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A Quality Improvement Evaluation of Patient Experience Through the Enhanced Recovery Program

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Abstract

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The purpose of this project was to evaluate the effectiveness of adopting clinical care bundles for the enhanced recovery program (ERP) at the project site. The practice-focused questions explored whether care bundles from the enhanced recovery program (ERP) would achieve positive postoperative patient care experiences when compared to the traditional surgical care pathways. The concepts, models, method, and theories used for this project include the Iowa model, the plan-do-study-act model, lean methodology, Donabedian's framework, and Watson's theory of caring. The sources of evidence included the facility site analysis report to evaluate surgical inpatient complications, morbidity, and mortality rates. Over 100 items related to surgical postoperative inpatient details were retrieved from the facility site database. Using descriptive analysis of 31 postoperative surgical inpatients' demographics, body mass index data, 30-day readmission, and comorbidities, the findings indicated that the ERP is an efficient, cost-effective program with positive postoperative inpatient outcomes in comparison to traditional surgical care pathways. The impact of the evaluation of the ERP predominately improves patient outcomes, which is a positive social change to postoperative inpatients, families, clinical staff, and the project site operational and clinical performance. The implications of this study for nursing practice and positive social change include standardization of quality and patient safety in a dynamic healthcare environment.

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I would like to express my gratitude to my lovely husband and my children who have supported and helped me reached this scholarly endeavor. Additionally, I want to thank all my family, my DNP mentor/chair/faculty, facility site preceptor, facility site quality team members, colleagues, and all Walden University committee members and faculty members who guided me to reach this point. Words can't express how I feel at this point, but I want to express a sincere gratitude for your patience and guidance.

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Section 1: Nature of the Project

Introduction

During the last few decades, health care organizations have had an increased focused on surgical outcomes (Kehlet & Jorgensen, 2016). Thus, many health care organizations have been required to increase the standard of surgical care to optimize clinical outcomes and reduce cost (Gramlich et al., 2017). For instance, there are recent surgical outcome methodologies that are linked with evidenced-based perioperative practices to prevent surgical stress effect (Kehlet & Jorgensen, 2016). Stress responses are triggered by surgical procedures such as colorectal surgeries for which recovery is slower and readmission rates and comorbidities are increased, which increases health care cost (Kehlet & Jorgensen, 2016). There is between 15% and 20% complication rate among patients undergoing the traditional colorectal surgery, which may prolong patient's length of hospital stay by 6 and 10 days and create a significant financial burden on the U.S. health care system (Gouvas, Tan, Windsor, Xynos, & Tekkis, 2009). However, the enhanced recovery approach is a perioperative evidence-based pathway that can lead to positive clinical outcomes with a decrease of hospital length of stay (The American College of Surgeon, 2018). This approach can be used to address surgical stress responses for surgeries in the project site, which can decrease complications and minimize the length of hospital stay, resulting in lower health costs and better patient safety (see Gouvas et al., 2009).

Problem Statement

The clinical pathway for excellence at the practicum site requires performance measures to be quality indicators in improving patient outcomes and experience. One of these indicators is the "Leapfrog Hospital Safety Grades," which measures hospital overall performance on patient safety and the high-quality care performed on each hospital (The Leapfrog Group, 2018, para 1). Since fall 2015 to Spring 2018, this facility's Leapfrog safety grade is a B grade. According to the Leapfrog Group, one of the performance measures includes serious complications after surgery resulting in death and represents the number of deaths per 1,000 for those with treatable complications after surgery. Based on Leapfrog Group data, the practicum site scored 138.69 with the average score being 139.90 on this measure.

As another quality indicator, the project site uses the comprehensive health outcome information system, which is a hospital analysis report that uses risk-adjustments methodologies to gauge clinical performance measures and benchmarks. The practicum site key performance indicator quarterly quality review reports indicated that for the fourth quarter of 2017, colon sepsis inflammatory response trendline increased from 0.0 to 1.214, which is statistically significant because the index is greater than 1. In this regard, improvements are needed for inpatient patients who experience colonic complications. Out of 516 general surgeries, six actual mortality rates occurred from January 2018 to May 2018, which makes the mortality index 0.70%, based upon the expected mortality rates being 8.52. The actual length of hospital stay for the 516 general surgeries was 3,633 and expected 3,042.2, which makes the index 1.19% with an actual

percent of 7.0%. In this regard, shorter length of stay is required for all general surgical patients since the facility site did not reach benchmark. Furthermore, the facility site Hospital Consumer Assessment of Healthcare Providers and Systems overall satisfaction for all of 2017 has ranged from 73%-78 %; therefore, patient satisfaction scores continue to be an issue within the facility site.

Almost all elective surgical patients in the project site require a better perioperative experience with best outcomes and shortened length of hospital stay, which can increase patient satisfaction scores. For this patient experience and a postoperative reduction of length of hospital stay, the clinical care bundles for the enhanced recovery program (ERP) were implemented in the project site starting in April 2018. The focus of this project was to evaluate if the adoption of the clinical care bundles for the ERP is a mainstay of all elective or emergent colorectal surgeries (see Gouvas et al., 2009). An important analysis was to evaluate whether the ERP can be the best routine perioperative management for surgeries at the project site and compare the ERP to the traditional standard care pathway for all colorectal surgeries. This doctoral project is significant for nursing practice because it offers an innovation to impact patient outcomes at an organizational and societal level (see Moran, Burson, & Conrad, 2017).

Purpose

The purpose of this quality improvement project was to evaluate a process change and if it improves clinical practices with positive patient experiences and outcomes at the project site. The meaningful gap-in-practice that this doctoral project addresses included evaluating, analyzing, and synthesizing a clinical practice change for improving the

quality of care and enhancing patient postoperative experiences within the project site (see Joliat et al., 2016). There continues to be a variability in the care of surgical patients within the project site as indicated by the implementation of clinical care bundles of the ERP for only elective or emergent colorectal surgeries. But care for all surgical patients within the project site must have a standardized surgical management for postoperative patients to experience an accelerated recovery with minimal length of hospital stay (see Gouvas et al., 2009).

Practice-Focused Questions

The practice-focused questions for the project include the following:

1. Will the use of the clinical care bundles of the enhanced recovery program achieve positive postoperative patient care experiences?
2. Will enhanced recovery program have higher positive outcomes and benefits compared to the traditional surgical care pathways?

Nature of the Doctoral Project

There is evidence supporting the need to enhance surgical experiences within health care organizations. Throughout Europe, the enhanced recovery approach has been standardized and in the United States the Agency for Healthcare Research and Quality Safety Program is establishing a similar program to manage and improve patients during the preoperative, intraoperative, and postoperative phases (The American College of Surgeons, 2018). The goal within the perioperative services is to achieve an effective perioperative goal-directed therapy that will enhance patient experiences and achieve a faster and smoother recovery, thus increasing patient satisfaction scores within the project

site. Evaluating the ERP and mapping the findings among elective or emergent colorectal surgeries during the preoperative, intraoperative, and postoperative care pathways suggested that the ERP is an effective approach in improving patient outcomes (Thacker et al., 2016). Implementing a multimodel perioperative care method such as the ERP to all elective surgeries can decrease health cost by reducing postsurgical stress and maintaining preoperative organ function which results to decreasing patients' length of hospitalization (Thacker et al., 2016).

Approach or Procedural Steps

Effective device and treatments are essential when caring for postoperative surgical patients. Evaluating the clinical care bundles of the ERP at the project site has emphasized a need for a clinical practice change for an effective standardized surgical management program with best safe practices. The evaluation of the ERP required data collection on the performance benchmarks of the traditional surgical care pathways and comparing those measurements with ERP performance benchmarks (see Gramlich et al., 2017). Outcome evaluation for both the traditional surgical care pathways and ERP included assessing complications, length of hospital-stay, readmissions, and cost (see Gramlich et al., 2017). Other types of performance measurement data included quarterly updates on the hospital analysis report and the comprehensive health outcome information system report, which indicated the mortality outcomes. Additionally, it was essential for full involvement of surgeons, patients, the director and manager of perioperative services, the patient safety manager, quality management, senior leaders, and health care professionals to assist in identifying process breakdowns.

