Department of Veterans Affairs
Office of Inspector General

Office of Healthcare Inspections

Report No. 15-04651-81

Healthcare Inspection

Review of Robotic-Assisted General Surgery Southern Arizona VA Health Care System Tucson, Arizona

November 14, 2016

Washington, DC 20420

In addition to general privacy laws that govern release of medical information, disclosure of certain veteran health or other private information may be prohibited by various Federal statutes including, but not limited to, 38 U.S.C. §§ 5701, 5705, and 7332, absent an exemption or other specified circumstances. As mandated by law, OIG adheres to privacy and confidentiality laws and regulations protecting veteran health or other private information in this report.

To Report Suspected Wrongdoing in VA Programs and Operations:
Telephone: 1-800-488-8244
E-Mail: vaoighotline@va.gov
Web site: www.va.gov/oig

Table of Contents

Executive Summary

The VA Office of Inspector General Office of Healthcare Inspections conducted an inspection to assess the merit of allegations made by a complainant regarding robotic-assisted surgery performed by General Surgery physicians at the Southern Arizona VA Health Care System (facility) in Tucson, AZ. The complainant alleged:

- A surgeon selected a poor candidate for robotic-assisted low anterior resection surgery.
- A surgeon provided sub-standard surgical care for a patient.
- A surgeon is poor at laparoscopic technique and needs additional training before performing robotic-assisted surgery on high-risk patients.
- The facility lacks Intensive Care Unit bed availability for post-operative recovery.

We did not substantiate that a surgeon selected a poor candidate for robotic-assisted low anterior resection surgery though the patient was medically complex and surgically challenging. While the type of surgical management may vary among surgeons, the decision to utilize robotic technique in the patient was within the discretion of the surgeon's clinical judgment.

We did not substantiate that a surgeon provided sub-standard surgical care for a patient. The patient experienced complications after surgery, but these same complications could have occurred if the patient had undergone a laparoscopic or open type procedure.

We did not substantiate that a surgeon is a poor laparoscopic surgeon and needs additional training before performing robotic-assisted surgery. Facility surgeons who perform robotic-assisted low anterior resection surgery at the facility completed the requisite training, including being proctored for six surgical cases, and attended advanced courses for additional training.

We did not substantiate that the facility lacks Intensive Care Unit bed availability for post-operative recovery, but we determined bed flow issues may result in a physical bed shortage in the Intensive Care Unit at times. Four Rapid Process Improvement Workshops related to bed flow issues were completed, and process improvement recommendations that were implemented have helped to move patients to appropriate levels of care and open Intensive Care Unit beds.

We made no recommendations.

Comments

The Veterans Integrated Service Network and Facility Directors concurred with the report (see Appendixes A and B, pages 13–14 for the Directors' comments). No further action is required.

JOHN D. DAIGH, JR., M.D.
Assistant Inspector General for
Healthcare Inspections

Purpose

The VA Office of Inspector General (OIG) Office of Healthcare Inspections conducted an inspection to assess the merit of allegations made by a complainant regarding robotic-assisted surgery performed by General Surgery physicians at the Southern Arizona VA Health Care System (facility) in Tucson, AZ.

Background

The facility is a tertiary-care referral system based in Tucson, AZ, and is part of Veterans Integrated Service Network (VISN) 18. The facility serves over 170,000 veterans located in southern Arizona and western New Mexico. The facility is the principle affiliate of the University of Arizona Colleges of Medicine, Nursing, and Pharmacy, and also has affiliations with over 65 academic institutions training over 700 physicians, nurses, pharmacists, and allied health students annually. The facility has authorized beds to support medicine, surgery, neurology, mental health, geriatrics, and rehabilitation services.

The facility has 19 Intensive Care Unit (ICU) beds serving patients with both medical and surgical needs. The facility has a 12-bed step-down unit and 84 acute care beds, including a 10-bed clinical decision unit used mainly for observation admissions and short stay admissions.[1] Surgical specialty staff request the anticipated type of admission bed a patient will need after a planned surgery. Bed control staff receive these requests the day before a scheduled surgery.

