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Bridging the Gap Between Evidence-Based Opioid Sparing Techniques and Anesthesia Provider Practice

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Doctor of Nursing Practice Final Scholarly Project

In Partial Fulfillment of the Requirements for the Degree Doctor of Nursing Practice

Otterbein University

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Executive Summary

In light of the current opioid epidemic in the United States, multiple sectors of health care specialties and nursing leaders have been called to aide in reversing this deadly opioid abuse trend. As a team, Certified Registered Nurse Anesthetists (CRNA), surgeons, and anesthesiologists have made great strides in developing evidence-based protocols titled Enhanced Recovery After Surgery (ERAS). ERAS protocols vary according to the surgical specialty; however, one universal component includes opioid sparing techniques such as peripheral nerve blocks. Despite ERAS protocol's benefits throughout the perioperative period, according to the literature, many anesthesia groups across the nation are non-compliant with their protocols due to lack of "buy- in" and resistance to change traditional practice.

In particular, at a mid-size urban hospital, it was reported by key stakeholders that anesthesia providers are not compliant with the facility's gynecology ERAS protocol which promotes opioid sparing techniques such as transverse abdominal plane (TAP) blocks/lidocaine infusions. The Gynecology Surgery ERAS protocol at this medical center was implemented in June of 2019. A six-month audit of gynecological surgeries between July and November of 2019, revealed that only 67 percent of the gynecology surgeries cases utilized TAP blocks or lidocaine infusions, indicating a possible clinical gap in practice. Prior to this project, reasons for lack of compliance with ERAS use of TAP blocks and lidocaine infusion administration among anesthesia providers was unknown.

The purpose of this project was to identify the key reasons anesthesia providers were not utilizing the established ERAS guidelines

and provide recommendations to the leadership that had authority to mitigate this issue and improve clinical practice of anesthesia providers caring for gynecology surgical patients.

The following methods were framed using the Johns Hopkins Evidence Based Practice Model and have been established to achieve the project's overall aim: 1) review and synthesize the evidence from the literature around the use of ERAS guided TAP block/lidocaine infusion practices in gynecologic surgical patients, 2) conduct chart audits to assess anesthesia provider compliance with ERAS required use of TAP blocks/lidocaine infusions in gynecology surgical patient, and lastly, 3) present project findings (e.g., chart audit data and identified compliance barriers) and evidence-based recommendations, using a SWOT analysis briefing and discussion format to the key stakeholders and surgical quality improvement department leader.

Results of the chart audit indicated that ERAS orders were placed 52.5 percent of the time and lidocaine infusions were administered 37.5 percent of the time. Discussions with stakeholders in a SWOT format concluded that main barriers include lack of communication between anesthesia providers and surgeons, surgeon and anesthesiologist reluctance to believe components of the ERAS protocol are effective, and nurse anesthetists not being involved in perioperative discussion or performance of TAP blocks. The results of the SWOT analysis, recommendations for change, and the literature were given to the surgical quality improvement leader and the head anesthesiologist champion.

The findings of this scholarly project serve as a beginning point towards improving provider compliance with EBP ERAS guidelines. Findings may also inform policy, educational programs, and clinical competency frameworks, which may improve anesthesia practices and patient outcomes centeredon using standardized ERAS protocols for administering TAP blocks/lidocaine infusions gynecologic surgery patients in the future.

Bridging the Gap Between Evidence-Based Opioid Sparing Techniques and Anesthesia Provider Practice

Introduction of the Problem

In light of the current opioid epidemic in the United States, multiple health care specialists and nursing leaders have been working to reverse this deadly opioid abuse trend. As a team, Certified Registered Nurse Anesthetists (CRNA), surgeons, and anesthesiologists have made great strides in developing evidence-based protocols titled Enhanced Recovery After Surgery (ERAS). These ERAS protocols vary according to the surgical specialty; however, one universal component includes opioid sparing techniques such as peripheral and spinal nerve blocks (American Association of Nurse Anesthetists, 2013). Despite ERAS protocol success at reducing costs and opioid consumption throughout the perioperative period, many anesthesia groups across the nation are non-compliant with their protocols due to lack of "buy-in" and resistance to change traditional practice (Reede et al., 2017).

This common anesthesia/surgical provider problem of non-compliance with ERAS protocols was identified in the gynecology surgery patient population at a mid-size urban hospital. The Gynecology Surgery ERAS protocol was implemented in June of 2019 and an audit of gynecological surgeries between July and November revealed that during the six- month time frame, opioid sparing medication administration techniques such as transverse abdominal plane blocks (TAP) or lidocaine infusions were used during only 67 percent of cases. Transverse abdominal plane blocks are a type of regional anesthesia used to anesthetize the nerves supplying motor and sensory innervation to the transverse abdominal muscles and the skin above the muscle. The efficacy of pain control with lidocaine infusion also derives from nerve conduction blocking. These opioid sparing components of the ERAS protocol are typically the responsibility of the

anesthesiologist and surgeon at the facility of interest. These components were audited due to anecdotal reports that they were underutilized with gynecology surgery patients at this facility. Evidence supports the consistent use of ERAS protocols, TAP blocks, and lidocaine infusions to decrease opioid use, length of stay, post op complications, and costs ("ERAS protocols go nationwide," 2017). In a systematic review of fifty studies, authors found ERAS protocols to decrease opioid consumption and pain levels and another prospective analysis found a hospital to save around five million dollars and reduce patient length of stay one year into their ERAS protocol implementation (Heathcote et al., 2019 & Schieb et al., 2018).

