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Special Article

Guidelines for Privileging for Robotic-Assisted Gynecologic Laparoscopy

AAGL Advancing Minimally Invasive Gynecology Worldwide

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Preamble

The AAGL *Advancing Minimally Invasive Gynecology Worldwide* provides the following guidelines for privileging qualified surgeons in the performance of robotic-assisted gynecologic laparoscopic surgery. The basic premise is that the surgeon must have the judgment and training to complete the procedure safely as intended and have the capability to convert immediately to a conventional laparoscopic or abdominal procedure when circumstances so indicate. As a basic premise, surgical privileging should be based on training, surgical board certification, and ongoing practical experience [1].

These guidelines are for this publication, primarily intended for the United States, and certain terms, associations, and standards references are pertinent only to the United States. Although they reflect the US perspective, it is hoped they might be helpful to local national privileging authorities. The basic principles of currency and competency may still be applicable in any country, and others are encouraged to use these guidelines as the basis for their own modifications.

Purpose

These guidelines are offered to assist hospital systems in evaluating the qualifications of applicants who wish to perform robotic-assisted gynecologic laparoscopy procedures in their facility. In conjunction with The Joint Commission standards for granting hospital privileges [2], these guidelines should help hospitals to confer and renew privileges for robotic-assisted gynecologic laparoscopy to surgeons who can demonstrate competence.

Uniformity of Standards

Uniform standards should be developed that apply to all medical staff requesting privileges to perform procedures using robotic-assisted gynecologic laparoscopy. Criteria must be established that are medically sound but not unreasonably stringent and that are universally applicable to all those who wish to obtain privileges. The goal must be delivery of high-quality patient care. Surgical proficiency should be assessed for every surgeon, and privileges should not be granted or denied solely on the basis of the number of procedures performed, although minimal numbers of surgical procedures may be established in accordance with published guidelines to ensure continued experience and proficiency.

Responsibility for Privileging

The privileging structure and process remain the responsibility of the institution at which privileges are being sought. It should be the responsibility of the department of obstetrics and gynecology, through its chief, or of a multidisciplinary Robotics Peer Review Committee to recommend privileges for individual surgeons to perform robotic-assisted gynecologic laparoscopy procedures. These recommendations should then be approved by the appropriate institutional committee, board, or governing body.

Disclaimer

It is not the purpose of this document to establish the standard of care for granting privileges in robotic-assisted gynecologic laparoscopy. These recommendations are based on current clinical evidence, expert opinion when evidence-based data were unavailable, and the experience of institutions that have adopted this model. It is intended to be adapted to the needs of the institution. This Guideline was developed under the auspices of the AAGL and its

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various committees and was approved by the Board of Trustees. This guideline has been researched and written by the Privileging Guideline Development Taskforce, and was reviewed by an appropriate multidisciplinary team. This guideline is scheduled for periodic review to enable incorporation of pertinent new developments in medical research knowledge, and practice.

Evidence Search

An evidence search of PubMed was performed, using the terms "aviation safety," "credential," and "robotics," spanning the past 15 years, resulting in 20 articles that were classified according to the quality of the evidence.

Abbreviations Used

- ACCME Accreditation Council for Continuing Medical Education
- ACGME Accreditation Council for Graduate Medical Education
- CME Continuing Medical Education
- MEC Medical Executive Committee
- MSO Medical Staff Office
- RPRC Robotics Peer Review Committee

