DOES USING A SURGICAL SAFETY CHECKLIST IMPROVE SURGICAL READINESS?

by

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Abstract

Previous studies supported training multidisciplinary teams using an evidence-based tool such as the *Comprehensive Surgical Checklist* (CSC) to promote communication, teamwork, and safety. Evidence showed the CSC's four-phased approach reduced avoidable adverse events that were problematic in the single-phased checklist of the studied organization for completing the Time-Out. The aim of this quality-improvement project was to increase safe surgical readiness by adopting the CSC and creating surgical-team awareness of the Phase I Preprocedure Check-In elements. The population, intervention, comparison, outcome, and time (PICOT) question—In the surgical patient population, how does implementing the CSC influence adverse events related to surgical readiness over an 8-week period?—was formulated to guide the search for evidence and assist in implementation of research into practice. The professional practice model encourages nurses to embrace their responsibility as a caring professional and acknowledge their accountability for practice outcomes through obligation, ownership, oversight, outcomes, and opportunity. A *t* test measured the difference in the number of adverse events before and after CSC implementation. Because the *t* value of .743 was not in excess of the critical value of 1.71, the project outcome was not statistically significant. Willingness to use the checklist and report adverse events was a study limitation improved by training. Findings included a positive association between CSC training and surgical team awareness of elements in the Phase I Preprocedure Check-In. Study assumptions reflected nurse-driven actions and outcomes. Findings demonstrated an increase in reporting of adverse events related to safe surgical readiness; safe surgical readiness was important to the organization.

Keywords: checklist, safety, adverse events, coaching.

Dedication

With much love, I dedicate this project to my Grandfather, Clifford Markman, who encouraged me to be a nurse, because nurses can do anything! I also dedicate this project to Todd, Tanen, and Taver Goodall for their love, support, and encouragement of me, which made it possible for me to achieve my aspiration of a terminal degree in nursing. You are beautiful humans and I love you!

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DOES USING A SURGICAL SAFETY CHECKLIST IMPROVE SURGICAL READINESS?

The focus of this quality improvement project was safe surgical readiness and addressed the population, intervention, comparison, outcome, and time (PICOT) question: In the surgical patient population, how does implementing the Comprehensive Surgical Checklist (CSC) influence adverse events related to surgical readiness over an 8-week period? Safe surgical readiness was problematic for the organization due to the use of a single-phased checklist for completing the Time-Out. Adoption of the four-phased CSC with Phase I Preprocedure Check-In elements improved awareness and communication by reporting elements not identified during surgical readiness, which enhanced safe surgical readiness for the patient.

Significance

The significance of this project was that checklists have been shown to reduce perioperative mortality by close to 50% and perioperative complications by 40% (Perry & Kelley, 2014). Ultimately, adoption of the checklist encouraged a change in culture through training, communication, and teamwork to improve safety. Participants realized the checklist could not be implemented as the sole source of quality and safety, nor was the success of the implementation based unilaterally on the proper circumstance or attempt to produce a single desired outcome (Perry & Kelley, 2014). Surgical-event reporting accounted for more than one-third of all hospital reports and communication through a checklist made the operating room (OR) safer overall (National Guidelines Clearinghouse, 2013).

Two reports by the Institute of Medicine (IOM) and multiple peer-reviewed studies identified safety as a priority and offered steps to make surgical practice safer (Collins, Newhouse, Porter, & Talsma, 2014; IOM, 1999, 2001; Kleiner, Link, Travis Maynard, &

Carpenter, 2014; Landers, 2015). The first report, in 1999, recommended methods by which to improve health care safety. The second report, in 2001, recommended innovations to improve health care quality. Together, they encouraged safe care and quality outcomes.

Report 1

In 1999, the IOM published *To Err is Human* and recommended one method to improve health care safety: the National Aeronautics and Space Administration crew resource management (CRM) concept (IOM, 1999). CRM was created for the aviation industry to improve outcomes of processes by the people doing work. Progressive health care organizations that adopted a forward-thinking view of safety saw quality changes in the care they delivered with a reduction in errors; adverse events; time in the facility; and improved retention rates, attitudes, and teamwork behaviors (Powell & Hill, 2006). Based on the IOM reports, accredited organizations were now required to train on topics of multidisciplinary approaches to care and teamwork (Glymph et al., 2015).

Events can be described as *near misses* or *adverse events.* A near miss was "any event that could have had adverse consequences but did not and was indistinguishable from fully fledged adverse events in all but outcome" (Agency for Healthcare Research and Quality [AHRQ], 2017, p. 1), and an adverse event "could have been substantially reduced if different actions or procedures had been performed or followed" (AHRQ, 2017, p. 1). Huang, Kim, and Berry (2013) suggested creating a culture of safety by applying the concept of CRM and using tools such as a surgical checklist. The CSC includes required actions in a certain location. For example, elements associated with the Preprocedure Check-In phase took place in the preoperative ready area where medical personnel reviewed blood products or implant availability. The Sign-In phase took place in the OR before anesthesia induction, where staff

checked patient allergies. The Time-Out phase took place in the OR and entailed identifying the correct patient, procedure, and laterality before skin incision. The Sign-Out phase took place before leaving the OR, where staff confirmed instrument counts and specimens and reviewed key concerns for needs in recovery (Association of periOperative Registered Nurses [AORN], 2016). When all team members worked together focused on specific elements in the process, the care in the workflow was stronger, more reliable, and less likely to produce an adverse event.

Report 2

In 2001, the IOM published *Crossing the Quality Chasm* and recommended a focused approach of health care innovation to improve the quality of care being delivered. The IOM's six points of focus were safety, effectiveness, patient-centeredness, timeliness, efficiency, and equitability. In 2008, the World Health Organization (WHO), challenged by the World Health Assembly, launched the Surgical Safety Checklist (SSC) for a multifaceted approach to safe patient care in the surgical setting. The original WHO SSC contained a three-phase approach to the checklist elements. For the *Surgical Safety Checklist in Obstetrics and Gynaecology,* the National Guidelines Clearinghouse (2013) described the quality of evidence ranking for the WHO SSC as a II-1A and in obstetrics a II-2A. The WHO recommended adopting and modifying SSC elements by all surgical providers for their respective specialties for improvements in safe patient care. Modifications of the checklist were encouraged to keep the checklist the right length for efficiency of use, yet beneficial for the processes and potential complications typical for a specialty (Helmi, Takala, Aaltonen, & Blomgren, 2012).

The aviation and medical communities collaborate in the area of safety. CRM helped reduce preventable health care errors by building effective teams and providing safety tools, such as a checklist, which can make a difference in the delivery of quality patient care (Johnson &

Kimsey, 2012). Each discipline in the OR—surgeon, anesthesia, nurse, technician—viewed CRM teambuilding and the checklist safety tool differently, but all were important to improve teamwork and communication (Prati, & Pietrantoni, 2014), which ultimately affected patient outcomes (Carney, West, Neily, Mills, & Bagian, 2010).

Checklist

In 2010, AORN released the CSC, which identified, by color code, contributions made by AORN, WHO, and The Joint Commission. The CSC was an upgrade from the WHO SSC, with the addition of the Preprocedure Check-In, to the other three-phases of Sign-in, Time Out, and Sign Out. The organization further developed the CSC to improve facility processes, expected workflows, and patient outcomes (Huang et al., 2013). The CSC encouraged team-member engagement in the surgical-readiness process, aiming to avoid preventable adverse events. The checklist was universal to the surgical setting and was the recognized community standard of care for safety. Thus, the professional nursing organization made the CSC available in the public domain (AORN, 2016).

Project Aim

The project aim was increased safety in surgical readiness by bringing awareness of the CSC and the Phase I Preprocedure Check-In elements. Awareness of these meaningful elements provided guidance for actions related to surgical readiness when checking the chart, confirming the presence of requested items, and acknowledging sterility. Elements of the CSC Phase I Preprocedure Check-In were reviewed and individually assessed for needs in each case. If an element was not present upon review and a need was assessed, it was considered an unexpected result, which influenced adverse-event reporting.

PICOT Relationship

In relation to the PICOT question—In the surgical patient population, how does implementing the Comprehensive Surgical Checklist (CSC) influence adverse events related to surgical readiness over an 8-week period?—adverse-event reporting was a standard practice associated with safety. A policy governed the practice of adverse-event reporting, defined as any unexpected outcome encountered while patient care was provided. Acknowledging unexpected outcomes during routine care promoted a high-reliability environment of safer care. The checklist brought awareness to the important elements of the Phase I Preprocedure Check-In and the organization's culture encouraged appropriate reporting of any unexpected outcome discovered during routine practice.

Relevance to Nursing

The project was relevant to perioperative nursing in that it promoted the surgical safety checklist to guide practice and workflow. Clinicians were leaders, decision makers, and practitioners involved in the intimate details of surgical care. Additionally, clinical practitioners embraced the professional-practice role as a responsibility to the patient and accountability for outcomes based on their care. Surgical care was based on time, which meant the pace of the work was expected to be quick, and any additions to the workflow could result in a delay or an error (Johnson & Kimsey, 2012). In light of the various individuals involved, the checklist kept the patient at the center of care by identifying the acuity and special needs of the patient during the Check-In and Sign In phases. The professional role of the nurse was to use clinical reasoning and evidence-based practice to reduce adverse events and improve safety for an exceptional surgical experience for the patient.

Relevance to Nursing Framework

The O'Rourke professional-practice model (PPM) defined the role of the professional nurse as responsible for care and accountable for outcomes. The model presented nurses as decision makers, with the professional role of leader, scientist, transferor of knowledge, and practitioner in patient care. Thus, nurses were leaders, decision makers, and safety-minded practitioners in adopting the evidence-based checklist and promoting safe surgical outcomes. This recognition and adoption made the checklist a relevant topic and useful tool for the nurse, patient, and health care organization.

Impact on the Patient

A culture of safety promoted the use of a surgical checklist, which was an efficient and effective tool, but also required a cohesive team. Collaboration by professionals from multiple disciplines using a checklist improved the exchange of information while providing safe patient care. Patient outcomes were attributed to the teamwork of each caregiver. The team's ability to coordinate care delivery and communicate with each other affected a patient's pain, recovery, length of stay, mortality, and overall safety in the delivery of care (Carney et al., 2010). The checklist was merely a tool, but more importantly, it was the team's willingness to use the tool to improve teamwork and communication for the impact it made on safe patient care (Prati, & Pietrantoni, 2014).

Impact on the Organization

The clinical relevance to the organization was clinicians and providers adopting evidence-based practices for the best patient outcomes. The organization provided safety tools necessary for best service and quality care. Thus, each department had specific workflows guided by a checklist that supported the surgeon in caring for the surgical patient. The

preoperative staff managed patient preparation, the OR staff managed supplies and equipment, the sterile-processing staff managed instrument sterilization, and credentialed vendors managed the implants. The organization also promoted policies that supported a culture of safety. The *universal protocol* policy supported use of the checklist and the *event report* policy supported reporting unexpected events. Organizational support of staff and guiding documents promote use of the checklist and work stoppage in real time if a concern arises (Johnson & Kimsey, 2012). This standardization of processes created a high-reliability environment producing a safe surgical experience for the patient.