Prior to this project, the reasons for lack of compliance with ERAS use of TAP blocks and lidocaine infusion administration among anesthesia providers was unknown. There was a need to determine the reasons why providers were not following the current protocol and identify strategies to help mitigate compliance with ERAS recommended opioid sparing techniques like TAP blocks and lidocaine infusions. The purpose of this project was to identify the reasons anesthesia providers were not using the TAP blocks and lidocaine infusions in compliance with established ERAS guidelines and to provide valuable data and recommendations to the leadership groups that have authority to mitigate this issue towards improving clinical practice of anesthesia providers caring for gynecology surgical patients.

Background

Components of ERAS protocols such as opioid sparing techniques to manage intraoperative and postoperative pain include prescription of non-steroidal anti-inflammatories, Gabapentin, and regional anesthesia, such as peripheral blockade

(American Association of Nurse Anesthetists, 2013). These opioid sparing techniques become especially important in preventing chronic opioid use and abuse in post-surgical patients (Brandal et al., 2017). The ERAS Society was formed in Europe in 2010, after it was discovered via multiple large studies that implementation of multimodal pain management and opioid sparing techniques resulted in decreased patient length of stays and decreased post-operative complications (Ljungqvist et al., 2017). A large study involving multiple hospital centers across Europe and New Zealand found that not only did compliance with ERAS protocols in colorectal cancer surgery patients improve short term outcomes, but five-year survival rates were also associated with increased ERAS compliance (Ljungqvist, et al., 2017). Currently, the ERAS Society has influenced ERAS implementation programs in over twenty-five countries and these protocols are being used in many different surgical specialties including gastro-intestinal, bariatric, breast, and gynecology (Ljungqvist et al.,2017). In 2017, the Agency for Healthcare Research and Quality collaborated with Johns Hopkins Medical Institute and the American College of Surgeons to fund and deploy a multimillion-dollar quality improvement initiative to implement ERAS protocols in approximately 750 hospitals in the nation (Garneski, 2017). Since this initiative, many more hospitals have implemented ERAS protocols and participated in research to enhance the evidence base surrounding various surgical cases and ERAS.

Despite these advances and proven advantages of following all components of the ERAS protocols, many hospital systems are not compliant due to provider resistance to change and unavailable resources due to cost constraints employed by hospital executives (Terrones, 2016). As an example, intravenous Tylenol is included in many ERAS protocols

for pain management postoperatively; however, many hospitals restrict or refuse to stock this medication due to the significantly increased cost when compared to oral Tylenol (Johnson, 2018). Perhaps a case could be made to continue using this medication if this aides in decreasing overall hospital cost and patient length of stay when compared to oral Tylenol. Currently in Ohio, there is not a positive incentive method from insurance company payment to utilize ERAS protocols. Also, the human nature of practitioners tends to resist change and stick to traditional means of providing anesthesia. According to Reede et al., this resistance to practice change is a major barrier to successful implementation and especially compliance with ERAS protocols (2017). Another barrier to compliance with ERAS protocols is the time constraint in planning/ordering medications and performing regional nerve blocks prior to the start of the case (Terrones, 2016). CRNAs provide sixty-three percent of all anesthetics in the nation (American Association of Nurse Anesthetists, n.d.); however, at the hospital of interest, current policy does not allow nurse anesthetists to perform regional nerve blocks, despite their training and education to do so.

Review of the Literature

In an attempt to gain a deeper understanding of the evidence regarding the benefits of ERAS protocols on pain control, opioid use, patient length of hospital stays, and ERAS protocol compliance issues, a literature review was conducted, using key search terms derived from a well- developed PICO question. The PICO format provided a framework for examining and answering a specific question related to the previously described problem (Melnyk & Fineout-Overholt, 2005). The PICO format was used to develop the clinical question as well as provide strategic keys search terms to obtain the best evidence related to the problem. The four components include “population of interest [P], intervention of

interest [I], comparison of interest [C], and outcome of interest [O]" (Melnyk & Fineout-Overholt, 2005, p. 29). The population of interest for this project was gynecological surgery patients. The intervention of interest was the provision of care using a standardized, evidence-based ERAS protocol and process with administration of TAP block and /or lidocaine infusion. The comparison of interest was the provision of care for gynecologic surgery patients that does not currently utilize the ERAS protocol, TAP block and lidocaine administration. The outcomes of interest looked at the impact the ERAS protocol, TAP blocks, and/or lidocaine administration on patient safety, complication rates, perceived pain ratings, opioid consumption, length of stay, and relevant care costs. The PICO question was as follows: [P] In gynecological surgery patients, how does the provision of care using a [I] standardized, evidence-based ERAS protocol of opioid sparing administration of TAP block and lidocaine injection compare [C] to typical care practices which do not currently utilize the ERAS guided TAP block and lidocaine administration, impact [O] patient perceived pain ratings, opioid consumption, and length of stay. Multiple variations of Boolean logic were used to search the database PubMed.gov. The advanced search tab was used with "TAP" typed in the first box, followed by "pain" in the second box, and "gynecology" in the third box. This combination recovered forty-six journal articles published in the last ten years related to the key terms with two being systematic reviews and fourteen randomized control trials. The remaining relevant articles included retrospective analysis and clinical case reports. Nineteen of these articles were relevant to the outcomes of interest including pain scores, length of stay, opioid consumption, and cost.

These studies compared the use of a TAP block with various combinations of local anesthetics to oral opioids, intravenous opioids, oral non-steroidal medication, local

surgical site infiltration, and combination of TAP block with oral or intravenous opioids. Another variation included “ERAS” in the first box, “outcome” in the second box, and “gynecology” in the third box. This combination yielded eighty journal articles with one relevant systematic review, two relevant randomized control trials, and one prospective analysis of outcomes before and after ERAS implementation.

Synthesis of the Literature

Enhanced Recovery after Surgery Protocols and Outcomes.