An additional essential evaluation for this project required the evaluation of surgical morbidity and mortality rates after using the clinical care bundle of the ERP. The data collection included collaborating with the patient safety manager and the director of quality/risk management to review the monthly mortality and morbidity rate related to elective colorectal surgeries. To determine if any elective colorectal surgeries had any complications with the ERP, specific data collection included patients' vital signs, labs (urine analysis, blood cultures, etc.), and nurses' documentation viewed on the evidence-based care documentation via Meditech.

Furthermore, evaluating patients' elective or emergent colorectal surgical journey required for a postoperative telephonic call to be conducted by the director of surgical unit to identify patients' experience, which included whether patients had any concerns about their surgical experience. The postoperative telephonic call is a type of ethnographic method that provides a contextual detail and rich information to support the proposed solution (Grove, Burns, & Gray, 2013). The focus of this doctoral project was to evaluate the impact of the clinical practice change on postoperative outcomes. An additional focus was connecting the gap-in-practice to the anticipated findings from the analysis to achieve a standardized perioperative management and the best clinical care practices for surgical patients.

Significance

Stakeholders who were impacted in addressing the need to implement a standardized surgical management to elective or emergent surgeries at the project site include patients, healthcare professional nurses, surgeons, dieticians, case managers,

physicians, directors, senior leaders, and the director of education. All stakeholders play a valuable role to support the management of patient care and encourage patients' engagement throughout the ERP journey (American Association of Nurse Anesthetists, 2018), which is important in building patient confidence to work with healthcare professionals as partners with their care (Poland et al., 2017). The evaluation of the ERP clinical care bundle emphasizes the need to standardize surgical management in the project site, which affects all disciplines of care. The hospital clinical staff managed the elements of the ERP clinical care bundle, which shifted their clinical decisions with little strategic thinking to address the immediate clinical situation that each patient presents (see American Association of Nurse Anesthetists, 2018). This process met the needs of the clinical staff fast pace environment and empowered the clinical staff in making a quick clinical identification (Ljungqvist, Scott, & Fearon, 2017).

Patients' experience through the ERP journey was optimized because of the fast, smooth return to their presurgical functioning level with shortening of postoperative hospital stay. There is growing evidence that patients in the ERP pathways have fewer or no internal devices such as tubes, invasive lines, or drains, which enhances the quality of recovery and improves patient engagement (American Association of Nurse Anesthetists, 2018). In this regard, the project site will continue to have higher patient satisfaction scores, which will influence the facility's Hospital Consumer Assessment of Healthcare Providers and Systems score. Furthermore, the evaluation findings of the ERP pathways will encourage senior leaders and surgeons to continue the ERP pathway development in a small program, gradually refining to a larger program involving various types of

surgeries to follow the ERP pathway (American Association of Nurse Anesthetists, 2018).

The potential contributions of this doctoral project to nursing practice include evaluating whether the clinical care bundles of the ERP significantly decrease patients' length of hospital stay, decreases in 30-day mortality, and decrease in 30-day readmissions, which can significantly decrease health costs (Gramlich et al., 2017). Another contribution included identifying and evaluating whether the clinical care bundle of the ERP is an effective evidence-based practice for all health care professionals to use and support early recovery (Gramlich et al., 2017). The potential transferability of the doctoral project to similar practice areas includes the potential to identify that the ERP has higher positive outcomes and benefits compared to the traditional postoperative management (Grocott, Martin, & Mythen, 2012).

Social Change

The ERP is an alternative clinical practice compared to the traditional postoperative care pathways at the project site, which provided faster and smoother recovery with a significant reduction of hospital length-of-stay and improved patient outcomes. Using the ERP, patients have fewer surgical complications, reducing the cost of healthcare delivery (Gramlich et al., 2017). Promoting and standardizing the surgical management practice change in the nursing practice guidelines leads to practicing quality-safe best practices. Educating health care professionals on the importance to support faster and smoother recovery to all surgical patients and performing the safe best practices will achieve the project site's mission and vision for providing high-quality safe

care to all. It is common for health care professionals to meet resistance to change; therefore, creating an organizational vision and establishing a design to achieve the vision are important key elements for change to occur within an organization.

Summary

Section 1 highlighted the nature of the doctoral project, which included the problem statement, the purpose, and significance of the project. A solution to improve all surgical patients experience is to standardize the surgical management by implementing the ERP to all surgical patients encountered within the project site, producing desirable health outcomes to everyone. Section 2 will include a discussion of scholarly evidence.

Section 2: Background and Context

Introduction

A primary objective within any healthcare organization is to provide high-quality safe care to postoperative inpatients without incidents (Dewes, 2018). But there is a growing concern over the increase in complication rates and length of hospital stay for patients undergoing elective surgical operations at the project site. Therefore, this DNP project focus was conducted to prevent the increase of postoperative general surgical complications by using the clinical care bundles of the enhanced recovery program in lieu of the traditional surgical care pathways (see Quiney, Aggarwal, Scott, & Dickinson, 2016). The practice-focused questions were designed for evaluating a clinical practice change and determining whether there is a significant improvement in patient health outcomes and patient experiences (see Joliat et al., 2016). The purpose of this doctoral project was to be part of a practice change initiative of improving quality of care and the promotion of safety within the project site. Section 2 includes concepts, models, and theories; the relevance to nursing practice; the local background; and the role of the DNP student.

Concept, Models, and Theories

There are numerous concepts, models, and theories when working to improve patient outcomes by translating research into clinical nursing practice patient outcomes (Brown, 2014). For example, the Iowa model of research-based practice can be used to promote quality of care by guiding decisions based on clinical problems like infections (White, Dudley-Brown, & Terharr, 2016). An evidence-based practice change is

warranted within the project site to decrease the escalation of postoperative complication rates among surgical patients; therefore, the Iowa model assisted in knowledge-focused triggers with new research findings presented to make a positive change within the project site (see Brown, 2014).

Another quality improvement model that assisted in evaluating performance improvement with the doctoral project was the Plan-Do-Study-Act (White et al., 2016). The Plan-Do-Study-Act lean methodology is an approach that can be used to reduce colorectal complication rates and capture quantifiable outcomes (Quiney et al., 2016). This lean methodology involves ongoing adjustments based on the data that details patient experiences and outcomes (White et al., 2016).

Another framework that assisted in improving the quality of care in the project site is the Donabedian's triad of structure, process, and outcomes, which is focused in covering quality measurement and performance measurement (Moran, Burson, & Conrad, 2017). A theoretical framework that further defined this project's variables and emphasized patient outcomes in improving nursing practice was Watson's theory of human caring (Lukose, 2011). Watson's theoretical framework provides a positive influence to nursing care practices because it guides nursing practice in providing high-quality safe care (Lukose, 2011). Watson's theory has four elements that demonstrate nursing as a caring science that preserves human dignity and promotes a healing environment, which provides an interconnectedness within the realms of patient's mind, body, and soul (Lukose, 2011).