Definitions

- Advanced training course: Training course certified for *AMA PRA Category 1 Credit* or a non-accredited course sponsored by an institution or industry that meets accepted guidelines for training as defined by each hospital's Robotics Peer Review Committee.
- Competence or competency: Determination of an individual's capability to perform to defined expectations.
- Currency: Minimum number of surgical procedures required to be performed over a specified period (e.g., 1 year) to ensure maintenance of skills by the robotic surgeon.
- Credentials: Documented evidence of licensure, education, training, experience, or other qualifications.
- Complete procedural conduct: Competency of the applicant and/or institution insofar as patient selection, periprocedural care, performance of the operation, technical skill, and equipment necessary to safely complete a procedure using robotic-assisted gynecologic laparoscopy techniques, and, when applicable, the ability to proceed immediately with an alternative procedure including an open or laparoscopic procedure.
- Documented training and experience [3]: Case list that specifies the applicant's role (primary surgeon, co-surgeon, first assistant, chief resident, junior resident, or observer). The case list should also include complications, outcomes, and conversion to open techniques, if known, and specify whether these details are not known [4]. Summary letter from preceptor and/or program director and/or chief of department, which should state whether the applicant can independently and competently perform the procedure in question.
- Focused professional practice evaluation: Process whereby the organization evaluates the privilege-specific competence of the practitioner who does not have documented evidence of competently performing the requested privilege at the organization. Focused professional practice evaluation is time-limited, during which the organization evaluates and determines the practitioner's professional performance [2].
- Formal course: Limited period of instruction that should offer *AMA PRA Category 1 Credit* (CME) that meets Accreditation Council for Continuing Medical Education (ACCME) standards. The course should be taught by instructors with appropriate clinical experience, and the curriculum should include didactic instruction as well as hands-on experience using inanimate and/or animate models. Documentation for certain courses consisting of only didactic instruction may consist of verification of attendance.
- Mentor surgeon: A mentor is a surgeon who meets all of the requirements of a proctor but also can teach and assist in training surgeons in new robotic procedures. A mentor should have extensive experience in performing those procedures for which the surgeon requests training, i.e., have performed at least 30 of the specific procedure being mentored. Mentors are approved on the advice of the Robotics Peer Review Committee and the Medical Staff Office. A mentor surgeon may assist in the procedure being mentored.
- Privileging: Process whereby a specific scope and content of patient care services (i.e., clinical privileges) are authorized for a health care practitioner by a health care organization on the basis of evaluation of the individual's credentials and performance.
- Proctor surgeon: A proctor is a board-certified surgeon who is privileged to perform robotic surgery in his or her respective institution and who has performed a minimum of 50 successful robotic procedures. Proctors are approved on the advice of the Robotics Peer Review Committee and the Medical Staff Office. A proctor may not function as an assistant surgeon while proctoring. A proctor reports to the medical staff whether or not he or she considers that the candidate surgeon can operate safely using the robotic surgical system. It is incumbent on the trainee to reimburse the proctor surgeon according to the policy of the hospital, the Medical Executive Committee, and the Proctor.
- Robotic-assisted surgery, robot, and robotic surgery: Terminology commonly recognized as applying to an advanced form of computer-assisted laparoscopic surgery or computer-assisted telesurgery or telemanipulation. Throughout this document we use robot-assisted surgery, robotic-assisted laparoscopic surgery, and variants.

- Robotic trained assistant: To assist at surgery, the surgeon may either already be privileged to perform gynecologic laparoscopy using a robotic surgical system in the particular facility or may have privileges to perform the basic non-robotic procedure and also have completed an in-service session with a qualified trainer on docking the robot and working with and managing the bedside robot before scheduling the procedure (>2 hours). The assistant informs the Medical Staff Office when this training is completed. For non-physician robotic assistants, see Addendum 5.

These are guidelines and do not purport to be Standard of Care Rules. They should provide a baseline framework for local health care systems to develop an evidence- and experienced-based process for developing their own internal standards.

A. Prerequisite Training Requirements

1. Residency training in obstetrics and gynecology (mandatory). Prerequisite training should include satisfactory completion of an accredited residency program in obstetrics and gynecology. The residency program must be recognized by the Accreditation Council for Graduate Medical Education (ACGME) or the equivalent body if the program is based outside the United States or Canada.
2. Prerequisites for training on a robotic surgical system:
   a. Surgeons who currently perform a minimum of 20 major gynecologic procedures per year [5].
   b. Surgeons with no evidence of higher than published rates of complications for bowel and urinary tract injury.
   c. Surgeons who will be able to perform procedures using a robotic surgical system immediately after training and will be able to obtain proficiency shortly thereafter.

B. General Requirements

1. Surgeon must be board certified or an active candidate for board certification in obstetrics and gynecology by the American Board of Obstetrics and Gynecology or an appropriate equivalent organization.
2. Surgeon must have privileges to perform the specific gynecologic procedures, either open and/or laparoscopically, without robotic assistance before performing basic or advanced robotic-assisted procedures (see Addendum 1) using a robotic surgical system.
3. Surgeon must be a member in good standing of the hospital medical staff.
4. Each hospital should establish a RPRC, ideally with members representing multiple disciplines, that should be charged with implementing and monitoring these guidelines. That committee should report to the appropriate hospital privileging committee and/or directly to the hospital Medical Executive Committee.

