

INTUITIVE



Helping transform operations, together

Using data and establishing best practices with da Vinci technology to help you alleviate staffing burdens and optimize OR efficiency

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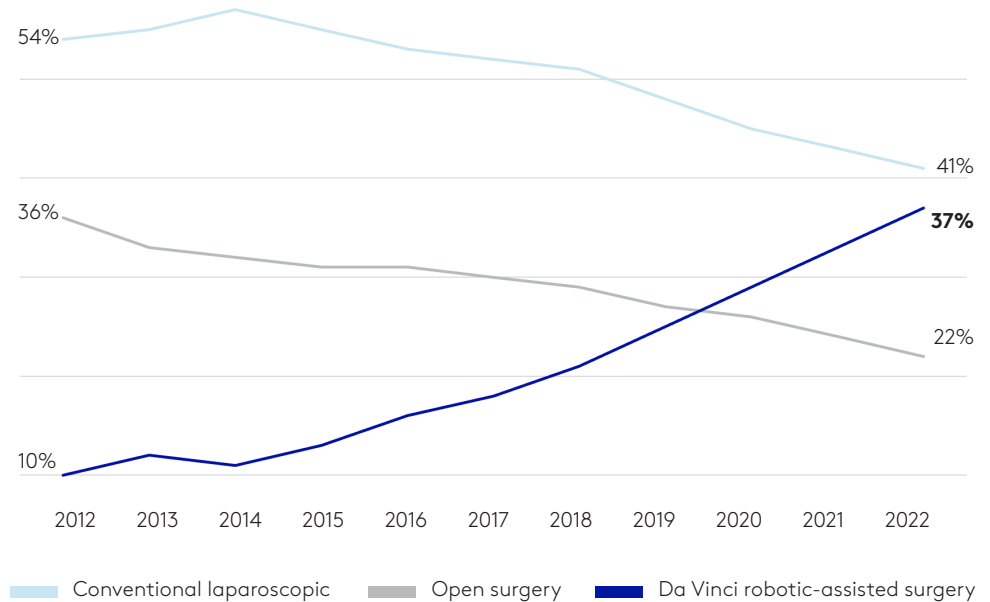
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A decade of growth

The demand for robotic-assisted surgery using da Vinci® systems has increased while open surgery and conventional minimally invasive procedures have declined. The trend is driven by quantified performance and increased surgeon demand.

U.S. modality trends

An examination of the percentage of estimated volume by modality from 2012 to 2022 shows that da Vinci robotic-assisted surgery grew 27 percent, and the demand for conventional laparoscopic and open surgeries decreased by 13 percent and 14 percent, respectively.*



Increased adoption

We have found that health systems and surgeons like yours continue to believe in the value of surgical robotics programs, expanding their adoption of cleared specialties and procedures and making the technology more accessible for appropriate patients. For nearly 30 years, and through more than 12 million procedures in collaboration with surgeons, care teams, and hospitals, our goal has been to help consistently deliver better, more predictable outcomes. We continually strive for optimal care through surgical innovation, working hand-in-hand with you to accelerate the future and build what's needed next.

This staffing resource highlights challenges and opportunities for hospital and health systems—providing insights and options for flexible staffing models.

* Estimated volume of hospital inpatient and outpatient procedures, including: Bariatrics, Cholecystectomy, Colorectal, Foregut, Inguinal Hernia, Ventral Hernia, Hysterectomy - Benign & Radical, Lung Resection, Nephrectomy - Partial & Radical, and Prostatectomy procedures. Intuitive internal estimates based on hospital inpatient and outpatient procedure data available from IQVIA (formerly IMS Health) for 2012 – 2021, with 2022 estimates extrapolated from 2021. Da Vinci surgery volumes are for 2012 – 2022, which also includes procedures performed at ambulatory surgery centers. Data analysis, including ICD-9 and ICD-10 codes, are on file at Intuitive. Data and conclusions should be considered preliminary unless published in peer-reviewed journal.