Relevance to Nursing Practice

Current literature and existing research indicate that following major surgeries undesirable stress response occurs and more complications can develop in patients who have limited cardiac reserve (Cecconi et al., 2013). Kehlet and Jorgensen (2016) asserted that the enhanced recovery after surgery (ERAS) principles minimizes physiological stress response which enhances the surgical metabolic response leading to better outcomes. The renewed interest of reducing the incidence of postoperative complication has been a concern worldwide with potential driver to decrease mortality rates and decrease health care cost (Kehlet & Jorgensen, 2016). Therefore, this specific doctoral project was embedded to improve all surgical outcomes by disseminating the evaluation of the ERP pathways which identified that the ERP clinical care bundles are a robust clinical practice change that achieves positive healthcare outcomes (Kehlet & Jorgensen, 2016). There are many surgical outcomes methodologies to improve surgical outcomes, but the best framework practice was implementing an evidence-based perioperative practice combined with the surgical outcomes methodologies to achieve smooth-fast recovery and improve all surgical outcomes (Kehlet & Jorgensen, 2016). Therefore, this knowledge-gap in practice brought about a catalyst in applying the same delivery standards to all patients undergoing surgical procedures (Kehlet & Jorgensen, 2016).

The Local Background and Context

There is proven research about the ERAS approach being used on different types of surgery demonstrating a decrease in postoperative complications, which optimizes outcomes leading to shorter length of hospital stay (Joliat et al., 2016). In this regard, the

enhanced recovery approach accelerates recovery by reducing surgical stress response; however, all elements of the ERP must be standardized throughout each perioperative phase (preoperative, intraoperative, postoperative) for positive outcomes to occur (Starkweather & Perry, 2017). Additionally, the ERP required the involvement of a wide range of disciplines which includes a system-level approach to make the program successful (Starkweather & Perry, 2017).

The facility site quarterly quality review report for the second, third, and fourth quarter of 2017 indicated that the colorectal surgical procedures had an increase of systemic inflammatory response syndrome from a 0% to a 1.214 trend. Thus, the overall performance trend is a downward trend which indicates not meeting the organizational goal in aiming for zero-tolerance for systemic inflammatory response syndrome among colorectal surgeries. The Centers for Disease Control and Prevention provides evidence-based guidelines in preventing surgical site infections which can assist the facility site in decreasing the incidence of systemic inflammatory response syndrome (2017). The relevance of the practice-focused questions was to optimize outcomes and patient experience in an acute care hospital which includes decreasing patients' length of stay and decreasing complications; thus, decreasing medical cost (Gramlich et al., 2017). An additional aim was to improve the quality of recovery to all surgical inpatients encountered at the project site and not compromising patient safety (Ren et al, 2011).

Role of the DNP Student

My scholarly endeavor is embedding existing scientific evidence and theoretical rationales by disseminating the evaluation of the existing clinical practice change that can

gradually refine to a large program of best clinical care perioperative pathways (American Association of Nurse Anesthetists, 2018). The dissemination of the doctoral project findings will assist in delivering care that will prevent complications and enhancing the quality care to all perioperative patients. This quality improvement evaluation is a clinical focus that improves the delivery of quality healthcare in the project site (Nelson, Cook, & Raterink, 2013). The driver and motivation behind my scholarly endeavor was to evaluate effective changes in patient outcomes by using both evidence-based practices and outcome performance measures.

My role in the doctoral project, is to be a leader and a champion of evidence-based safe practices by promoting safe and efficient patient-centered care to everyone (see Moran, Burson, & Conrad, 2017). The relationships to the participants included to always adhere to healthcare professional conduct, following all institutional review board human research subjects process, project site ethical conduct policies, and examining the ratio of benefits to risks (Grove et al., 2013). The potential bias that I prevented included my opinion on the individual subjects, the data, the sample, the measurement methods, and the statistics which could have been a concern on this evaluation research study findings (Grove et al., 2013). Some of the steps taken to address them included identifying sources of biases to avoid the biases and reduce the possibilities of bias (Grove et al., 2013).

Summary

Section 2 included concepts, models, and theories; the relevance to nursing practice, the local background, and the role of the DNP student. The dissemination of the

findings from an existing evidence-based clinical practice required a transition to connect the gap-in-practice. Section 3 highlights the practice-focused questions, sources of evidence, and the analysis of the evidence.

Section 3: Collection and Analysis of Evidence

Introduction

At the project site there has been an escalation of postoperative surgical patients' length of hospital stay; therefore, addressing patient care delivery at the project site required alternative measures to prevent postoperative complications. An approach to ease postoperative recovery without complications among various types of surgeries is the ERP, which is an alternative to the traditional surgical care management (Gaetan-Romain et al., 2016). Implementing the ERP within the project site can impact patient satisfaction and improve clinical outcomes, because delivering quality, safe care involves better perioperative management to prevent postoperative complications (Currie et al., 2015; Gaetan-Romain et al., 2016). Section 3 will highlight the practice-focused questions, sources of evidence, and the analysis of the evidence.

Practice-Focused Questions

The practice-focused questions were focused on enhancing health related quality of life among patients undergoing various types of surgeries at the project site. Additionally, I wanted to improve the perioperative care at the project site, which can reduce the prevalence of postoperative complications among patients undergoing varies types of surgeries (Gaetan-Romain et al., 2016). Addressing the facilitating factors and challenges of the ERP to diverse surgical specialties can speed the promotion of the ERP adaption in the project site (Herbert et al., 2017). The practice-focused questions for the study include the following:

1. Will the use of the clinical care bundles of the enhanced recovery program achieve positive postoperative patient care experiences?
2. Will enhanced recovery program have higher positive outcomes and benefits compared to the traditional surgical care pathways?

The Gap-in-Practice

Bridging the gap in clinical practice at the project site can reduce postsurgical complications and mortality by translating evidence-based knowledge to practice, thus improving perioperative management (see Ljungqvist et al., 2017). Providing clinical staff, the knowledge and support of the best safe practices can initiate a standardized perioperative care at the project site that accelerates recovery and promotes quality of life (see Ljungqvist et al., 2017). The purpose of this doctoral project was to evaluate the modification of existing quality improvements of perioperative care with new evidence-based practices to keep current with best care pathways in the project site. Implementing the ERP to various types of surgeries as an alternative management can sustain surveillance of best perioperative care, which reduces both the prevalence of postoperative complications and readmission rates (Gaetan-Romain et al., 2016). This approach aligns with the practice-focused questions, which identified that implementing the ERP is the best care pathway in lieu of the traditional surgical care pathways (see Quiney et al., 2016).

Sources of Evidence

The sources of evidence to address the practice-focused questions included information related to enhanced recovery program, enhanced recovery protocol,

colorectal surgeries, fast track, and quality assurance. The sources of evidence were used to fulfill the purpose of the project by helping identify whether the ERP is an effective perioperative management to various types of surgeries. Additionally, the sources of evidence also helped identify that the implementation of the ERP can prevent the escalation of postoperative complication rates in the project site. The collection and analysis of this evidence provided appropriate ways to address the practice-focused questions by investigating clinical staff and patient experiences during all perioperative phases.

Published Outcomes and Research

Conducting a literature search included resources from using several different databases such as Cochrane Library, CINAHL (Cumulative Index to Nursing and Allied Health Literature), National Library of Medicine (MEDLINE), Simultaneous Search, and ProQuest databases. The databases had the following parameters: evidence-based practice peer-review journals with all levels of research studies and published within the last 10 years, adults 19 years and older, both sexes, and English language. Keywords and phrases relevant to the search included *enhanced recovery program, enhanced recovery protocol, colorectal surgeries, fast track,* and *quality assurance*. Additional sources that addressed the practice-focused questions with evidence-based practice research included the American Association of Nurse Anesthetists website, the Enhanced Recovery After Surgery website, and federal/regulatory agencies. A review of literature indicated that there is a plethora of literature reviews on ERP and ERAS, which has assisted program developers on barriers and benefits prior implementation (Ljungqvist et al., 2017).

Finally, the literature review process was comprehensive in terms of searching, reviewing, and synthesizing each article because conducting a literature review was imperative to understand the problem and identifying knowledge gaps about the phenomenon (Grove et al., 2013).

