

**Barriers to Optimal Patient Outcomes of an Enhanced Recovery After Surgery Protocol
for Gynecologic Surgery Patients Encountered by Post-Anesthesia Care Unit Nurses at the
OHSU Center for Health and Healing**

Maja Jozanovic BSN, CCRN, SRNA, Nathan Kania BSN, RN, SRNA,

Angel Sidell BSN, RN, SRNA, Nicholas Willis BSN, RN, SRNA

Oregon Health and Science University School of Nursing,

Nurse Anesthesia Program

Project Chair: Douglas Arditti, DNP, FNP-C, CRNA

Date of Submission: 8/31/2021

Abstract

Enhanced Recovery After Surgery (ERAS) is a multidisciplinary, perioperative care pathway which consists of established guidelines intended to improve outcomes in patients who undergo surgical procedures. Studies have shown that successful implementation of an ERAS protocol can reduce postoperative complication rates and health care costs. A formal analysis was performed in order to identify existing barriers to the implementation of an ERAS protocol among Post Anesthesia Care Unit (PACU) nursing staff for patients undergoing gynecologic surgery at the Oregon Health Science University (OHSU) Center for Health and Healing (CHH). Multiple factors were identified, the most prominent were: (1) poor communication; (2) lack of staff and patient education; (3) the absence of an identified ERAS protocol champion; and (4) insufficient receipt of feedback regarding patient outcomes and overall protocol status. These findings offer an opportunity to design and implement interventions to strengthen protocol adherence; improve interdisciplinary communication; and enhance the knowledge base of the PACU nursing staff.

Contents

Introduction	4
Problem Statement	5
Review of the Literature	6
Theoretical Framework.....	9
Methods & Objectives	10
Ethical Considerations/Protection of Human Subjects	11
Results.....	11
Discussion.....	12
Conclusion	15
References.....	16
Appendix A: Project charter and timeline	20-21
Appendix B: Fishbone diagram	21
Appendix C: Survey tool	22-24
Appendix D: ERAS protocol goals identified by survey respondents.....	25
Appendix E: Participants’ identification of ERAS protocol “champion”	25
Appendix F: Factors believed to adversely impact patient outcomes.....	26
Appendix G: Responses regarding ERAS protocol impact on patient outcomes.....	26
Appendix H: IRB determination.....	27
Appendix I: Yes/No responses to survey questions.....	28
Appendix J: Participant responses to survey items categorized by theme.....	29
Appendix K: Demographics of survey respondents	30

Introduction

Enhanced recovery after surgery (ERAS) protocols have been shown to improve postoperative patient outcomes (Cohen & Gooberman-Hill, 2019). In general, these protocols contain patient care guidelines which address the following: (1) strategies that utilize preemptive analgesia; (2) multimodal analgesia approaches to reduce opioid usage, (3) post-operative nausea/vomiting (PONV) prophylaxis,; and (4) interruption/mitigation of the catabolic state induced by the surgical stress response (ACOG Committee Opinion No. 750, 2018; Bauchat & Habib, 2015; Scott & Miller, 2015). Interventions outlined within an ERAS protocol often involve all phases of perioperative care. Thus, there are numerous implications for all members of the care team including surgical, nursing, and anesthesia staff.

The implementation of an ERAS protocol is a multidisciplinary endeavor; and in order to achieve the best outcomes, each team member must understand their role and responsibilities (ACOG Committee Opinion No. 750, 2018). Patient outcomes are optimized when care team members carry out all elements that comprise an ERAS protocol. Omission of one part of the protocol potentially jeopardizes the outcomes sought by that agency (ACOG Committee Opinion No. 750, 2018; Scott & Miller, 2015). Implementation of any new workflow protocol or practice guideline occurs with the expectation that all stakeholders will share responsibility and accountability for their particular roles. Members of the healthcare team often have different perspectives and priorities related to their roles and responsibilities (Kahokehr et al., 2009). Thus, the summary of these variables creates a setting in which teamwork and communication are paramount concerns.

Practice Setting

Oregon Health and Science University (OHSU) Center for Health and Healing (CHH) is an ambulatory and short stay surgical center located in Portland, Oregon. The Department of Gynecologic Surgery recently implemented an ERAS protocol for patients undergoing total laparoscopic hysterectomy. The Post Anesthesia Care Unit (PACU) nursing department leadership reached out to the OHSU School of Nursing Nurse Anesthesia Program to assist them with a variety of issues which had arisen after implementation of the protocol. Their concerns included the observation that there were a significant proportion of patients who were experiencing problems with postoperative pain, nausea, and prolonged length of stay in the PACU. These factors led to the formation of our ERAS protocol work group and plan outlined in the project charter and timeline (see Appendix A).