Shared values, shared vision—expanding access



“We are driven by the tenants of the Quadruple Aim—first among them are patient outcomes. We envision a future of care that is less invasive and profoundly better, where diseases are identified earlier and treated quickly so patients can get back to what matters most.”

Gary Guthart, PhD

Chief Executive Officer, Intuitive
Speaking at the JP Morgan
Healthcare Conference 2022

Intuitive helps empower your health system, surgeons, and care teams to achieve programmatic excellence around a shared vision of improving the care your hospital provides to patients. Collaborating with Intuitive provides access to a unified ecosystem that enables minimally invasive surgery with a full spectrum of systems, learning, and value-enhancing services—all developed to maximize your robotics investment and help support your hospital’s pursuit of the goals of the Quadruple Aim:

- Improving outcomes – length of stay, complications, surgical site infections, return to OR, readmission, consistency of outcomes
- Lowering total cost care – clinical cost savings, reduced direct costs, reduced clinical variation
- Improving the patient experience – faster recovery, reduced conversions, outpatient vs. inpatient
- Improving the care team experience – ergonomics, dedicated teams, OR efficiencies, analytics, training

The challenge of staffing



Hospitals need to take both long- and short-term measures to address critical workforce issues so they can continue to provide safe, high-quality care now and in the future.¹

Deborah J. Bowen, FACHE, CAE
President and CEO
American College Healthcare
Executives

Workforce challenges continue to plague the healthcare industry. Again in 2022, CEOs ranked workforce challenges, which include personnel shortages, above financial challenges for the second time as top issues confronting hospitals, according to the American College of Healthcare Executives annual survey.¹

Further complicating issues, one in five physicians and two in five nurses intend to leave their current practice within the next two years, according to a Mayo Clinic COVID-Related Stress and Work Intentions Survey of 20,000+ healthcare workers at 124 institutions in the U.S. between July 1 and December 31, 2020.²

Why is this such a critical issue?

People are the foundation of good healthcare—from highly trained physicians and nurses to other healthcare staff. Yet, the supply of healthcare professionals has not kept pace with an increasing demand for care spurred by a growing aging population and a global pandemic. Nearly one in five healthcare workers left their jobs during the pandemic, according to another survey of 1,000 U.S. healthcare workers as reported on October 4, 2021, in “Voices from the Front Lines of Healthcare, Part II,” a special report from the online publication *Morning Consult*.³

As a result, healthcare leaders may be looking at new staffing models and technology that support care teams across all sites of care, including the operating room. Health systems are leveraging modern robotic surgery platforms and implementing alternative staffing approaches to help optimize OR performance and alleviate staff burden.

The opportunity— enhancing efficiencies, driving greater surgeon autonomy

Da Vinci surgical systems from Intuitive with integrated technologies for robotic-assisted surgery can help drive greater surgeon autonomy and potentially impact your staffing requirements.

As an example, the fourth-generation da Vinci Xi® surgical system includes the same advanced 3DHD vision and wristed instruments you expect from da Vinci, in a modular, adaptable format. It is designed for multi-quadrant access and allows surgeons to perform a variety of robotic-assisted procedures by offering broad anatomical access and integration of the most advanced da Vinci technology.

The arms on the system are mounted to a boom and can rotate, as a group, to many desired angles over the patient. Without having to move the base, this enables effective and efficient four-quadrant access. And with the Integrated Table Motion, surgeons can reposition the patient to optimize access, exposure, and reach without stopping the procedure.

Along with the fully integrated endoscope (no set-up required) and the ability to flip the endoscope view 30 degrees up and down with the press of a button, these capabilities give the surgeon complete control of the camera. And should a case need it, the fourth arm for retraction is always available.

Surgeon-controlled energy settings provide precise control* and amplified performance.** Integrated da Vinci generators help you fine-tune energy output and switch presets directly from the surgeon console.

