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Identifying Risks and Opportunities in Outpatient Surgical Patient Safety: A Qualitative Analysis of Veterans Health Administration Staff Perceptions

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Abstract

Objectives—Little is known about patient safety risks in outpatient surgery. Inpatient surgical adverse events (AE) risk factors include patient- (e.g., advanced age), process- (e.g., inadequate preoperative assessment), or structure-related characteristics (e.g., low surgical volume); however, these factors may differ from outpatient care where surgeries are often elective and in younger/healthier patients. We undertook an exploratory qualitative research project to identify risk factors for AEs in outpatient surgery.

Methods—We developed a conceptual framework of patient, process and structure factors associated with surgical AEs based on a literature review. This framework informed our semi-structured interview guide with 1) open-ended questions about a specific outpatient AE that the participant experienced and 2) outpatient surgical patient safety risk factors in general. We interviewed nation-wide VA surgical staff. Results were coded based on categories in the conceptual framework and additional themes were identified using content analysis.

Results—Fourteen providers representing diverse surgical roles participated. Ten reported witnessing an AE and everyone provided input on risk factors in our conceptual framework. We did not find evidence that patient race/age, surgical technique, or surgical volume affected patient safety. Emerging factors included patient compliance, postoperative patient assessments/instruction, operating room equipment needs and safety culture.

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Conclusions—Surgical staff are familiar with AEs and patient safety problems in outpatient surgery. Our results show that processes of care undertaken by surgical providers, as opposed to immutable patient characteristics, may affect the occurrence of AEs. The factors we identified may facilitate more targeted research on outpatient surgical AEs.

Keywords

qualitative research; surgery; patient safety; quality measurement; outpatient care

INTRODUCTION

The growing volume of outpatient surgery demands a better understanding of the patient safety risks unique to this setting. As many as 65% of all hospital-based surgeries currently performed are outpatient,¹ and the proliferation of dedicated ambulatory surgery centers (ASCs) has further increased outpatient surgical volume.² While the literature shows that the risk of adverse events (AEs) in outpatient surgery is much lower than that for inpatient surgery,⁶⁷ these events nonetheless have a substantial impact on healthcare outcomes and resources because of the high volume of outpatient surgeries performed annually. An estimated 1–6% of outpatient surgeries are associated with complications requiring a 30-day hospital admission.^{3–5} Additionally, the literature suggests that as outpatient surgeries become more complex the risk of AEs may increase.⁸⁹

Documented risk factors for AEs in surgery can be categorized as patient- (e.g., advanced age),¹⁰ process- (e.g., inadequate use of prophylactic antibiotics),¹¹ or structure-related (e.g., low surgical volume).¹² Many of these AE risk factors may apply to outpatient surgery. However, because outpatient surgical procedures are often elective and limited to healthy patients, it is likely that some factors uniquely affect outpatient surgical AE risk. Little exploratory research has been done, using either quantitative or qualitative methods, to identify risk factors that are specific to outpatient surgical AEs. Furthermore, no study has solicited the input of surgical providers to identify factors associated with safety problems in the outpatient setting.

The objective of this exploratory study was to use qualitative research interviews of surgical staff members in the Veterans Health Administration (VA) to gain insights into factors associated with AEs in outpatient surgery. We studied the VA because of the high volume of outpatient surgeries performed annually in over 130 facilities and because the VA has a reputation for surgical innovations that are widely adopted in the private sector.¹³¹⁴ Semi-structured interviews with surgical providers allow us to explore and understand their unique perspectives of AE risk factors. As we attempt to improve quality in outpatient surgery, their insights regarding contributory factors may identify opportunities for risk reduction and quality improvement.

METHODS

Conceptual Framework

Our study was guided by the *a priori* conceptual framework we developed after a literature review of the factors associated with outpatient surgical outcomes. We began with the Donabedian framework showing the relationship between process, structure and outcomes; this framework has been widely accepted for quality measurement in the field of health services research.¹⁵¹⁶ We further adapted our framework using some of the changes made by Freundlich and Kheterpal (2011) to reframe Donabedian's model for surgical quality measurement – they added surgery-specific subdomains and including patient characteristics to control for quality outcomes.¹⁷ Figure 1 depicts our adaptation of the Donabedian/Freundlich patient-process-structure framework we used to explore factors associated with AEs during and after outpatient surgery. Our adaptation expands on subdomains that have been shown in the literature to be relevant to AEs or adverse outcomes in outpatient settings. The factors we included in our framework are described below.

