecast the type and volume of cases that will be referred to the hospital’s robotic surgery program in the first year.

While the *da Vinci* Surgical System is acquired for the operating room, management oversight is best assigned to a multi-disciplinary robotic surgery task force, chaired by a Finance Director (Table 2).

Table 2: Hospital Robotics Taskforce	
Director of Finance, Taskforce Chair Director of Managed Care Contracting Director of Strategic Planning Director of Marketing/Public Relations	Operating Room Supervisor (or Robotics Coordinator) Financial Analyst for Surgical Services Director, Surgical Medical Records/Coding Robotic Surgeons

This taskforce should meet at least twice a year to review financial reports. The first report should assess changes in the following financial metrics that may result from a shift from open surgery to robotic-assisted laparoscopic surgery (Table 3).

Table 3: Potential Procedural Cost-Shifts
<ul style="list-style-type: none"> • Decreased intra-operative minutes • Decreased hospital length of stay • Decreased consumption of routine post-op surgical care needs, such as IVs, narcotics, blood transfusions, wound care management & nursing care surveillance • Avoidance of intra-operative conversions • Avoidance of post-operative wound infections

As reported in the peer-reviewed literature, laparoscopic robotic surgery is associated with numerous efficiencies due to improved patient outcomes. These efficiencies typically represent direct hospital cost-savings. When completing a classic cost-accounting procedural analysis, these cost-savings typically exceed the direct costs associated with performing laparoscopy with robotic-assistance. At the advent of the first generation of laparoscopic surgery in the late 1980s and early 1990s, Operating Room Supervisors and Materials Managers often objected to the direct costs associated with laparoscopic cholecystectomy. In contrast, hospital strategic planners and executives recognized the system-wide efficiencies and growth in new business from laparoscopic surgery. Similar financial dynamics are associated with this second generation of laparoscopy. With robotics, conventional open surgical procedures can be shifted to a minimally invasive approach. To date, the following efficiencies have been reported in the literature and should serve as comparative benchmarks for the hospital’s robotic surgery task force (Table 4).

Table 4 Performance Benchmarks		
Laparoscopic Robotic Prostatectomy^{2,3}	Laparoscopic Robotic Hysterectomy (Benign Conditions)⁴	Laparoscopic Robotic Hysterectomy (Endometrial Cancer)⁵
200 intra-operative minutes	79 intra-operative minutes	191 intra-operative minutes
<30 minutes set-up & turn-over time	<30 minutes set-up & turn-over time	<30 minutes set-up & turn-over time
1.5 day length-of-stay	1.0 day length-of-stay	1.0 day length-of-stay

²Patel VR, Palmer KJ, et al. Robot-assisted laparoscopic radical prostatectomy: perioperative outcomes of 1500 cases. *J Endourol.* 2008 Oct; 22 (10): 2299-305

³Tewari AK, Jhaveri JK, et al. Benefit of robotic assistance in comparing outcomes of minimally invasive versus open radical prostatectomy. *J Clin Oncol.* 2008 Oct 20; 26(30):4999-5000

⁴Payne TN, Dauterive FR. A comparison of total laparoscopic hysterectomy to robotically assisted hysterectomy: surgical outcomes in a community practice. *J Minimally Invasive Gynecology.* 2008 May/June; 15(3)

⁵Boggess JF, Gehrig PA, et al. A comparative study of 3 surgical methods for hysterectomy with staging for endometrial cancer: robotic assistance, laparoscopy, laparotomy. *Am J Obstet Gynecol.* 2008 Oct; 360.e5

It takes time and practice by both the robotic surgeon and hospital team to achieve these performance ideals, and many institutions have surpassed these benchmarks by reducing intra-operative minutes to levels well under the aforementioned numbers. How long depends upon how many cases are needed for the surgical team to complete its learning curve. Cases every day versus a handful of cases per month have very different impacts on the hospital's financial profile. Practice drives performance, efficiencies and program growth.

Defining the financial value of a strategic acquisition such as the *da Vinci* Surgical System requires looking beyond procedural analysis. It includes assessment of the hospital's ability to grow its business, attract new referrals, attract a younger, insured patient population and offer a competitive distinction within the community. While a robotic surgery program may begin in the operating room, its financial impact should be felt across the hospital's continuum of care. With this in mind, the operating room may focus on procedural line-item cost-analyses, but the Finance Department should maintain a focus on strategic business development metrics (Table 5).

Table 5: Business Development Metrics
<ul style="list-style-type: none"> • New direct referrals for elective surgical procedures • New referrals to ancillary services in the hospital's continuum of care pre- & post-robotic surgery, such as Radiology, Laboratory, Cancer Center, etc. • Market share shifts beyond customary primary & secondary service catchment • Shift in payer mix to a younger, insured patient population • Change in private payer contract terms, in particular shift from per diem to case rates • Change in open surgical volume to minimally invasive surgery volumes • Change in adverse surgical events reported by Infection Control & Quality Assurance • Reduction in surgical re-admission rates

The purpose of creating a multi-disciplinary robotic surgery task force is to ensure that the hospital's new business plan is the beneficiary of continuous process improvement. When budgeting for change, it follows that operational changes need to be made. A multi-specialty robotic surgery program requires collaboration. The limited focus of cost-accounting procedural analysis traditionally performed for the operating room will fail to capture the impact of new referrals and efficiencies, with concomitant shifts in market share and payer mix.