Enhanced Recovery After Surgery (ERAS) protocols have been implemented for the perioperative, intraoperative, and postoperative management of surgical patients throughout the nation and have been successful in reducing opioid use, length of stay, and hospital costs (“ERAS protocols go nationwide”, 2017). A prospective analysis comparing length of stay, relevant health care costs, and mortality rates of patients prior to ERAS protocol implementation and one year after ERAS implementation, according to Heathcote et al., was found to save one hospital five million dollars in a year and 1,847 hospital days (2019). It is likely that if the hospital of interest is able to achieve high compliance with their ERAS protocols across various surgical specialties, the hospital system could see a reduction in costs. A systematic review conducted by Schieb and colleagues reviewed fifty studies which evaluated the outcomes of ERAS protocols in gynecology surgery patients, and based on their review, the authors recommended a multimodal opioid sparing approach to pain management which is included in ERAS due to reduced opioid consumption and pain scores associated with ERAS (2018). Another systematic review conducted in 2016 by Miralpiex et al., concluded from their database search using key terms including gynecology oncology, colorectal surgery, gynecology

surgery, ERAS, and fast-track surgery, that ERAS protocols decreased costs, opioid use, length of stay, and improved overall patient satisfaction. The authors found a retrospective analysis of four hundred patients who underwent hysterectomies with ERAS protocol implementation had an average of a two-day decreased length of stay compared to those who had surgery before the ERAS protocol was implemented (Miralpiex et al., 2016). A reduction in the length of stay could potentially decrease costs and improve patient satisfaction at the hospital of interest.

Transverse Abdominal Plane Blocks and Outcomes.

Anesthesia personnel and/or the surgeon are responsible for implementing components of the ERAS protocol which, at the hospital of interest, included performing TAP blocks and/or maintaining a lidocaine infusion during the perioperative period. TAP blocks and the respective effects on patient pain, opioid consumption, and complication rates have been studied thoroughly. The majority of evidence reveals a decrease in all of the previously mentioned outcomes (Ma et al., 2017); therefore, TAP blocks have been included as a vital component of gynecological ERAS protocols at the hospital of interest.

Specific to the outcomes of pain levels and opioid consumption, the authors of a randomized control trial found that TAP blocks decreased pain levels and opioid consumption when compared to intravenous narcotic administration and epidural catheter placement (Mathew et al., 2019). Additionally, the utilization of TAP blocks and lidocaine infusions would require less workload or nursing and anesthesiologist supervision for the hospital of interest's staff when compared to a continuous epidural catheter infusion and frequent intravenous narcotic administration. The authors of a systematic review of thirty-two randomized control trials comparing TAP blocks in various types of abdominal and

gynecology surgeries to traditional means of pain control (IV narcotics, oral opioids, epidural), as seen in Table 1 Synthesis of Literature, found that the addition or sole use of TAP blocks for pain control improved patient reported pain levels and decreased total opioid consumption (Ma et al., 2017). Thus, adhering to an ERAS protocol with TAP block and lidocaine infusion could increase patient satisfaction and possibly result in increased reimbursement via Press-Ganey scoring metrics. Another systematic review comprised of studies including 855 patient who underwent total abdominal or laparoscopic hysterectomies displayed significantly reduced morphine consumption in the TAP block group and a delayed need for pain management intervention after surgery compared to those with placebo or no TAP block (Bacal et al., 2019). The reduction in opioid pain medication, patient reported pain levels, and decreased length of stay which TAP blocks may provide, could improve patient satisfaction at the hospital of interest if provided more consistently.

Lidocaine Infusion and Opioid Consumption/Pain.

Another intervention included in the ERAS protocol for gynecology surgery is infusion of lidocaine throughout the procedure. Lidocaine infusions have been shown to decrease opioid consumption and pain levels at least for the first forty-eight hours after surgery (Naik et al., 2017). There is less literature supporting the use of lidocaine infusions; however, they are relatively inexpensive and require minimal labor to infuse, therefore, they are included in the hospital of interest's ERAS protocol.

Although evidence supports the use of ERAS protocols, and the opioid sparing techniques used by anesthesia providers are critical in our current opioid epidemic, many hospitals throughout the nation are non-compliant with the use of these techniques ("ERAS

Protocols Go Nationwide", 2017). As with any significant change in patient/provider practice, staff "buy-in" and access to resources becomes a major key to compliance and implementation of the protocol (Terrones, 2016).

Table 1

Synthesis of Literature

Study Authors	Ma, N., Duncan, J. K., Scarfe, A. J., Schuhmann, S., & Cameron, A. L	Mathew, P., Aggarwal, N., Kumari, K., Gupta, A., Panda, N., & Bagga, R	Chang, H., Rimel, B., Li, A. J., Cass, I., Karlan, B. Y., & Walsh, C.	Wan, K. M., Carter, J., & Philp, S.	Scheib, S. A., Thomassee, M., & Kenner, J. L.
Level of Evidence/Study Type	Systematic Review	Randomized Control Trial	Retrospective observational	Retrospective Observational	Meta-analysis
Size=N Setting	32 RCTs	60 patients	98 patients who underwent open hysterectomy with a gynecology oncologist	454 gynecology surgery patients with the same surgeon	50 studies
Type of Nerve Block	TAP	TAP	TAP	ERAS protocol	ERAS protocol
Variables	Pain levels with TAP block in addition to oral opioids and pain levels with only oral opioids	Each group received the same pain control intervention of TAP blocks with either .25 percent bupivacaine bilaterally at the end of the procedure, .125 percent bupivacaine via epidural boluses for 24 hours, or diclofenac and tramadol intravenous injections every 6 hours for 24 hours.	Independent variables-TAP blocks in open hysterectomy patients. Dependent variables- Pain levels and use of PCA.	procedure performed, use of COX-2 inhibitor, transverse or vertical midline incision, operating time, degree of surgical intervention and estimated blood loss.	Different types of gynecological procedures with varying surgeons and facilities.
Methods	Studies with TAP block in various abdominal surgeries were included.	Patients underwent total abdominal hysterectomy were divided into three groups each group receiving a	Women who underwent open hysterectomy with similar demographic characteristics all received a PCA post-operatively and half received a TAP block	Retrospective review was performed on patients undergoing laparotomy by a single surgeon and by an ERAS protocol. Patients	Database search for ERAS protocols and gynecologic procedures