Many patient characteristics have been associated with either adverse outcomes or AEs in outpatient surgery. Studies have found that patient characteristics including advanced age, multiple comorbidities, minority race/ethnicity, disability and the number of hospitalizations in the previous 6 months are independent risk factors for postoperative mortality.¹⁰¹⁸ Poor health in general raises the risk of AEs; in particular, obstructive sleep apnea has been found to be a significant risk factor for surgical complications in both the inpatient and outpatient settings.¹⁹²⁰ Furthermore, studies have shown that access to care (e.g., distance to the treatment facility) may increase the likelihood that a patient is admitted to a hospital directly after outpatient surgery.²¹²²

The process factors in our conceptual framework are provider activities related to patient care and procedure characteristics related to the surgical encounter. The successful preoperative assessment, a provider process of care, can prevent serious complications in patients at high risk, particularly those with obesity, sleep apnea, and heart disease.²³ Additionally, several studies demonstrate a positive correlation between a well-trained and multispecialty surgical team and the facilitation of better patient care processes; surgeon's specialty training is also associated with better patient outcomes for certain procedures.^{24–28} The procedure characteristics including higher technical difficulty may be less actionable predictors of poor surgical outcomes.

We defined structural factors in our conceptual framework as relatively stable characteristics of organizations and providers. The structure of care can be thought of as the context or environment in which surgical care is provided. Structural factors, including facility teaching status, surgical volume, ASC status, and geographic location have been associated with fewer AEs or near misses.^{8–101229–33} The composition of the preoperative assessment team, a structural factor, is also important for surgical safety; it is recommended that multiple disciplines, such as anesthesiologists, nurses, social workers, and surgeons, provide input into a patient's surgical candidacy.³⁴

Development of Interview Guide

Our semi-structured interview guide was based on our *a priori* conceptual framework with open ended questions about patient, process and structure quality dimensions and prompts related to specific factors (Figure 1; see Appendix A for a copy of the interview guide). As our study was exploratory in nature, we focused on questions about the participant's experience with a specific AE (if an interview participant did not witness an AE, we asked about a near miss or about a safety breach).

We piloted the interview guide with a nurse and an anesthesiologist at our institution to determine whether the interview could be completed within 30 minutes and whether participants understood the questions. The pilot results led us to add a prompt related to the preoperative assessment: "Were there unanticipated issues that differed from the pre-op evaluation?" Each pilot participant completed the pilot interview in approximately 20 minutes.

Study Population and Sampling Methodology

Our study population was surgical staff from VA facilities, including ASCs, where outpatient surgery is performed. Our sampling design was purposive: we sought representatives of all surgical roles from geographically diverse facilities. No demographic variables (e.g., age, sex, race/ethnicity, Veteran status) were used as inclusion or exclusion criteria. We used convenience sampling, beginning with surgical colleagues across the VA and asking them to participate and/or to recommend potential interviewees.

Interview Process

The first author conducted all interviews and took detailed notes. Interviews were also audio-recorded. Informed consent was obtained prior to each interview. At the beginning of each 30-minute interview we explained that we used the Institute for Healthcare Improvement's definition of AEs: any patient harm resulting from medical care, ranging from "temporary harm to the patient that required intervention" to "death."³⁵ Next, we asked participants about their role in outpatient surgery and how many hours a week they were involved in outpatient surgical care. We then asked the participants to consider the specific event and probed: "What do you think were all the factors leading to the [AE/complication/near miss]?" We followed up with questions about specific quality dimensions, for example, "Was there anything about the *patient* that affected the outcome?" In addition to collecting details about specific events and associated factors, we asked participants whether they could speculate about any other risk factors that might be associated with outpatient surgical AEs.