C. Training Requirements

1. Surgeon must meet the requirements to be awarded a certificate of training by an approved robotic surgical system training course:
   a. Complete an approved computer-based on-line training module.
   b. Observe a live robotic-assisted surgical procedure.
   c. Complete at least 2 hours of bedside training by a qualified trainer for docking, bedside assisting, and resolving bedside robotic surgical system issues.
   d. Complete at least 1 hour of hands-on training with the robotic surgical system using inanimate training aids.
   e. Participate in a live, pig laboratory course (not mandatory for surgeons who have had documented previous robotic surgical system training as a resident or fellow).
   f. Demonstrate competency on a robotic simulator by passing robotic surgery skills drills described in Addenda 4 and 6 before operating on a patient (strongly encouraged but not mandatory).
2. Because robotic surgical skills degrade substantially within weeks of inactivity in newly trained surgeons [6], the first proctored case should be performed no longer than 2 months after training has been completed. Otherwise, the training should be repeated.
3. Surgeons who complete the recommended training pathway may be eligible for approval by the hospital MEC or appropriate governing hospital body to receive privileges to perform procedures designated as "Basic Robotic Surgery Cases." (Addendum 1).

D. Privileging Requirements for Basic Procedures (Fig. 1) (Addendum 1)

1. Surgeon should be required to complete a minimum of 2 robotic-assisted procedures, observed by an approved proctor (see *Definitions*) until passing (an example of a Robotic Surgery Proctoring Assessment form is given in Addendum 2) and assisted by a surgeon in the same specialty who is credentialed to assist in robotic surgery (see *Definitions*) for all procedures in the basic privileges category.
2. After completing at least 2 proctored procedures, the surgeon's next 5 basic category robotic procedures can be non-proctored but should undergo Focused Chart Review (a sample Focused Chart Review form is given in Addendum 3) by the RPRC. After successful focused review, the RPRC may recommend granting basic privileges for the surgeon to the Medical Executive Committee or appropriate privileging body.
3. Required procedure progression. Because robotic surgery has long learning curves (e.g., at least 50 to 90 procedures for experienced gynecologic laparoscopic surgeons) [7], new robotic surgeons should be limited in their first 15 procedures to only basic laparoscopic procedures (defined in Addendum 1). In general, a candidate surgeon

Fig. 1

Ladder to privileging for basic procedures.

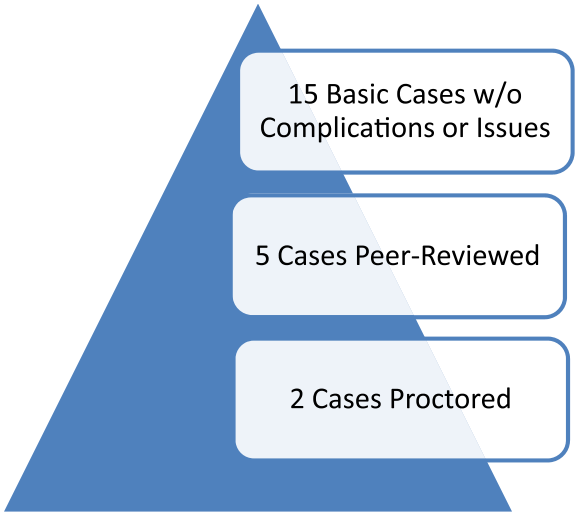
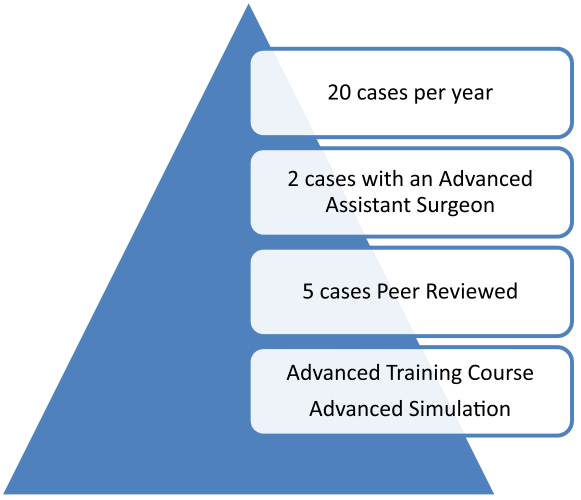


Fig. 2

Ladder to privileging for advanced procedures.



is expected to become proficient with basic cases before being granted privileges to progress to more difficult and complex advanced cases (defined in Addendum 1).

Robotic-assisted laparoscopy should not be used inappropriately for simple laparoscopic procedures such as tubal ligation and adhesiolysis unless patient conditions warrant it. The hospital should monitor the type of procedures being performed through the RPRC to avert use of the robotic surgical system in inappropriate situations.