Project Description

The project implemented the CSC with specific elements associated with four-phases of action on the surgical continuum: Phase I, the Preprocedure Check-In; Phase II, the Sign-In; Phase III, the Time-Out; and Phase IV, the Sign-Out. The organization's checklist included the elements of the CSC Phase I–IV, but all were listed and reviewed in a single-phase, which for the organization was considered the Time-Out. For this project to address safe surgical readiness, the focus was on Phase I Preprocedure Check-In elements of the CSC. In the Preprocedure Check-In phase, staff reviewed patient identity, the procedure, the procedure site, site marks, consent, history, physical examination, preanesthesia assessment, nursing assessment, diagnostic-test results, radiologic-test results, blood products, and special equipment or devices. Further, staff confirmed vendors, implant trays, or implants, and confirmed sterilization indicators.

Capstone Significance

By implementing the CSC, the organization adopted an evidence-based practice with a four-phased approach to improve safe surgical readiness. This implementation brought

awareness of required elements and encouraged actions to report potential adverse events by perioperative teams in pretreatment and surgical units. The completed project made an impact by improving awareness of checklist elements, communication involving care, and reporting of potential adverse events. To that end, organizational leadership recommended extension of the project to other areas in the hospital performing operative or invasive procedures.

Extending Capstone Impact

The checklist intervention was conducted in the OR, but invasive procedures occurred in many other locations. The checklist intervention offered a four-phased format with common elements that were reviewed prior to any operative or invasive procedure. Administrators recommended the checklist intervention be extended to the ambulatory surgery setting, cardiac-catheterization laboratory, labor and delivery, magnetic-resonance imaging, the endoscopy center, and any bedside area where a procedure could occur. In addition, other facilities, hospitals, and surgery centers implemented the CSC in the organization's enterprise.

Significance of the Problem

The background of the problem was ongoing avoidable adverse events related to surgical readiness. Use of an outdated surgical checklist that was not evidence based included some activities represented in all four-phases of the CSC, but not in a phased approach. The preprocedure activities were included on the current checklist, but reviewed during the Phase III Time-Out. For some of the needed activities, Time-Out was too late, as it occurred after the patient's anesthesia induction.

Prevalence of the Problem

Researchers reported that unintentional injuries happen in approximately 10% of patient admissions globally (Brasaite, Kaunonen, & Suominen, 2015). Most notable were

communication failures, which were a major contributor to surgical sentinel events (Collins et al., 2014; Kleiner et al., 2014; Manrique, Soler, Nolasco Bonmati, Lopez Montesinos, & Pina Roche, 2015; Oak, Dave, Garasia, & Parelkar, 2015). Miscommunication in surgery affected patient safety related to equipment and supplies (Kleiner et al., 2014). Surgical procedures were highly complex, with multidisciplinary teams working under tight time constraints (Collins et al., 2014; Manrique et al., 2015) and high-performance expectations while multitasking. Because of these factors, some researchers believed that many adverse events were preventable (Brasaite et al., 2015; Manrique et al., 2015; McDowell & McComb, 2014). The OR environment was described as time sensitive and tends to be hurried and hierarchical, with physicians making demands of staff, and procedures requiring high-level hardware and software technology. Further complexities include distractions resulting in wrong laterality, equipment with the potential to malfunction, and incomplete or incorrect information in patients' electronic health records, all of which have the potential to produce a poor outcome for the patient (Collins et al., 2014). Researchers indicated use of a checklist improved outcomes (McDowell & McComb, 2014). The Phase I Preprocedure Check-In elements encouraged confirmation of necessary items such as consent, laboratory work, or requested implants in preparation for the procedure. A preprocedure huddle or check-in reduced near-miss events and was well received by the surgical staff (Glymph et al., 2015).

Global Data

The perioperative setting was closely associated with adverse events and avoidable risks (Bohomol, & de Abreu Tartali, 2013), and was considered to be an unsafe environment (Michael, Della, & Zhou, 2013). At least half of surgical complications or adverse events could be prevented (Michael et al., 2013). In developed countries, 3–16% of procedures had

complications (Prakash, Baduni, Sanwal, Sinha, & Shekhar, 2014; Salkind, 2013). The Centers for Disease Control and Prevention estimated postoperative complications due to surgical infections were 14–16% (Silva Araújo & de Oliveira, 2015). In a retrospective review of surgeries associated with actual wrong-side errors, 85% could have been prevented by using the WHO checklist (Fudickar, Hörle, Wiltfang, & Bein, 2012). Avoidable risks and adverse events related to patient care were estimated at $17–29 billion the United States alone (Böhmer et al., 2012).

Practice Before Intervention

The current checklist included all activities of the CSC, but not in a phased format like the CSC. Following the CSC, staff performed elements of the Phase I Preprocedure Check-In, but confirmed during Phase III, which was the organization's Time-Out. Confirming elements during the Time-Out, which occurred after the patient was under anesthesia, was too late if some item or information was unavailable. This was the source of some adverse events related to surgical readiness.

Checklist Implementation

Researchers found checklists were an effective tool in completing redundant, yet important work that may otherwise depend on memory and result in an error (Salkind, 2013). The surgical checklist is a tool to separate the phases of surgical care and designate responsibility to the physician, anesthesia provider, and nurse during the checklist intervention (Manrique et al., 2015). Checklist phases promote open communication (Prati, & Pietrantoni, 2014) and planning, which helps clinicians become familiar with actions and anticipate surgeons' requests (Kelvered, Öhlén, & Gustafsson, 2012). This experience resulted in team satisfaction for being efficient and effective in providing the best care for the surgical patient. The nurse had a prime

focus on patient safety, but a team approach with a collaborative attitude among all providers was necessary to maintain the importance of a safety strategy and promote a safe environment for patients (Brasaite et al., 2015; McDowell & McComb, 2014; Waehle, Haugen, Søfteland, & Hjälmhult, 2012). Staff comfort encouraged consistency in adopting a checklist for surgical safety (McDowell & McComb, 2014). As an example, a checklist implemented using a top-down approach might only result in generalized adoption that may have been forced and mechanical. However, when the end user is part of the decision-making process in adopting the safety concept and developing the elements, the checklist is more meaningful, resulting in consistent ease of use (Waehle et al., 2012). When the entire team knew that safety with the use of the checklist was expected, the team approached the implementation from a position of social and professional acceptance to improve compliance (Prati, & Pietrantoni, 2014).

Available Knowledge

A review of literature on the use of a checklist in the surgical patient population aided in answering the PICOT question: Does using a surgical safety checklist improve safety in surgical readiness over an 8-week period? The process for finding the best evidence included a choice of database, key terms, and other methods to narrow the review of literature search results.

Database

An electronic search was conducted using full-text academic journals found in the *Cumulative Index of Nursing and Allied Health Literature Complete,* which is a digital nursing research database available through the Capella University library portal. The baseline search parameters were articles limited to 2012 through 2017, written in the English language, and peer reviewed.

Key Terms

Key search terms used Boolean operators and included [(surgery OR operation OR surgical procedure)] AND (adverse events) AND (safety)] with a return of 4,392 articles. To reduce the number of returns [(safety checklist)] was added to the search AND other terms were included such as [(crew resource) OR (coaching)], which returned 269 articles. The final search included [(safety checklist)] AND [(surgery OR operation OR surgical procedure)] AND [(adverse events) OR (safety) OR (crew resource) OR (coaching)].

Number of Articles

Of the 269 articles identified in the electronic search, titles and abstracts were evaluated to align with the aim of safety when using surgical checklists, which excluded 245. Those remaining full texts were reviewed and an additional four excluded. The articles were retained due to content based on the described parameters and were then ordered, combined, evaluated, and condensed to identify themes and gaps in practice.

Articles Retained

Most articles described adverse events and positively associated the checklist intervention with teamwork, communication, training, and tools to improve patient safety. A collection of 20 ranked literature reviews supported the project. These articles were retained due to the strength of the evidence identified by using the AORN evidence appraisal tools and inclusion criteria.

Hierarchy of evidence. According to the AORN (2015b), the *AORN Hierarchy of Evidence* lists Research Level I—all random control trials, II—quasiexperimental, and III—nonexperimental and qualitative and nonresearch Level IV Clinical Practice Guideline Consensus or Position Statement, and V Literature Review, Case Report, Expert Opinion, and Organizational experience. This list helped to categorize the literature researched and apply the

appropriate level of evidence. Procedure and general rules for evaluation of the articles followed the research and nonresearch evidence-appraisal instruments.

Appraisal tools. The two appraisal instruments were available in the public domain and permission was not needed for use. The *AORN Research Evidence Appraisal Tool* was used to assess the strength of the evidence when reviewing research Levels, I – III (AORN, 2015d). The *AORN Non-Research Evidence Appraisal Tool* was used to assess the strength of an article's evidence when reviewing nonresearch Levels, IV–V (AORN, 2015c). Each instrument was applied in this project when performing literature reviews to rank the level of evidence, based on defined criteria. Ranking the strength of the evidence was important in the rate of adopting evidence-based research to practice (Melnyk & Fineout-Overholt, 2015). According to AORN (2015a), the *AORN Evidence Rating Model* listed the research and nonresearch types and provided a ranking system of A for high, B for good, or C for low to assess the strength of the evidence being reviewed. Girard (2013) demonstrated use of the *AORN Research Evidence Appraisal Tool* to provide an understanding of the ranking methodology when reviewing the articles' content. The ranking was to support clinical judgment in determining the worth and relevance of a study's findings to similar practice situations (Girard, 2013).

Inclusion and exclusion criteria. The inclusion criteria for retained articles included research articles based on the hierarchy of evidence: Levels I–III and quality ranking for research of A–C. Studies that included use of a checklist in the OR setting and addressed at least two of the four themes—adverse events, communication and teamwork, training, or tools—were retained. The exclusion criteria for unretained articles included articles that were not research based on the hierarchy of evidence Levels IV–V, which left 20 articles for the project. Writings in the form of summary reports, poster presentations, grey literature, or commentaries on the

topic of a surgical checklist were excluded. Settings and participants other than the OR and patients undergoing surgical procedures were excluded.

Literature Search and Analysis

To reduce the potential for adverse events and avoidable risks (Bohomol, & de Abreu Tartali, 2013), the WHO promoted a health care trend to follow the aviation industry's use of checklists to foster teamwork and communication and promote a safe and efficient environment (Kleiner et al., 2014; Salkind, 2013). The CSC required training to enculturate the concept that standard work promoted a highly reliable environment of care through teamwork and communication (Prati, & Pietrantoni, 2014).

Adverse Events

The *Swiss cheese model of error by reason* was a model used by other high reliability organizations to improve staff practices and patient outcomes to avoid adverse events (Collins et al., 2014). The model had two error types described as latent and active. Errors classified as latent were design failures by the system that tolerated active errors to cause harm. Errors classified as active were caused by an individual failure in real time when staff had a point of contact with the system while providing patient care (Collins et al., 2014). The model encouraged a relationship-based approach to avoid blame and resolve points of failure, making the concern a larger system issue (Collins et al., 2014).