Scaffolding the Project

Project Purpose

Key stakeholders at a mid-size urban hospital reported that anesthesia providers are less than 100 percent compliant with the facility's gynecology ERAS protocol which utilizes opioid sparing techniques such as TAP blocks and lidocaine infusions. Only 67 percent of the gynecology surgeries cases used TAP blocks or lidocaine infusions, indicating a possible clinical gap in practice. Prior to completion of this project, reasons for the lack of compliance with ERAS guidelines, specifically the utilization of TAP blocks and lidocaine infusions, among anesthesia providers were unknown. There was a desire to determine why providers were not following the ERAS guidelines and identify strategies to enhance compliance with ERAS recommended opioid sparing techniques, such as TAP blocks and lidocaine infusions.

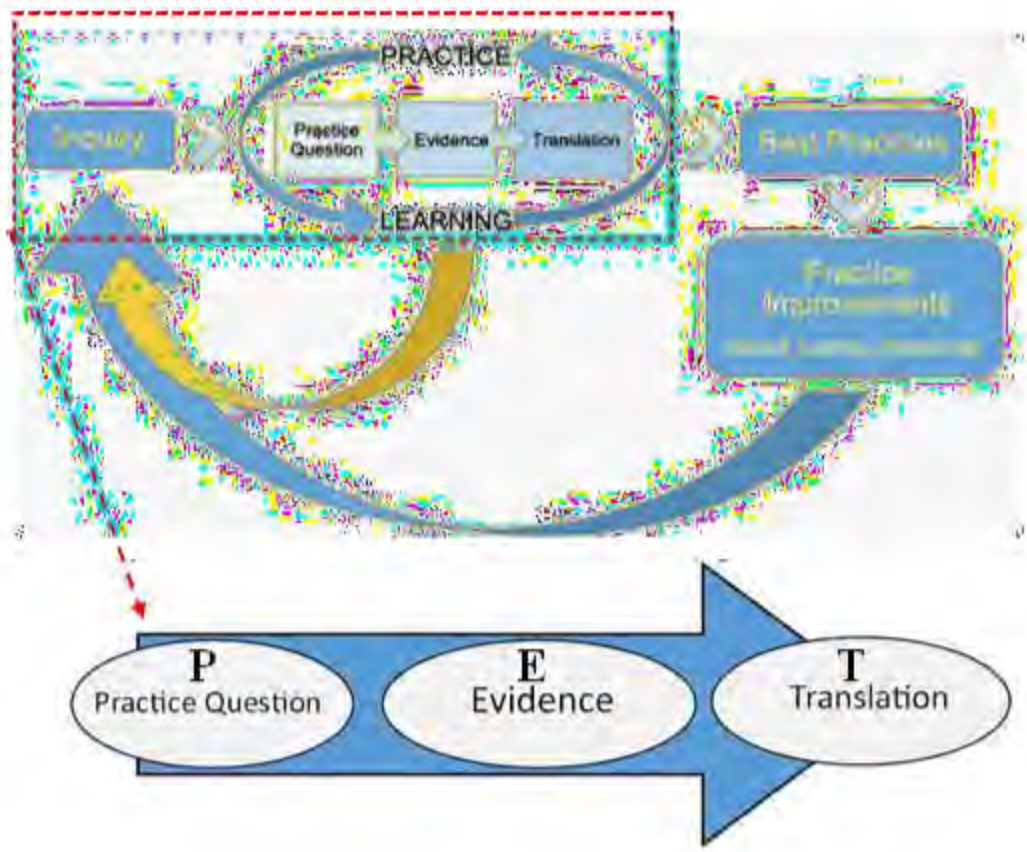
Project Framework

Figure 1. Johns Hopkins Nursing Evidence-Based Practice (JHNEBP) Model

The Johns Hopkins Evidenced Based Practice Model served as a guiding framework for this quality improvement project, and was used with permission, obtained from the Johns Hopkins University School of Nursing. The JHNEBP model is an approach to clinical decision making and problem-solving that involves utilizing an initial three step process called, 'PET' to facilitate the successful implementation of current evidence-based literature from inquiry into practice: 1) practice question, 2) evidence, and 3) translation (Johns Hopkins Nursing EBP, n.d). The aim of this model was and is to help lead nurses and clinicians through a path of inquiry, development, and eventual translation of the best evidence into patient care practices (Johns Hopkins Nursing EBP, n.d.) Therefore, the JHNEBP Model PET process was an appropriate fit to guide and support the purpose of this project. Figure 1 depicts and describes each step of the

JHNEBP Model from Inquiry through the PET Process.

Figure 1. The Johns Hopkins Nursing Evidence Based Practice Model PET Process



Note: © The Johns Hopkins Hospital/Johns Hopkins University School of Nursing. (2017). Johns Hopkins Nursing Evidence Based Practice Model [Image]. https://www.ijhn-education.org/node/18409/done?sid=81439&token=0ac7240dc9fcce64b7734b128e9

Clinical Inquiry

Issues prompting inquiry can arise from a multitude of sources, including patient satisfaction, wide variation in practice, and a lack of EBP (Newhouse et al., 2017). Inquiry is the process to identify the scope of the problem and opportunity for improvement. EBP inquiry includes knowing current practices, following steps to identify issues, and gathering evidence to address the issues (John Hopkins Hospital, 2017). Clinical inquiry was initiated by reports by key stakeholders determining a gap in practice.