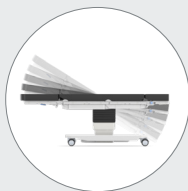
These advanced technologies with the da Vinci Xi are designed to improve operational efficiency, enabling you to get started quickly and streamline essential tasks—all good news for hospitals looking to optimize staffing models.

* Da Vinci Energy includes SynchroSeal with E-100 and VSE with E-100.

** Da Vinci Energy includes SynchroSeal with E-100 and VSE with E-100. Based on analysis of sealing cycle time differences between SynchroSeal with E-100 compared to Harmonic ACE+7 and Vessel Sealer Extend with E-100 compared to Vessel Sealer Extend with ERBE VIO devices. P <0.05. Data on file.



Endoscope flip



Integrated table motion



4th arm for retraction



Advanced energy and stapling



Surgeon controlled energy settings



Integrated video recording with Intuitive HUB



Handheld camera



Suction and irrigation

Our continuous investment—driving better insights

For nearly three decades, we have developed new technology according to our customers' needs, working together to support new approaches to minimally invasive surgery. We have introduced four generations of da Vinci surgical systems based on your feedback and years of human factor studies.

As highlighted, the fourth-generation da Vinci Xi system provides a multi-faceted solution—from a consistent user interface and set up to capability and ease-of-use enhancements such as streamlined port placement, full multi-quadrant access, simplified cart positioning, and optimized patient-side access.

Experience meets performance

Quantified performance from years of case data based on millions of procedures can help create an environment that sets the stage for potentially better patient outcomes, influences staffing models in and out of the OR, or anticipates staffing resources for postoperative care.

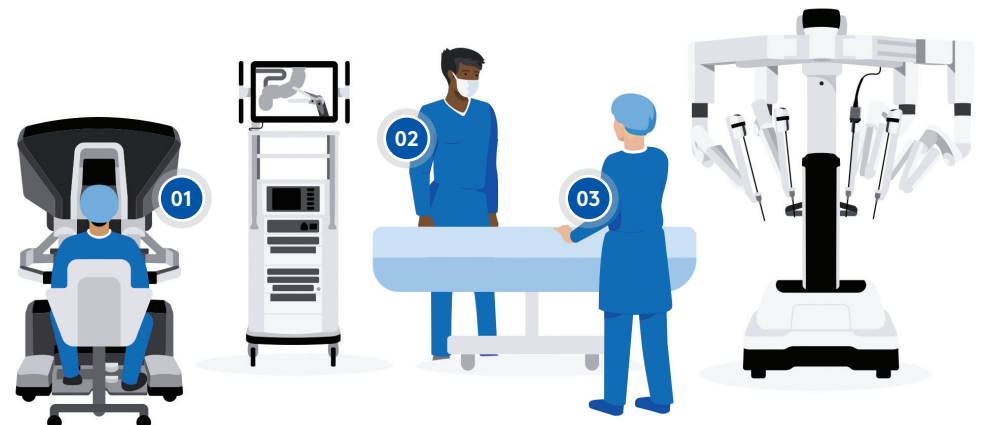
Staffing model example for open and conventional laparoscopic

- 01 Surgeon
- 02 Nurse Circulator
- 03 First Assist
- 04 Scrub Tech



Staffing model example using da Vinci surgical systems

- 01 Surgeon
- 02 Nurse Circulator
- 03 Scrub Tech



Actionable digital insights across the care continuum

Our digitally connected ecosystem provides enhanced capabilities, intraoperative guidance, decision support, and personalized learning with the goal to help improve outcomes and efficiencies. Integrated intelligence can help you and your team illuminate insights within your data to potentially streamline your instrument usage, OR efficiency, and staffing models.

By providing a constant stream of data, Intuitive gives your hospital the information and tools for more informed decision-making. The goal is to help you drive meaningful change that moves your minimally invasive care program forward.