Evidence Generated for the Doctoral Project

Participants

The participants who contributed the evidence to address the practice-focused questions included all adult postoperative inpatients 18-75 years old who participated on both the ERP pathways and the traditional surgical care pathways in a 6-month period. The relevance of these postoperative subjects was essential to address the practice-focused questions.

Approach or Procedural Steps

Effective collaboration across disciplines and clinical practice pathways are essential when caring for patients undergoing surgical procedures within the project site (Starkweather & Perry, 2017). The evaluation of the ERP effectiveness on reducing postoperative complications rates, hospital length of stay, mortality rates, and cost within the project site required precise data collections on various types of surgeries performed at the project site. Additionally, it was essential for full involvement of surgeons, infection preventionists, patient safety managers, director of quality/risk management, the director of perioperative services, and senior leaders to assist in identifying any process breakdowns.

An essential evaluation to determine safe best practices for this project required the evaluation of patient-centered outcomes related to the traditional surgical care pathways compared to the ERP pathways. The types of performance measurement data to be collected included validated instruments to evaluate both the ERP and traditional surgical care pathways health-related quality of life, functional recovery, pain management, and patient satisfaction. Additional data collection included receiving monthly report from the director of quality/risk management to review monthly mortality rates and surgical complications rates, such as sepsis. The data collection for evaluating surgical complication rates, such as sepsis was determined by following the Centers for Disease Control and Prevention guideline recommendations (Centers for Disease Control and Prevention, 2016). Electronic data collection was extracted from the evidence-based care documentation via Meditech which is a type of data application that the clinical staff in the project site use for documentation. The types of data that was extracted included, patient's values from physiological measures, such as vital signs, labs, and pain level.

The adoption of the Quality Enhancement Research Initiative Model is an approach that was used to evaluate the end-to-end implementation of the ERP care systems (Gramlich et al., 2017). The Clavien-Dindo classification system was used to categorize the level grade for postoperative complications which classified the postoperative complications with grades I (minor complications) through grade IV (major complications; Wen et al., 2017). Additionally, the patients' comorbidities were categorized according to American Society of Anesthesiologists numerical grade from I (low)-IV (high; ERAS Compliance Group, 2015). Furthermore, patient satisfaction

questionnaires were conducted telephonically post-discharge aiming specifically on patient's recovery and experience which was conducted by the director of surgical department.

The validated instruments provided a contextual detail and rich information to support the proposed solution (Grove, Burns, & Gray, 2013). The focus of this doctoral project was to connect the gap-in-practice to the anticipated findings which leads to developing best practices in preventing and decreasing the incidence of postoperative complication rates in the project site (Quiney, Aggarwal, Scott, & Dickinson, 2016). Therefore, it is imperative to produce sustainable quality improvement interventions that are multi-faceted practice approach for preventing the escalation of postoperative complication rates.

Protections

Procedures used to ensure ethical protection of each participant, included data retention plans, consent process, incentives, and safe guarding privacy which included following both Walden University Institutional Review Board policies (approval no. 10-18-18-0655765) and the facility site institutional review board policies and procedures. Additionally, the rights of the postoperative inpatients were protected by submitting the project research for institutional review, securing informed consents, and encrypting flash drives which also included balancing the risks and benefits of the project research (Grove, Burns, & Gray, 2013).

Analysis and Synthesis

The systems used for tracking, organizing, and analyzing the evidence included using the facility site dashboard and scorecards. The dashboard and scorecards consisted of both the traditional surgical care pathways and the ERP pathways number of operations per day, the number of complications per day, the average total length of hospital stay, and ERP compliance rates (Encare Provider of ERAS, n.d.). The dashboards provided performance trackers of quality with the focus interest on improving performance and patient outcomes (see White, Dudley-Brown, & Terhaar, 2016). Additionally, the scorecards and dashboards provided metrics that were specific and reliable which represents important measures in quality of care (see White, Dudley-Brown, & Terhaar, 2016).

This process is an important quality assurance tool that assisted senior leaders and the director of perioperative service in making decision about the surgical service line process throughout the organization (Encare Provider of ERAS, n.d.). Furthermore, a form of synthesis included evaluating the practice guidelines of the ERP pathways compared to the traditional surgical care pathways to determine conclusive evidence (see White, Dudely-Brown, & Terhaar, 2016). Statistical Package for Social Sciences (SPSS) current version software was utilized for statistical analysis of the demographic and outcome measures (White, Dudely-Brown, & Terhaar, 2016).

The procedures used to assure the integrity of the evidence included a multidisciplinary structure care plan, such as clinical pathways which are used within the facility site to translate evidence into practice (see White, Dudley-Brown, & Terhaar,

2016). Using clinical pathways can improve quality and safety, patient outcomes, and patient satisfaction with specific cost control drivers (White, Dudley-Brown, & Terhaar, 2016). An approach to managing outliers or missing information included evaluating and monitoring the progress of both the traditional surgical care pathways and the ERP pathways which included revising the integrity of the evidence (White, Dudley-Brown, & Terhaar, 2016). Additionally, the presence of outliers was not revealed during the evaluation of the data via SPSS which a different software approach, such as Kruskal-Walis test was not used for this project (White, Dudley-Brown, Terhaar, 2016).

The statistical analysis procedures and run charts was used for this doctoral project to address the practice-focused questions which continuously determine if the process is improved (White, Dudley-Brown, Terhaar, 2016). Additionally, the run charts are used to identify correlation between process and outcomes which identified if there were any differences across groups (White, Dudely-Brown, Terhaar, 2016). In this DNP project, biases did not occur, and other design elements were not used to adjust biases (White, Dudley, Terhaar, 2016). Furthermore, coding was conducted to easily enter the numerical labels into an encrypted computer and safely stored in an encrypted flash drive (Grove, Burns, & Gray, 2013).

Summary

A deliverable academic product requires a rigorous evaluation plan that will describe the success of addressing the practice-focused questions. Transforming the ERP surgical care systems across various types of surgeries was the aim for this DNP project which will assist in improving postoperative outcomes to all (Gremlich, 2017). Section 3

highlighted the practice-focused questions, sources of evidence, and the analysis of the evidence. Section 4 will include the findings and implications, recommendations, and strengths/limitations of the project.

Section 4: Findings and Recommendations

Introduction

The perioperative paradigm is shifting toward a culture that incorporates quality improvement with evidence-based surgical management for positive outcomes. More research is indicating that the ERP can lead to positive outcomes, which includes the reduction of both postoperative length of stay and complication rates (Tanious, Ljunqvist, & Urman, 2017). The adoption of the ERP, also called enhanced surgical recovery, clinical care bundles across diverse surgical fields performed in the project site can optimize perioperative management and is the best evidenced-based standard of care. At the institutional level, the local problem is to assist the institution in standardizing surgical care to optimize patients postoperative experience and enhance surgical inpatient quality of life (Tanious et al., 2017).

The ERP clinical pathways are a quality improvement endeavor that integrates a multimodal evidence-based approach that is associated with the maximization of patients fast-smooth recovery without compromising patient safety (Thacker et al., 2016). In the practicum site, to avoid any patient aspirations during surgery, the traditional surgical care pathway (non-ERP) practices fasting after midnight (bowel preparation) to all elective and nonelective surgeries (see Ren et al., 2012). However, at the practicum site one colorectal surgeon practices the evidence-based ERP pathway, which require patients to load carbohydrates (no bowel preparation), such as Ensure, 2 hours prior surgery (see Ren et al, 2012). Further, research has indicated that the elements of the ERP clinical care bundles have an impact on postoperative outcomes (ERAS Compliance Group, 2015).

Therefore, comparing, analyzing, and evaluating outcomes on the traditional surgical care pathway also known as non-ERP pathway, with the evidence-based ERP pathway helped answer the practice-focused questions:

1. Will the use of the clinical care bundles of the enhanced recovery program achieve positive postoperative patient care experiences?
2. Will enhanced recovery program have higher positive outcomes and benefits compared to the traditional surgical care pathways?