JHEBP Model PET Process Step 1: Practice Question

The initial inquiry and the following practice question have helped this project team focus on the clinical problem of interest. The practice question phase of the JHNEBP model, utilized a six-step process that aided in the development of the project's foundation. In this phase, an interprofessional team was recruited and the problem was defined (Newhouse et al., 2017). The practice question helped guide the next step, the search for evidence (Newhouse et al., 2017). The following EBP question using PICO format was developed for use in phase one: [P] In gynecological surgery patients, how does the provision of care using a [I] standardized, evidence-based ERAS protocol of opioid sparing administration of TAP block and lidocaine injection compare [C] to typical care practices which do not currently utilize the ERAS guided TAP block and lidocaine administration, impact [O] patient pain ratings, opioid consumption, length of stay, and relevant care costs. The stakeholders were identified as the patients, anesthesia providers, nurses, surgical quality improvement team, and the organization. An open line of communication facilitated by periodic meetings allowed for continuity of a shared vision, common goals, and shared knowledge, which ultimately created an environment for a successful partnership between the project manager and stakeholders (Moran et al., 2020).

JHEBP Model PET Process Step 2: Evidence

Phase two, the evidence phase of the JHNEBP model, utilized a five-step process that aided in the facilitation of a thorough literature search (Dang & Dearholt, 2017). Types of evidence that can be used are as follows: "research studies; EBP practice guidelines; quality improvement data; position statement from professional organizations; opinions of internal and external experts; regulatory, safety, or risk management data; community standards; or patient survey and satisfaction data" (Newhouse et al., 2017, p 44). The details of the evidence can be found in the literature review section of this report. A table summarizing the evidence can be found in the Table 1. Literature Synthesis. Based on the appraisal of the evidence from the literature, SWOT analysis findings, and ERAS compliance data obtained from a EMR chart audit, using the ERAS Guided TAP Block/Lidocaine Infusion Compliance Chart Audit Checklist Form (Appendix A), the project manager developed a document of findings and recommendations as a method of translating to stakeholders and surgical quality improvement department leaders.

JHEBP Model PET Process Step 3: Translation

Phase three, the translation phase of the JHNEBP model, utilized an eight-step process that aided in the facilitation of project implementation (Dang & Dearholt, 2017). A clinical project mentor who was familiar with the compliance problem and worked in the surgery department's quality improvement team at the project site of interest was selected. The clinical project mentor assisted the project manager in accessing data and other resources available within the care sites and in combating organizational project obstacles (Moran et al., 2020). With the help of the community mentor, the project leader conducted a chart audit of the patients' EMR at the project site to analyze provider compliance with ERAS guided TAP block and

lidocaine infusion administration. The project team utilized the appraised evidence from the literature along with the project findings in developing EBP founded recommendations. Relevant data and recommendations were translated into a document in the form of a SWOT analysis brief and was provided to key stakeholders and the surgical quality improvement department leader to facilitate discussions leading to the identification of the reported barriers impacting ERAS compliance and use of TAP blocks/lidocaine infusions. During discussions the project leader attempted to present an overview of the problem, evidence from the literature, ERAS provider compliance data from EMR chart audits, and need for clinical practice change using the SWOT briefing format to stakeholders, and the surgical quality improvement department leader. From that point, the next phase—practice improvement—can be achieved by disseminating and implementing best practices to improve outcomes for people receiving services (Foreman-Hoffman et al., 2017). This phase can be achieved in the future by the groups, which have authority to mitigate the issue, delegate, and implement practice change strategies to improve anesthesia provider compliance with ERAS guided use of TAP blocks and lidocaine infusions in gynecology surgical patients.

Project Objectives

The overall aim of this project was to identify the reasons anesthesia providers were not utilizing TAP blocks and lidocaine infusions in compliance with established ERAS guidelines. In addition, this project served to provide valuable data and recommendations to leadership that has authority to enhance compliance and improve clinical practice of anesthesia providers caring for gynecology surgical patients. The following objectives and methods were framed using the Johns Hopkins Evidence Based Practice Model and were established to achieve the project's overall aim:

1) Review and synthesize the evidence from the literature around the use of ERAS guided TAP block/lidocaine infusion practices in gynecologic surgical patients.

2) Conduct chart audits to assess anesthesia provider compliance with ERAS required use of TAP blocks/lidocaine infusions in gynecology surgical patients, which were documented in the ERAS Guided TAP Block/Lidocaine Infusion Compliance Checklist Form (Appendix A).

3) Present project findings (e.g., chart audit data and identified compliance barriers) and evidence-based recommendations, using a SWOT analysis briefing and discussion format to the key stakeholders and surgical quality improvement department leader.

Methods

This project was reviewed by the OhioHealth Nursing Evidence Based Practice Review Committee (OH NEBPRC) and the Otterbein University Institutional Review Board (IRB) to facilitate the protection of the human subjects involved with the project. Following bi-organizational approval, a systematic chart audit of the patient EMR was conducted (see Appendix A) to determine the anesthesia providers' compliance (or non- compliance) with ERAS guidelines of using opioid sparing TAP blocks/lidocaine infusions in gynecology surgical patients. The chart audit using the patient EMR and Appendix A was used in the collection and review of data from April 2021 to June 2021. The data gathered in the chart audit was reviewed and analyzed to produce a report that was provided along with a literature synthesis table to the healthcare organization's stakeholders in the form of a SWOT analysis document. During the SWOT discussions, valuable chart audit data and recommendations were provided to the attending leadership groups which had authority to mitigate this issue towards clinical practice improvements.