The facility uses the da Vinci® Surgical System[2] (System) for robotic surgery. The System consists of a magnified three-dimensional high-definition vision apparatus including a camera with small-wristed instruments that bend and rotate beyond the range of the human wrist. The System facilitates enhanced surgical vision, precision, dexterity, and is controlled fully by the surgeon.

Potential benefits to using the System for patients requiring a low anterior colon resection[3] (LAR) due to colorectal cancer are listed by the manufacturer as:

- Precise removal of the cancerous tissue
- Less blood loss
- Less pain
- Quicker return of bowel function

[1] A short stay admission is a time limited admission of usually less than 48 hours where targeted care is provided, and patients are discharged as soon as the clinical condition resolves (for example, a patient needing to stay overnight after undergoing a procedure).
[2] The da Vinci® Surgical System Website. http://www.davincisurgery.com/. Accessed August 27, 2015.
[3] A low anterior resection is a surgical technique used to remove rectal cancer in the upper rectum and sigmoid colon.

- Shorter hospital stay with quicker recovery

Risks for using the System are similar to risks involved with open and minimally invasive (laparoscopic[4]) colon resection and include:

- Anastomotic leak[5]
- Pulmonary embolus[6]
- Ileus[7]
- Abscess[8]
- Urinary problems[9]

According to the manufacturer, use of the System may be associated with longer operative times than non-robotic surgery and, if so, would necessitate the patient being under anesthesia for a longer period of time.

Literature reviews for robotic-assisted colorectal surgery document operative times for patients undergoing LARs to be 315 +/- 65 minutes.[10] Although longer operative times were seen in obese patients, results comparable to non-obese patients were observed for estimated blood loss, conversions, complications, re-admission, and mortality.[11] Improvements in operative time may be achieved with increased case numbers.[12,13]

The manufacturer[14] developed the da Vinci® Technology Training Pathway to help surgeons develop the knowledge and technical skills to operate the System safely and efficiently. The pathway consists of four phases.

[4] Laparoscopic surgery is a minimally invasive type of surgery that allows a surgeon to use a laparoscope to access the abdomen and pelvis without making large incisions in the skin. The laparoscope is a small tube with a light source and camera attached which relays the images to a television monitor and allows visualization of the structures inside the body.
[5] An anastomotic leak occurs when the new connection between two pieces of bowel attached during surgery is not complete and intestinal fluid leaks into the abdominal cavity.
[6] Pulmonary embolus is a blood clot occurring in one or more arteries of the lung.
[7] Ileus is the inability of the bowel to contract normally and move bodily waste through the intestine.
[8] An abscess is a confined collection of pus.
[9] Urinary problems seen during colon surgery may include difficulty with urination or injury to the nerves controlling the bladder or bladder function.
[10] Zawadzki M, et al. Beginning robotic assisted colorectal surgery - it's harder than it looks! *Wideochir Inne Tech Maloinwazyjne*. 2014 Dec; 9(4):562–8. doi: 10.5114/wiitm.2014.45494. Epub 2014 Sep 23.
[11] Lagares-Garcia, et al. The influence of BMI on clinical short-term outcomes in robotic colorectal surgery. *Int J Med Robot*. 2015 Aug 27. doi: 10.1002/rcs.1695. [Epub ahead of print].
[12] Huang, et al. Robotic colorectal surgery for laparoscopic surgeons with limited experience: preliminary experiences for 40 consecutive cases at a single medical center. *BMC Surg*. 2015 Jun 18; 15:73. doi: 10.1186/s12893-015-0057-6.
[13] Park S, Kim NK. The role of robotic surgery for rectal cancer: Overcoming technical challenges in laparoscopic surgery by advanced techniques. *J Korean Med Sci*. 2015 Jul; 30(7):837–46. doi: 10.3346/jkms.2015.30.7.837. Epub 2015 Jun 10.
[14] Intuitive Surgical Website. http://www.intuitivesurgical.com/training/. Accessed September 28, 2015.

- Phase 1 is instructive training designed to give foundational knowledge of the System and includes navigating the robot to understand its capabilities, observing live procedures to learn clinical applications and techniques, and pairing new surgeons with experienced surgeons.