Coding Process and Analysis

Interview notes were finalized after listening to the audio recordings. The first author open-coded *a priori* concepts from the conceptual framework and emerging themes and transcribed these data into a table organized by category.³⁶ Three co-authors [HM, MC, PR] with collective expertise in surgery and qualitative methods iteratively discussed the table in a series of group meetings in order to develop a final set of focused codes and categories. We kept themes only if we had data from two or more participants and we reached consensus on the final categories after three meetings. Although we began with a list of factors

in our conceptual framework, several additional themes emerged: patient non-compliance, poor standardization of care processes, and safety culture. We also collected a number of suggestions from participants about outpatient surgical safety initiatives. We assessed the AEs these initiatives might prevent as well as the quality dimensions they affected.

The VA Boston Healthcare System Institutional Review Board approved this study.

RESULTS

We identified 65 potential participants and we interviewed 14 between January and April 2015. Participants included surgeons, gynecologists, podiatrists, surgical chiefs, nurses, nurse managers, anesthesiologists, certified registered nurse anesthetists (CRNAs), and physician assistants (see Table 1). Participants came from 11 different VA facilities, one of which was an ASC. Participants varied in the volume of outpatient surgeries they participated in: two rarely participated in outpatient surgery (they were more involved in management of outpatient surgical care) and four participated in more than 30 surgeries a week.

Study participants had a range of experiences around witnessing AEs. Ten of the 14 reported witnessing at least one AE in their career, one witnessed a near miss, and three reported that they did not witness any AEs, near misses or safety breaches in their time working in outpatient surgery. We found no apparent relationship between surgical role and witnessing an AE. All interview participants reported potential safety risks related to outpatient surgery

Structure, Patient and Process Factors Associated with Outpatient Surgical Safety

Although not everyone reported witnessing an AE or a near miss, all the staff we interviewed identified factors that increased or decreased the risk of patient safety events (Table 2). We organized results around our conceptual framework beginning with patient factors. Interview participants reported that patient comorbidities were important contributors to AEs. Although we expected to find evidence that patient demographics affected AE development, participants did not report these factors as important. Unexpectedly, patient living conditions were reported by two participants as risk factors for infections. There was no evidence that patient's distance from the VA facility or prior utilization was related to AEs. Like a patient's living conditions, patient non-compliance with stated guidelines emerged as a factor that is arguably influenced by the medical system and could contribute to the development of an AE.

We anticipated processes of care related to the provider and to the procedure would be important risk factors for AEs. Interview participants did not report that provider characteristics including surgical specialty, or level of supervision played a role in patient safety. However, various processes of care undertaken by providers, such as pre- and postoperative assessments, were considered important by the majority of interview participants. We identified several independent processes of care important in maintaining patient safety that were perceived as sources of potential problems if they were not done properly: the surgical diagnosis, instructions given to the patient in the initial preoperative assessment, the preoperative assessment on the day of surgery, postoperative instructions

to the patient on the day of surgery, and post-operative follow-up. For example, same day preoperative assessments successfully prevented surgeries in patients for whom the surgery was contraindicated and preoperative huddles with surgical staff optimized OR equipment. Although we expected to find that processes of care in the pre-operative period might contribute to patient safety, participants also reported that processes in the intra-operative (e.g., time outs and checklists) and post-operative periods (e.g., follow-up assessments, including phone calls), prevented harm and identified complications in time to intervene.

In addition to postoperative assessments, one specific and two broad process-of-care categories emerged from our data. During surgery we found evidence of iatrogenic injuries that were considered non-preventable outcomes that could happen any time a patient experienced surgical care. Broadly, unstandardized processes emerged as a factor associated with the development of AEs. These were processes seen as important in delivering care but poorly defined or not assigned to appropriate staff. Unstandardized processes could affect any stage of the patient's trajectory through outpatient surgery, including a nurse failing to provide the right equipment during the surgical operation. Communication/coordination issues also emerged as a broad patient safety risk factor. Communication and coordination between surgical team members primarily affected patient transitions into and out of surgery, such as the extent to which the surgical team used time-outs.

