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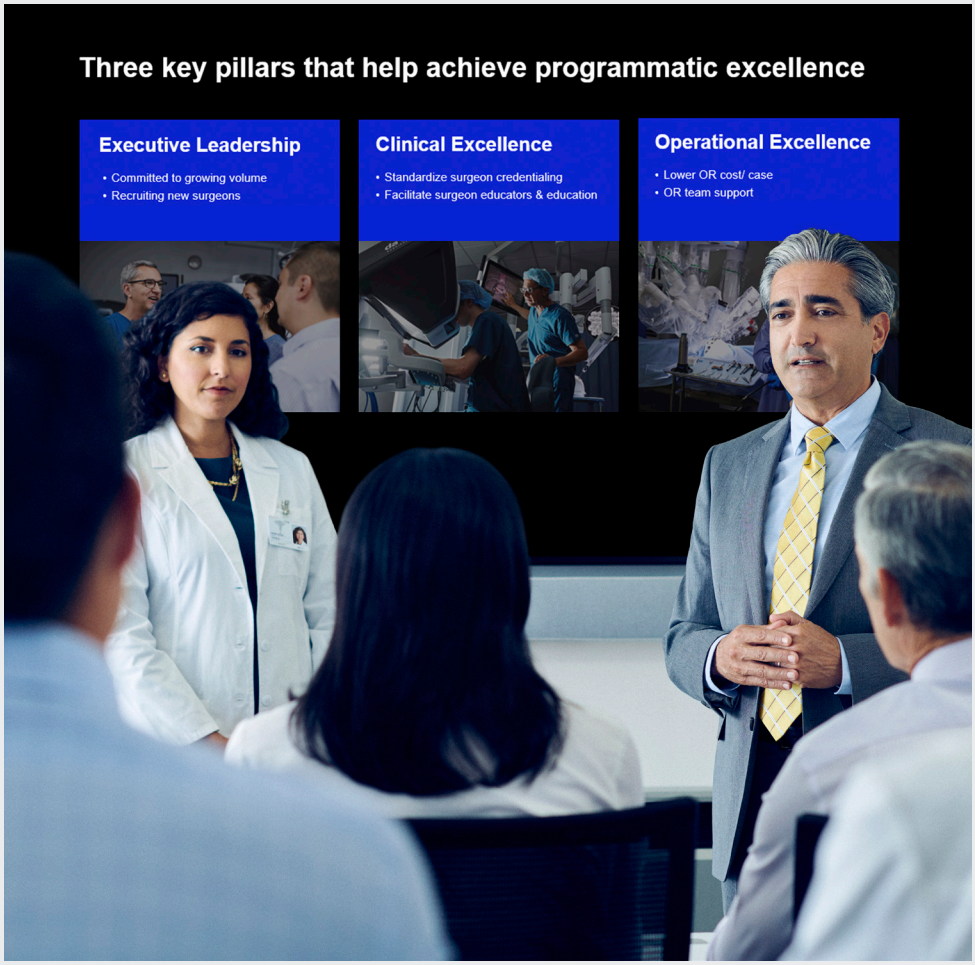

More Than a Robot in the OR

Insights on building a highly structured, robotic-assisted surgery service line

Tenets of the Quadruple Aim

Better patient outcomes.

Lower total cost of treatment per patient episode.

Better patient experience throughout the process.

Better care team experience.

Some of the most important achievements in the history of medicine have been made in surgical care. Today's leading surgeons stand on the shoulders of generations of innovators that came before them and are now able to perform certain minimally invasive procedures with highly sophisticated robotic–assisted surgical systems. But modern surgical excellence is less the product of talent than it is the collective efforts of a team that not only includes individual clinicians, but also operational administrators and executive-level decision-makers, all aligned under the tenets of the Quadruple Aim: better outcomes, lower total cost of care, improved patient and care team experience.

Today's robotic-assisted surgical systems are sophisticated pieces of equipment that facilitate certain minimally invasive procedures, capable of moving surgical instruments through one or more small incisions in a patient's body. Over the years, the demand for this technology has evolved to support a growing number and type of minimally invasive procedures. For example, in 2008 approximately 50 percent of hysterectomies were performed using open techniques. By 2017, the open technique for hysterectomies had dropped to less than 25 percent and hysterectomies performed using robotic-assisted techniques increased to 58 percent of the total 80 percent performed using minimally invasive techniques, according to estimates based on information compiled in the national Premier Healthcare database[1].