As one example, data can help you better analyze and understand the demand for robotics procedures—everything from the number of cases, and length to the health of your da Vinci program—using instrument and system use data can potentially help your hospital align the right staffing resources.

Tuning data into insights and insights into action



Data

High quality, interconnected, secure, accessible



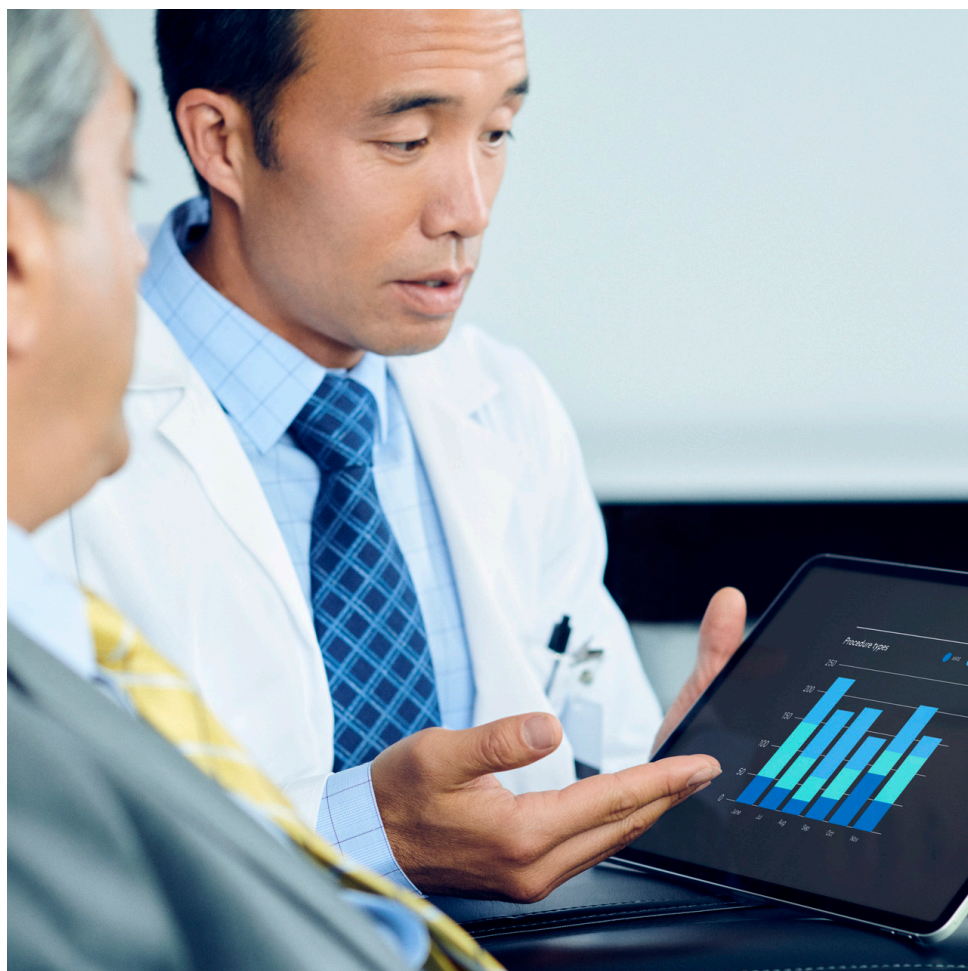
Insights

Relevant, trusted, accurate



Action

Recommend, notify, train, empower



Identifying the root cause of your staffing shortage

Understanding the source of your staffing challenges and identifying improvement opportunities can help you achieve growth and efficiency. The Genesis approach enables you to address staffing challenges, optimize staffing resources, and implement best-practice care team training strategies for your da Vinci program.