- Phase 2 is the completion of online product training modules and viewing full-length procedure videos. This phase also includes hands-on training at a local hospital and at the da Vinci® training center.

- Phase 3 is skills application. New da Vinci® surgeons are proctored by experienced surgeons with a goal of providing direct support and ensuring proper technique. The number of proctored cases required for the credentialing and privileging process of newly trained surgeons is determined by each hospital. During this phase, new surgeons can complete additional simulator training and skills practice using the System.

- Phase 4 encourages continued skills development by attending advanced training programs led by independently contracted, experienced da Vinci® surgeons.

The System was created to offset the technical limitations associated with rigid laparoscopic instruments by using instruments that bend and rotate. The conventional open and laparoscopic techniques used in colorectal surgery provide lesser visualization of the anatomy in the confined space of the deep pelvis, especially in male patients due to a narrower pelvis.[15,16] The rigid instruments used in laparoscopic surgery make gaining access to the rectal structures difficult resulting in poor nerve visualization, traction injury, rectal cross stapling, and crowding of the instruments.[17,18,19] Interest in utilizing the System for colorectal surgery has been increasing since the first case publication in 2002.[20,21]

[15] Park S, Kim NK. The role of robotic surgery for rectal cancer: Overcoming technical challenges in laparoscopic surgery by advanced techniques. *J Korean Med Sci*. 2015 Jul; 30(7):837–46. doi: 10.3346/jkms.2015.30.7.837. Epub 2015 Jun 10.
[16] Huang, et al. Robotic colorectal surgery for laparoscopic surgeons with limited experience: preliminary experiences for 40 consecutive cases at a single medical center. *BMC Surg*. 2015 Jun 18; 15:73. doi: 10.1186/s12893-015-0057-6.
[17] Park S, Kim NK. The role of robotic surgery for rectal cancer: Overcoming technical challenges in laparoscopic surgery by advanced techniques. *J Korean Med Sci*. 2015 Jul; 30(7):837–46. doi: 10.3346/jkms.2015.30.7.837. Epub 2015 Jun 10.
[18] Huang, et al. Robotic colorectal surgery for laparoscopic surgeons with limited experience: preliminary experiences for 40 consecutive cases at a single medical center. *BMC Surg*. 2015 Jun 18; 15:73. doi: 10.1186/s12893-015-0057-6.
[19] Lagares-Garcia, et al. The influence of BMI on clinical short-term outcomes in robotic colorectal surgery. *Int J Med Robot*. 2015 Aug 27. doi: 10.1002/rcs.1695. [Epub ahead of print].
[20] Ibid.
[21] AlAsari S, Min BS. Robotic Colorectal Surgery: A Systematic Review. *ISRN Surg*. 2012; 2012:293894. doi: 10.5402/2012/293894. Epub 2012 May 13.

The facility had six surgeons (three general surgeons) on staff who had completed the required training and held privileges to use the System. One of the general surgeons served as a proctor for the other two general surgeons when they were training to use the System. The proctor observed six robotic cases performed at the facility by the two general surgeons including a left colon resection, abdominal perineal resection, and LAR.

The facility surgeons stated they perform a hybrid LAR procedure using laparoscopic, robotic, and open techniques during surgery. The hybrid surgical procedure starts laparoscopically to remove any adhesions[22] and dissect the anatomy needed to expose the area where the disease is located. Next, the System is used to remove the diseased tissue. The final part of the surgery is an open procedure. The surgeon makes a small incision to remove the diseased colon tissue from the body and perform the re-connection of the colon.

For this type of surgery, surgeons attempt to accomplish several things: minimize invasive technique, minimize blood loss, reduce the body's surgical stress response, and preserve nerve function to the area.

Allegations

In June 2015, the OIG Hotline Division received allegations from a complainant regarding robotic-assisted surgery performed by General Surgery physicians at the facility. Specifically, the complainant alleged:

- A surgeon selected a poor candidate for robotic-assisted LAR.
- A surgeon provided sub-standard surgical care for a patient.
- A surgeon is poor at laparoscopic technique and needs additional training before performing robotic-assisted surgery on high-risk patients.
- The facility lacks ICU bed availability for post-operative recovery.