E. Privileging Requirements for Advanced Procedures (Fig. 2) (Addendum 1)

1. To be eligible for moving from basic to advanced privileges, the robotic surgeon must have completed at least 15 successful basic procedures without complications or other issues.
2. Surgeon must be current, having performed the required number of cases annually.
3. If available, surgeons must complete advanced levels of simulation with passing scores, i.e., >85% (sample simulation skills and assessment forms are given in Addenda 4 and 6).
4. Surgeon should be strongly encouraged to attend an advanced training course (see *Definitions*) (e.g., AAGL, World Robotics Congress), either an outside ACCME-accredited source (unbiased, disclosures) or a formal industry-sponsored course.
5. Focused Chart Review of the first 5 advanced procedures should be performed by the RPRC. If there are no unusual outcomes after Focused Chart Review, and if the surgeon has complied with the guidelines above, the RPRC may recommend to the specific hospital MEC that the surgeon be granted privileges to perform advanced robotic surgery procedure (Addendum 1).
6. Surgeons should not be permitted to schedule or perform advanced cases until approved by the hospital MEC or appropriate privileging body.
7. It is highly recommended that after being granted advanced privileges, the surgeon's first 2 advanced procedures be assisted by another surgeon with privileges to perform advanced gynecologic procedures using a robotic surgical system.
8. If a surgeon wishes to perform a procedure that is new to that surgeon, he or she should complete appropriate training sufficient to be granted privileges from the hospital MEC to perform the basic open, laparoscopic, or robotic procedure. For the first robotic new procedure, mentoring by a proctor or mentor surgeon who has extensive experience in performing the particular procedure ($\geq$50 procedures) should be required. Examples include sacrocolpopexy, stage 4 endometriosis excision, retroperitoneal myoma excision, among others.
9. The surgeon who wishes to perform single-port robotic-assisted gynecologic surgery should first be accomplished at performing advanced procedures using the multiport platform before attempting to qualify for privileges for single-port procedures.

F. Maintaining Privileges in Robotics

1. To maintain privileges to perform basic or advanced procedures, the surgeon must perform a minimum of 20 procedures each calendar year using the robotic surgical system.
2. A surgeon who has performed <20 procedures in the previous year is no longer current and must accomplish the

following before being allowed to schedule a surgery using a robotic surgical system:

a. Surgeons in either the basic or advanced category require a proctor for their first procedure (at the surgeon's expense).
b. If a robotic simulator is available, surgeons must achieve a score of at least 85% or achieve passing levels of competency on designated recertification simulator exercises before being able to schedule a procedure (Addendum 6). If a simulator is not available, surgeons are required to successfully demonstrate skill and proficiency by completing the procedures in a dry laboratory using a robotic surgical system with training instruments and inanimate models under the supervision of a faculty or mentor surgeon (Addendum 4).
c. For both basic and advanced categories, the surgeon's first proctored procedure and the next 4 procedures should undergo focused review. If the surgeon is in the advanced category, the first proctored and the next 4 advanced procedures should undergo focused review.
d. Surgeons are notified if the reviews are favorable, and a recommendation will be made to the hospital MEC to re-grant full robotic privileges at the appropriate basic or advanced level.

3. A surgeon may receive credit toward annual currency requirements for partial console time for a robotic procedure as co-surgeon, but not to exceed 5 procedures or 25% of the total procedures required. To receive credit, the co-surgeon must perform a substantial amount of the procedure.

G. Documenting Competency and Proficiency

1. Each hospital should determine an objective method to ensure proficiency on an annual basis for all robotic surgeons. This can be accomplished in any of several ways, as follows:
   a. Hospitals should determine normal outcomes for surgeons experienced in using robotic surgical systems (>50 procedures) in their institution for total operative times, estimated blood loss, and complications in hysterectomies, sacrocolpopexies, or other procedures, performed using a robotic surgical system. Hospitals should determine 2 SD for these numbers and review all cases that fall outside of these normal values. If a surgeon shows consistent trends as an outlier, that should be addressed by the RPRC.
   b. Surgeons can document proficiency annually on a robotic simulator by successfully passing or accomplishing exercises designated by the RPRC (Addendum 6).
   c. Hospitals can establish a dry laboratory simulation using a robotic surgical system and inanimate models validated for training. This requires a trained observer and standardized scoring (an example is given in Addendum 4).
   d. Hospitals could require all robotic surgeons to undergo an annual "check ride" with an experienced mentor surgeon using a proctoring checklist to grade the surgeon on performance. Substandard performance should be addressed with a recommendation from the RPRC for additional training, mentoring, or other action.
2. As simulation training for robotic surgical systems continues to become validated and more widely available, we suggest that in the future all robotic surgeons should be required to demonstrate proficiency annually on a robotic simulator or equivalent [8–11] (Addendum 6).
3. Surgeons are encouraged to bedside assist at a robotic-assisted surgery at least once per quarter to maintain familiarity with the instrumentation and with advancing and new technologies and to be more aware of issues that occur with robotic-assisted surgery at the bedside and in the operating room suite.