Our conceptual framework suggested several process factors associated with the operation itself including duration, time of day/week, and complexity. Participants reported that these were important factors. A longer operation was associated with greater AE risk and an operation at the end of day was riskier than a morning surgery because staffing levels dropped off in the outpatient surgical ward in the late afternoon. The complexity of the operation was identified as an important factor in the development of AEs but no one reported that surgical technique played a role.

We found three structure factors that staff considered important factors in outpatient surgical AE development: the complexity of the facility, a factor included in our conceptual framework, and equipment and instrumentation and safety culture, two emergent factors. We did not find evidence that surgical team composition, teaching status, surgical volume, or urban/rural location affected the development of AEs. Instead, several interviewees reported problems with instrumentation including inadequate supply and poorly stocked ORs. There were also reports of equipment breaking down or unavailable during the operation. Safety culture was seen as a critical element in providing safe surgical care; when staff feels that safety is important, they are willing to advocate for patients despite potential conflicts with supervisory roles.

Surgical Care Timeline

Interview participants described patient, process and structural factors in the context of the patient trajectory through the outpatient surgery experience, beginning with the preoperative assessment and ending with the postoperative follow-up. Our data suggested the following surgical care timeline (see Figure 2):

- Preoperative period, estimated to be 1–30 days before the date of operation, including assessments by surgical and anesthesia staff;
- Same day preoperative period, estimated to be up to four hours prior to the start of the operation, including any pre-operating tests or screening;
- Intraoperative period, estimated to begin when the patient entered the OR and end when the patient left the OR, and;
- Discharge and follow-up period, estimated to begin after the patient exited the OR and end 30 days after the date of the operation, including recovery time spent in the surgical intensive care unit.

We further organized interview results to reflect the phases of surgical care where these factors might occur (Table 2). Placing the relevant patient safety factors when they occur on the patient care continuum may aid in quality measurement and improvement.

Quality Improvement Opportunities

Interviewees identified a number of QI initiatives, either actual or proposed, to reduce AEs. They frequently described patient safety risks and how they or someone on their team resolved these problems (Table 3). Many of the initiatives designed for the preoperative surgical phase were structural changes (e.g., providing an alcohol detox program to outpatient surgical patients prior to their surgery), while the initiatives for the post-operative discharge and follow-up period were all processes of care (e.g., voiding trial before removing urinary catheter). Some of these initiatives had been implemented at the facility where the interviewee worked and were perceived to be successful in lowering patient safety risk.

Discussion

This study explored factors in outpatient surgery that may be associated with the development of an AE. We interviewed a national sample of VA providers representing diverse surgical roles using a pilot-tested interview guide and a literature-based conceptual model. Our results provided evidence that many of the patient, process and structure factors in our conceptual framework do play a role in patient safety in outpatient surgery. In addition, our findings introduced new factors that have not been considered in the literature to date. Further, we developed a surgical care timeline based on interview results to organize the factors associated with AEs; this timeline and categorization of interview results may aid both in future research and in the development of QI innovations to reduce AEs in outpatient surgery. To further improve quality and safety in this care setting, we also documented several QI initiatives suggested by interview participants.

The purpose of this study was to address an important gap in the literature related to factors associated with outpatient surgical AEs; much of what we know of factors related to AEs following surgery is limited to findings from studies of inpatient surgical care. Interestingly, none of our interview subjects identified age, disability, distance from the facility, or the number of hospitalizations in the previous 6 months as patient factors in outpatient surgical AEs despite evidence in the literature.¹⁰¹⁸²¹²² They also did not identify surgeon's

specialty training as a process factor or issues related to teaching status, surgical volume, ASC status, or facility geographic location as structural factors important in outpatient surgical patient safety. Consistent with the literature, however, interviewees reported that preoperative assessments were related to outpatient surgical safety.²³

Moving beyond our conceptual framework, we also found some novel patient, process and structure factors such as patient compliance, post-operative patient assessments and instruction, and OR equipment needs that affected the development of AEs. The emerging factors of unstandardized processes of care, coordination and communication problems, and safety culture have all been tied to patient safety in the literature;^{37–40} we have not seen these factors explicitly linked to outpatient surgical AEs before although it makes sense that these issues would affect both inpatient and outpatient care. Interestingly, the Agency for Healthcare Research and Quality (AHRQ) designed a safety culture survey for ASCs in 2014, suggesting that safety culture is a factor gaining recognition in the field.⁴¹ Postoperative patient care processes and OR equipment and instrumentation may be important issues to address in future research on outpatient surgical AEs. Additionally, exploring patient perspectives of outpatient surgical safety may reveal gaps in our conceptual framework and identify new opportunities to improve care.