The gap-in-practice in the project site included consolidating perioperative practice and standardizing the evidenced-based approach to achieve the best perioperative care to surgical inpatients. Since 2016 at the project site, there has been an escalation of surgical site infections such as colorectal surgeries (see Appendix A). In 2016, there were a total of 51 surgical site infections, and 11 were colon surgical infections. In 2017, there were a total of 66 surgical site infections, and 17 were colon surgical infections. As of January 29, 2019, the total surgical site infections for 2018 is 71, and colon surgeries alone for the year 2018 had a total of 27 surgical site infections. Therefore, it is important to standardize perioperative care management with a variety of surgical disciplines performed in the project site to improve the quality of life to patients undergoing elective surgeries (see Mithchell, 2011). Thus, the purpose of this doctoral project was to revolutionize perioperative management to all elective surgeries performed in the project site and increase patient satisfaction after surgery.

As part of data collection to address the purpose of the project, the director of patient safety and risk management provided a copy of the Comprehensive Health

Outcome Information System report, which indicates types of quality outcomes such as surgical complications and length of hospital stay. Additionally, specific data collections such as patient's demographic, vital signs, labs, body mass index (BMI), physician progress reports, and nurse's documentation was extracted from the evidenced-based care documentation via Meditech. This process was important for determining the Clavien-Dindo classification system level grade for each surgical inpatient that experience both the ERP clinical pathway and traditional surgical care pathway (see Wen et al., 2017). The 30-day readmission data for both the ERP and traditional surgical care pathways were also extracted from both Meditech and Horizon Patient Folder. The patient comorbidities American Society of Anesthesiologist numerical grade and the diagnosis related group international classification of a disease (DRG-ICD) 10th revision procedure code set was also extracted from the Horizon Patient Folder in addition to the standard length of stay (see ERAS Compliance Group, 2015). The data collection for both ERP clinical pathway and traditional surgical care pathways included surgical procedures performed from April, 2018 through November, 2018.

Data also came from the administrative manager for the perioperative services providing an Excel document indicating patients' surgical procedures from April, 2018 through November, 2018. After analyzing the surgical procedures Excel document, there was a total of 228 ERP procedures performed and 1,291 traditional surgical care procedures performed and the project site. After evaluating the 228 ERP procedures, the perioperative clinical staff only documented 66 inpatients participating in the ERP clinical pathways, which includes the indication that patient received carbohydrates

loading. Extracting the data for the traditional surgical care procedures required a match with the ERP inpatients' gender, age, DRG-ICD procedure code set, and comorbidities American Society of Anesthesiologist numerical grade level. When matching the age group, there was no more than 5 years difference between the ERP and traditional surgical care inpatients. There were three specific colon surgical DRG-ICD codes used for this project: ICD-10 329, ICD-10 330, and ICD-10 331. The final sample size for evaluating both ERP and non-ERP pathways is 31 postoperative inpatients, which consists of 18 females and 13 males between 18-75 years old.

Findings

The evaluation findings after transcribing the data into the Excel document indicated that there was no 30-day readmission for the DRG ICD-10 329 for both ERP and non-ERP postoperative inpatients. There was one ERP and four non-ERP postoperative inpatient 30-day readmissions for the DRG ICD-10 330. Additionally, there was zero ERP and two non-ERP postoperative inpatient 30-day readmissions for the DRG ICD-10 331. These findings indicate that for the performance measure of the 30-day readmission, there was only one ERP and six non-ERP postoperative inpatients who were readmitted in 30-days. The standard length of hospital stays for the DRG ICD-10 329 is 10.8 days for which there was zero ERP and one non-ERP postoperative inpatient who exceeded the standard length of hospital stay. The standard length of hospital stays for the DRG ICD-10 330 is between 6.2-6.3 days for which there was eight ERP and eight non-ERP postoperative inpatients who exceeded the standard length of hospital stay. The standard length of hospital stays for DRG ICD-10 331 is between 3.7-3.8 days

for which there was zero ERP and three non-ERP postoperative inpatients who exceeded the standard length of hospital stay. These findings indicated that there was a total of eight ERP and 12 non-ERP postoperative inpatients who stayed longer than the DRG ICD procedure code sets' standard length of stay. There were one ERP postoperative inpatient and 10 traditional surgical care postoperative inpatients who were categorized as an IV postoperative complication based on the Clavien-Dindo Classification System.

Table 1 (see Appendix B) contains the demographics and BMI for ERP and non-ERP inpatients, which includes the age and BMI mean with standard deviation. Table 1 is a full description analysis compared to Table 2 (see Appendix C), which is a descriptive statistical analysis for the ERP and non-ERP inpatients with BMI, ethnicity, age, and gender. Table 3 (see Appendix D) is the final evaluation findings after transcribing the data into the SPSS, which indicates the descriptive statistical analysis for 30-day readmission and postoperative inpatients comorbidities. Additionally, Table 3 (see Appendix D) is a descriptive analysis of data that contains the following variables: ERP postoperative inpatient's comorbidities, non-ERP postoperative inpatient's comorbidities, ERP postoperative inpatient's 30-day readmission, and non-ERP postoperative inpatients 30-day readmission. The symbol *N* is the total number of sample cases, in which is a total of 31 sample of postoperative inpatients for this descriptive analysis (see Polit, 2010).

Measures of dispersion were computed to understand the variability of scores for the 30-day readmission between the ERP and non-ERP variable. The following are the results for the ERP 30-day readmission analysis: $N = 31$, $M = 1.97$, $SD = 0.180$. The following are the evaluation results for the non-ERP 30-day readmission analysis: $N =$

31, $M = 1.81$, $SD = 0.402$. In this regard, the non-ERP (traditional surgical care pathways) is a higher standard deviation from the mean; therefore, the ERP values showed range and variability because the value showed small standard deviation. Measures of dispersion were also computed to understand and evaluate the variability of scores for patient's comorbidities between ERP and non-ERP postoperative inpatients. The following are the final evaluation results for both of this analysis: $N = 31$, $M = 2.48$, $SD = 0.508$. In this regard, both the ERP and non-ERP postoperative inpatients' comorbidities had the same measurement of dispersion.

The project site uses the Charge Comparison-Facility CareScience to analyze the geometric surgical charge outcome(O) cases and the expected (E) value for the surgical outcome cases. The overall colon surgical geometric O/E from April 2018, through November 2018, for ICD-10 329 is 1.77, ICD-10 330 is 1.24, and ICD-10 331 is 1.04. In this regard, greater than 1.0 indicates opportunities for improvements because the surgical charge outcome was worse than expected which is a financial loss in the project site.

Addressing patients' ongoing needs and guiding patients along a path to full surgical recovery requires a health care professional to evaluate patient's response to treatment and care during patients' hospitalization (Godden, 2010). In this regard, an important element in enhancing patients postoperative clinical experience and closing the nursing process loop is understanding patient's feedback after postoperative telephonic discharge calls (Godden, 2010). The telephonic post-operative inpatient discharge calls from April through November 2018, were performed by the director of surgical

department which there was no data indicating patient complaints with clinical care for both ERP clinical pathways and traditional surgical care pathways. Another clinical communication loop of addressing patient's ongoing needs and clinical experience is leader rounding. In this regard, the director of surgical department conducts daily leader rounding which the director observed that patients who experience all ERP elements present a faster progression of care with good outcomes compared to the traditional surgical care. Since ERP implementation, the director of surgical department has recently encountered clinical staff dissatisfaction with not having surgical postoperative clinical care bundles order sets for the traditional surgical care pathways. However, the clinical staff in the facility site has voiced their satisfaction with the ERP clinical care bundle order set to the director of surgical department. In this regard, opportunities for standardization on postoperative clinical care bundle order-sets is highly recommended. The second quarter of 2018, overall Hospital Consumer Assessment of Healthcare Providers and Systems rating was 81.4% which is above the facility site 75th percentile. However, one of the project site challenges is maintaining Hospital Consumer Assessment of Healthcare Providers and Systems above the 75th percentile.