The *Swiss cheese model of error by reason* encouraged a change in safety perspective to a *just culture* when managing adverse outcomes (Collins et al., 2014). The just-culture concept considered the individual's responsibility and the organization's design of system processes when errors occurred (Boysen, 2013). A just culture holds an individual accountable by having no leniency for reckless behavior while identifying failures in the organization's systems and

processes. A just culture discriminates between errors of humanity such as an omission, risk of not completing all the steps in the process, or reckless behavior, such as disregarding safety measures (Boysen, 2013). In a safety culture, the organization puts systems and processes in place by design to assist an individual to engage in safe behavior. In a just culture, the response to error rests on behavior of the individual and not the severity of the error.

This model helped identify that adverse events are possible in all organizations to the degree that the organization adopted systems approaches to reduce failure. Engagement of key participants in adopting a checklist or other approaches to reduce failures was of primary importance. As teamwork was the focus, building trust, sharing vision, and proactive communication needed to parallel the intervention of the surgical checklist to improve patient outcomes (Collins et al., 2014).

Teamwork and Communication

The OR team includes multiple disciplines that benefit from improving teamwork and communication to produce better outcomes. These improvements in outcomes were from removing hierarchical impediments, opening communication (Prati, & Pietrantoni, 2014), and teambuilding through the use of a checklist (Böhmer et al., 2013). Teambuilding improved the quality of briefings and debriefings and provided a better conversation regarding the patient, surgical-procedure preparation, and identification of possible concerns (Glymph et al., 2015; Kleiner et al., 2014). A briefing or debriefing was considered “Healthcare, Utilizing, Deliberate, Discussion, Linking, Events,” (a HUDDLE); (Glymph et al., 2015, p. 185) was an acronym used to improve surgical-patient safety.

Other high-reliability organizations used CRM, and showed it to be beneficial in health care settings. Staff and teams needed training to fully understand the concept and how the tools

provided reduced variability and improved safety for patients. CRM improved OR teamwork, communication, and safety (Kleiner et al., 2014; Manrique et al., 2015). Kleiner et al. (2014) measured two interventions of improved communication and enhanced quality of communication. The measurement of communication showed a vast improvement to prior observations by 100% and by using the checklist, the measurement of quality communication significantly improved (Kleiner et al., 2014). The structured format of the checklist facilitated better communication (Prati, & Pietrantoni, 2014) and teams were encouraged to make modifications to the checklist specific to their local practice to ensure the team addressed critical aspects of care (Silva Araújo & de Oliveira, 2015).

Training

Coaching on communication techniques was key to checklist success. Coaching on communication while performing surgical-checklist briefings and debriefings improved the quality of the intervention (Kleiner et al., 2014; McDowell & McComb, 2014). A multidisciplinary approach to training on the checklist facilitated implementation without conflicts and improved quality of communication, making the environment safer by reducing adverse outcomes in the OR (Fudickar et al., 2012). What and how communication occurred in the multidisciplinary team improved patient care. The multidisciplinary OR team had differing levels of academic preparation. The organization was required to provide skills necessary to improve communication in an ongoing effort to improve safety (Kleiner et al., 2014). When implementing a surgery-safety checklist, coaching facilitated process changes and staff attitudes (Manrique et al., 2015; McDowell & McComb, 2014). Coaching communicates to staff that the organization was willing to devote resources to a new intervention and develop the team in preparation for implementing the intervention for success. Coaching was a recognized

intervention to improve the quality of communication and reduce adverse outcomes. Thus, it supported the team by helping members prepare to implement the intended intervention and ultimately help patients receive the best outcome.

Knowledge, skill, and attitude of health care professionals improved quality and safety. Although physicians and nurses were familiar with general patient safety, their knowledge improved in the area of evidence-based safety practices (Brasaite et al., 2015). Safety was also affected when staff identified a deficit in professional skills, such as in medication calculations. Continuing education improved confidence and provided a safer environment for patient care. Health care professionals had a positive attitude in learning teamwork, safety interventions, or reducing stress and hazardous work environments (Brasaite et al., 2015; Manrique et al., 2015; McDowell & McComb, 2014). Physicians were more complimentary of stress recognition and the team and safety environment, whereas overall, nurses focused on management and work conditions as possible safety concerns (Brasaite et al., 2015). Physicians relied on the clinical team to be knowledgeable and capable of ensuring a safe experience for the patient instead of being a partner in the provision of safe care delivery. Nurses created an environment for patients' safety, healing, and recovery based on procedure, patient, and personal knowledge of the professional experience (Kelvered et al., 2012).

Tools

The addition of tools, such as checklists, reduced adverse events by adding vigilance to the workflow (Salkind, 2013). A reduction in failures associated with communication was demonstrated by staff adopting a surgical checklist and debriefings (Kleiner et al., 2014; Manrique et al., 2015; McDowell & McComb, 2014). In a second campaign by the World Alliance for Patient Safety, *Safe Surgery Saves Lives,* Manrique et al. (2015) posited the need for

safer anesthetic practices, eradication of preventable surgical-site infections, and better communication. The surgical-safety checklist included basic components for universal adoption and safer surgery that resulted in a more engaged responsible workforce, with greater teamwork, better communication, and improved attitude (Collins et al., 2014; Manrique et al., 2015; McDowell & McComb, 2014). The CSC included specific actions associated with the four-phases of care, which were universal in the surgical environment, and resulted in a safer experience for the patient. The surgical-safety checklist was a powerful tool and in each phase, recommended (Collins et al., 2014; McDowell & McComb, 2014) for use before anesthesia (Salkind, 2013), before the surgical incision, and before leaving the OR, and subsequently required participation by all members of the multidisciplinary team. Consensus on checklist elements with a cohesive team approach showed a reduction in adverse events (Collins et al., 2014; McDowell & McComb, 2014).

Rationale

The vision of the hospital was to support patient care, education, and research. The hospital was committed to this vision as a Magnet recognized organization. Part of the Magnet program required the organization to identify a nursing theorist, enculturate nursing theory, and integrate philosophical concepts across each nursing service to positively impact nursing care and nursing outcomes. The hospital had three theorists who represented relationship-based care by Watson, human caring theory by Swanson, and PPM with the five Os (O^5) of accountability by O'Rourke.

Theoretical Framework

This quality-improvement study reinforced O'Rourke's PPM. The PPM identified the nurse as a professional first, nurse second, and then nurse in the functional role of clinician,

manager, or educator (O'Rourke & White, 2011). The accountability of O^5 was essential to the PPM as it represented disclosure of actions produced by the authority and decision-making responsibilities bestowed on every nurse. In a Magnet-designated organization, the PPM demonstrated dedication to the profession and commitment to nurses in a shared governance structure. When nurse leaders value the discipline as a profession, they empower the role of the nurse as a decision maker, appreciate the distinction of the technical and professional role, and acknowledge the responsibility of the professional to invigilate and appraise practice to the highest scope and standard (O'Rourke, 2007). The PPM offered a clear definition of the nurse in a professional role representing "leader, scientist, transferor, and practitioner" (O'Rourke & White, 2011, p. 184). These defined role obligations encouraged professional development, excellence in practice, and enhanced patient outcomes.

Professional-Practice Model

The O'Rourke PPM held nurses accountable through actions of O^5: obligation, ownership, oversight, outcomes, and opportunity. The O'Rourke PPM encouraged nurses to embrace their responsibility as a caring profession and acknowledged their accountability for practice outcomes. Nursing outcomes were a result of strong nursing leadership and clinical practice focused on safety and quality.

As a professional and nurse in a functional role, it was the nurse's obligation to lead care and practice safety (O'Rourke, 2003). A nurse had ownership as a decision maker and used scientific knowledge of evidence-based practice to monitor and evaluate practice against a set of recommended standards set forth by the specialty professional organization. This ownership included providing, teaching, and managing practice standards, and measuring outcomes related to the practice. A nurse was depended on to have oversight of clinical practice and ensure patient

safety at all times. The professional role represented a critical link to quality of care, decision-making practice, and patient safety. Patient outcomes reflected measurement of decision-making practices and professional-role competency. Outcomes aligned with the environment of practice, and the nurse had the opportunity to influence high-quality patient care through a focus on safety. O'Rourke (2006) posited improved outcomes validated the PPM and O^5 accountability. The standard of practice was elevated when the nurse understood the professional role to influence accountability, responsibility, and authority. An improved standard of practice corresponded with an improved standard of care, and ultimately improved outcomes for the patient.

Obligation, Ownership, Oversight, Outcomes, and Opportunity

O^5 represented five distinct characteristics that included obligation, ownership, oversight, outcomes, and opportunity (O'Rourke, 2006). In the professional practice role, the nurse had an obligation to lead. As a professional, the nurse maintained a set of standards, skills that required technical practice, and scientific knowledge. With these qualities, the nurse as decision maker had commitment to the role to guide the practice, help others learn the practice, uphold the practice, and measure the outcomes of practice and the role. In the professional role, the nurse had oversight for safety and systems of clinical practice by associating competency, quality care, practice decisions, and safe patient care. The professional nurse was driven by outcomes that reflect competencies and practice decisions. In the professional role, the nurse had the opportunity to influence the delivery of safe quality care and the environment where care was practiced (Nurse, n.d.).

Connection

Safety connected the study aim of safe surgical readiness, and the PICOT question—In the surgical patient population, how does implementing the Comprehensive Surgical Checklist (CSC) influence adverse events related to surgical readiness over an 8-week period?—to the theoretical model of the nurse's professional practice and O^5 accountability. The professional role creates accountability to determine the patient's condition and directs care activities on the patients' changing status (O'Rourke, 2003). Nursing in particular made a difference in outcomes of care. To understand better the complexity of the issue of error reduction and improving outcomes, nurses uncovered what was behind the error to see if any of the contributing factors aligned with implementation of professional-role responsibilities or professional education. This exposition required uncovering some deep-seated trends and issues that contributed to or at least fostered conditions for errors or poor outcomes (O'Rourke, 2003).

Operational Study Variables

Operational variables included independent and dependent study variables for the project. The independent study variable was the CSC Phase I Preprocedure Check-In elements related to surgical readiness. The dependent study variable was adverse-event reports, submitted when Phase I Preprocedure Check-In elements were needed but not available when providing care related to surgical readiness.

Study Assumptions

Study assumptions rested on participants' intention, perception, and willingness to participate in the study. Study assumptions included participants' intention to provide high-quality patient care for safe patient outcomes. Study assumptions included willingness to participate in a formal quality-improvement project focused on safety initiatives, adopt the

organization's PPM and O^5 accountability to affect patient outcomes, incorporate new evidence-based concepts into care practices, and report an adverse event. Study assumptions included perceptions that the intervention checklist was easier to use than the current checklist. These study assumptions reflected the organization's support of nurses as decision makers, and empowered nurses as leaders, scientists, transferors of knowledge, and practitioners in the scope of nursing practice to enhance patient care and effectively demonstrate nurse-driven outcomes.

Specific Aims

The problem solved through this quality-improvement project was increased safety in surgical readiness. Using the CSC brought awareness to Phase I Preprocedure Check-In elements and encouraged adverse-event reporting. The checklist improved communication and teamwork between providers and clinicians.