Problem Statement

Studies have demonstrated that implementation of an ERAS protocol for gynecologic surgery patients can reduce postoperative complication rates (ACOG Committee Opinion No. 750, 2018; Bauchat & Habib, 2015; Scott & Miller, 2015). The consensus amongst PACU leadership was that nursing staff were often unfamiliar with some of the components of the ERAS protocol. In addition, they felt that nurses were sometimes ill-prepared to deliver care that would achieve the best patient outcomes while attempting to adhere to protocol guidelines. These concerns served as the catalyst to pursue a formal investigation which focused on the following: protocol implementation, existing stakeholder attitudes, and the staff's current level of knowledge surrounding the gynecologic ERAS practices. The purpose of this project was to identify common barriers to ERAS implementation and discover which barriers were present among the PACU nursing staff at CHH. Identification of these barriers would then serve as the

basis on which the ERAS group would tailor recommendations aimed at improving patient outcomes by strengthening protocol adherence and the knowledge base of the PACU nursing staff.

Review of the Literature

The literature is replete with studies designed to guide successful implementation of ERAS protocols; though studies that focus on GYN-related protocols are sparse. Although evidence for its positive impact on patient outcomes was developed in the context of colorectal surgeries, ERAS principles have been increasingly utilized in many other specialties, including gynecologic surgery (Cohen & Gooberman-Hill, 2019; Gramlich et al., 2020; Kahokehr et al., 2009). ERAS protocols can often be complex as they often contain many components which span the perioperative period (Cohen & Gooberman-Hill, 2019). In order to achieve the best outcomes, it is necessary to identify and overcome barriers to implementation or adherence to protocols that may exist in a particular healthcare environment. Our literature review revealed that the following factors negatively impact the success of an ERAS protocol: (1) poor communication; (2) inadequate staff education; (3) ineffective leadership; (4) negative staff attitude; (5) lack of staff acceptance (6) poor compliance; (7) and absence of regular auditing (Brown & Xhaja, 2018; Cohen & Gooberman-Hill, 2019; Gramlich et al., 2020; Kahokehr et al., 2009; Pearsall & McLeod, 2018). These factors will be discussed in greater detail.

Lack of effective communication represents a large portion of the challenges that often emerge during ERAS protocol implementation. Strategies shown to enhance communication include presence of ERAS champions, knowledge dissemination, and interdisciplinary willingness to collaborate (Pearsall et al., 2015). Given that the perioperative setting hosts many disciplines including: surgeons, anesthesia providers, nurses, and patients, the integrity of the

communication chain is threatened by factors that may be common in all healthcare environments. These include nursing staff turnover, burnout, lack of consistent educators, and lack of interdisciplinary team support (Brown & Xhaja, 2018; Cohen & Gooberman-Hill, 2019; Pearsall et al., 2015).

Presence of an ERAS champion, a staff member designated as a point of contact for ERAS related questions and guidance, is essential to effective protocol implementation. An ERAS champion facilitates communication, promotes positive attitudes, and provides consistent leadership (Brown & Xhaja, 2018; Gramlich et al., 2020).

Knowledge dissemination involves educating nursing staff about ERAS principles and data that supports the protocol, as well as a discussion aimed at managing expectations regarding patient outcomes (Cohen & Gooberman-Hill, 2019; Kahokehr et al., 2009; Pearsall & McLeod, 2018).

Willingness to collaborate can be affected by the quality of information dissemination, staff attitudes, stakeholder buy-in, and the presence of effective leadership (Brown & Xhaja, 2018; Cohen & Gooberman-Hill, 2019; Gramlich et al., 2020; Kahokehr et al., 2009). Not only does this further highlight the importance of an ERAS champion, but also displays the interconnected components that impact the effectiveness of existing communication streams.

Attainment of desired patient outcomes is highly dependent on performance auditing and timely delivery of feedback to stakeholders (Cohen & Gooberman-Hill, 2019; Gramlich et al., 2020; Kahokehr et al., 2009; Nelson et al., 2019). Ongoing assessment of compliance to the protocol is frequently mentioned in the literature; and ERAS success declines when continuous measurement of compliance is absent (Gramlich et al., 2020; Kahokehr et al., 2009; Nelson et al., 2019). Periodic protocol audits have multiple potential effects that support staff which

include: conveying management's support for their work and well-being; facilitate the delivery of consistent feedback; and enhancement of communication felt to boost staff morale which ultimately may increase their willingness to participate (Cohen & Gooberman-Hill, 2019; Kahokehr et al., 2009).

The attitudes of various staff are also greatly interconnected by other factors that impact ERAS protocol implementation which may result in uncertainty regarding their role and ineffective communication. The attitude of each member has implications for adherence to the protocol, and ultimately implementation success (Kahokehr et al., 2009). Negative attitudes which can arise from content which can lead to misconceptions regarding ERAS principles as well as give rise to false views regarding the appropriate roles of self and coworkers. This can ultimately affect stakeholder buy-in (Cohen & Gooberman-Hill, 2019). Additionally, when negative attitudes drive the notion that any change is dramatic, resistance to change can emerge—one of the chief barriers to ERAS protocol implementation (Cohen & Gooberman-Hill, 2019; Pearsall et al., 2015).