A strength of this study is that we acquired candid input from surgical staff working directly with patients every day. Exploratory research is an important means of identifying factors associated with AEs and opportunities for improvement. When employees have the opportunity to share their perspectives in an interview format, they may volunteer original information that might not be revealed through surveys. An unexpected outcome of our interviews was the unsolicited input on QI initiatives that were either suggested or implemented in interviewee's facilities to improve outpatient surgical patient safety. Just as there are gaps in the literature around predictors for AEs in outpatient surgery, there is a dearth of QI studies targeting this area of care. Our results suggest administering wound cleaning solution to patients at the pre-operative assessment or taking the extra step to reconcile pharmacy orders for pain medication at discharge can be simple but effective processes of care to prevent AEs. These QI initiatives may be of particular interest to ASC and hospital leaders seeking tested ways to improve safety.

This research has some limitations. While we recruited and interviewed a diverse sample of 14 people in an effort to obtain a full picture of outpatient surgical safety, as with any interview study, results are limited to the perspectives of those interviewed. In addition, our convenience sample of surgical staff may be biased. Lastly, our sample was limited to the VA and therefore may not be representative of surgical providers in the private sector. However, as many surgical innovations have originated in the VA, the contributions of VA surgical staff may resonate with non-VA surgical providers.¹⁴

Conclusions

The increased prevalence of outpatient surgery has raised the demand for AE detection and quality measurement tailored to outpatient surgical care. Exploratory qualitative research using interviews with surgical staff revealed a number of contributory factors that may be important opportunities to improve safety. Our results highlighted the importance of

processes of care undertaken by surgical providers in the preoperative, intraoperative and postoperative periods, particularly the value of a standardized preoperative assessment performed by a diverse surgical team including anesthesiologists, surgeons and nurses. We also identified structural factors related to intraoperative equipment supply and surgical safety culture that may affect the development of AEs. Staff working in the outpatient surgical setting are familiar with AEs and have ideas for QI initiatives to reduce patient safety problems. The factors we identified may facilitate more targeted research on outpatient surgical AEs. More immediately, the QI initiatives suggested in our interviews present unique opportunities to directly improve patient safety.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1.
Conceptual Framework for Assessing Outpatient Surgical Adverse Events

Timeline of patient care in outpatient surgery

Figure 2.
Phases of Outpatient Surgical Care

Table 1.

Description of Interview Participant's Surgical Roles and Experience with Outpatient Surgery

Role	Average number of outpatient surgeries per week
Anesthesiologist	10–12
CRNA *	30
Nurse	43
Nurse manager	85
Nurse manager	40
Nurse manager	8
Nurse Practitioner	20
Physician Assistant	10
Chief of Surgery	Rarely
Chief of Surgery	2
Surgeon	2–4
Surgeon	4
Surgeon - gynecology	1
Surgeon - podiatry	1–4

* CRNA=Certified Registered Nurse Anesthetists

Table 2.
Staff-Reported Patient Safety and Adverse Event Risk Factors in Outpatient Surgery