Project Purpose

The purpose of the project was to implement the CSC. The pretreatment and surgical teams modified the Phase I Preprocedure Check-In list with elements meaningful to the departments. The teams were then trained with a competency that included the elements and how to complete the checklist. The problem was solved by training on surgical-readiness elements, implementing the adopted CSC, and bringing awareness to CSC Phase I Preprocedure Check-In elements. The teams were also encouraged to complete an adverse-event report if an element from the checklist was needed and not available when providing care related to surgical readiness. Providing the CSC to open communication and enhance teamwork, while providing training on how to complete the CSC and encourage adverse-event reporting solved the problem. This resulted in the desirable result of increased awareness and reporting on potential adverse events, based on Phase I Preprocedure Check-In elements.

Goal and PICOT Connection

The study goal of safety connected the PICOT question— In the surgical patient population, how does implementing the Comprehensive Surgical Checklist (CSC) influence adverse events related to surgical readiness over an 8-week period?—to the theoretical model of nurses' professional practice and O^5 accountability. Enhancing knowledge and understanding the professional-role obligation and scope of practice or the competency level of the practitioner in implementing role accountability contributed to reducing errors and improving outcomes (O'Rourke, 2003).

For this quality-improvement project focused on safety, the PPM and all five characteristics of accountability were applicable. The organization's transformational nursing leadership was supportive of clinical nurses embracing the concept of safety through their PPM and O^5 in their obligation to lead change, commit to their practice, have oversight of their practice, review outcomes as a reflection of their decisions and competencies, and accept the opportunity to implement changes based on evidence.

Content

The setting for this quality-improvement project was a 265-bed academic hospital in the western region on the United States. The pretreatment unit (PTU) was the site-specific location for surgical-patient arrival when having an invasive procedure in the OR. Combined perioperative services had approximately 200 represented staff. The units continue to grow in volume and services, which encouraged collaboration with surgeons and provision of necessary resources. The PTU had 30 multifunctional bays to support 11 ORs and one procedure room. The hospital delivered surgical care to approximately 7,000 patients annually.

Organizational Structure

The organizational structure for perioperative services was complex. Unit leadership included the Anesthesia Medical Director and the unit directors for PTU and OR, who report to the Director of Perioperative Services. The Director of Perioperative Services reported to the hospital Chief Nursing Officer (CNO) and the Executive Director of Perioperative Services, who reported to the System Chief Operating Officer (COO).

Organizational Culture

The hospital was Magnet designated, which meant nursing leadership had success in aligning nursing strategic goals to enhance patient outcomes. The Magnet Recognition Program® demonstrated organizational commitment to nursing excellence, evidenced by resources, recognition, and professional development of nurses, validated by the American Nurses Credentialing Center (ANCC) Magnet designation. For nurses, Magnet designation meant the organization provided time and resources for education, professional development, certification, and autonomy at the bedside. For patients, a Magnet-designated hospital meant nurses were inspired and sought excellence in their work by providing the highest standards of care, quality metrics, and best patient outcomes, because they were valued as an equal discipline to advance health care for all (ANCC, n.d.).

The ANCC and Magnet Recognition Program® support and promote the goals of the IOM's report on *The Future of Nursing*, which encouraged increasing the proportion of nurses with a baccalaureate degree to 80% and doubling the number of nurses with doctoral degrees by 2020 (Nurse, n.d.). With continued progress, this Magnet hospital encouraged nurses to return for higher level academic degrees, as well as sought bachelor-prepared nurses as entry into practice. Other Magnet requirements included certification, which indicated a form of higher

education in a specialty. Certifications demonstrated a nurse's knowledge in their specialty and encouraged application of that knowledge by implementing community standards to achieve optimal patient outcomes in the delivery of care. When organizations earn Magnet designation, health care facilities must demonstrate that staff achieved or were in the process of achieving, specialty or practice certifications (Nurse, 2017).

This Magnet hospital had strategies to meet IOMs goals by hiring only bachelor or greater degreed nurses and promoting actions for 50% of their nurses to gain certifications. These approaches expanded nursing knowledge, enhanced the quality of nursing practice, and produced positive patient-care experiences and outcomes. To date, 91% of the perianesthesia nurses and 86% of the perioperative nurses are BSN prepared with 39% and 64%, respectively, certified by their professional associations.

Organizational Barriers

The health system was supportive of academic endeavors and quality-improvement projects. The system CNO was this learner's preceptor. This association enabled the project to have executive sponsorship and communicated that the project was valued and accepted by the organization. This sponsorship, in turn, removed barriers and provided the performance-excellence team as a resource to assist the process and bring the project to fruition.

Organizational Support

The organization supported the change in practice. The checklist was laminated and made available in each OR. The organization used the Epic Systems Corporation health care software known as Epic for its electronic health record (EHR) and the Informatics Support Services (ISS) department assisted with ongoing changes to the documentation screens. Recommendations were made for development of the checklist in the EHR to document care delivered.

Financial Support

Financial resources, beyond current practices, were not needed for this project's implementation. The ISS-department budget included support for software optimization and upgrades. The surgery-department budget included support for paper and laminating supplies used to print and laminate the checklist for availability in each OR.

Stakeholder Discussion

A sentinel event occurred that indirectly aligned with the issue of surgical-procedure readiness. This event resulted in a root-cause analysis in which all stakeholders for that particular case agreed changes were needed in the process. Organizational leadership and quality/risk management agreed to support the intervention. The CSC was presented and the organization provided feedback to modify and adopt the evidence-based CSC as its own.

Stakeholders

Stakeholders were interprofessional and multidisciplinary. The System COO and System CNO, as executive sponsors, provided assistance to the performance-excellence team. The hospital Anesthesia Medical Director, surgery-department chairs, and the Chief Medical Officer were all executive stakeholders, as this was a priority for departments providing operative and invasive procedures and the organization.

Benefits

Benefits of the intervention included use of evidence-based CSC to improve surgical-procedure readiness. The CSC improved readiness with a detailed checklist by phases, kept patients safe, and prevented avoidable adverse events (Bohomol, & de Abreu Tartali, 2013) from affecting patients who could have put the organization at risk for poor outcomes or financial loss. The CSC provided better management of external factors such as vendor availability, instrument

trays, or implants. These specific elements of the Preprocedure Check-In were also communicated on the shift-change report. The CSC used a four-phased approach that included the Preprocedure Check-In, Sign-In, Time-Out, and Sign-Out. The elements in each phase reduced delays and improved throughput, improved the level of patient satisfaction, reduced financial risk for the organization, and empowered front-line clinical staff to sustain a more autonomous practice. These benefits brought awareness of the Preprocedure Check-In elements specific to safe surgical readiness and increasing safety by reporting adverse events.

Intervention

Quality-improvement studies evaluate changes over time through the collection and analysis of quantitative data (Portela, Pronovost, Woodcock, Carter, & Dixon-Woods, 2015). As a quality-improvement project, this study implemented actions to improve a current practice rather than attempting to generate original knowledge (Portela et al., 2015). This quality-improvement design was different from others in that it used a PICOT question instead of a hypothesis. The PICOT question for this project asked, In the surgical patient population, how does implementing the Comprehensive Surgical Checklist (CSC) influence adverse events related to surgical readiness over an 8-week period? This quality-improvement project aimed to implement a hospital modified version of the evidence based CSC (see Appendix A) to improve safety by bringing awareness to required elements of surgical readiness. The project took place in the PTU and the OR. The improvement project was 8 weeks in length and included data collection for the same time period.

Project Design

The project, a predetermined quantitative correlational design, centered on quality improvement. The rationale for conducting a quality-improvement project was to positively

influence change in healthcare practices and outcomes by adopting evidence-based research and putting that research into practice (Newhouse, 2007). This quality-improvement study design identified a problem, demonstrated through a theoretical framework to determine how study variables related, used a study design and methodology principles, and a PICOT question. This study differed from a traditional research design, which typically uses a hypothesis. A research design is a methodological investigation used to develop, test, and evaluate to create new knowledge (Newhouse, 2007). Research designs can be "experimental, quasi-experimental, or nonexperimental" with a required sample size that were specific to the need to demonstrate a "statistically significant difference" (Newhouse, 2007, p. 432). The methods section in the research design must have proper controls to connect the intervention to the outcome and identify instruments that confirm reliable and valid measures. The research design follows strict procedures to address the intervention, measure, collection of data, analysis of statistical tests, and authorization by the international review board (Newhouse, 2007).

Project Setting

This study had a well-defined problem of surgical readiness related to the use of an outdated checklist that was not evidence based. The aim of the study was to improve safe surgical readiness by adopting the CSC Phase I Preprocedure Check-In elements that were practical in PTU and OR settings. Through review of the adverse-event reports, the Preprocedure Check-In checklist elements were used for baseline and retrospective data collection.

Population

The total population was all patients of any age or status needing surgery of any procedure type. Patients were of emergent, urgent, outpatient, same-day admit, or inpatient status. Patients arrived or transferred to the PTU prior to going to the OR or patients went

directly to the OR. Each month, on average, 575 patients received care in the surgical setting. Of those surgical patients, 5% were considered emergent patients, 30% were outpatients, 49% were same-day admits, and 16% were inpatients. For this study, 5% of the population was excluded because they either transferred from the emergency room or transferred from inpatient departments as emergent cases going directly to surgery.

Sample

The sample was a subset of the population (Heavey, 2014). For this study, the sample was all patients of any age scheduled for elective surgery of any procedure type. Patients had outpatient or same-day admit status. Patients also had inpatient status with concurrent add-on scheduling for same-day surgical procedures. All patients either arrived or transferred into the PTU before going to the OR.

Sampling Methods

The method for this study was nonprobability sampling. This method involved a sampling of participants who did not have equal chances to be part of the study selection (Heavey, 2014). Not all participants had an equal chance of participating in this study because study participation needed to include use of the checklist between the PTU and the OR.

Inclusion and Exclusion Criteria

The study included all patients arriving in the PTU for a surgical procedure in the OR. Any patients going directly to the OR without arriving in the PTU for a surgical procedure in the OR were excluded from the study. The study only included patients arriving or being transferred into the PTU and then transferring to the OR.

Recruitment Process

The recruitment process entailed studying patients listed on the elective surgical schedule or added electively to the surgical schedule. These patients arrived in the PTU or were transferred to the PTU prior to transferring to the OR.

Recommendations

Practice recommendations included the use of a checklist to improve safety in the surgical setting. The adoption of a checklist demonstrated success, but knowledge must be developed and retained to preserve evidence-based best practices (Brasaite et al., 2015). Health care professionals must stay current on knowledge, skill, and attitude to improve patient safety (Brasaite et al., 2015). An investment in training and current information promotes a positive perspective on safety and reporting practices (Brasaite et al., 2015) and contributes to the growing body of evidence-based knowledge (McDowell & McComb, 2014). Training on the checklist ensured compliance and the rate of completion while promoting awareness of the checklist as a tool to improve surgical safety (Michael et al., 2013). Standardization by roles and responsibilities further preserved adoption of the checklist, encouraged team engagement, and fostered a patient-centered focus (McDowell & McComb, 2014). Elements of the checklist needed to include actions by all team members to hold everyone accountable for safety (Fudickar et al., 2012).