Outcome Analysis Plan

Instruments & Data Collection

Chart Audit using ERAS Guided TAP Block/Lidocaine Infusion Compliance Checklist Form

- Chart Audit using ERAS Guided TAP Block/Lidocaine Infusion Compliance Checklist Form

Electronic medical record (EMR) audits provide the project leader with access to valid and reliable data (Agency for Healthcare Research and Quality, 2013). Retrospective quantitative data attained for problem identification was retrieved through an EMR audit conducted by the project manager. Data collected for anesthesia provider ERAS compliance identification by the project leader included a convenience sample for a total number of 80 gynecology surgical patient EMRs from April 2021 to June 2021. After bi-organizational approval, an EMR chart audit using the *ERAS Guided TAP Block/Lidocaine Infusion Compliance Checklist Form* (Appendix A), was conducted and determined the following:

- The number of gynecology surgical patient assessed via chart audit of EMRs from April 2021 to June 2021
- Basic demographic information (e.g., surgery date, surgical procedure, length of surgery)
- Number of TAP Blocks performed
- Number of Lidocaine infusions performed
- Number of ERAS orders placed in EMR
- Pre-operative lab availability
- Ultra-sound machine availability
- Anesthesia Provider documented reasons if ERAS orders, TAP Block, and/or Lidocaine Infusion not performed (e.g., procedure contraindicated and/or patient refused procedure,

etc.)

The data obtained through chart audit of patient EMR was placed into the ERAS Guided TAP Block/Lidocaine Infusion Compliance Checklist Form (Appendix A). The checklist data from the chart audit did not include any patient or provider personal identifiers. Personal patient identifiers or any personal information were not recorded or included in the data collection. Confidential health information such as names or unique patient/staff identifiers was not requested, collected, or stored. All collected information was fully de-identified prior to storage into a password-protected, secure spreadsheet as previously described. Only de-identified aggregate data was shared outside of the OH GMC with Otterbein University Nursing Department faculty and students as part of the dissemination of the project presentation (in partial fulfillment of the requirements for the degree).

Strengths, Weaknesses, Opportunities, and Threats Analysis (SWOT)

A SWOT Analysis Briefing Format (Appendix B) was used during meetings to assist the project leader in providing valuable chart audit data and recommendations to the attending leadership group. SWOT analysis is a process of identifying a company's Strengths, Weaknesses, Opportunities, and Threats (Moran et al., 2018). The strength (S) component focused on the facility's gynecology ERAS protocol, which was established in June 2019 and promotes opioid sparing techniques such as a TAP block and/or lidocaine infusion. Additionally, a brief discussion of the evidence from the literature (Table 1), was provided to further highlight the benefits of ERAS opioid sparing techniques for leadership members who were unfamiliar with ERAS. The weakness (W) component investigated the current identified barriers which were obtained by interactive discussions during SWOT briefings and discussions with leadership and stakeholders. Identified barriers obtained from several discussions with stakeholders was added

to the (W) section, which was used as part of the final document given to the surgical department and quality improvement leaders. The opportunity (O) component further explored the desired state that would address identified barriers and recommended ways to overcome barriers/weaknesses towards improving clinical practice compliance with ERAS guided opioid sparing techniques such as TAP blocks and lidocaine use in gynecology surgical patients. The threat (T) component addressed implications and vulnerabilities to ERAS policy compliance, clinical practice, and patient outcomes should the identified barriers/weaknesses and recommended actions not be corrected by the leadership groups. The SWOT analysis helped develop a full awareness of all the factors involved and described within this project surrounding the anesthesia providers decreased compliance with the facility's gynecology ERAS protocol.

Data Analysis

The data collected in the chart audit was uploaded into an Excel document. Descriptive statistics were used to analyze and summarize quantitative data. The use of descriptive statistics allowed the project leader to examine and provide basic summary information about the anesthesia providers' compliance (non-compliance) with ERAS protocol requirements of using opioid sparing TAP blocks/lidocaine infusions in gynecology surgical patients.

Facilitators

A physician champion and the QI project leader within the surgery department were essential to the success of the project. The project primary investigator worked with the QI leader/facilitator to obtain the original compliance rate. This was preferred, as the primary investigator obtaining specific provider data on her/his own could have created tension among the student registered nurse anesthetists and the anesthesiologists who were audited. A physician anesthesiologist champion was imperative to obtaining compliance barrier information and

assessing the practice of anesthesia providers. This driven and passionate provider is experienced in performing TAP blocks.

Project Timeline and Budget

Timeline

Between March 2021 and April 2021, the Institutional Review Board (IRB) process was completed. After IRB approval, the project's chart audit data collection was completed between April 2021 and June 2021. After data collection was completed, a formal final document of findings, evidence from the literature, and recommendations, using the SWOT format (Appendix B) was provided to the quality improvement department leader and surgical department key stakeholders in January 2022. The final scholarly written report was completed and approved along with a poster for presentation in partial fulfillment of the requirements for the Doctor of Nursing Practice degree. The project was defended and disseminated in an open forum to the Nursing Department faculty and students at the Otterbein University. Once the final written report was approved by the Committee Chair, the final report was submitted to Otterbein University for published archiving in April 2022.

Budget

The financial and nonfinancial budget for this project included personal time of the project leader with little to no monetary costs. The time spent by the project's key investigator consisted of conducting chart audits (average of one hour per week), facilitating SWOT analysis meetings (average 1 hour per month), and reaching out to key stakeholders for new viewpoints and project support, outcomes management, and data analysis. The cost of implementing provided recommendations would be minimal as the recommendations mainly consist of improved communication and education. However, an hourly cost consisting of the hospital of

interest's CRNA wage for training on TAP block administration may apply.