Genesis, part of the Intuitive Unified Ecosystem, is a specialized consulting, training, and education program backed by ten years of in-field experience worldwide and more than 2,000 hospitals. Our Genesis team works closely with your entire team—health system executives, clinical leadership, OR staff, and reprocessing staff—to understand your goals, then help you address problems through customized solutions.

We can provide the appropriate training, education, and best practices to support improved efficiency with Intuitive technologies today and tomorrow, procedure after procedure.

To help identify the potential cause or causes of your staffing challenges, start by considering the following:

- **Not enough staff:** What roles have the most staffing shortages at your facility? Are certain days or shifts more short-staffed than others?
- **Not enough trained staff:** Are there enough trained staff to support prime operating hours, after-hours, and weekends? Are your training strategies aligned to meet all stages of competency, from your novice to your most experienced staff member?
- **Optimized staffing model:** What type of staffing model do you have at your hospital? What is the hospital policy and scope of practice for surgical technicians? Do surgeons always request a First Assistant for da Vinci procedures?
- **Misaligned staff:** Are there staffing gaps for procedures using the da Vinci system? Do your staffing resources meet the demand for the da Vinci system? Is staff competency aligned with the surgeons or specialties they support? Can misaligned staffing be resolved with training or modified scheduling?

Optimizing your staffing resources

After identifying the source of your staffing shortage, consider these training and scheduling strategies to help optimize your resources.

Training

- **Not enough staff:** Consider swapping shifts on low-demand days for those in high demand or adjusting shift lengths to support the needs of a specific day or surgeon. Evaluate how many more staff you need and on which shifts.
- **Not enough trained staff:** Implement a standardized training pathway with opportunities to learn across all specialties, improve competence, and increase experience. Utilize the Intuitive Learning platform for online technology and procedure training. Develop super-users across all shifts.
- **Optimized staffing model:** Begin by asking your surgeons when they need a First Assistant for their robotic-assisted surgeries with the da Vinci surgical system. Review your state guidelines, hospital policy, and the surgical technician's scope of practice to determine if an optimized staffing model is possible. Provide training specific to your staffing model needs.
- **Misaligned staff:** Identify staffing gaps that can be improved with additional training and create a plan to align with team member competency levels.

Scheduling

- **Front loading da Vinci cases:** Front loading cases early in the day can avoid extending into after hours. This approach also maximizes the high-robotic competency of day-shift staff and allows less experienced staff additional exposure and learning opportunities to improve competency.
- **Case stacking:** Schedule cases of similar type or set-up for greater efficiency. This approach provides repetition for your staff with low-to-medium robotic competency and the ability to maximize turnover/case-support variability.
- **Flip rooms:** Schedule four to five low-variation cases of 90 minutes or less in a single day. Flip rooms enable more procedures to be completed in less time during prime hours, preventing after-hours staffing burdens in operating rooms and sterile processing departments. And this model provides repetition for newer staff to develop their skills.

Once you have evaluated these strategies, we recommend you communicate your findings to hospital leadership and create an action plan that applies the right solution to address any gaps in staffing, such as matching staffing models to surgeon and procedure needs, educating care team staff across specialties, providing more role-specific training, or training for off-shift team members.

Informing staffing needs

Lessons from Northeast Georgia Medical Center

Standardization of preoperative processes and procedures can help reduce procedure variation and ultimately optimize OR activities that will, in turn, help inform staffing needs.

At Northeast Georgia Medical Center (NGMC)—the first hospital in Georgia to earn designation as a Center of Excellence for robotic surgery⁴—the service-line approach to robotic-assisted surgery has been crucial to the success of their program. It enabled them to improve communication and collaboration among stakeholders—boosting staff morale. And by implementing standardizations in everything from instrument color coding for easy visibility to leveraging data to identify instrument usage frequency and centrally locating instruments to support efficiency, NGMC was able to achieve better operational outcomes and grow its service line.

One of the most significant achievements of the data-driven collaboration at NGMC has been the more efficient use of the OR and robotic platforms, allowing quicker turnover times between surgery and a more streamlined preparation process for support staff.