H. Previous Privileging

1. If a new surgeon with previous training and experience obtained at another institution applies for robotic privileges, and if that surgeon is currently privileged to perform robotic cases at another Joint Commission–accredited facility, and if that surgeon has performed a minimum of 20 complete robotic cases in the previous 12 months, he or she may be granted initial privileges without undergoing proctored procedures. That surgeon's next 5 procedures should undergo focused review, and the surgeon must be assisted by another robotic surgeon until granted robotic privileges by the hospital MEC.
2. If a surgeon with previous privileging meets the standards above but has performed <20 procedures in the previous 12 months (not current), that surgeon should be required to complete the requirements listed in section F: "Maintaining Privileges in Robotics" (Annual Recertification).
3. If a surgeon was trained in a residency or fellowship, then the criteria stated in section C: "Prerequisite Training Requirements" apply. The surgeon must provide a log of all robotic-assisted procedures and a letter from their program director verifying robotic training. That surgeon will need to complete any items not documented in C-1, a–f, before being allowed to start performing robotic surgery. All other requirements including proctoring are defined in D-4 to D6.
4. The appropriate hospital department committee and the MEC reserves the right to review, recommend, modify, and apply these requirements as needed after review of each individual applicant.

I. Continuing Medical Education

CME related to robotic-assisted gynecologic laparoscopic surgery should be required as part of the periodic renewal of privileges. To maintain privileges, a surgeon should earn a minimum of 6 credits of *AMA/PRA Category 1 Credits* (CME) in the preceding 24 months. Attendance at appropriate local, national, or international meetings and courses is encouraged.

J. Institutional Support

Robotic-assisted laparoscopy requires a substantial amount of supporting infrastructure vital for the proper completion of procedures. It is incumbent on the institution to have this support in place before beginning a robotic-assisted laparoscopic surgical program.

K. Privileging Guideline Development Task Force Members and Disclosures

Chair, John P. Lenihan, MD; Intuitive Surgical, Inc.: Speakers Bureau, Proctor

Erica C. Dun, MD, MPH; Plasma Surgical, Inc.: Consultant

Isabel C. Green, MD; nothing to disclose.

Franklin D. Loffer, MD: nothing to disclose

Nicholas M. Packer, MD; nothing to disclose

Michael C. Pitter, MD; Intuitive Surgical, Inc.: Speakers Bureau

Monica Reed, MD; nothing to disclose

L. Statement of Approval by the AAGL Board of Trustees

This statement was reviewed and approved by the Board of Trustees of the AAGL, January 2014.

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Evidence Grading

I: Evidence obtained from at least one properly designed randomized clinical trial.

II: Evidence obtained from nonrandomized clinical evaluation.

II-1: Evidence obtained from well-designed control trials without randomization.

II-2: Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research center.

II-3: Evidence obtained from multiple time series with or without intervention. Dramatic results in uncontrolled experiments also could be regarded as type II-3.

III. Opinions of respected authorities, based on clinical experiences, descriptive studies, or reports of expert committees.

Addendum 1. Robotic-Assisted Gynecologic Laparoscopy: Basic and Advanced Procedures

1. A new robotic surgeon should perform at least 15 procedures from the basic group before being eligible to receive advanced robotic privileges (see examples below).
2. If a surgeon has never performed a particular advanced procedure before, either open or laparoscopically, mentoring by an approved robotic mentor surgeon is required. Verification of appropriate training through an approved source is also required for accomplishing that procedure if the surgeon does not already possess basic open and/or laparoscopic privileges for that procedure.
3. When performing the first 2 advanced procedures, the surgeon shall be required to have a robotic trained assistant from the same specialty who has advanced privileges. These procedures are reviewed.
4. Surgeons should have performed at least 1 procedure in the 30 days before performing their first 2 advanced procedures.