Additionally, while robotic-assisted surgery was first mainly used for urology and gynecology procedures, the technology has grown across other procedure types as well, such as general surgery, colorectal, and thoracic. By 2024, the global surgical robotics market is expected to approach $98 billion, which would mark an annual growth rate of 8.5 percent from 2017 to 2024, according to projections[2] from Allied Market Research.

While investment in this technology signals that hospital leaders are committed to innovative surgical care at their organization, simply outfitting the operating room with this equipment is not enough to achieve optimal surgical program performance. When hospitals and health systems are pursuing surgical excellence, robotic-assisted surgery should be viewed and cultivated as a service line that requires a continuum of support to succeed.

This e-book provides an overview of the leadership pillars and the resources available to help grow and maintain robotic-assisted surgery service lines, and a glimpse into what surgical excellence means to St. Elizabeth Healthcare in Northern Kentucky.

The 3 pillars of surgical excellence

Intuitive, maker of the da Vinci® surgical system and Ion® endoluminal system, collaborates with hospitals and health systems to support robotic-assisted surgery service lines to help these organizations optimize their use of this technology.

Throughout these relationships, three pillars of programmatic excellence in surgical services have emerged: 1) executive leadership, 2) clinical excellence, and 3) operational excellence.

Executive leaders should be active in the service line and committed to growing minimally invasive surgical volumes in a way that is appropriate with patient selection, recruiting more surgeons to train to use the technology, and closely tracking revenue associated with the service line. To promote clinical excellence, surgeons should have access to robust performance data and educational opportunities, and credentialing should be standardized for all. Leaders tasked with achieving operational excellence should pursue optimal efficiency and work to lower the average OR cost for surgical cases.

A four-phase maturity model

For a robotic-assisted surgery service line to flourish, executive, clinical, and operational leaders can usher the program along a four-phase maturity model pathway. Evolution along this model can be tracked across several classifications, including C-suite engagement, program structure, technology innovation, service line, access, productivity, and data insights.

Hospitals and health systems that reach the fourth phase of the maturity model are considered highly structured robotic-assisted surgery service lines. These robotic-assisted surgery programs may have C-suite champions, utilize the resources available through the Intuitive ecosystem, and perform cleared procedures across multiple specialties. Advancing along the maturity model requires a steadfast commitment from leadership to continually embrace minimally invasive surgery and a rigorous execution of best practices. While this is no simple task, hospital teams do not have to do it alone. In addition to their systems, Intuitive offers a cohesive and integrated ecosystem of resources that provides in-depth learning to help surgeons develop proficiency with the technology along with a range of services to assist and help hospitals optimize their programs.

The cost equation: measuring clinical and economic performance

While the open exchange of best practices between peer organizations is an important component of robotic-assisted surgery service lines, consistent analysis of data and metrics is also essential for developing and maintaining a highly structured program. With the right metrics, leaders can assess operational efficiency, clinical performance, and financial results.

Data on surgical procedures and utilization including procedure benchmarking, instrument variance and system utilization can be gathered and collected from robotic-surgery systems. This data can help program leaders regularly assess instrument utilization and console time. Once an organization understands its top performers' digital insights, leaders can help establish protocols across the robotic-assisted surgery program. When it comes to utilization review, leaders can track the percentage of robotic-assisted procedures that are performed to identify possible opportunities for appropriate extended use of the technology. As a baseline goal, programs may seek to maximize utilization of their systems by optimizing block schedules and ensure surgeons are performing multiple cases throughout the day. Believing that robotic-assisted surgery should not be limited to day and time, many of today's hospitals in the U.S. have expanded staff training—to increase system availability and provide greater access to the technology after 3 p.m. and on weekends.

Executive leaders may also use data on outcomes and costs to get a better sense of the financial viability associated with their robotic-assisted surgery service line. Data on patient outcome measures such as length-of-stay and complication rates should be a factor in the hospital's evaluation of its robotic-assisted surgical service line revenues.