Reproducible Intervention

The steps of this quality-improvement project were easily reproduced by using the familiar Iowa Model of Evidence-Based Practice to Promote Quality Care (Iowa Model). The implementation framework guided the steps of the intervention to disseminate research into practice by identifying triggers based on problems or new knowledge (White & Dudley-Brown,

2012). Quality-improvement projects were considered tools to disseminate evidence-based guidelines and standards of care into practice. Using the problem-focused trigger of the Iowa Model, a process-improvement initiative related to the surgical-safety checklist and surgical readiness was identified. The success of any surgical procedure requires many engaged stakeholders and efficient workflows to be successful. The Iowa Model was the framework stakeholders wanted to use to guide the implementation of best practice. The Iowa Model encouraged stakeholders to question practice by identifying a clinical problem and using research to adopt evidence-based best practice (Melnyk & Fineout-Overholt, 2015). All stakeholders in the process agreed that safety was the highest goal of the intervention and desired success with the implementation.

The practice in question resulted from an adverse event in surgical readiness, which furnished a problem-focused trigger. The steps in the Iowa Model confirmed the intervention was meaningful to the organization and offered additional steps for the formation of a team comprised of interprofessional stakeholders. The Iowa Model encouraged the team to perform evidence-based literature reviews and synthesize the evidence for application to practice. Steps to pilot the application were itemized for the team to easily follow. The Iowa Model suggested monitoring of outcome data and disseminating results (Melnyk & Fineout-Overholt, 2015). The following Iowa Model steps were used to implement the intervention:

- identify a problem-focused trigger;
- confirm the problem is a top priority for the organization;
- form a team;
- assemble relevant research literature;
- critique and synthesize research for practice (Melnyk & Fineout-Overholt, 2015).

Specific to the intervention implementation, the team followed the described steps:

- identified the desired outcome to be achieved;
- collected baseline data;
- adopted the evidence-based practice;
- implemented the evidence-based practice;
- evaluated the process and outcomes of the implemented intervention;
- gained feedback specific to the practice guideline (Melnyk & Fineout-Overholt, 2015).

A study may be difficult to replicate with limited understanding of what inspired the change or if the reports generated by the study were of poor quality (Portela et al., 2015)

Role in Practice Change

This learner's role during the project was the Director of Perioperative Services. This learner's role in the practice change was to empower the interprofessional team to question practice, review the research, and adopt the evidence that makes sense in practice. As a doctoral leader, this learner provided the necessary resources for the team to be successful in the quality-improvement project. The team needed guidance using nursing-theory frameworks, implementation and evaluation frameworks, and statistical support to measure the outcomes of the project. The team was successful in identifying the problem, reviewing the evidence, tracking and trending the specified data, and reporting to stakeholders. Ultimately, the team influenced the frontline staff to adopt the CSC and elements of the Phase I Preprocedure Check-In to improve processes of safe surgical readiness.

Team and Roles

The hospital was Magnet designated. Staff were encouraged to embrace the PPM and shared governance through participation on Unit Practice Councils (UPC) or complete the Clinical Nurse III requirements for the clinical ladder. Based on the Iowa Model, the team comprised individuals interested in the problem-focused trigger of safe surgical readiness. The team consisted of front-line staff in the PTU and the OR who were members of the UPC. The roles of the teams included clinical nurses, technicians, certified nurse aides, sterile processing personnel, anesthesiologists, and surgeons. For this quality project, the UPC teams followed the steps in the Iowa Model, reviewed the baseline data, questioned the practice, searched the literature, and suggested recommendations for intervention based on the researched evidence. The PTU and the OR UPCs reviewed the CSC for applicability of elements and standard workflows. The teams modified the content of the Phase I Preprocedure Check-In list for elements that were meaningful to the departments. Both groups agreed to adopt the checklist for consistent expectations of care, workflows, and continued sustainability of the quality-improvement project. All departments and representatives immediately involved in the project were listed as the project team (see Appendix B).

Study of the Intervention

The approach chosen to assess the impact of the intervention was the Deming Cycle with the actionable steps of Plan, Do, Check, Act (Melnyk & Fineout-Overholt, 2015). The organization's Performance Excellence (PE) team facilitated many quality-improvement projects that involved multiple interprofessional stakeholders and a large span of control. The PE team reported directly to the System Chief Operating Officer; their involvement and efforts produced teamwork, standardized practices, and sustainable results across the enterprise.

Evaluation Plan

The Plan, Do, Check, Act evaluation model assessed the impact and confirmed the adoptability and sustainability of the intervention (Melnyk & Fineout-Overholt, 2015). In the planning phase, the team identified a problem, gathered stakeholders, used tools like flow mapping to define the process, generated ideas for change, and used methods such as a histogram to measure improvement. In the Do phase, team members implemented a suggestion for change in a single test cycle. In the Check phase, the current test data were compared to baseline data to ensure improved results. In the Act phase, stakeholders assembled again to review results and decide if they would implement the tested change. Stakeholders shared their interprofessional perspectives, thereby improving processes by problem solving in a collegial and collaborative environment (as in Brennan, Olds, Dolansky, Estrada, & Patrician, 2014). Engaged stakeholders bring awareness to issues, implement actions for changes, and embed new practices for sustained results (Chaboyer et al., 2012).

Reflection of Accomplishments

Supported by the PE team, the UPC teams accomplished their goal to implement the CSC. In the Plan phase, teams identified the problem-focused trigger of safe surgical readiness. The teams also reviewed baseline adverse-event data and searched the literature for evidence-based solutions for practice. The teams modified the CSC Phase I Preprocedure Check-In elements and influenced the larger group to adopt the practice. In the Do phase, the larger group was trained and workflows were coordinated. Letters were sent to surgeon groups, and the CSC was implemented. In the Check phase, data were tracked and trended. The data were compared to baseline and a difference emerged in the reporting of adverse events. In the Act phase, all

stakeholders evaluated the processes. Stakeholders agreed that although the intervention took place over a short period of time, the impact was appropriate to adopt the practice**.**

Impact

The intervention resulted in a change. The change that occurred was intended, based on the training and awareness of the Preprocedure Check-In elements. The larger group of team members were trained on the CSC Phase I Preprocedure Check-In elements. The elements supported workflow to produce safe surgical care of patients, but if an element was needed and not available when providing care, the team was requested to complete an adverse-event report. To that end, the reporting of potential adverse events increased. An unintended change that occurred was in the varied categories of adverse events reported. The preintervention Pareto chart demonstrated the significant few categories of special equipment or devices, and the postintervention Pareto chart demonstrated the significant few categories of special equipment or devices and consent. These data demonstrated daily operational efforts that reviewed adverse-event reports and adopted measures to improve efficiencies and effectiveness of the workflow in a continual cycle for improvement. Efforts to reduce issues in confirming that sterilization indicators showed improvement, whereas awareness of the Preprocedure Check-In elements identified an issue with consent. More importantly, issues with special equipment or devices was an ongoing issue requiring more time and effort to improve outcomes.

Due to Intervention

The training on the CSC encouraged increased reporting. A competency test followed the training and the team was expected to complete an adverse-event report if the elements of the Preprocedure Check-In were needed but unavailable. The observed outcomes of increased adverse-event reporting were due to the CSC training and implementation of the CSC

intervention. A Student's *t* test, which tests the difference in a small sample, confirmed the increased number of adverse events.

Evaluative Measures

Adverse-event reports were a common tool to report unexpected outcomes during the course of patient care. The quality-improvement project aimed to bring awareness to the CSC Preprocedure Check-In elements to improve safe surgical readiness. Adverse-event reporting was a familiar method for documenting gaps in safe practice. Tracking and trending adverse-event reports was a way to identify opportunities for improvement. The *t* test measured the difference between the baseline data and the implementation data. The *t* test of the adverse-event reports was an evaluative measure used to confirm the statistical significance and confirm outcomes were due to the intervention.

Measures

A predetermined quantitative correlational design was used to explore relationships between variables of the intervention checklist and adverse events related to surgical readiness reported by staff caring for surgical patients in the OR for the same time period. The *t* test was used for the data-analysis phase of the project. The independent variable for the quality-improvement project was the CSC intervention and the dependent outcome variable was adverse events related to Phase I Preprocedure Check-In elements. Adverse events were reviewed and compared to elements of the CSC Phase I Preprocedure Check-In, which included the following:

- Patient identity
- Procedure
- Procedure site
- Site marks

- Consent
- History and physical
- Preanesthesia assessment
- Nursing assessment
- Diagnostic-test results
- Radiologic-test results
- Blood products
- Special equipment or devices
- Confirmation of vendor, implant trays, and implants
- Confirmation of sterilization indicators

Data Timeline

The university Institutional Review Board (IRB) screened the project and indicated IRB approval was not indicated. The adverse-event reporting data accrued in two different time periods. Baseline data were collected in November and December, 2017. Intervention data accrued in May and June, 2018.

Tool

A tool was not used for this project. No permission was needed.

Evaluation Criteria

The independent variable was the CSC Phase I Preprocedure Check-In elements. The dependent variable was outcomes associated with adverse events related to surgical readiness. The study measured the difference between the preintervention and postintervention dependent variables of adverse-event reports. Nominal data were used to measure compliance with the

intervention. The difference in the preintervention and postintervention variables were measured by the statistical *t* test. The planned change occurred but was not statistically significant.

Analysis

Quantitative methods were used to draw inferences from the data. A statistical methodology was used to understand the variation between preintervention and postintervention data and if the results were statistically significant. Evaluation also considered the project's length of time, which was an 8-week period. This timeframe was short but demonstrated a difference in the number of adverse events reported. However, the difference between the baseline data and the intervention-outcome data was not statistically significant.

A need emerged to identify ways to make surgery safer for patients. The literature search demonstrated the magnitude of a safe surgical experience and needed tools, such as checklists, training, and competencies to improve communication and teamwork. This checklist-implementation project added to the body of quality-improvement knowledge, and demonstrated highly reliable results through improved quality efforts focused on interprofessional teamwork and communication, training, and tools to improve workflows and safety.

Type of Data

The data-collection tool produced nominal data. A nominal level of measurement was used to indicate a difference, but did not rank order the data (Heavey, 2014). The elements of the CSC Phase I Preprocedure Check-In were listed in a table and for each data-collection period, nominal data reflected if an adverse event was reported. The adverse-event-report data-collection tool was created to collect data for each time period (see Appendix C).