Ethical Considerations/Protection of Human Subjects

The ethical consideration in the project involved protecting the participants. Careful measures were taken to protect personal information. Following the review and determination by the OhioHealth Nursing Evidence-Based Practice Review Committee (OH NEBPRC), the OH NEBPRC approved proposal was submitted as part of an application to the Otterbein University IRB for approval prior to initiating this DNP Final Scholarly Project. Once Otterbein University IRB official approval was obtained, the document was submitted to the OH NEBPRC for record-keeping. Confidential health information such as names or unique patient/staff identifiers were not requested, collected, or stored.

Project Outcome

Chart Audit

The chart audit was completed using the ERAS Guided TAP Block/Lidocaine Infusion Compliance Checklist Form as shown in Appendix A. The checklist data was recorded in an excel spreadsheet as displayed by Appendix C. A total of eighty charts were reviewed for only pertinent data aligning with the checklist, and the date ranges for the cases span from April 1st to June 18th, 2021. The chart audit ceased prior to an original September end date due to the goal of eighty chart audits already reached by June 18th. Of the eighty gynecologic surgery patient charts reviewed, ERAS orders were placed 52.5 percent of the time. Lidocaine infusions were administered 37.5 percent of the time; however, a ropivacaine pain ball or TAP block was performed in lieu of the lidocaine infusion 13.75 percent of the time. Also, a TAP block was missed 18.75 percent of the time when a lidocaine infusion or pain ball was not used.

SWOT Analysis

The project team leader met with multiple anesthesiologists, nurse anesthetists, and surgeons at the facility of interest to facilitate discussion regarding barriers to compliance with the facility's gynecology ERAS protocols. Chart audit data and evidence to support ERAS protocols from the literature were presented and discussed as indicated. The SWOT format was used to summarize the feedback and facilitate discussion with providers. Identified strengths (S) included:

- Multiple reference cards with instructions and guidelines regarding the ERAS protocol easily accessible on the anesthesia pyxis machine in the rooms where these procedures are performed.
- Increased knowledge of benefits of ERAS protocols
- Ample number of ultrasound machines, medication, and equipment available and ready

Identified weaknesses (W) included:

- CRNA's inability perform regional anesthesia, specifically peripheral nerve blocks at the facility of interest.
- CRNA's do not always feel compelled to discuss the preoperative plan or suggest the potential for regional anesthesia or ERAS protocols with the surgeon.
- Anesthesia providers express skepticism regarding the effectiveness of lidocaine infusions reducing pain scores and opioid requirements.
- There is often a lack of communication between anesthesia providers and surgeons, therefore the ERAS protocol and its vital components regarding opioid sparing analgesia are being missed.
- Some surgeons do not agree to ordering the ERAS protocol for their patients because they believe it would not aide in discharging the patient sooner.

- Some anesthesia providers find it difficult to express the benefits of ERAS to the surgeon and dismiss the protocol to avoid delays in surgery start time and increased OR turn over time.

Identified opportunities (O) included:

- Education regarding efficacy of TAP blocks and lidocaine infusions reducing pain levels and need for opioid pain management.
- Possibility for CRNAs to administer regional blocks, specifically TAP blocks, at the facility.
- Improved communication between surgeons and anesthesia providers when a TAP block or lidocaine infusion is indicated for a gynecology surgery patient.

Identified threats (T) included:

- Patients who do not receive the components of the ERAS protocol may experience longer hospital length of stay, increased requirements for opioid analgesia and increased pain levels in the perioperative time.

Recommendations

The SWOT analysis revealed vital information regarding the barriers to ERAS guideline compliance. These barriers were identified under the "weaknesses" component of the SWOT analysis. Recommendations centered around improving communication between providers, allowing CRNAs to perform peripheral nerve blocks (TAP block), and increased discussion of the literature which supports ERAS protocols. Discussion of the literature is recommended due to one surgeon indicating that they did not support ordering ERAS protocols because patients are being discharged earlier, regardless of whether ERAS was ordered or not.

According to Fewster-Thuente & Velsor-Friedrich, lack of or gaps in interdisciplinary

communication between healthcare providers has been implicated in seventy percent of poor patient outcomes (2008). Improving anesthesiologist/surgeon communication prior to the start of each case in which a TAP block is an appropriate component of multimodal analgesia would increase the potential for the patient to receive the block. Also, the ERAS protocol should be ordered the day before surgery so the appropriate lab work is completed the morning before surgery. The surgeon and anesthesiologist should quickly discuss ordering ERAS the afternoon before the next day's cases via face to face or via the EMR communication tools.

Additionally, nurse anesthetists are trained to perform peripheral nerve blocks, as well as anesthesiologists. Including CRNAs in preoperative discussions and allowing them to practice to their full educational ability would increase the number of providers available to perform this skill for the patient. The CRNA could perform the TAP block prior to surgery start, near the end of the procedure, prior to emergence, or in the post anesthesia care unit, as this provider is with the patient throughout the majority of the operative period. Also, empowering CRNAs to be more involved with the anesthesia plan could increase the chances of discussing the ERAS protocol with surgeons and therefore, increase compliance.

Dissemination

Recommendations for improvement based on the SWOT analysis findings through discussions with providers and supported by evidence displayed in the literature review were disseminated to the quality improvement manager of the surgical/anesthesia department and to the head anesthesiologist of the department (Appendix D). The findings and recommendations can now be used to further discussion between providers and lead to improved compliance with the gynecology ERAS protocol.