Current "Leapfrog Group Hospital Safety Grades" for Fall 2018 is an A grade, which indicates the practicum site serious complications after colon surgery score of 0.627 with the average performing hospital score being 0.859 (The Leapfrog Group, 2018). According to the Leapfrog Group, this represents deaths per 1,000 patients with a treatable complication after surgery. The practicum site 2018 hospital survey time covered for the Leapfrog Group Hospital Safety Grades was from January 1, 2017

through December 31, 2017. Despite the Leapfrog Grade being an A grade, the project site continues to have an escalation of surgical site infections in 2018, as evidence by the National Healthcare Safety Network surveillance record of quality review. In this regard, it is imperative for the institution to focus on sustaining a Leapfrog Grade of an A by considering in standardizing an evidence-based surgical care delivery.

The overall evaluation findings indicate that the ERP, known as enhanced surgical recovery at the project site, have higher positive outcomes and benefits compared to the traditional care pathways. Additionally, the clinical care bundles of the ERP achieve positive postoperative patient care experiences. However, this DNP project sample size is an unanticipated limitation because the sample is not as large enough sample size, which could have had potential impact on the evaluation findings.

Implications

The implications resulting from the above evaluation findings in terms of an individual indicates that patients who participated in the ERP pathway have a fast-smooth recovery with minimal complications and shorter length of hospital stay (Thacker et al., 2016). Simultaneously, operationally at an institution and system level, the ERP pathway does improve quality for less cost (Ljungqvist et al., 2017). However, a vital part of the ERP pathway preparation and recovery is for the community health professionals to be trained and be knowledgeable about the ERP pathway to provide positive outcomes when both community care and follow-up occurs (Bernard & Foss, 2014). In this regard, an integral to ERP inpatients successful recovery post discharge include increasing community awareness regarding the ERP pathway (Bernard & Foss, 2014). Since ERP

patients are being discharged earlier than the traditional surgical care pathways, another essential element in the ERP pathway is home recovery and full family support which is beneficial to patient's successful recovery (Bernard & Foss, 2014). Furthermore, the ERP pathway provides potential implications to positive social change by having family members to become actively involved sooner and immediately following patients discharge (Bernard & Foss, 2014).

Recommendations

Gaining wide adoption of the ERP in the facility site requires challenging the traditional surgical care pathways and taking a step forward on evidence-based perioperative care programs that will show expected outcome improvements (Thacker et al, 2016). Additionally, it is recommended to cultivate and grow the ERP in the project site to exhale in delivering service excellence to all postoperative inpatients. Therefore, implementing uniform ERP protocols to all elective surgeries in the project site will require a detail performance improvement plan document which will provide a comprehensive application of Plan-Do-Study-Act cycles with current evidence of the ERP clinical pathway outcomes (Holland et al., 2010). Using the Plan-Do-Study-Act lean methodology can determine the need for a microsystem level of a quality performance change (Terry, 2015). This facility site performance improvement plan document will then have to be presented to the institution shared governance and gain an approval from all committees for the new policies to be implemented to all elective surgeries. Once the shared governance approves the performance improvement plan, the plan will have to gain approval by nursing excellence committees then the chief medical officer will

introduce the plan to variety of surgical disciplines that are performed in the institution. This purposeful development can provide a positive impact across all settings at the project site. On a downside note and operationally, surgeons will not be forced to change his or her traditional perioperative care pathways but will be asked to consider the ERP clinical pathways.

Strength and Limitations of the Project

The strengths of the doctoral project are the level of quality, safety, and value it represents to future nursing practice (Dewes, 2018). Despite the evaluation analysis of positive outcomes in using the ERP care pathway, the evidence-based ERP clinical care bundles pose great challenges to accepted surgical procedures in the practicum site which is one of the limitations of this doctoral project (Ren et al, 2012). Another limitation of this doctoral project is that the evidence-based ERP clinical care bundles was implemented April 2018, which there was not enough ERP surgical inpatients to compare and evaluate to the traditional surgical care pathway (non-ERP). In this regard, for validity and reliability of the ERP care pathways indicating significantly positive outcomes, longer length of studies should be considered comparing and evaluating outcomes on ERP care pathways to the traditional surgical care pathways. Therefore, further expansion of this quality improvement evaluation with larger sample size is required to enhance the generalizability of this quality improvement evaluation. Furthermore, an additional limitation is the patient's comorbidities grading level that the anesthesiologist categorized, which is a subjective evaluation. However, the

anesthesiologist is knowledgeable and an expert on this field to determine the appropriate comorbidities grading level for each patient encounter (ERAS Compliance Group, 2015).

It is highly recommended to evaluate quality outcomes and ongoing research on future versions of the ERP clinical care bundles to be studied and evaluated to other surgical subspecialties with similar methods. Additionally, for high risk patients more specific studies and evaluation are recommended if bowel preparation (traditional surgical care pathways) is required compared to no bowel preparation (ERP pathways) (Ren et al., 2012).

Section 5: Dissemination Plan

Disseminating strategies to improve clinical care practices and patient outcomes builds empirical based knowledge for health care professionals (Malloch, 2017). Part of disseminating clinical strategies includes evaluating the effectiveness of clinical approaches to develop and implement innovations that change processes that will produce quality of care (Malloch, 2017). Therefore, knowledge synthesis and translation of evidence into practices are key components of evidence-based dissemination (Forsyth, Wright, Scherb, & Gaspar, 2010). The dissemination of the ERP care paradigm from this project will positively impact patient care in the institution and across a continuum in health care settings. As a DNP-prepared leader, it was important to disseminate the project to create change in health care organizations and provide evidence-based knowledge for nursing practice, which is important to the overall nursing profession (Sherrod & Goda, 2016).

For this project, the dissemination of the outcomes of the ERP care paradigm compared to the outcomes of the traditional surgical care paradigm includes a meeting to present a PowerPoint Presentation to all stakeholders at the practicum site. Some important stakeholders include senior leaders, the director of patient safety, the director of perioperative services, the director of quality, the director of surgical services, clinical staff, surgeons, and patients. The audience for this project also includes all health care professionals working in the practicum site who will be involved in the ERP care pathway such as the quality team and infection preventionists. The venues for dissemination of the project to the broader nursing profession include National DNP

forums and other nursing organizations such as the Association of Perioperative Registered Nurses conferences.

Analysis of Self

As a DNP-prepared leader, I can lead systems and improve health care quality by integrating evidence-based research into practice as well as ensure professional integrity as a nurse (see Malloch, 2017). As a DNP-prepared scholar, I can disseminate this new scholarship in any practice system and integrate the scholarship into clinical nursing settings, which can improve nursing practice (see Conrad & Pape, 2014). Despite expectations and challenges as a project manager, I am prepared to guide the health care system in eliminating inefficient practices and sustaining changes that are made (see Malloch, 2017).

As I reflect on this project experience, I gained knowledge in evaluating levels of quality and performance to achieve positive outcomes. I can now evaluate current nursing practice and apply the best evidence into clinical practice. My long-term professional goal is mastering credible research evaluation findings within an organization and becoming a system expert of sustainable delivery of evidence-based practices across all health care disciplines. An additional long-term professional goal is impacting health care by being involve and managing local, state, and national health care policies (see Malloch, 2017).