Scope and Methodology

We conducted our review from July 14, 2015 through February 29, 2016.

We made a site visit and interviewed the complainant, facility leadership, general surgeons privileged to perform robotic-assisted surgery at the facility, anesthesiologists, nurse managers, operating room (OR) staff, and Bed Control staff.

We reviewed relevant Veterans Health Administration and facility policies related to the training, competency assessment, and use of the System and pertinent medical literature. We reviewed peer reviews, ongoing professional practice evaluations, focused professional practice evaluations, and surgical quality data. We reviewed the

[22] Adhesions are fibrous bands of internal scar tissue that can form following inflammation and join together two surfaces that are normally separate.

patient's and other electronic health records related to relevant complaints or peer reviews. We also reviewed four Rapid Process Improvement Workshop[23] (RPIW) assessments related to patient flow.

In the absence of current VA/VHA policy, we considered previous guidance to be in effect until superseded by an updated or re-certified Directive, Handbook, or other policy document on the same or similar issue(s).

We **substantiate** allegations when the facts and findings support that the alleged events or actions took place. We **do not substantiate** allegations when the facts show the allegations are unfounded. We **cannot substantiate** allegations when there is no conclusive evidence to either sustain or refute the allegation.

We conducted the inspection in accordance with *Quality Standards for Inspection and Evaluation* published by the Council of the Inspectors General on Integrity and Efficiency.

[23] A Rapid Process Improvement Workshop is a quick assessment workshop using multiple employees from the facility to analyze a complex issue in order to provide recommendations to make a more reliable, efficient, cost-effective, patient-driven process.

Case Summary

At the time of our review, the patient was in his/her 70s with a past medical history significant for multiple chronic medical conditions including obesity and obstructive sleep apnea.[24] The patient was referred to gastroenterology in 2014 for a colonoscopy due to anemia and rectal bleeding resulting in a diagnosis of rectal cancer. General Surgery and Oncology providers saw the patient in consultation. Following further diagnostic evaluation, and with no evidence of metastatic disease,[25] a surgical resection of the colon mass was planned.

Preoperatively, the patient received a series of radiation treatments at a non-VA facility as well as adjuvant chemotherapy intended to decrease tumor size and the risk of recurrent disease following surgical resection. The surgery was delayed for about 6–8 weeks for various reasons and was eventually performed in mid-2015.

During surgery, the patient was found to have extensive abdominal adhesions, possibly related to the recently concluded radiation treatments and with adherent small bowel. Lysis[26] of the adhesions, tedious and time-consuming, was performed laparoscopically before docking the robot (readying the device for use) to continue with the surgery. Late in the operation, the surgeons noted that there was not sufficient colon length to perform a bowel anastomosis,[27] so the robot was removed and a hand-assisted dissection of the left colon was done. Laparoscopic equipment was re-introduced into the surgical field and an ileostomy[28] was performed. After several hours, which included prolonged Trendelenburg[29] positioning, the operation was concluded and the patient transferred to the ICU while intubated. An ICU nurse noted the patient had generalized edema (swelling) bilaterally when arriving in the unit. The patient experienced some respiratory difficulties over the next several days but was successfully extubated[30] on postoperative day (POD) 4.

In the next week, the patient showed gradual generalized improvement, was transferred to a medical-surgical unit, and began to ambulate. The patient was then transferred to an interim care unit for rehabilitation where he/she experienced intermittent confusion and sustained a fall. (Computed Tomography imaging of the head was unremarkable.) The patient developed an intra-abdominal abscess that required transfer to the acute medical unit for treatment including intravenous antibiotics. When stable, the patient

[24] Obstructive sleep apnea is intermittent, repetitive pauses in breathing during sleep caused by obstruction of the upper airway.
[25] Metastatic disease occurs when cancer cells have spread beyond the primary site of the disease.
[26] Lysis is the cutting away of scar tissue (adhesions).
[27] Anastomosis is a connection made surgically between adjacent blood vessels, parts of the intestine, or other channels of the body, or the operation in which this is constructed.
[28] An ileostomy is an operation in which a piece of ileum is diverted to a surgical opening made in the abdominal wall for the purpose of evacuating feces.
[29] Trendelenburg is a position used in surgery where a patient is lying supine (face up) with the table tilted so the feet are at a higher level than the head.
[30] Extubation is the procedure to remove the endotracheal tube used to assist breathing during surgery.

was transitioned to oral antibiotics and transferred back to the rehabilitation unit for continued care though he/she intermittently refused both physical and occupational therapy.