Limitations & Barriers

Conversations with anesthesia providers and surgeons were difficult as they were reluctant to discuss weaknesses regarding compliance with the project leader; therefore, discussion of the evidence was limited. Also, as time passed between project proposal and approval, the quality improvement leader indicated a shift in focus from the gynecology ERAS compliance to another problem that developed within the surgical department. Also, the data collection period ended in June, 2021, prior to the original goal date of September, 2021.

Conclusion

In summary, substantial evidence supports the consistent use of ERAS protocols, TAP blocks, and lidocaine infusions to decrease patient pain, opioid use, length of stay, post op complications, and costs ("ERAS protocols go nationwide," 2017). A SWOT analysis and chart audit at the hospital of interest revealed multiple barriers to compliance. Recommendations to address these barriers and improve provider compliance with the protocol were given to leadership members. The recommendations formulated by the project manager are intended to guide leadership to improve compliance with the gynecology ERAS protocol within the surgical department. The method of this project exercised the project manager's ability to work through clinical problems with leadership and professional colleagues. Also, experience with electronic record chart auditing and interpretation of data was beneficial to the project manager and prepared them for future quality improvement initiatives.

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Appendix A

ERAS Guided TAP Block/Lidocaine Infusion Compliance Chart Audit Checklist Form

Patients Identification number (Made up number for project): _____ **Date of Surgery: _____** **Length of Surgery (Hours/Minutes): _____**
Gynecology Surgical Procedure Type? _____ **A**
1. Was TAP Block performed? □ Yes □No
2. Was Lidocaine Drip performed? □ Yes □No
3. Were ERAS orders placed? □ Yes □No
4. If a TAP Block/Lidocaine Drip was not performed, were pre-op labs available? □ Yes □No
5. If a TAP Block/Lidocaine Drip was not performed, was the ultrasound machine available? □ Yes □No
6. If a TAP Block/Lidocaine Drip was not performed, did patient refuse procedure? □ Yes □No
7. If a TAP Block/Lidocaine Drip was not performed, was the procedure contraindicated? □ Yes □No
8. If a TAP Block/Lidocaine Drip was not performed, did the anesthesia provider document the reason? □ Yes (What was reason?_____) □No

Appendix B

SWOT Analysis Briefing Format

Strengths:	**Weaknesses:**
Knowledge of ERAS protocols is increasing among providers	**ERAS protocol is not ordered 48% of the time (chart audit)**
Ultrasound, medications, and equipment readily available	**CRNAs not included in performanc** **TAP blocks**
ERAS protocol is ordered 52% of the time (chart audit)	**Lack of communication b** **and anesthesia provid**
Guideline/Protocol handouts are readily available in the ORs	**TAP blocks were** **hysterectomy** **Surgeon** **ERA**
Opportunities:	
Increased use of TAP block indicated	
Improved commu **anesthesia pro**	
CRNAs e **and p**	

Appendix C

Excel Chart Audit Data Summary

Appendix D

SWOT and Recommendation Document

S.W.O.T. Analysis & Recommendations for increased ERAS compliance

Strengths: • Knowledge of ERAS protocols is increasing among providers • Ultrasound, medications, and equipment readily available • ERAS protocol is ordered 52% of the time (chart audit) • Guideline/Protocol handouts are readily available in the ORs	**Weaknesses:** • ERAS protocol is not ordered 48% of the time (chart audit) • CRNAs not included in performance of TAP blocks • Lack of communication between surgeons and anesthesia providers • TAP blocks were provided only 3/18 open hysterectomy cases (chart audit) • Surgeons decline suggestions to order ERAS protocol • Anesthesia providers lack confidence to discuss benefits of protocol with surgeon
Opportunities: • Increased use of TAP block when indicated • Improved communication between anesthesia providers and surgeons • CRNAs empowered to help with work load and perform TAP blocks	**Threats:** • Patients who do not receive the components of the ERAS protocol may experience longer hospital length of stay, increased requirements for opioid analgesia, and increased pain levels in the perioperative time

RECOMMENDATION #1

- Improved communication between anesthesia providers and surgeons prior to the case leads to improved outcomes for patients. If the case involves a robotic hysterectomy, the anesthesia provider should offer the opportunity for ERAS components to be ordered the day before the surgery and offer a plan for a TAP block to be performed prior to surgery start or in the PACU if the case proceeds to an open hysterectomy.

RECOMMENDATION #2

- Nurse anesthetists have the ability to perform peripheral nerve blocks, in this case, TAP blocks, when they are trained to do so. Training a number of CRNAs to perform nerve blocks would increase the number of capable providers available to perform TAP blocks. This will be especially helpful in the PACU or close to the patient emerging from anesthesia.

RECOMMENDATION #3

- Discussion between anesthesia providers and surgeons regarding the benefit of ERAS protocols and the vast evidence to support the protocols may improve surgeon compliance. Patients experience improved outcomes with sound interdisciplinary communication and continued discussion of the literature and evidence between care providers.

Appendix E

Otterbein University International Review Board Document

OTTERBEIN UNIVERSITY

INSTITUTIONAL REVIEW BOARD

__X__ Original Review
_____ Continuing Review
_____ Amendment

Dear Dr. Garrett,

With regard to the employment of human subjects in the proposed research:

IRB # 20/21-63
Garrett, Hempfling & Sribanditmongkol: Bridging the Gap Between Evidence-Based ...

THE INSTITUTIONAL REVIEW BOARD HAS TAKEN THE FOLLOWING ACTION:

We have determined that the proposed activity is not characterized as human subjects research, in that the investigators are not:

1. Obtaining information or biospecimens through intervention or interaction with the individual, and using, studying, or analyzing the information or biospecimens; or
2. Obtaining, using, studying, analyzing, or generating identifiable private information or identifiable biospecimens.

Therefore, IRB review is not required.

Date: 11 March 2021 Signed: Meredith C. Frey
Chairperson

(Revised January 2019)