Statistical Test

A one-tailed *t* test was used to demonstrate the difference between adverse-event reporting before and after implementation of the CSC. Multiple *t* tests were not used, to avoid the risk of a Type 1 error (Heavey, 2014). The size of the sample provided the ability to discover an association or difference relating to the intervention (Heavey, 2014). The *t* test was used for statistical analysis to determine if the desired outcome was produced from the implemented intervention. After the nominal data accrued in the preintervention and postintervention column, the nominal data were summed. This total reflected almost double the number of potential adverse events reported in the postintervention period. A Student's *t* test was conducted to determine the effects of the CSC intervention on safe surgical readiness and reporting of adverse events. No statistically significant difference emerged between adverse-event reports before the CSC intervention ($M = 2.57$; $SD = 1.19$) and following the CSC intervention ($M = 4.50$; $SD = 2.31$) conditions; $t(26) = .743$, $p = .232$. According to *p* value, only a 23% chance of a difference emerged. The *t* value was not in excess of the *t* critical value of 1.71 so the null hypothesis was accepted. Due to the small sample size, the difference in the adverse-event reports was not significant. Thus, the intervention did not produce the desired statistical outcome.

Ethical Considerations

The potential for research risks does not pertain to the Doctor of Nursing Practice (DNP) capstone because this learner's design was a quality-improvement project. Quality-improvement projects focus on patient-centered care provided by an interdisciplinary team focused on evidence-based practice (Melnyk & Fineout-Overholt, 2015). This strategy mitigated human-participant risk related to data collection and patients received better care when evidence-based

practices were applied through quality improvement. This capstone project did not require study recruitment, consent, or protection.

Clinical Site

The IOM encouraged healthcare professionals to be knowledgeable in the delivery of patient-centered care by interdisciplinary teams, conducting quality-improvement projects emphasizing evidence-based practice (Melnyk & Fineout-Overholt, 2015). Most clinical sites encourage quality-improvement projects and empower clinicians to adopt evidence-based practice. Clinical sites have established processes available for department heads to give permission for studies that are not research based.

Intellectual Property

In most studies, quality-improvement projects were not generalizable; therefore, they were without the need for intellectual-property consideration. However, Melnyk and Fineout-Overholt (2015) posited an ever-changing education landscape and blanket concerns to protect intellectual property and copyright. Much of teaching, scholarship, and critiques of work may be considered fair use, according to U.S. copyright laws (Melnyk & Fineout-Overholt, 2015). For this capstone project, the comprehensive intellectual-property concept was not a concern, evidenced by the topic being unaddressed in the site-permission paperwork.

Conflicts of Interest

Scientific literature needs protection from conflicts of interest (Munafò, 2016). Conflicts of interest may be financial, but were also influenced by employers based on employee research and interpretation of data. These circumstances created further complexities in the meaning of conflicts of interest. Conflicts of interest can come from restrictions related to ownership, funding, or association with the industry. These ethical issues do not pertain to this capstone as it

was conducted at a clinical site where an evidence-based practice was implemented to identify an improvement in clinical practice.

Project Bias

Bias in research was potentially present, represented in missing data or selective reporting of data. Incomplete data should be indicated in a report. Selectively reporting only positive findings or reporting only statistically significant findings leads to publication bias (Melnyk & Fineout-Overholt, 2015). For this capstone project, this learner's study had an inherent limitation of a small sample size and the outcomes were not statistically significant. Nonetheless, this learner reported the outcomes of the study, positively or negatively related to checklist implementation.

Human-Subjects Protection Method

This quality-improvement project was conducted through a retrospective review of adverse events reported during the same time period as the implementation of the CSC. Participants were protected in this project by removing any type of data-sensitive identifiers or personal health information from the aggregated adverse-event report. No informed consent was needed for the project as no participants directly engaged with the quality-improvement project. Retrospective data was blinded to minimize risk and further protect privacy and confidentiality in the aggregated report. The risks and benefits of the project were fairly distributed and adverse-event data were routinely collected, counted, and reviewed by the organization, regardless of the project.

IRB

The project was submitted for IRB screening through Capella University. The project was approved as non-human-subject research by Capella University and the learner's practicum site.

Results

Related to the PICOT question—In the surgical patient population, how does implementing the Comprehensive Surgical Checklist (CSC) influence adverse events related to surgical readiness over an 8-week period?—the project intervention influenced adverse-event reporting, but did not produce the desired statistically significant outcome. The quantitative event-report data for the preintervention totaled 36 and postintervention totaled 63. Because the *t* value of .743 was not in excess of the critical value of 1.77, no difference emerged between the preintervention and postintervention adverse-event reports. However, findings did align with previous research and evidence-based practice, which encouraged use of tools and training to improve safety by enhancing teamwork and communication.

Outcomes

The project compared outcome measures related to elements listed in the CSC Phase I Preprocedure Check-In. Adverse-event reports were reviewed for differences in numbers of adverse events before and after CSC-intervention implementation. The difference between the preintervention and postintervention implementation focused on the CSC Phase I Preprocedure Check-In elements.

Inclusion and Exclusion Criteria

Any adverse events related to surgical readiness in the OR as measured by the elements of the CSC Phase I of the Preprocedure Check-In were included. The report of adverse events

included 8 weeks of data before project implementation and 8 weeks of data during intervention implementation. Any adverse events unrelated to elective surgical readiness in the OR or direct admits to the OR from the emergency room or inpatient areas were excluded. Any adverse events related to other areas in the hospital, such as minor procedure areas of the gastrointestinal laboratory, catheterization laboratory, interventional radiology, transesophageal echocardiography, magnetic resonance imaging, and computed tomography, or inpatient areas were excluded. Any adverse events not associated with the comparison timelines of 8 weeks before and 8 weeks during the intervention were excluded.

Findings

The quantitative event-report data for the preintervention totaled 36 and postintervention totaled 63. Because the *t* value of .743 was not in excess of the critical value of 1.77, no difference emerged between the preintervention and postintervention adverse-event reports. The null hypothesis was accepted. However, project findings align with the literature reviewed, which indicated checklists enhance communication and build teamwork. With training on the CSC Preprocedure Check-In elements, more adverse events were reported. This project brought added awareness to surgical readiness, which improved surgical safety.

Quantitative Results

This study used a Student's *t* test (see Table 1) to measure the difference in the number of adverse-events reported before and after implementation of the CSC by two independent groups. The quantitative event-report data for the preintervention totaled 36 and postintervention totaled 63. Because the project aimed to find the difference between two independent groups of adverse-event reports as outcome variables, a Student's *t* test was the most appropriate test to use. No statistically significant difference emerged between adverse-event reports before the CSC

intervention (M = 2.57; SD = 1.19) and following the CSC intervention (M = 4.50; SD = 2.31) conditions; $t(26) = .743$, $p = .232$. According to the p value, only a 23% chance emerged of a difference. The t value was not in excess of the t critical value of 1.71 so the null hypothesis was accepted. Due to the small sample size, the difference in adverse-event reports was not significant. Thus, the intervention did not produce the desired statistical outcome.

Project Outcomes

The t test provided a statically significant result that demonstrated the project outcome was not achieved. The null hypothesis was accepted. The appropriate rationales for these findings were a small sample size between the preintervention and postintervention adverse-event reports. The numbers of adverse-event reports increased, based on awareness of the Preprocedure Check–In elements and training, but the value was not statistically significant.

The preintervention and postintervention adverse-event-reports histogram illustrated a trend line for increased adverse-event reporting following implementation (see Figure 1). The X axis represents the Phase I Preprocedure Check-In elements. The Y axis represents the number of adverse-event reports. A greater number of reports indicated a positive association with increased awareness and improved communication.

The Figure 2 Pareto chart illustrates that at least 80% of the preintervention adverse events are in the significant-few category. The X axis represents the Phase I Preprocedure Check-In elements. The Y axis represents the number of adverse-event reports submitted. Also, specifically, at least 80% of the adverse events are in the special-equipment-or-devices category. A smaller number of reports had a negative association with decreased awareness and limited communication. In Figure 3, the X axis represents Phase I Preprocedure Check-In elements; the Y axis represents the number of adverse-event reports submitted. Figure 3 illustrates that at least

80% of adverse events are in the special-equipment-or-devices and consent categories. A greater number of reports had a positive association with increased awareness and improved communication.

Observed Associations

Several observed associations arose between outcomes, the intervention, and relevant contextual elements. The CSC Phase I Preprocedure Check-In elements were the evidence-based intervention, which replaced the single-phase checklist. Contextual elements, such as checklist training and checklist competency brought awareness of the CSC Phase I Preprocedure Check-In elements. Further contextual elements, such as the Universal Protocol and the Event Report policies further supported the intervention of the checklist and the outcome variable of adverse-event reporting. Consequently, an association arose between the CSC Phase I Preprocedure Check-In elements and an increase in adverse-event reporting. Based on the CSC Phase I Preprocedure Check-In elements, staff completed an adverse-event report if an element required by the checklist was needed but was unavailable when providing care.

Unintended Consequences

Unintended consequences of the CSC Phase I Preprocedure Check-In were with the elements regarding confirmation of vendors, implant trays, or implants. Confirming the vendor meant that the vendor had to be in the OR with the implant trays, and the implants had to be ready for the procedure to begin. Most vendors arrived prior to the start of the case, as a customer service to the surgeon, but a vendor not arriving on time meant a delay in the procedure start time. It was unintended that requiring the vendor, who was not an employee, to be on time meant a delay in the procedure start time.

Missing Data

Missing data are considered ethical concerns in research. Quality-improvement projects also maintain ethical standards and report on all available data. All data for this quality-improvement project was accounted for in the results section.

Facilitators and Barriers

As with any interprofessional project, multiple factors facilitated or produced barriers to meeting outcomes. For this project, the System CNO, quality representatives, and surgeon department chairs were leading the organization on a high-reliability journey. Stakeholders had great interest in the safety aspects of implementing the CSC intervention and reviewing the outcomes of the adverse-event reports. The hospital's version of the CSC was acknowledged as the organization's new evidence-based checklist across the system enterprise. To that end, surveillance of adverse-event reports continued, significant issues were escalated, and further interventions were encouraged by leadership for continued high reliability.

Sustainability

The change in practice was sustainable after the project ended due to improved awareness and increased adverse-event reporting. The Universal Protocol policy was revised to reflect the new checklist. A Universal Protocol competency was created for new employees and annual competency testing. The competencies informed the staff about how to implement and document the CSC elements. The ISS department was directed to build the CSC into the EHR. Surveillance of adverse events was routine for the organization and ongoing after the project.

Recommendations

Additional quality-improvement projects should be conducted for a longer period of time to potentially produce statistically significant results. However, outcomes of the project

positively influenced adverse-event reporting by bringing awareness through training of the Preprocedure Check-In elements. This project demonstrated that the checklist alone was not the sole source of safety. Recommendations included empowering the clinical team with the PPM and O^5 accountability relating to safety initiatives, encouraging the Iowa Model to question problem-focused triggers, using quality-improvement methodologies to implement applicable evidence-based practice, and opening communication while building teamwork. Further studies should be conducted to associate empowering nurses through nursing frameworks and teambuilding with CRM skills.

Future Practice

Recommendations for future practice and practice-inquiry activities were supported for more quality-improvement studies and other nurse leaders were encouraged to gain their DNP. Quality-improvement studies encouraged a review of literature to glean best practice and transition nursing research to evidence-based nursing practice. DNP leaders encouraged practice-inquiry activities on their units to continue the journey toward high reliability and safety for patients receiving procedures. Last, nursing leaders encouraged active mentorship and stewardship of other nurses for their professional and academic development in preparation for safe patient care and advocacy.