Quality Dimension	Description	Relevant Quotes	Surgical Care Phase
Patient			
Comorbidities	Patient's existing health issues and disease burden.	<ul style="list-style-type: none"> • Patient [with surgical site infection] had lots of diagnoses. • Patient [with wound infection] on steroids, immunocompromised. 	Throughout
Prior utilization	Patient's history of healthcare utilization (medical and surgical) before the outpatient surgery.	No evidence.	Pre-operative
Demographics	Patient characteristics including race, class, income, sex, education and marital status.	No evidence.	Throughout
Distance to facility	Patient's distance between home and the medical facility.	No evidence.	Throughout
<i>Patient living conditions</i>	Patient's living conditions including cleanliness and presence of toxins or insect/animal infestations.	<ul style="list-style-type: none"> • Sometimes patient living conditions are such that they don't have appropriate bathing before surgery, e.g., homeless or in shelter [wound infection AE]. 	Pre- and Post-operative
<i>Patient compliance</i>	Patient issues separate from actions by the surgical team including deliberate non-compliance with pre or post-op instructions.	<ul style="list-style-type: none"> • Patient had eaten something, denied it, patient aspirated during operation. • Getting patient back in for post-op appointment [is a factor in AEs]. They forget or don't come in and are at high risk for an AE. Dressing change or staple removed. May have improper caregiver at home. 	Throughout
Process			
Surgeon's specialty	Specialty-level training for the surgeon.	No evidence.	Intra-operative
Level of supervision	Type of supervision for the surgeon (e.g., attending supervising a resident)	No evidence.	Intra-operative
Preoperative assessment and patient instructions	Pre-operative assessments by surgical staff to discuss patient, plan schedule and evaluate equipment needs. This also includes pre-op communication with the patient.	<ul style="list-style-type: none"> • No case seen without anesthesia pre-op full assessment. Use ASA classification protocols for anesthesia. Surgeon also does pre-op (in addition to anesthesia) within 24hrs and it is done by the person performing surgery in the OR. • Important for all patients going to the OR to have team pre-huddle to discuss cases for the whole week. To make sure pre-op was complete and medical issues were addressed and to make sure they have everything they need for the OR, e.g., instruments, prosthetics, implants. 	Pre-operative
Preoperative assessment on the day of surgery	Day of surgery medical issues that may prompt surgeon to cancel the case.	<ul style="list-style-type: none"> • Case done by surgeon but pre-op by resident. Not much communication, surgeon's decision. If the surgical prep is wrong, e.g., colonoscopy bowel prep, and diagnosis was wrong, could lead to an AE. • NPO, had mild liver issues, hepatitis C, went to do block and patient had to be resuscitated. Patient was drunk. Didn't do blood alcohol screen. 	Surgery day pre-operative

Quality Dimension	Description	Relevant Quotes	Surgical Care Phase
		<ul style="list-style-type: none"> Some cases canceled day of because patient didn't go through pre-op. 	
Surgical diagnosis	Patient's medical situation requiring outpatient surgical care.	<ul style="list-style-type: none"> "Misdiagnosis and open patient and find something different, but that is surgery." 	Pre-operative
Duration of operation	Amount of time the patient is in the OR.	<ul style="list-style-type: none"> Attending has to be in the room during the critical part of the surgery, but resident can be left to close. This increases the duration of the surgery. [Infection] happens because of long duration of surgery and wound is open longer. 	Intra-operative
Date/Time of operation	The date and time of the operation.	<ul style="list-style-type: none"> OR shuts at 3:30 and then overtime PACU RN left until 6. No surgeon or anesthesia. Leads to near misses or transfers to higher level of care. [AE happened in an] urgent case at end of the day. 	Intra-operative
Complexity of operation	Complexity of the surgical operation.	<ul style="list-style-type: none"> 5th time redo of an inguinal hernia... difficult to see anatomy. Known risk and complications of a difficult procedure. 	Intra-operative
Surgical technique	Type of surgical technique used during the operation (e.g. open versus laparoscopic).	No evidence.	Intra-operative
<i>Iatrogenic injury</i>		<ul style="list-style-type: none"> Unpredictable event. Procedural anomaly, no other factors. 	Intra-operative
<i>Post-operative assessment and patient instructions</i>	Post-operative follow-up performed by the surgical team to ensure the patient's safety throughout the surgical recovery process. This includes communication with the patient.	<ul style="list-style-type: none"> For patients on narcotics for pain, surgeons can give them prescription after surgery without realizing they were already taking narcotics, leading to an adverse drug event. Surgeon talks to nurse who gives discharge instructions to patient. Attending gives instructions/sets expectations for residents. This process is sped up in outpatient surgery. Not a good tracking system for when the patient leaves. May not find out about problems until 2 week post-op visit. 	Discharge and follow-up
<i>Unstandardized processes</i>	Specific examples of work processes that could be more clearly defined and assigned to surgical staff to improve patient safety. This includes efforts to reduce these types of events (e.g., checklists and timeouts).	<ul style="list-style-type: none"> For all surgeries. Do timeout, called by attending, before cut. During surgery doing timeouts and verifying site so no issues with sentinel events. Need routine with same questions by same people e.g., are you NPO? Otherwise need to reschedule - not an AE, but great inconvenience. Seen nurse not know how to use equipment or not able to find equipment. Never seen it lead to bad patient outcome, just makes surgeon's job harder. 	Throughout
<i>Communication and coordination</i>	Evidence that communication within the surgical team affected patient safety.	<ul style="list-style-type: none"> Anesthesia very proactive. Good communication. They say "stop" and surgeon stops. Communication is one of the biggest issues. Pre-op time out in OR is very important. What's being done and why. Also, post-op debriefing before the team leaves the OR. Don't spend as much time on it in outpatient surg. Doing these wrong or skipping them leads to AEs. 	Throughout