Several days later, the patient developed a rapid heart rate, increased respiratory rate, and fever. The patient was transferred to the facility's step-down unit after being diagnosed with bilateral pulmonary emboli and was treated with anticoagulation medication. An infectious diseases consultant recommended intravenous antibiotics for continued treatment of the abscess.

The patient was clinically stable over the next week and was transferred back to the rehabilitation unit. Occupational therapy was discontinued due to the patient's continued refusal to participate. At times, the patient refused physical therapy but made progress with strength and mobility. Staff continued to provide patient education. The patient began using a walker and was able to walk greater distances each week.

Over the next several weeks, the patient continued to gradually improve with near healing of the abdominal incision and was able to demonstrate acceptable self-care skills for discharge home.

Inspection Results

Issue 1: Poor Patient Selection

We did not substantiate the allegation that the surgeon selected a poor candidate for robotic-assisted LAR surgery though the patient was medically complex and surgically challenging. While the type of surgical management may vary among surgeons, the decision to use robotic technique in the patient was within the discretion of the surgeon's clinical judgment.

The patient was obese and had other medical conditions including obstructive sleep apnea. The surgeon estimated the surgery would last within the upper range of operative times reported in the literature.

We interviewed anesthesiologists who expressed concern about the risks of performing extended laparoscopic and robotic-assisted surgery on obese patients because they are placed in the Trendelenburg position for a prolonged period. The Trendelenburg position causes increased peak inspiratory pressure,[31] which can result in difficulty ventilating the patient. Another concern with obese patients is increased abdominal pressure. During laparoscopic and robotic-assisted surgery, the abdomen is insufflated[32] to help the surgeon visualize the internal structures. The abdominal pressure sometimes increases excessively resulting in the patient's temporary inability to urinate post-operatively. When a patient is obese and has lung disease, such as

[31] Peak inspiratory pressure is the highest pressure applied to the lungs during inhalation.
[32] Insufflation is the introduction of a flow of gas into a body cavity.

obstructive sleep apnea, a protracted surgery that requires extensive time under anesthesia may result in a difficult extubation or prolonged time on a ventilator after surgery.

One surgeon explained that a patient with previous abdominal surgery would not routinely be selected for robotic surgery due to the likelihood of the patient having adhesions requiring dissection before a surgery could proceed. Pulmonary and cardiovascular comorbidities are also significant because of the required Trendelenburg position and pneumoperitoneum,[33] which may decrease the ability of the lung to expand. In addition, obesity increases difficulty with visualization of anatomy due to the presence of greater amounts of fat in the abdomen. All surgeons interviewed who use the System stated, however, that obesity is not a strict exclusionary criterion for robotic-assisted surgeries since robotic bariatric surgery is common.

The surgeons involved in the case explained that the robot is beneficial to use on a fixed site that may be difficult to visualize. The robot allows the surgeon to see the anatomy well and avoid nerves when compared to strict laparoscopic or open procedures where the anatomy may not be visible. However, the surgeons stated they may elect to perform the hybrid robotic-assisted procedure in an effort to preserve sexual and sphincter function.

Many patients in VA facilities are medically complex with comorbidities, including severe obesity. None of the surgeons interviewed would, per se, disqualify an obese patient from the option of robotic surgery. Surgical proficiency would be difficult to accomplish if robotic procedures were to be limited only to patients without comorbidities, including weight and pulmonary conditions, both frequently diagnosed in VA patients.

Issue 2: Quality of Surgical Care

We did not substantiate the allegation that the surgeon provided sub-standard surgical care for a patient related to long surgical time and positioning.