When assessing the total cost of minimally invasive surgical care using robotic-assisted technology, executives may find the iceberg metaphor helpful. At the tip of the iceberg are the direct cost expenditures: capital investment costs, instrument and accessory costs, and OR time costs. The rest of the iceberg comprises downstream costs such as the clinical and operational measures that may have an effect on cost reduction: the length of a patient's hospital stay, complications, surgical site infections, readmission rates, and conversion rates.

Comprehensive Cost of Care

Upfront OR investment (direct costs)

Instrument and accessory costs

Capital costs

OR time costs

Downstream costs

Length of stay

ICU admission

Blood transfusion

Conversions

Complications

Surgical site infections (SSI)

Readmissions

Variability in

- Surgeon experience
- Patient comorbidities
- Delivery of care

Downstream costs

A snapshot of a highly structured robotic-assisted surgery program — belief, access, and coordination at St. Elizabeth Healthcare

St. Elizabeth Healthcare, which operates five hospitals across northern Kentucky, exemplifies a health system that has committed to the goal of achieving surgical programmatic excellence. The health system built its robotic-assisted surgery service line on the three key components of surgical excellence: building belief, expanding access, and care team coordination.

Building Belief
To gain support from executive leadership, surgeon champions at St. Elizabeth advocated for robotic-assisted surgery with evidence-based data on outcomes. After capturing the interest of its executives, these surgeons arranged an in-person, site visit to Orlando Regional Medical Center in Florida, enabling St. Elizabeth leadership to experience, firsthand, an established robotic-assisted surgery service line. The executives who attended the site visit later became active supporters of the St. Elizabeth robotic-assisted surgery program.

Expanding Access
The commitment of St. Elizabeth to support the health of its community spurred commitment and dedication from their Executive Surgeon Leader within the clinical excellence pillar. The health system invested in seven fourth-generation robotic-assisted surgical systems and trained the entire surgical staff. This effort resulted in the creation of a multi-specialty robotic-assisted surgery service line that provided expanded access to the technology.

Care Team Coordination
After launching the program, team leaders worked to establish a culture of continuous process improvement for operational excellence. Leaders used data captured from surgical procedures to inform the standardization of surgical protocols and OR utilization. Within two quarters, St Elizabeth increased the number of robotic-assisted procedures performed by 36 percent.

More than a machine — the cohesive and connected Intuitive ecosystem

Incorporating robotic-assisted surgery platforms into the OR can be a significant investment. These platforms are integrated technology systems supported by the Intuitive ecosystem of resources. This cohesive and connected ecosystem consists of three components: products (minimally invasive robotic-assisted systems and OR technology), learning (educational classes, events, and other opportunities for peer-to-peer collaboration), and services (including custom analytics to support operational optimization and access to peer-to-peer programs and learning opportunities with experienced robotic-assisted surgery teams).

Robotic-assisted surgery programs can't achieve optimization if the technology is used by only a few properly trained surgeons on a limited basis. Programs should be representative of and support an organization's commitment to surgical excellence, quality patient outcomes, a better provider experience, and cost-effective care. Technology is only one piece of the surgical excellence continuum.

So what makes the real difference at organizations with highly structured robotic-assisted surgery service lines? People, not machines.

To learn more about Intuitive and da Vinci robotic-assisted surgical systems, click here. ■

References

1. Intuitive internal estimates based on Q1 of 2017 national Premier database for open, conventional MIS and da Vinci procedures
2. Sajeev, S., & Chandra, G. (2018). Surgical Robotics Market Size & Growth: By 2017-2024. Retrieved October 05, 2020, from https://www.alliedmarketresearch.com/surgical-robotics-market

Important safety information
For important safety information, indications for use, risks,full cautions and warnings, please also refer to www.intuitive.com/safety.

Material disclosure
Some of the information presented are the views and opinions of independent surgeons and healthcare professionals based on their experience and the experience of their institution with the da Vinci surgical system. Their experience may or may not be reproducible and is not generalizable.

The material presented for St. Elizabeth Healthcare represents the views, experiences, and opinions of an independent institution based on their practice and experience with the da Vinci surgical system. Their experience may or may not be reproducible and is not generalizable.

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