Quality Dimension	Description	Relevant Quotes	Surgical Care Phase
Structure			
Surgical team composition	The number and type of surgical providers from various specialties involved in providing surgical care.	No evidence.	Pre- and intra-operative
Teaching status	VA-assigned teaching facility with opportunities for medical students and medical/surgical residents.	No evidence.	Intra-operative
Surgical volume	Number of surgical procedures performed in the facility over a fixed time frame.	No evidence.	Throughout
Surgical facility complexity	VA National Surgery Office-assigned complexity rating related to infrastructure and staffing required to perform certain surgical procedures.	<ul style="list-style-type: none"> No vents in ASC and can't always predict whether the patient will need a vent in the OR. Facility not designed for outpatient surgery [leads to problems.] 	Throughout
Urban/rural location	Geographic location of the facility in either an urban or rural environment.	No evidence.	Throughout
<i>Equipment and instrumentation</i>	Structural or physical elements, including equipment and supplies, related to performing high quality, safe surgical care.	<ul style="list-style-type: none"> "Not enough instruments and the necessary instruments are infrequently available", e.g., missing or mismatched. The tray process is messed up. Have instances where improper scope and procedure gets aborted. Plan to always have 2 but it doesn't always happen. 	Intra-operative
<i>Safety culture</i>	Attitudes, beliefs and practices (i.e., culture) around patient safety in the surgical department.	<ul style="list-style-type: none"> Culture of safety. [Hypothetical] near miss - patient with iodine allergy and nurse pointed out and an AE was averted. Surgical staff don't feel like they can speak up. [Time outs are] supposed to be done in all VAs but there is fatigue - [failure to do time outs are] caught because nurse communicates it [to Chief of Surgery] or even Joint Commission. Nurses are not snitches; they're part of the process. 	Throughout

Note: AE=adverse event; ASA=American Society of Anesthesiologist's Physical Assessment Score; ASC=ambulatory surgical center; NPO=nil per os, in other words, no eating or drinking prior to surgery; OR=operating room

Table 3.

Staff Reported Initiatives to Prevent Adverse Events in Outpatient Surgery

Quality Dimension	Adverse Event Risk	Initiative	Surgical Care Phase
Process of care	Wound infections	Give Hibiclens wash to patients prior to surgery	Preoperative
	Adverse drug events and polypharmacy from the in- and outpatient settings	Reconciliation between inpatient and outpatient pharmacy with respect to chronic pain meds and the meds prescribed for post-op pain	Discharge and follow-up
	Urinary tract infections	Voiding trial before removing catheter in PACU	Discharge and follow-up
	Inadequate postoperative follow-up	Changing patient contact information in the healthcare system	Discharge and follow-up
Structure	Missing or inadequate equipment available in the OR	Pick list in the healthcare system for OR equipment	Preoperative
	Adverse effects from alcohol in system during surgery	Pre-operative alcohol detox program	Preoperative
	Inadequate staffing in patient care settings	Ensuring surgical staff are cross-trained (e.g., PACU staff are trained in Advanced Cardiac Life Support)	Intraoperative

Note: PACU=post anesthesia care unit; OR=operating room