All interviewed surgeons who perform the hybrid LAR procedure admitted the procedure is currently taking longer than a conventional open procedure; however, they are still gaining proficiency in performing this type of procedure. The proctor offered the opinion that it would likely take 2 years for the surgeons to become fully proficient with the hybrid LAR procedure considering the number of procedures performed at the facility.

Trendelenburg positioning is used in both laparoscopic and robotic procedures and one surgeon reported that the time spent in the Trendelenburg position for this patient likely would have been the same if an entirely laparoscopic procedure was performed.

Both surgeons involved in the patient's operation stated that, while they did experience unanticipated complications during the procedure, they were successful in continuing through the respective stages of surgery and decided to continue with the hybrid

[33] Pneumoperitoneum is the presence of gas or air in the abdominal cavity.

procedure as originally planned. If the patient had been showing signs of distress or the surgeons were unable to overcome the complications, then the hybrid procedure would have been stopped and converted to an open procedure. Surgeons use their medical judgment as to continuing a robotic or laparoscopic procedure or converting to an open technique based on the surgery becoming excessively long. In this case, the surgeons determined the patient was hemodynamically stable and tolerating the operation without the need to change course intraoperatively.

We noted an entry in the nurses' ICU documentation that the patient had generalized edema when admitted to the ICU but we could not determine if the edema was related to the patient being in the Trendelenburg position for a prolonged time.

The anesthesiologist was unable to extubate the patient in the OR, but Pulmonary Critical Care staff were able to extubate the patient the next day. Although the patient required emergent re-intubation because of difficulty breathing, extubation was successful again 5 days later. Staff we interviewed could not determine definitively whether the patient's postoperative breathing difficulties were related to the prolonged surgery time, known pulmonary comorbidities, or to extended time in the Trendelenburg position.

Issue 3: Poorly Trained Surgeon

We did not substantiate the allegation that the surgeon is a poor laparoscopic surgeon and needs additional training before performing robotic-assisted surgery.

The facility had three general surgeons on staff who had completed the necessary training and held privileges to perform surgery using the System. One of those surgeons served as the proctor for the other two surgeons when they were training to use the System. The proctor is highly experienced using the System and performs approximately 12–20 robotic procedures monthly. The second surgeon completed the educational and simulation portion of the training in 2013, while the third surgeon completed these portions of training approximately 4 months later. The proctor observed six robotic cases performed at the facility by the two surgeons including a left colon resection, abdominal perineal resection, and LAR. The two new robotic surgeons have also recently attended an advanced course in robotic surgery.

The proctor explained that the two facility surgeons are gaining proficiency in using the System but did note that a low number of robotic cases are performed at the facility. The proctor emphasized that proficiency with using the System is gained as more robotic procedures are performed. The two surgeons who have received proctoring perform the facility's hybrid LARs together, each carrying out a specific portion of the surgery. Together, they have completed 14 robotic LARs since attaining privileges in 2014. Standards for ongoing training are determined by the facility. Presently, there is neither a national society providing specific guidance nor a national protocol for recommended ongoing continuing education for the use of robots in surgery.

Issue 4: ICU Bed Shortage

We did not substantiate the allegation that the facility lacks ICU bed availability for post-surgical recovery.

During our review, we found that the facility sometimes had bed flow problems causing delays in discharges and movement of patients from one level of care to another. Bed Control staff interviewed explained the process of bed management. Each day around 1:00 p.m., Bed Control staff gather information about bed availability and the anticipated discharges or movement of patients between levels of care. The OR scheduler is contacted to provide an estimate of the number and unit location of beds needed for the following day. The next morning each unit is again reviewed to gather data on available beds and planned discharges. This information is reported to the OR Manager.

Bed occupancy changes throughout the day so the information is updated in real time. Bed Control staff wait for discharge orders to determine bed availability for that day's workload, and usually enough discharges occur throughout the day to accommodate the bed needs. A surgery may be temporarily postponed to make sure the type of bed requested for post-operative care will be available that same day; however, surgery is not cancelled due to lack of an appropriate bed. The facility generally stays at or near capacity, and the staff work on a daily basis to move patients to the appropriate level of care in order to open the ICU, step-down, and general unit beds needed to accommodate the patient census. During interviews, only one staff member could recall a single case delayed (24 hours) because of no ICU bed availability.