The medical center also worked with the Intuitive Genesis team to evaluate ways to do more with less. For instance, they optimized block schedules and case stacking, enabling administrators to predict staffing needs more effectively and avoid scheduling open cases during the designated robotic block. This allowed surgeons “unfettered access” to robotics platforms.



“Genesis helped us by identifying opportunities to improve productivity and standardization... Now we have surgeon champions for each surgical service we support.”

**Courtney Emory, MSN, BA,
RN, CNOR**

Manager, Surgical Services
Northeast Georgia Medical Center



Informing staffing needs

Lessons from The Ohio State University Wexner Medical Center



The Ohio State University Wexner Medical Center working with the Genesis team established a task force to assess policies and best practices to determine the precise number of team members required to support each procedure. Administrators at the Columbus, Ohio facility then established a competency outline for surgical techs and the first assist, providing greater clarity around the roles and responsibilities of each position. Cases were evaluated based on complexity, volume, the potential novelty of the procedure itself, and surgeon experience to determine when to assign first assists. After implementing this approach in 2021, the Wexner Medical Center is now tracking increases in robotic-assisted surgery cases and assessing the financial impact.

From a staffing perspective, the medical center has already achieved benefits. The administrators at Wexner reduced the surgical support team for select robotics cases by one-third. This new staffing model required just two full-time staff (one scrub tech and one nurse circulator) and empowered scrub techs to take on a more expanded role in the OR.

“We determined that our scrub techs weren’t operating at the top of their scope. There was room for an expanded role.”

Paige Starkey

Surgical Technologist Manager,
Wexner Medical Center



Informing staffing needs

Lessons from Methodist Healthcare System

At the Methodist Healthcare System, the organization was evaluating how to make postoperative care more efficient yet less burdensome on its staff. Pandemic-related staffing challenges and shortages continued to place significant strain on personnel and a financial burden on the San Antonio-based healthcare system. Filling the vacancies with travel nurses was expensive and not always the best option.



Looking to enhance patient safety, Methodist Healthcare explored supplementing its inpatient workforce with a focus on postoperative care for robotic surgery patients as a good starting place for expanding the role of licensed vocational nurses (LVNs). Before they considered making this role shift, administrators and data experts worked alongside the Intuitive Genesis team to analyze length-of-stay data and complication and readmission rates, deciding to integrate LVNs into what had traditionally been an RN-dominated space.

This approach has allowed Methodist Healthcare to use LVNs as part of a team concept with RNs and has enabled standardized care with data-driven protocols for improving consistency and creating an environment of predictability. Further, the changes have helped ease the administrative burden on clinicians and boost staff morale.

“We’re trying to reimagine our care teams because there just doesn’t appear to be enough RNs to be able to staff it the way we historically have...”⁵

Allen Harrison

Methodist Healthcare,
President/CEO



Operations transformed— New models, new approaches

We have highlighted challenges that may be affecting your robotic-assisted surgery program today. In particular, the healthcare workforce crisis is a significant issue for health systems like yours and the communities you serve.⁶

At Intuitive, we believe healthcare delivery must become more efficient and cost-effective. We also acknowledge that your situation is unique, and there is no one-size-fits-all approach. Whether you look to expand the roles of your care team or emphasize greater standardization and actionable digital insights, we can help. We work with healthcare systems to build well-run robotics programs that offer a foundation for a breadth of surgical procedures.

Together, we strive for care team proficiency and streamlined operations to help you deliver better results across the continuum of care.

To learn more, contact:

Perioperative.Education@intusurg.com



Resources

[Robotics Program Expanded Access—Operations, Aligned](#)

Talks about establishing process efficiencies and expanding access to da Vinci technology for your health system and care teams.

[Collaborate Effectively with Genesis](#)

Highlights how Genesis consulting and training services can potentially help hospitals and health systems achieve operational efficiency and process alignment with Intuitive technologies.