Summary

Key findings and relevance to the rationale and the specific aim of this study were found in training, communication, and teamwork. Previous research and evidence-based practice described safety improvements through review of adverse-event reports, use of tools, and training on tools to enhance teamwork and communication. The rationale for implementing the CSC was to create a safer surgical-readiness experience for patients, and to provide standard

work for caregivers through the implementation of a checklist. The aim was to improve safety in the surgical-readiness workflow.

Strengths of the project were many. Interprofessional support by executive leaders and assignment of the PE team facilitated the initiative. The PTU and OR UPCs led a grassroots effort to review the literature and adopt evidence-based best practice. The PTU and OR educators and quality team provided education on Just Culture, the CSC, and clinical competency. Last, the team was empowered through training on the organization's nursing theory of the PPM and O^5, and embraced the initiative to make a difference in the safe surgical experience of patients served. The results were not statistically significant, but stakeholders agreed that with more time, the dedicated efforts of all involved and the commitment of the organization to create a high-reliability environment would produce the desired result.

Interpretation

The association between the intervention and the outcome was safety. The CSC was designed to standardize the surgical-readiness workflow. Standard workflows improve safety. The evidence-based CSC was a standard workflow that improved safety. The increase in potential adverse-event reports due to awareness of the Phase I Preprocedure Check-In elements demonstrated this improvement in safety. This finding, compared with findings from other researchers, added to the availability of research-based studies. Use of checklists in the health care setting improved safety. The impact of this project on participants involved enhancing their clinical knowledge of the checklist and improved communication and teamwork. The impact of this project on systems was the initiation of a standardized workflow across departments and interprofessional teams with a key focus on enhanced teamwork and communication.

No differences emerged between the anticipated and observed outcomes. The anticipated outcome was improved safety in surgical readiness, due to bringing awareness of the Phase I Preprocedure Check-In elements. Although not significant, the awareness influenced adverse-event reporting. Project participants were committed to the project aim of safety, demonstrated through an increased number of adverse-event reports.

This project adopted an evidence-based CSC, which did not increase costs. A checklist was already in place and the workflow already included use of a checklist. The savings can be identified in surgical-risk-loss reduction and a reduction in surgical complications and legalities.

Limitations

Quality-improvement projects measure a system in constant change (Portela et al., 2015). This characteristic was the purpose of the quality-improvement design and was not intended to be considered new knowledge or generalizable beyond the department or organization. The limitations of this quality-improvement project related to adverse-event reports and staff's willingness to use the checklist or report adverse events. The small sample size was due to the adverse-event reports generated based on the CSC Phase I Preprocedure Check-In elements. The project only reviewed adverse-event reports, so was limited in knowing patient populations that were represented.

Limiting Validity

This quality-improvement project was conducted in a teaching hospital with a majority of employed provider staff and represented clinical staff with limited control for bias, practice, or volume of surgical patients. The results of this study may not be generalizable to other academic facilities in nonprofit or for-profit settings. The results of the quality-improvement project were

project-site specific with relevance to other organization only by the project topic of a surgical readiness and safety checklist.

Minimizing Limitations

Efforts to minimize or adjust study limitations included messaging the quality-improvement project to all stakeholders. Educators in the PTU and OR units trained staff on the content of the CSC Phase I Preprocedure Check-In elements and uses of the new checklist format, and encouraged adverse-event reporting for elements needed but unavailable when providing care for surgical readiness.

This project used deidentified, aggregated reports from the event-reporting system based on patient care relating to the CSC Preprocedure Check-In elements. Adverse-event reports do not require patient consent; however, a potential existed for inclusion of pediatric and other adult populations that may have been unable to give consent. Thus, this lack of consent should be considered a limitation of the study and provides circumstances that would make the study ungeneralizable.

Conclusion

Twenty research articles were reviewed, based on the common themes of checklist use in the surgical setting. The usefulness of this quality-improvement project was to continue to disseminate alarming statistics on avoidable and preventable harm in the surgical setting and suggest an evidence-based practice that promotes the checklist as a tool to promote standard work and safety in surgical readiness. For the organization in this study, the checklist was outdated and was not evidence based; this project encouraged a review of literature to identify and adopt evidence-based practice. The project had marked sustainability as the organization continues the journey toward high reliability. Staff used the checklist as a tool to standardize

work, and through the training process, opened communication and built teamwork. The organization's adverse-event reports continue to be monitored to identify actions necessary to improve safety.

This project concept can spread to all other surgical departments that perform procedures and other contexts including the bedside. Implications for practice and further study include use of the CSC to elevate standards of practice, improve teamwork, and enhance communication for the surgical team while reducing avoidable harm for patients. Further study should include the effectiveness of each of the four phases of the CSC as they relate to patient outcomes. Suggested next steps to continue and spread evidence-based practice changes across all contexts are to share the knowledge of the project and results of the intervention to improve safe surgical readiness.

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Table 1

Checklist t test

Student's *t* test	Post	Pre
Mean	4.5	2.57
Standard deviation	4.45	8.63
Observations	14	14
Hypothesized mean difference	0	
Degrees of freedom	26	
t value	0.743	
p value one-tail	0.232	
t table critical value one-tail	1.71	

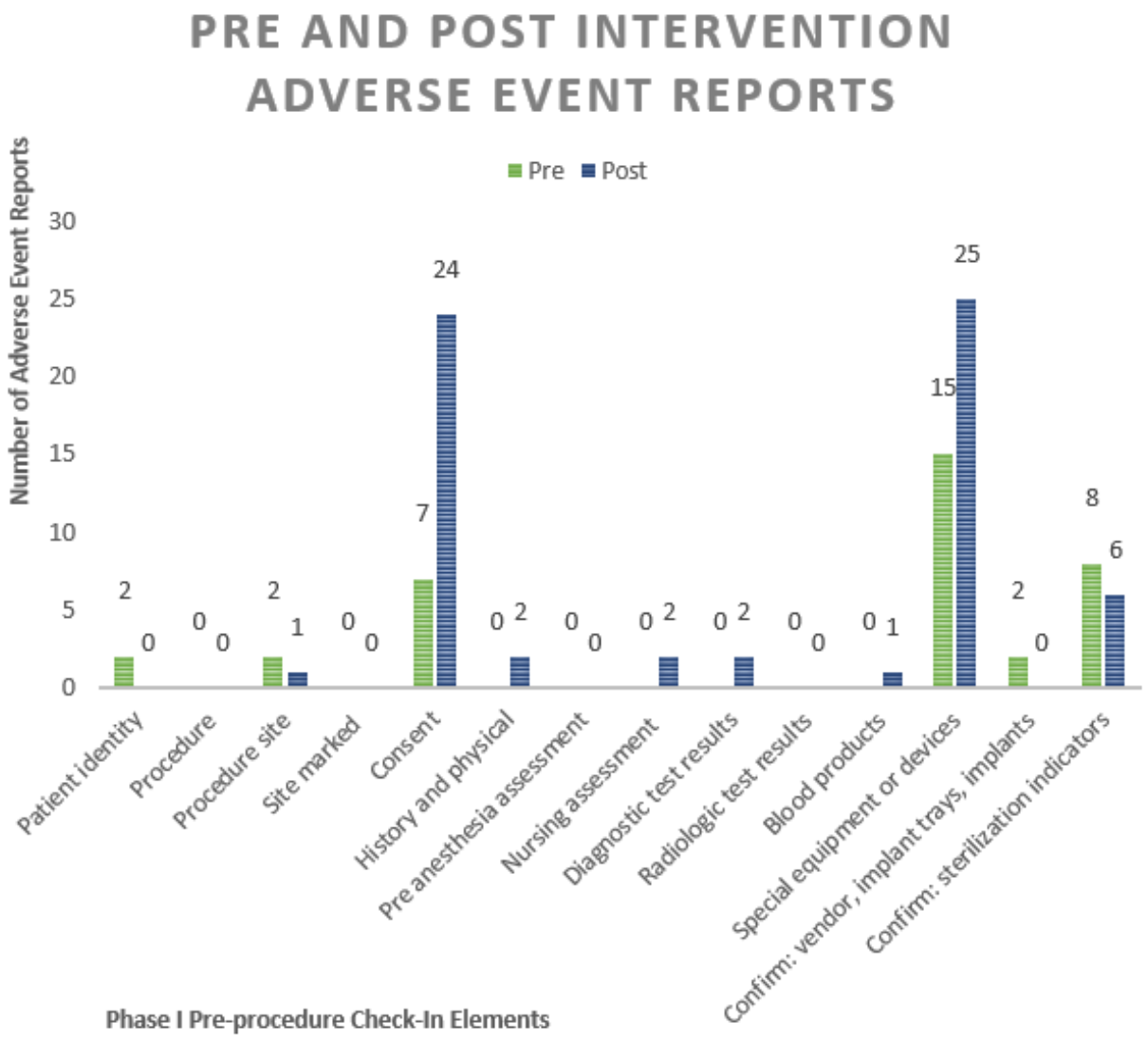

Figure 1. Pre- and postintervention adverse event reports.