Robotic-assisted laparoscopy should not be used inappropriately for simple laparoscopic procedures such as tubal

ligation and adhesiolysis unless patient conditions warrant it. The hospital should monitor the type of procedures being performed through the RPRC to prevent use of the robotic surgical system in inappropriate situations.

Basic Robotic-Assisted Gynecologic Laparoscopic Procedures (The listed procedures are meant to represent typical cases that would be considered "Basic." The list is not meant to be all inclusive or exclusive.)

1. Adnexal surgical procedures including ovarian cystectomy (CPT 58925), salpingo-oophorectomy (CPT 58940), and adhesiolysis (CPT 58740).
   a. Benign cysts without potential of malignancy.
2. Laparoscopic supracervical hysterectomy of uteri $\leq$250 g at ultrasound without bilateral salpingo-oophorectomy (BSO) (CPT 58541) or with BSO (CPT 58542).
3. Total laparoscopic hysterectomy of uteri $\leq$250 g at ultrasound without BSO (CPT 58570) or with BSO (CPT 58571).
4. No more than 2 previous abdominal surgical procedures including cesarean section.
5. Body mass index $\leq$35.
6. Laparoscopic myomectomy: $\leq$4 with no myoma $>$6 cm in greatest diameter (CPT 58545).
7. Endometriosis: minimal or mild (American Fertility Society stage 1–2) (CPT 58662)

Advanced Robotic-Assisted Gynecologic Laparoscopic Procedures (The listed procedures are meant to represent typical cases that would be considered "Advanced." The list is not meant to be all inclusive or exclusive.)

1. Pelvic lymphadenectomy (CPT 38571) including para-aortic lymphadenectomy (requires separate gynecologic oncology privileges).
2. Retroperitoneal procedures including presacral neurectomy (CPT 64772), ureterolysis (CPT 50715), and biopsy or excision of masses (CPT 49203).
3. Sacrocolpopexy (CPT 57425), Burch procedure (CPT 51990), and other pelvic reconstruction operations.
4. Stage 3 or 4 endometriosis surgery (American Fertility Society stage moderate or severe) (CPT 58662).
5. Bowel surgery including appendectomy (CPT 44970).
6. Any other new, not previously described, complex procedure

Addendum 2. Robotic Surgery Proctoring Assessment

Date of Proctoring/Assessment: _____
Location: _____
Name of surgeon being proctored: _____
Name of proctor: _____
Type of procedure: _____
Robotic case number for surgeon: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ __Other (Check one)

Evaluation Items:

1. Was the patient selection for the type of case appropriate? ☐ Yes ☐ No
   Type of Procedure: ☐ Basic ☐ Advanced (check one)
   a. If No, provide comments: _____
   _____
   _____
   _____

2. Was the case progression appropriate? ☐ Yes ☐ No
   a. If No, provide comments: _____
   _____
   _____
   _____

3. Was surgical technique safe and efficient? ☐ Yes ☐ No
   Circle areas of concern or areas for improvement: Uterine manipulator placement, trocar placement, docking, instruments out of view, instrument collisions, proper use of cautery or energy, knowledge of anatomy, excessive blood loss, sewing and knot tying, other:
   _____
   _____
   _____

4. Were any complications managed appropriately? ☐ Yes ☐ No ☐ NA
   a. If No, provide comments: _____
   _____

5. Was the surgeon able to complete the case robotically (i.e., no conversion to open, vaginal, or laparoscopic technique)? ☐ Yes ☐ No

6. Could the surgeon have completed the case successfully without the proctor being there? ☐Yes ☐ Maybe ☐ No

7. Is the surgeon technically competent with robotics to operate independently? ☐ Yes ☐ No
   Proctor: _____
   Surgeon: _____
   Date _____

Used with permission from MultiCare Health Systems, Tacoma, Washington.

Addendum 3. Privileging Proctoring Review and Retrospective Review for Robotics and Minimally Invasive Surgery Focused Review Form

Patient Name: _____ Facility: _____

ID Number (MRN): _____ Date of Review: _____ Reviewer Name:

Type of Review ☐ Ongoing ☐ Random ☐ Referral ☒ ***FOCUS*** ☐ Initial Review

Review Category ☐ Mortality ☒ ***PRIVILEGING*** ☐ Peer Review ☐ Risk Management ☐ UM ☐ Legal

Review Source ☒ ***SCREENS*** ☐ Planned Audit ☐ MeQIM ☐ In-house Referral ☐ Outside Request for Review

When reviewing the chart, please take a close look at: [Please complete the section below.]