[People Empowerment Across the Care Continuum](#)

Focuses on how health systems can leverage Intuitive's ecosystem to better optimize OR staffing models.

[AST Guidelines](#)

Offers best practices on the perioperative role and duties of the surgical technologist during robotic surgical procedures.

[Technology Training Pathway: OR/Support Staff](#)

Designed to be a facilitator guide for conducting hands-on training to OR staff during the da Vinci X System Overview In-Service.

[Integrated Intelligence from Intuitive](#)

Discover the power of a digitally connected ecosystem to help reduce variability and optimize workflow.

[Intuitive Learning Customer Training Guide](#)

Explore what's possible with Intuitive Learning. Select and enroll in technology learning plans and simulation programs for one or more hospitals you are associated with, access your performance scores, and download your training certificates and transcripts.

[Intuitive Learning Hospital Learning Management \(HLM\) Training Guide](#)

Empowers you to manage your staff's technology and simulation learning within Intuitive Learning.

[Da Vinci Si Surgical System In-Service Guide: OR Staff](#)

(software versions: P8 and da Vinci OS4 v9)

Designed as a facilitator guide for conducting hands-on training to OR staff during the da Vinci Si® System Overview In-Service.

[Da Vinci X Surgical System In-Service Guide: OR Staff](#)

(software version: da Vinci OS4 v9) A facilitator guide for conducting hands-on training to OR staff during the da Vinci X System In-Service.

[Da Vinci Xi Surgical System In-Service Guide: OR Staff](#)

(software version: da Vinci OS4 v9) A facilitator guide for conducting hands-on training to OR staff during the da Vinci Xi System Overview In-Service.

[Block schedule template](#)

An interactive PDF template to assist with block schedule management.

[Robotic staff mapping template](#)

An interactive PDF template to assist with staffing for your robotic service line.

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Presented material disclosure

The material presented represents the views, experiences, and opinions of independent surgeons and healthcare professionals based on their experiences with the da Vinci surgical system. Their experience may or may not be reproducible and is not generalizable.

Important safety information

Serious complications may occur in any surgery, including surgery with a da Vinci system, up to and including death. Examples of serious or life-threatening complications, which may require prolonged and/or unexpected hospitalization and/or reoperation, include but are not limited to, one or more of the following: injury to tissues/organs, bleeding, infection, and internal scarring that can cause long-lasting dysfunction/pain.

Risks specific to minimally invasive surgery, including surgery with a da Vinci system, include but are not limited to, one or more of the following: temporary pain/nerve injury associated with positioning; a longer operative time, the need to convert to an open approach, or the need for additional or larger incision sites. Converting the procedure could result in a longer operative time, a longer time under anesthesia, and could lead to increased complications.

Contraindications applicable to the use of conventional endoscopic instruments also apply to the use of all da Vinci instruments.

For important safety information, including surgical risks and considerations, please also refer to www.intuitive.com/safety. For a product's

intended use and/or indications for use, risks, full cautions and warnings, please refer to the associated User Manual(s).

Individual outcomes may depend on a number of factors, including but not limited to patient characteristics, disease characteristics, and/or surgeon experience.

Da Vinci Xi/X system precaution statement

The demonstration of safety and effectiveness for the representative specific procedures did not include evaluation of outcomes related to the treatment of cancer (overall survival, disease-free survival, local recurrence) or treatment of the patient's underlying disease/condition. Device usage in all surgical procedures should be guided by the clinical judgment of an adequately trained surgeon

Instrument and accessory care

It is the responsibility of the owner of the da Vinci Surgical System to properly train and supervise its personnel to ensure that the instruments and accessories are properly cleaned, disinfected and sterilized as required by the User's Manual. The da Vinci products should not be used in a clinical setting unless the institution has verified that these products are properly processed in accordance with the da Vinci System User's Manual.

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