The 19-bed ICU consistently houses overflow from the 12-bed step-down unit. As many as six step-down patients have been housed in the ICU at times; typically, about three ICU beds are used for step-down patients. The facility has 74 acute care beds and a 10-bed clinical decision unit used mostly for observation patients but also for medical unit overflow. In addition, staff in the Emergency Department (ED) care for patients evaluated in the ED who need to be admitted to acute care but are waiting for an available bed. Obtaining a bed for these patients can sometimes take over 24 hours. We learned during our interviews that the facility does not utilize divert status because the local private hospitals usually run near capacity. The majority of staff interviewed agreed that the ICU was appropriately sized but felt that a larger stepdown unit would help eliminate some of the patient flow issues.

Facility leadership had submitted a proposal to the Veterans Health Administration in central office to increase the number of inpatient beds at the facility. The proposal was not approved, resulting in the need to address the bed shortage challenge daily.

The facility conducted four RPIWs in the past 2 fiscal years to help address the movement of patients throughout the hospital. One RPIW in 2014 used education to increase staff awareness of the need for care planning and improve communication to facilitate inpatient to outpatient care coordination. A result of the RPIW was to start patient discharge planning upon admission instead of waiting until the time of discharge.

Another RPIW noted a 5-hour delay between the entry of a discharge order and the bed of the discharged patient actually being available. The delay resulted in a potential extended wait for other patients, including surgical patients, who required a bed. Plan-Do-Study-Act cycles[34] included completing medication orders before discharge orders, improving the travel request form, having clerks input information in the bed management system instead of the staff responsible for preparing beds, and trialing a discharge team huddle. The matter of monitoring the time from discharge order entry to vacated bed availability is an ongoing process for the facility.

A third RPIW in 2014 noted that approximately 17 percent of ED patients had a check-in time to disposition exceeding 4 hours, which resulted in delays in overall care. The RPIW noted ED patients were staying in the ED while waiting for an acute bed; waiting for consult, lab or radiology results; and waiting for the care of patients with non-emergent medical needs as some of the reasons for delay. The team continues to track metrics with a goal of significantly reducing the percentage of patients waiting longer than 4 hours from check-in time to disposition.

The fourth RPIW was completed in 2015 with a goal of optimizing patient flow for the discharge process to the community living center (CLC). The team noted delays in transitioning patients from acute care to the CLC decreases the availability of acute care beds and impacts surgical patients requiring a bed for post-operative recovery. Barriers identified included use of an incorrect CLC consult, not completing the consult, untimely discharge orders, inability of surgeons to write or sign discharge orders while in the OR, and providers being unfamiliar with CLC criteria. Changes suggested to improve patient flow included planning patient discharge the day prior to scheduled discharge, performing CLC screening huddles to improve communication about discharge needs, and a case manager or social worker entering consults to the CLC. The process was piloted in one acute unit and implemented in two other units to monitor results.

Conclusions

We did not substantiate that a surgeon selected a poor candidate for robotic-assisted LAR surgery. Many patients in VA facilities are medically complex with comorbidities, including severe obesity. None of the surgeons interviewed would, per se, disqualify an obese patient from the option of robotic surgery. Surgical proficiency would be difficult to accomplish if robotic procedures were to be limited only to patients without comorbidities, including weight and pulmonary conditions, both frequently diagnosed in VA patients.

We did not substantiate the allegation that the surgeon provided sub-standard surgical care for the patient. The patient experienced complications after surgery, but these same complications could have occurred if the patient had undergone a laparoscopic or

[34] Plan-Do-Study-Act cycle is a series of steps (plan it, try it, observe the results, and act on what is learned) used to gain knowledge for process improvement and carry out change.

open type procedure. We determined that the hybrid LAR procedure is taking longer than a conventional open technique LAR, but as more expertise is acquired by performing additional surgeries, the length of the surgery is expected to decrease.