☐ BASIC

Patient selection: _____

Total OP time _____ minutes.

Was the procedure converted to open? ☐ Yes ☐ No

Blood loss _____ mL.

Anesthesia notes/criteria_____

☐ ADVANCED

Patient Selection _____

Total OP time _____ minutes.

Was the procedure converted to open? ☐ Yes ☐ No

Blood loss _____mL.

Anesthesia notes/criteria _____

Reason for review: Case Review:

☐ Findings: ☐ No findings

Documentation issues:

Communication issues:

Recommendations: ☐ No Recommendations

Refer to other peer review:

☐ Nursing ☐ Hospital Peer Review

☐ Oncology ☐ Anesthesia

☐ OB-GYN ☐ Urology

☐ General Surgery ☐ Cardiac Surgery

☐ Physician ☐ ENT

☐ Other:_____

System issues:

Care issues:

Actions (committees sent to, dates): Please check what applies.

1. ☐ Surgeon recommended for full robotic surgical system privileges
2. ☐ Due to concerns or status listed above:

___ Continued case review

___ Other_____

☐ Sent review to Surgical Committee

☐ Sent review to Robotic Peer Review Committee

Signature of Reviewer X_____

Used with permission from MultiCare Health Systems, Tacoma, Washington

Addendum 4. Example of Use of Inanimate Training Aids for Robotic Surgery Skill Drills

Total Passing Score: 80/100

Date: _____

Surgeon: _____

Instructions: Rate individual performance on each drill using the attached guidelines (see page 2).

Drill 1: Tower Transfer

Subject should pick up rubber band, transfer to other hand, place on tower, proceeding from shortest to tallest tower. If subject fails to transfer band between hands, points should be deducted from "Dexterity."

Circle one from each category.

Depth perception/accuracy	1	2	3	4	5
Force/tissue handling	1	2	3	4	5
Dexterity	1	2	3	4	5
Efficiency	1	2	3	4	5
Total score					__/20

Drill 2: Roller Coaster

Move black ring from right to left side of the model without dropping the ring.

Circle one from each category.

Depth perception/accuracy	1	2	3	4	5
Force/tissue handling	1	2	3	4	5
Dexterity	1	2	3	4	5
Efficiency	1	2	3	4	5
Total score					__/20

Drill 3: Big Dipper

Use CT-1 or GS-21 needle. Pass needle from points 1 to 5 in sequential order.

Circle one from each category.

Depth perception/accuracy	1	2	3	4	5
Force/tissue handling	1	2	3	4	5
Dexterity	1	2	3	4	5
Efficiency	1	2	3	4	5
Total score					__/20

Drill 4: Railroad Tracks

Use CT-1 or GS-21 needle with 0 Vicryl or 0 Polysorb suture trimmed to 8 inches long. Pass needle from top to bottom dots in sequence to run the suture line from right to left.

Circle one from each category.

Depth perception/accuracy	1	2	3	4	5
Force/tissue handling	1	2	3	4	5
Dexterity	1	2	3	4	5
Efficiency	1	2	3	4	5
Total score					__/20

Drill 5: Suturing

Use CT-1 or GS-21 needle with 8-inch 0 Vicryl or 0 Polysorb suture. Place 1 figure-of-8 stitch with 4 square knots (1 surgeon's knot followed by 3 single throws).

Circle one from each category.

Depth perception/accuracy	1	2	3	4	5
Force/tissue handling	1	2	3	4	5
Dexterity	1	2	3	4	5
Efficiency	1	2	3	4	5
Total score					__/20

General Scoring Guidelines for Skill Drills

1	2	3	4	5
Depth Perception/Accuracy				
Constantly overshoots target, slow to correct		Some overshooting but quick to correct		Accurately directs instruments to target
Force/tissue handling				
Breaks model, ring, or suture; damages needle		Moves or bends wire; minor trauma to model or needle; frays suture		Handles model, suture, and/or needle well; traction is appropriate
Dexterity				
Poor coordination of hands; repetitively drops ring or band; inappropriately drops needle or poor suture management		Suboptimal interaction between hands, any drops of ring or band; suboptimal suture or needle management		Expertly uses both hands; always transfers rings or bands without dropping; optimal needle or suture management
Efficiency				
Uncertain movements, with little progress		Slow, but movements seem reasonably organized		Confident, fluid progression, adjusts quickly

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Addendum 5. Non-Physician Robotics Assistant Privileging