Health Policy Considerations

During the due diligence process, the hospital's coding department should review *Intuitive Surgical's* "Laparoscopic Robotic Surgery Coding and Reimbursement" document (PN 871971). Its purpose is to briefly share education and information consistent with decisions made by the American Medical Association (AMA), Centers for Medicare and Medicaid Services (CMS) and leading payers, as summarized in Table 6.

Table 6: Coding Considerations	
Professional fee, per AMA	In June 2007, a Robotics Work Group convened by the American Medical Association (AMA) concluded that the current laparoscopic CPT codes were the appropriate considerations for laparoscopic procedures completed with robotic-assistance. At this time, per the AMA, no new codes or unique modifiers are needed.
Technical component, per CMS	On October 1, 2008, CMS released a new family of ICD-9-CM Procedure Codes for Robotic-Assisted Procedures (17.4X). Per Medicare, the hospital should code the primary surgical procedure and then identify 17.42 to identify the laparoscopic procedure with robotic-assistance.
Local carrier code	In 2005, a BlueCross Blue Shield plan issued S2900, defined as "Surgical technique requiring robotic surgical systems" (list separately in addition to code for primary surgical procedure). This code is found in the Level II HCPCS coding manual.

Since coding, coverage and reimbursement determinations can be subject to frequent change, healthcare providers should check with their payers before submitting claims.

While most healthcare providers initially concentrate on "What's the code?" and "How much will we be reimbursed?," it is equally important to establish the medical necessity of advanced laparoscopic surgery performed with robotic assistance with any payer who may still not understand that the primary surgical procedure is a laparoscopic procedure, and robotic-assistance is a technology enabler. To date, the majority of leading payers — such as Anthem, CIGNA, United, Humana and innumerable Blue Cross and Blue Shield plans — have medical policies pertaining to laparoscopic robotic surgery. The majority consider the use of the robot to be part of the global surgical service rendered.

Early inclusion of the hospital's Director of Managed Care Contracting in the planning, preparation, launch and ongoing surveillance of the hospital's robotic surgery program is critical. A pre-assessment of the hospital's payer mix and contract terms is needed to appreciate the impact a robotic surgery program may have on OR efficiencies, length of stay, patient throughput and current profitability by payer. Contract terms, such as MS-DRGs, case rates and percent-of-charges, benefit from procedural efficiencies associated with a robotic surgery program and should favorably contribute to the hospital's profitability. If the hospital still has "per diem" contracts, then time and attention is needed. By now, most hospitals have tackled the per diem dilemma with other surgical specialties where decreasing the length of stay has become the norm. Valuable lessons can be learned from the hospital's earlier efforts to realign their payer contracts when they adopted the myriad of minimally invasive technologies now routinely used in cardiothoracic, neuro and orthopedic surgeries. This same process of contract correction is needed for robotic-assisted laparoscopy.

Before delving into a comprehensive financial analysis, a baseline query of the hospital's most prevalent robotic-assisted laparoscopic procedure — such as laparoscopic radical prostatectomy — helps to identify any programmatic issues that require correction (Table 7).

Table 7: Laparoscopic Radical Prostatectomy with robotic assistance ICD-9-CM Procedure Code 60.5⁶ ICD-9-CM Procedure Code 17.42
<ul style="list-style-type: none"> • Total number of cases performed • Length of stay (range & average) • Age of patient (range & average) • Name of payer • Type of reimbursement (MS-DRG, Case Rate, Percent-of-Charges) • Amount of reimbursement for each case • Cost per case (not charge)

Examining the details of robotic-assisted laparoscopic prostatectomy offers a preview to the direction of the hospital's overall robotics program. Lessons learned in prostatectomy should be transferable to other surgical service lines.

Positioned for the Future

In conclusion, a paradigm shift in healthcare financing will inevitably cause a shift in healthcare delivery decisions. Shifts from cost-accounting to new financial metrics that reward quality and efficiency are on the horizon. Hospitals that pursue a multi-specialty robotic surgery program should be guided by the dynamic interaction of cost-accounting, strategic planning and business development principles. Oversight requires a multi-disciplinary team, chaired by a Financial Director experienced in monitoring a strategic investment. As a new service line for the Department of Surgery, three strategic shifts are desired management outcomes (Table 8):

Table 8: 3-D Value Budgeting for Change
<ul style="list-style-type: none"> • Clinical: Conversion of complex open surgical procedures to minimally invasive procedures • Financial: Operational direct patient care efficiencies • Strategic: Change in business practices (new patient referrals, broader market share, shift in payer mix and contract term corrections)

Upon your review, I welcome the opportunity to schedule a conference call with your strategic planning and business development personnel to further consider how the unique dynamics in your marketplace are driving your strategic business decisions.

Kathryn Barry, MPH,MSN, RN is the principal of Medical Education Training Associates, LLC. For further information and personal discussion, please contact metakb@yahoo.com.

This information is shared for educational and strategic planning purposes only.

⁶American Medical Association, *ICD-9-CM 2009*, Hospital Volume 1, 2 and 3. 9th Revision-Clinical Modification