We did not substantiate the allegation that the surgeon is a poor laparoscopic surgeon and needs additional training before performing robotic-assisted surgery. Both surgeons who perform the hybrid LAR at the facility have completed the requisite training to use the System including being proctored for six surgical cases by a proficient robotic-assisted trained surgeon. Standards for ongoing training are determined by the facility. Presently, there is neither a national society providing specific guidance nor a national protocol for recommended ongoing continuing education for the use of robots in surgery. In addition, both facility surgeons have attended advanced courses for additional training to keep abreast of new techniques in robotic surgery.

We did not substantiate the allegation that the facility lacks ICU bed availability for post-operative recovery, but we determined that there are bed flow issues within the facility resulting in a physical bed shortage in the ICU occasionally. Facility leadership is aware of the issue and has performed four RPIWs related to bed flow issues. Facility leadership also communicated submitting a proposal to the Veterans Health Administration in central office to increase the number of inpatient beds at the facility. The proposal was not approved, resulting in the need to address the bed shortage challenge daily. The implemented process improvement recommendations, daily meetings on bed management, and diligence of the staff to help move patients to appropriate levels of care, appear to have prevented any surgical cancellations for patients requiring post-operative ICU care.

We made no recommendations.

VISN Director Comments

Department of Veterans Affairs

Memorandum

Date: April 15, 2016

From: Director, VA Pacific Desert Health Care Network (10N22)

Subj: Healthcare Inspection—Review of Robotic-Assisted General Surgery, Southern Arizona VA Health Care System, Tucson, Arizona

To: Director, Dallas Office of Healthcare Inspections (54DA)
Director, Management Review Service (VHA 10AR MRS OIG Hotline)

1. I have reviewed the Healthcare Inspection – Review of Robotic-Assisted General Surgery, Southern Arizona VA Health Care System, Tucson, Arizona and concur with the report.

2. If you have any questions or concerns, please contact Terri Elsholz, VISN 22 Deputy Quality Management Officer at 480-397-2782.

Marie L. Weldon, FACHE
Network Director, VISN 22

Appendix B

Facility Acting Director Comments

Department of Veterans Affairs

Memorandum

Date: April 5, 2016

From: Acting Director, Southern Arizona VA Health Care System (678/00)

Subj: Healthcare Inspection—Review of Robotic-Assisted General Surgery, Southern Arizona VA Health Care System, Tucson, Arizona

To: Director, VA Southwest Health Care Network (10N18)

1. I concur with the OIG Healthcare Inspection Draft Hotline Review Report "Review of Robotic-Assisted General Surgery."

2. Point of contact for this action is Dr. Robert Guerra, Surgery Care Line Chief, (520) 792-1450, extension 6156.

Jennifer S. Gutowski, MHA, FACHE
Acting Director

Appendix C

OIG Contact and Staff Acknowledgments

Contact	For more information about this report, please contact the OIG at (202) 461-4720.
Contributors	Trina Rollins, MS, PA-C, Team Leader Rose Griggs, MSW, LCSW Cathleen King, MHA, CRRN Thomas Jamieson, MD Roneisha Charles, BS

Appendix D

Report Distribution

VA Distribution

Office of the Secretary
Veterans Health Administration
Assistant Secretaries
General Counsel
Director, VA Southwest Health Care Network (10N18)
Director, Southern Arizona VA Health Care System (678/00)

Non-VA Distribution

House Committee on Veterans' Affairs
House Appropriations Subcommittee on Military Construction, Veterans Affairs, and Related Agencies
House Committee on Oversight and Government Reform
Senate Committee on Veterans' Affairs
Senate Appropriations Subcommittee on Military Construction, Veterans Affairs, and Related Agencies
Senate Committee on Homeland Security and Governmental Affairs
National Veterans Service Organizations
Government Accountability Office
Office of Management and Budget
U.S. Senate: Jeff Flake and John McCain
U.S. House of Representatives: Ruben Gallego, Paul Gosar, Raul Grijalva, Trent Franks, Ann Kirkpatrick, Martha McSally, Matt Salmon, David Schweikert, Kyrsten Sinema

This report is available on our web site at **www.va.gov/oig**.