1. Assistant must be a licensed practicing Physicians Assistant (PA), Certified Registered Nurse First Assistant (CRNFA), Advanced Registered Nurse Practitioner (ARNP), or Certified Surgeon Technician (CST) whose requirements are dictated by the State Nursing Care Quality Assurance Commission or the State Medical Licensing Division and the local hospital or health care system.
2. Assistant must already be privileged to assist at open or laparoscopic surgery.
3. Assistant must complete 4 hours of hands-on robotic bedside orientation and skill training conducted by a certified trainer.
4. Assistant must observe 2 successfully completed robotic surgery cases including set-up, patient positioning, orientation of equipment, surgeon preferences, the procedure itself, and postoperative activities.
5. Assistant must be proctored while assisting on 2 successfully completed robotic procedures by either a surgeon or another certified non-physician assistant who must be available for instant hands-on instruction or to take over as dictated by case need.
6. For a PA, CRNFA, ARNP, or CST to serve as an assistant trainer for another CRNFA, PA, or ARNP, he or she must have completed at least 40 robotic laparoscopic procedures and feel comfortable in this role.
7. Each primary surgeon must be comfortable with the assistant's role and abilities, with the right to require longer periods of observation as the surgeon deems necessary.

PAs, CRNFAs, and ARNPs may assist only surgeons who have successfully completed the requirements currently in effect and have received approval to use a non-surgeon as the primary assistant (Advanced Category).

When assisting in a robotic-assisted surgical procedure, a non-PA may perform only those additional activities for which the assistant is already privileged.

Addendum 6. Simulation

Inasmuch as robotic surgery is essentially computer-assisted laparoscopic surgery, use of computer-based simulators becomes a useful tool for training and for documentation of proficiency. This use would be similar to the aviation model, which has used simulation for decades to train pilots before initial flying with passengers and to demonstrate annual proficiency. To be most useful, a simulator must be self-directed, able to provide quantitative feedback, and useful to users of all skill levels. It should provide personal historical scores and data, comparison with expert level performance, and be programmable for future curriculum development based on validated exercises. Being able to measure performance enables institutions to certify proficiency for surgeons at all levels of experience [11].

There are currently several options for accomplishing simulation. The daVinci robot surgical system can be set up in a dry laboratory mode with training instruments. This enables practice of basic camera and instrument skills; however, there is no easy way to score this or provide specific feedback to the surgeon.

Currently, there are 3 commercially available robotic surgery simulation systems. Two are based on similar software programs developed by Mimic Technologies, Inc. (Seattle, WA). Mimic Technologies makes a stand-alone robotic trainer (dV Trainer), and Intuitive Surgical, Inc. (Sunnyvale CA), has developed its trainer to attach to the robot console and be used on the console when the robot is not being used for surgery. A third product, the RoSS trainer, is available from Simulated Surgical Systems (Williamsville, NY). It is also a stand-alone trainer, similar to the dV Trainer, but uses its own simulation programs involving live videos of robotic surgeries.

At this time, these simulators all use exercises with the objective of developing and improving basic robotic skills such as camera movement, clutching, suturing, and energy use. These are scored either using a numeric number (0%–100%) based on proficiency demonstrated in several key areas or using a point scoring system that can be customized by the end user to measure surgeons vs standardized models and experts and establish "pass-fail" criteria for those exercises (M-Score; Mimic Technologies).

At the time of this writing, new procedure-based training programs are being developed. In addition, validated training exercise modules have been published by several institutions and can be located on manufacturers' web sites for adoption by other institutions. The recommendation of "Passing scores on simulation exercises of 85%" is based on initial program metrics available in 2010 and can and should be modified by each institution as newer and better simulation metrics become available (see sections *C-1, f; D-2; and E-2, d*)

Sample Robotic Simulator Exercises (on Mimic dV Trainer and Intuitive Skills Simulator)

Initial Training, Basic Certification

1. Camera and clutching
   a. Camera Targeting 2
   b. Ring walk 2
2. Endowrist manipulation
   a. Peg board 2
3. Energy and dissection
   a. Energy dissection 2

Advanced Certification

1. Camera and clutching, use of third arm
   a. Ring walk 3
2. Needle control and suturing
   a. Dots and needles 1
   b. Sewing 1
3. Endowrist manipulation
   a. Match board 3

Annual Recertification

1. Camera and clutching
   a. Ring walk 2
   b. Peg board 3
2. Energy and dissection
   a. Energy dissection 1
3. Needle driving and sewing
   Suture Sponge 2