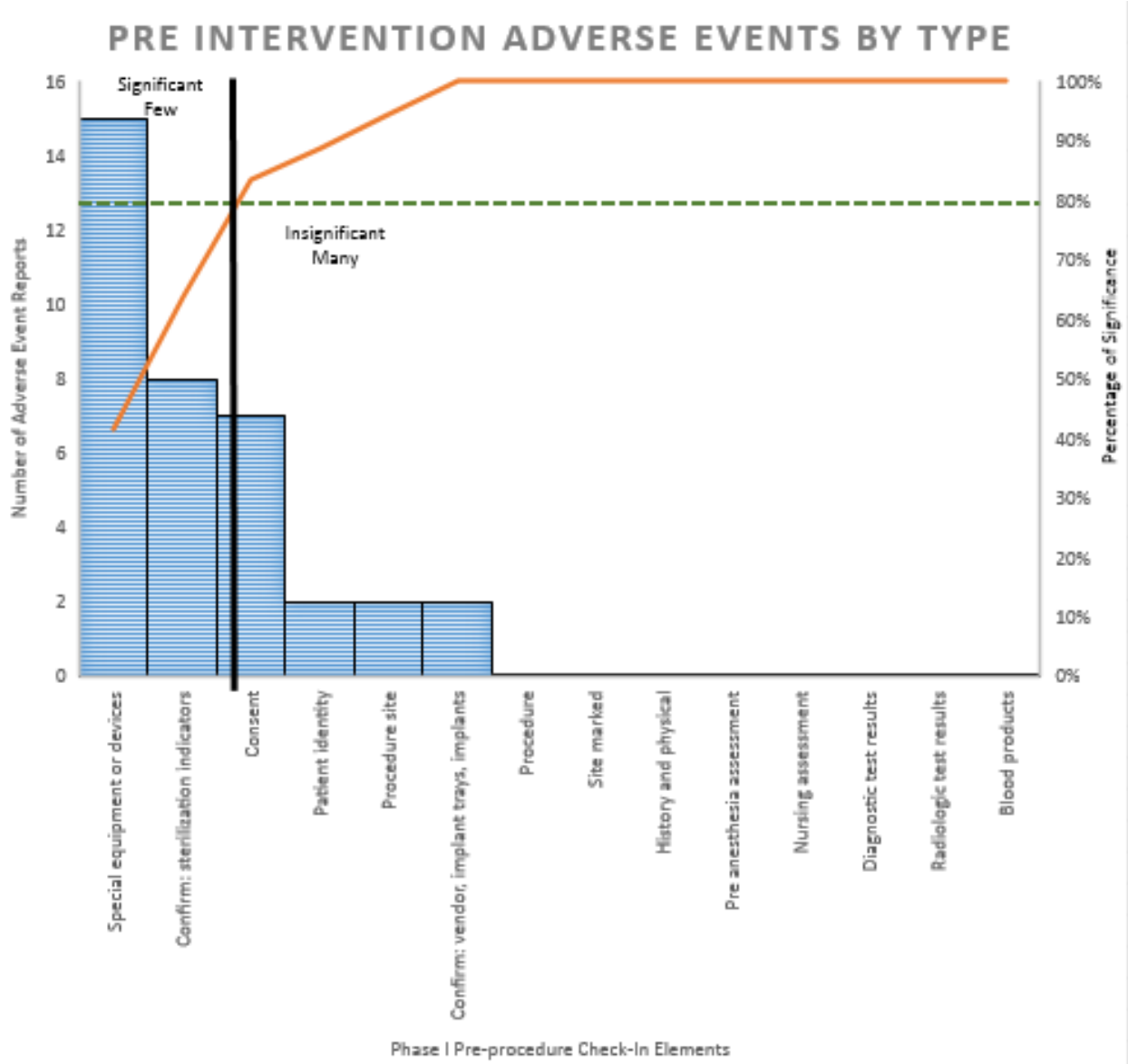

Figure 2. Preintervention adverse events by type.

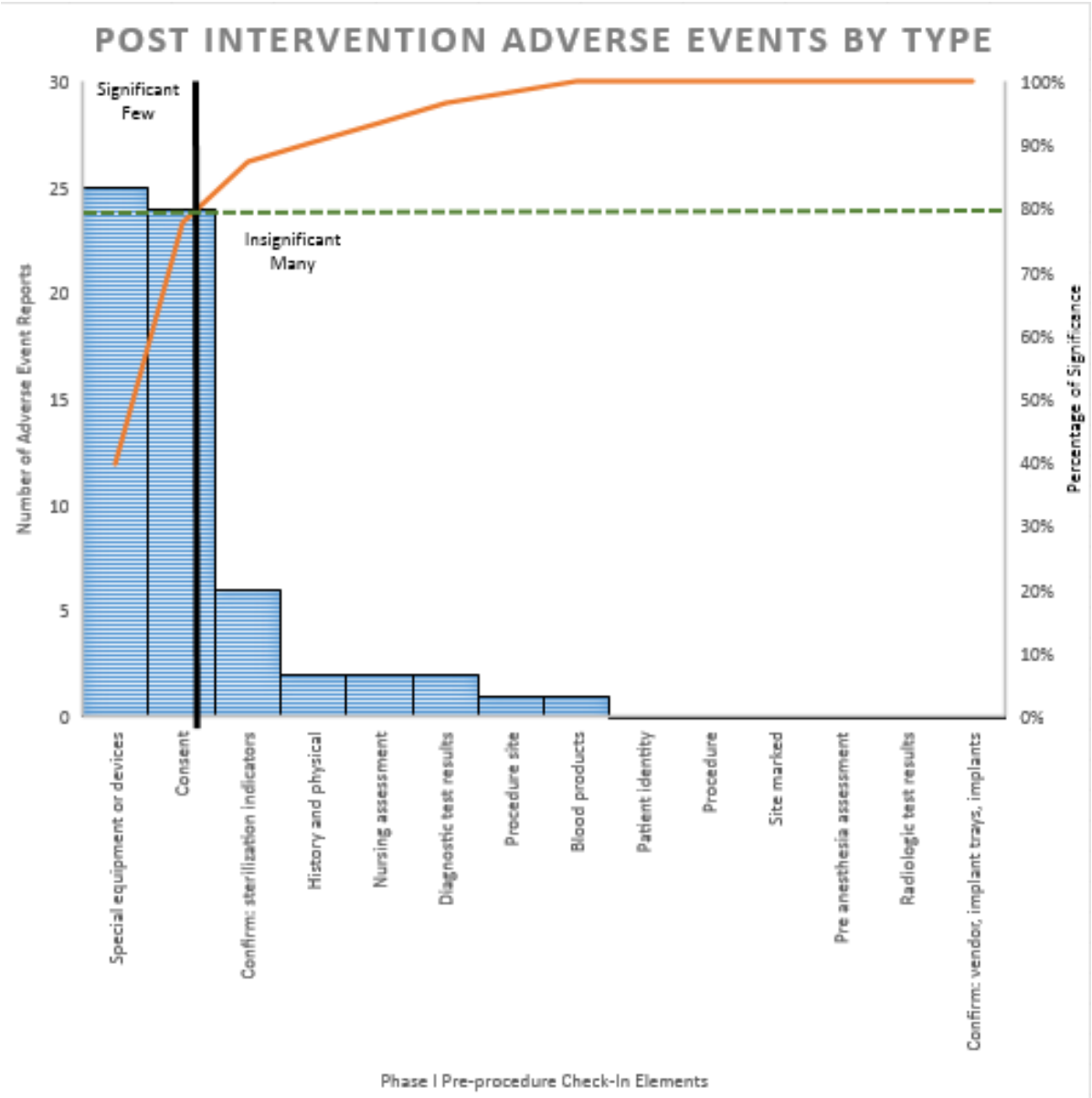

Figure 3. Postintervention adverse events by type.

APPENDIX A – HOSPITAL COMPREHENSIVE SURGICAL CHECKLIST

HOSPITAL COMPREHENSIVE SURGICAL CHECKLIST

PREPROCEDURE CHECK-IN	SIGN-IN	TIME-OUT	SIGN-OUT
In Preoperative Ready Area	**Before Induction of Anesthesia**	**Before Skin Incision**	**Before the Patient Leaves the Operating Room**
Patient or patient representative actively confirms with registered nurse (RN):	**Patient introduction to room staff** **RN and anesthesia professional confirm:**	**Initiated by designated team member:** All other activities to be suspended (except in case of life-threatening emergency)	**RN confirms:**
Patient Identity ☐ Yes Procedure ☐ Yes Procedure site ☐ Yes Site marked ☐ Yes ☐ N/A Consent(s) ☐ Yes **RN confirms presence of:** History and physical ☐ Yes Pre anesthesia assessment ☐ Yes Nursing assessment ☐ Yes Diagnostic test results ☐ Yes ☐ N/A Radiologic test results ☐ Yes ☐ N/A Blood products ☐ Yes ☐ N/A Any special equipment or devices ☐ Yes ☐ N/A Confirm: vendor, implant trays, implants ☐ Yes ☐ N/A Confirm: sterilization indicators ☐ Yes	Confirmation of the following: Patient identity ☐ Yes Procedure ☐ Yes Procedure site ☐ Yes Site marked ☐ Yes ☐ N/A Consent(s) ☐ Yes Patient allergies ☐ Yes ☐ N/A Pulse oximeter on patient ☐ Yes Difficult airway or aspiration risk ☐ No ☐ Yes (preparation confirmed) Risk of blood loss (> 500 mL) ☐ Yes ☐ N/A # of units available _____ Anesthesia safety check completed ☐ Yes **Briefing:** All members of the team have discussed care plan and addressed concerns ☐ Yes **Scrub person and RN circulator:** Sterilization indicators confirmed ☐ Yes Additional concerns ☐ Yes ☐ N/A	Introduction of team members ☐ Yes **All:** Confirmation of the following: Patient identity ☐ Yes Procedure ☐ Yes Incision site ☐ Yes Site marked and visible ☐ Yes ☐ N/A Consent(s) ☐ Yes Fire Risk Assessment and Discussion ☐ Yes (prevention methods implemented) ☐ N/A Score of: A, B, C, D, E Relevant images properly labeled and displayed ☐ Yes ☐ N/A Any equipment concerns ☐ Yes ☐ N/A Any device of implant concerns ☐ Yes ☐ N/A **Anticipated Critical Events** **Surgeon:** States the following: ☐ Critical or non-routine steps ☐ Case duration ☐ Anticipated blood loss **Anesthesia professional:** Antibiotic prophylaxis within 1 hour before incision ☐ Yes ☐ N/A Additional concerns ☐ Yes ☐ N/A **Scrub person and RN circulator:** Sterilization indicators confirmed ☐ Yes Additional concerns ☐ Yes ☐ N/A	Name of operative procedure: _____ Completion of sponge, sharp, and instrument counts ☐ Yes ☐ N/A X-ray Negative ☐ Yes ☐ N/A Specimens confirmed with surgeon, identified, and labeled ☐ Yes ☐ N/A Equipment problems to be addressed ☐ Yes ☐ N/A Charge problems to be addressed ☐ Yes ☐ N/A Discussion of Wound Classification ☐ Yes **To all team members:** What are the key concerns for recovery and management of this patient? _____ _____ **Debriefing with all team members:** Opportunity for discussion of – team performance – key events – any permanent changes in the preference card

Note. Adapted from *Comprehensive Surgical Checklist*, by Association of periOperative Registered Nurses, 2016, retrieved from https://www.aorn.org/-/media/aorn/guidelines/tool-kits/correct-site-surgery/aorn_comprehensive_surgical_checklist_2016.pdf?la=en

APPENDIX B – PROJECT TEAM

Department	Project Team / Work Owner
OR	Unit Director OR
Anesthesia	Medical Director OR
Pain Management	Pain Group
Surgeon	Orthopaedic Group
OR	Administrative Nurse II Educator
OR	Administrative Nurse II Schedule Navigator
OR	Administrative Nurse I Orthopaedics
OR	Clinical Nurse II and Scrub Technician Orthopaedics
OR	Surgical Coordinator
OR	Anesthesia Technician and Hospital Lead Assistant
PTU	Clinical Nurse II Block Nurse
PTU	Administrative Nurse I Charge/Schedule Navigator
PTU	Clinical Nurse II Staff Nurse and Clinical Care Partner
PTU	Administrative Nurse I Educator
SPD	Manager III Sterile Processing Department
SPD	Tray Coordinator
Lab	Laboratory Technician
Pharmacy	Pharmacist
Registration	Manager Patient Access Services
Support Services	System and Hospital Perioperative Quality
Support Services	IT CareConnect/OpTime

APPENDIX C – ADVERSE EVENT REPORT DATA COLLECTION TOOL

CSC Phase I Preprocedure Check-In elements	Pre	Post
Patient identity		
Procedure		
Procedure site		
Site marked		
Consent		
History and physical		
Pre anesthesia assessment		
Nursing assessment		
Diagnostic test results		
Radiologic test results		
Blood products		
Special equipment or devices		
Confirm: vendor, implant trays, implants		
Confirm: sterilization indicators		
Total		