Challenges, Solutions, and Insights from Scholarly Journey

ERP elements will continue to gain traction across the spectrum of surgical fields; therefore, my project can improve surgical value and perioperative management in the

institutional site (see Senturk et al., 2017). One challenge is overcoming beliefs on traditional surgical care pathways compared to the evidence-based ERP clinical care pathways. The solution for this is to provide the evidence of this project to achieve positive quality outcomes when the ERP care pathway is used for elective surgeries. The insight gain on this scholarly journey is to challenge current practices that are outdated and identify evidence-based value nursing care practices that illustrates positive outcomes (see Malloch, 2017).

Summary

In the current health care environment, health care organizations are required to deliver high-quality safe care across all clinical settings, which includes the perioperative services (Joshi, Ransom, Nash, & Ransom, 2014). Over the coming years, the ERP will continue to grow and change standardized clinical perioperative pathways both nationally and internationally. Therefore, evaluating the ERP in the project site presents valuable evidence that any health care organization can use and replicate. This doctoral project can encourage efforts to standardize evidence-based perioperative practices that will contribute to a positive nursing process change.

References

American College of Surgeons. (2018, February 5). An enhances recovery program for colorectal surgery patients reduced total hospital costs and improved patient outcomes. Retrieved from https://www.facs.org

American Association of Nurse Anesthetists. (2018). Enhanced recovery after surgery. Retrieved from https://www.aana.com/docs/default-source/practice-aana-com-web-documents-(all)/enhanced-recovery-after-surgery.pdf?sfvrsn=6d184ab1_6

Bernard, H. & Foss, M. (2014, January). Patient experienced of enhanced recover after surgery (ERAS). *British Journal of Nursing, 23*(2), 100-106. doi:10.12968/bjon.2014.23.2.100

Brown, C.G. (2014, April). The Iowa model of evidence-based practice to promote quality care: an illustrated example in oncology nursing. *Clinical Journal of Oncology Nursing, 18*(2), 157-159. doi:10.1188/14.CJON.157-159

Cecconi, M., Corredor, C., Arulkumaran, N., Abuella, G., Ball, J., Grounds, R. M., . . . Rhodes, A. (2013). Clinical review: Goal-directed therapy-what is the evidence in surgical patients? The effect on different risk groups. *Critical Care, 17*(2), 1-15. doi:10.1186/cc11823

Centers for Disease Control and Prevention. (2017). Infection control: Surgical site infections. Retrieved from https://www.cdc.gov/infectioncontrol/guidelines/ssi/index.html

Conrad, P. L., & Pape, T. (2014, March). Roles and responsibilities of the nursing scholar. *Pediatric Nursing, 40*(2), 87-90. CINAHL Complete.

Currie, A., Burch, J., Jenkins, J. T., Faiz, O., Kennedy, R. H., Ljungqvist, O., . . . Jenkins, J. T. (2015, June). The impact of Enhanced Recovery Protocol Compliance on elective colorectal cancer resection. *Annals of Surgery, 261*(6), 1153-1159. doi:10.1097/SLA.0000000000001029

Dewes, A. (2018). Improving performance measures with perioperative analytics. *AORN, 107*(2), 189-198. doi:10.1002/aorn.12021

Encare Provider of ERAS. (n.d.). ERAS interactive audit system (EIAS). Retrieved from https://www.encare.net/healthcare-professionals/products-and-services/eras-interactive-audit-system-eias

ERAS Compliance Group. (2015, June). The impact of enhanced recovery protocol compliance on elective colon. *Annals of Surgery, 261*(1), 1153-1159. doi:10.1097/SLA.0000000000001029

Forsyth, D. M., Wright, T. L., Scherb, C.A., & Gaspar, P.M., (2010, April). Disseminating evidence-based practice projects: poster design and evaluation. *Clinical Scholars Review, 3*(1), 14-21. doi:10.1891/1939-2095.3.1.14

Gaetan-Romain, J., Labgaa, Hubner, I., Blanc, C., Griesser, A., Schafer, M., & Demartines, N. (2016, October). Cost-benefit analysis of the implementation of an enhanced recovery program in liver surgery. *World Journal of Surgery, 40*(1), 2441-2450. doi:10.1007/s00268-016-3582-2

Godden, B. (2010, December). Postoperative phone calls: is there another way? *Journal of PeriAnesthesia Nursing*, *25*(6), 405-408. doi:10.1016/j.jopan.2010.09.004

Gouvas, N., Tan, E., Winsor, A., Xynos, E., & Tekkis, P. P. (2009, October). Fast-track

vs standard care in colorectal surgery: A meta-analysis update. *International Journal of Colorectal Disease, 24*(10), 1119-1131. doi:10.1007/s00384-009-0703-5

Gramlich, L. M., Sheppard, C. E., Wasylak, T., Gilmour, L. E., Ljungqvist, O., Basualdo-Hammond, C., & Nelson, G. (2017, January). Implementation of enhanced recovery after surgery: Aa strategy to transform surgical care across a health system. *Implementation Science, 12*(67), 1-17. doi:10.1186/s13012-017-0597-5

Grocott, M. P., Martin, D. S., & Mythen, M. G. (2012, August). Enhanced recovery pathways as a way to reduce surgical morbidity. *Current Opinion in Critical Care, 18*(4), 385-392. doi:10.1097/MCC.0b013e3283558968

Grove, S., Burns, N., & Gray, J. (2013). *The practice of nursing research: Appraisal, synthesis, and generation of evidence* (7th ed.). St. Louis, MO: Saunders Elsevier.

Gustafsson, U. O., Scott, M. J., Schwenk, W., Demartines, N., Roulin, D., Francis, N., . . . Ljungqvist, O. (2012, December). Guidelines for perioperative care in elective colonic surgery: Enhanced Recovery After Surgery (ERAS) Society recommendations. *Clinical Nutrition, 31*(6), 783-800. doi:10.1016/j.clnu.2012.08.013

Herbert, G., Sutton, E., Burden, S., Lewis, S., Thomas, S., Ness, A., & Akinson, C. (2017, January). Healthcare professionals' views of the enhanced recovery after surgery programme: A qualitative investigation. *BMC Health Services Research, 17*, 617. doi:10.1186/s12913-017-2547-y

Holland, R., Meyers, D., Hildebrand, C., Bridges, A. J., Roach, M. A., & Vogelman, B.

(2010, March). Creating champions for health care quality and safety. *American Journal of Medical Quality, 25*(2), 102-108. doi:10.1177/1062860609352108

Joliat, G., Labgaa, I., Hubner, M., Blanc, C., Griesser, A., Schafer, M., & Demartines, N. (2016, October). Cost-benefit analysis of the implementation of an enhanced recovery program in liver surgery. *World Journal of Surgery, 40*(1), 2441-2450. doi:10.1007/s00268-016-3582-2

Joshi, M. S., Ransom, E. R., Nash, D. B., & Ransom, S. B. (Eds.). (2014). *The Healthcare Quality Book, 3rd edition.* Chicago, IL: Health Administration Press.

Kehlet, H., & Jorgensen, C.C. (2016, February). Advancing surgical outcomes research and quality improvement within an enhanced recovery program framework. *Annals of Surgery, 264*(2), 237-238. doi:10.1097/SLA.0000000000001674

Ljungqvist, O., Scott, M., & Fearon, K. C. (2017, March). Enhanced recovery after surgery-a review. *JAMA Surgery,152*(3), 292-298. doi:10.1001/jamasurg.2016.4952

Lukose, A. (2011, January). Developing a practice model for Watson's theory of caring. *Nursing Science Quarterly*, *24*(1), 27-30. doi:10.1177/0894318410389073

Nelson, J. M., Cook, P. F., & Raterink, G. (2013). The evolution of a Doctor of Nursing practice capstone process: Programmatic revisions to improve the quality of student projects. *Journal of Professional Nursing, 29*(6), 370-380. doi:10.1016/j.profnurs.2012.05.018

Malloch, K. (2017, January). Leading DNP professionals practice competencies for organizational excellence and advancement. *Nursing Administration*

Quarterly,41(1), 29-38. doi:10.1097/NAQ.0000000000000200

Methodist Healthcare. (n.d.). Our values, mission, and roots. Retrieved from https://sahealth.com/about/mission-values/

Mitchell, M. (2011, September). The future of surgical nursing and enhanced recovery programmes. *British Journal of Nursing, 20*(16), 978-984. doi:10.12968/bjon.2011.20.16.978

Moran, K., Burson, R., & Conrad, D. (2017). *The Doctor of Nursing practice scholarly project: A framework for success* (2nd. ed.). Burlington, MA: Jones & Bartlett Learning.

Poland, F., Spalding, N., Gregory, S., McCulloch, J., Sargen, K., & Vicary, P. (2017, June). Developing patient education to enhance recovery after colorectal surgery through action research: a qualitative study. *BMJ Open, 7*(6), 1-10. doi:10.1136/bmjopen-2016-013498

Polit, D. (2010). *Statistics and data analysis for nursing research* (2nd ed.). Upper Saddle River, NJ: Pearson Education.

Quiney, N., Aggarwal G., Scott, M., & Dickinson, M. (2016, June). Survival after emergency general surgery: What can we learn from enhanced programmes? *World Journal of Surgery, 40* (6), 1283-1287. doi:10.1007/s00268-016-3418-0

Ren, L., Zhu, D., Wei, Y., Pan, X., Liang, L., Xu, J., . . . Wu, Z. (2012, February). Enhanced recovery after surgery (ERAS) program attenuates stress and accelerates recovery in patients after radical resection for colorectal cancer: A prospective randomized controlled trial. *World Journal of Surgery, 36* (2), 407-

414. doi:10.1007/s00268-011-1348-4

Senturk, J. C., Kristo, G., Gold, J., Bleday, R., & Whang, E. (2017, September). The development of enhanced recovery after surgery across surgical specialties. *Journal of Laparoendoscopic & advanced surgical techniques, 27*(9), 863-870. doi:10.1089/lap.2017.0317

Sherrod, B., & Goda, T. (2016, September). DNP-Prepared leaders guide healthcare system change. *Nursing Management, 47* (9). 13-16. doi:10.1097/01.NUMA.0000491133.06473.92

Starkweather, A., & Perry, M. (2017, March). Enhanced recovery programs and pain management. *Topics in Pain Management, 32*(8), 1-9. doi:10.1097/01.TPM.0000513202.87691.49

Tanious, M. K., Ljungqvist, O., & Urman, R. D. (2017). Enhanced recovery after surgery: History, evolution, guidelines, and future directions. *International Anesthesiology Clinics, 55*(4), 1-11. doi:10.1097/AIA.0000000000000167

Terry, A. J. (2015). *Clinical research for the Doctor of Nursing Practice* (2nd ed.). Burlington, MA: Jones & Bartlett Learning.

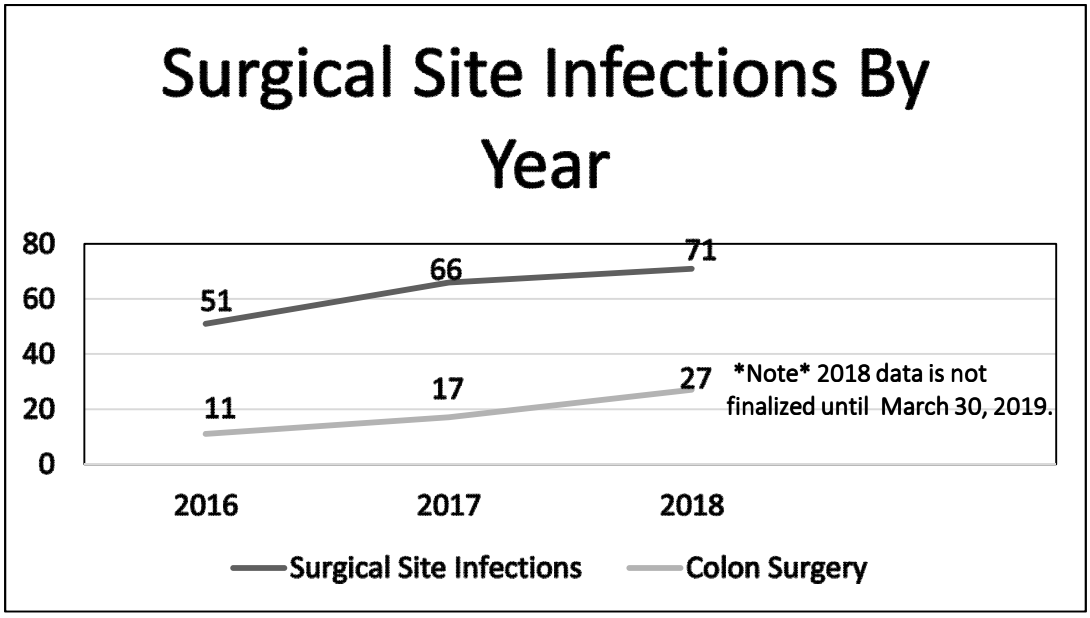
Thacker, J. K. M., Mountford, W. K., Ernst, F. R. Krukas, M. R., & Mythen, M. G. (2016, February). Perioperative fluid utilization variability and association with outcomes. *Annals of Surgery, 263*(3), 502-510. doi:10.1097/SLA.0000000000001402

The Leapfrog Group. (2018). About the grade. Retrieved from http://www.hospitalsafetygrade.org/your-hospitals-safety-grade/about-the-grade

Wen, Y., Althans, A. R., Brady, J. T., Dosokey, E. M. G., Choi, D., Nishtala, M., Delaney, C. P., & Steele, S. R. (2016). Evaluating management and outcomes of colovaginal fistulas. *The American Journal of Surgery, 213*(3), 553-557. doi:10.1016/j.amjsurg.2016.11.006

White, K. M., Dudley-Brown, S., & Terhaar, M. F. (2016). *Translation of evidence into nursing and health care* (2nd ed.). New York, NY: Springer.

Appendix A: Facility Site-Surgical Site Infections by Year



Appendix B: Demographics and BMI Data of the ERP and Non-ERP Inpatients

	ERP inpatients (*n* = 31)	**Non-ERP inpatients (*n* = 31)**
Sex ratio (Female to male)	18:13	18:13
Age mean	Year range = 31-75 *SD* = 60.23 (12.02)	Year range = 32-75 *SD* = 59.74 (11.65)
Mean BMI (kg/m2)	Range = 16.3-42.5 *SD* = 27.874 (5.95)	Range = 17.1-45.3 *SD* = 29.39 (6.99)
Ethnicity		
White	24	20
Hispanic or Latino	0	10
African American	1	1
Other/Unknown	6	0

Appendix C: Descriptive Statistics for ERP and Non-ERP Inpatients

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ERP Patient's BMI	31	16.3	42.5	27.874	5.9567
NonERP Patient's BMI	31	17.1	45.3	29.390	6.9941
Patient's Ethnicity # NonERP	31	1	3	1.39	.558
Patient's Ethnicity # ERP	31	1	4	1.65	1.226
Patient's Age NonERP	31	32	75	59.74	11.656
Patient's Age ERP	31	31	75	60.23	12.027
Patient's Gender # ERP	31	1	2	1.42	.502
Patient's Gender # NonERP	31	1	2	1.42	.502
Valid N (listwise)	31				

Appendix D: Comorbidities and 30-Day Readmission Data for ERP and Non-ERP Postoperative Inpatients

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ERP Patient Comorbidities #	31	2	3	2.48	.508
NonERP Patient Comorbidities #	31	2	3	2.48	.508
ERP 30-Day Readmission #	31	1	2	1.97	.180
NonERP 30-Day Readmission #	31	1	2	1.81	.402
Valid N (listwise)	31				