Lastly, patient education about surgical and post-recovery procedures may alleviate their fear and anxiety, which can improve immediate postoperative recovery (Balfour, Burch, Flecher-Jones & Carter, 2019; Huang, Cao, Nelson & Wilson, 2019). Care team members should set goals and discharge criteria preoperatively as this is necessary to set realistic expectations and help guide patients through the postoperative phase of recovery (Balfour, Burch, Flecher-Jones & Carter, 2019; Gustafsson et al., 2019).

It is important to note that in order to effect change within an established system, it is not enough to simply identify existing barriers. Rather, by addressing the barriers that we have identified within the context of a quality improvement-focused theoretical framework, a more

robust foundation can be laid to achieve a greater chance of success. Thus, we felt that Lewin's Change Theory was closely aligned with how a change in practice adapts and shapes within a health care setting, specifically where a protocol or system was already in place.

Theoretical Framework

The implementation of any protocol that necessitates changing the manner in which health care is delivered is often fraught with difficulties (Rapport et al., 2017). Lewin's Change Theory posits that change is the result of a balance of driving forces within a 3-step process. When the status quo is disrupted (unfrozen), a new equilibrium is sought (change), and new habits and behaviors are reinforced (refreezing) (Hawkes & Hendricks-Jackson, 2017; Wagner & Udod, 2018). Unfreezing an existing process enables driving forces and restraining forces to be evaluated, where staff attitudes can be assessed and as a result of this assessment, resistance to change can be overcome (Wagner & Udod, 2018).

Seeking a new equilibrium requires a team approach, where multiple members can pursue better outcomes of the process (Hawkes & Hendricks-Jackson, 2017). Furthermore, sustaining the new equilibrium requires the emergence of leaders who will continually support the change (Hawkes & Hendricks-Jackson, 2017; Wagner & Udod, 2018).

These features of Lewin's theory seem appropriate to the context of the perioperative environment given that collaboration between team members across multiple disciplines is prevalent and generally viewed to be a desirable team attribute. Also, the many interactions that involve multiple staff members in the operating theater could be easily categorized as the driving or restraining forces Lewin describes. Examples of restraining forces include: negative attitudes; lack of staff acceptance and cooperation; unmanaged expectations; poor communication; lack of central ownership; knowledge dissemination, and uncertainty regarding roles. These are themes

that are well-represented within literature that explores barriers to ERAS protocol success. In order to strengthen the GYN ERAS protocol at OHSU, the status quo must be “unfrozen” and the balance of forces explored before a new equilibrium can be sought.

Methods

After being contacted by the PACU leadership, an interview was held with the manager and the project team to identify possible barriers affecting the ERAS protocol success at CHH. Insight gained from the interview, in combination with the findings summarized across multiple articles of the literature review, led to the construction of a fishbone diagram to plot and appreciate the barrier landscape at CHH (Appendix B). These barriers became our major headings (in ‘blue’ on the diagram). Based upon our understanding of these agency-specific barriers as well as our literature review a survey of 15 questions was developed (Appendix C). These questions were designed to reflect a specific theme or factor associated with the findings outlined in the literature review and the themes extracted from the fishbone diagram. Before distribution of the survey, it was edited and approved by a member of the Quality Improvement Office at OHSU.

The survey was administered anonymously via the Qualtrics platform to CHH perianesthesia nursing staff, short stay unit nurses, and the recovery float pool (N=60). Qualtrics is a free and easily accessible online tool utilized by OHSU for surveys and data collection. Data collection occurred over a 4-week period. We received 31 completed surveys with a response rate of 51.7 percent (n=31). The data compiled by Qualtrics was then analyzed by our team. The free text answers were coded by a member of our team according to similar themes and ideas. For example, responses that mentioned “teaching,” “education,” or “staff unfamiliarity” were all categorized under “education.” These data were entered into Excel and responses to

open-ended questions are shown in bar charts (Appendices D-G). The consensus among the authors was that a simple majority of responses (≥ 16 or greater than 50 percent) constituted the threshold in which a potential barrier was identified.

Ethical Considerations

The OHSU Institutional Review Board (IRB) determined that a detailed review and approval was not required for this project as it did not involve human subjects research and no patient health information (PHI) was collected (Appendix H). Anonymity of both the survey respondents and their responses was maintained.

Results

The survey respondents identified multiple barriers which could adversely affect the roll-out of the ERAS protocol implementation within the PACU at CHH. The most prominent were: (1) poor communication, (2) lack of staff and patient education, (3) confusion surrounding the identification of a protocol champion; and (4) lack of feedback received from management. Responses to 'yes/no' and 'agree/disagree' questions are summarized in Appendix I and are grouped by barrier category. The table in Appendix J outlines this information and includes the compiled survey responses.

Demographics. 56 percent of the respondents were from the CHH perianesthesia unit, while 23 percent came from recovery float pool and 21 percent were based in the short stay unit (see Appendix K).

Knowledge dissemination and staff education. Eighty percent of respondents (n=25) identified that they were aware of the existence of a GYN ERAS protocol. Twenty-one respondents were able to identify where to find the protocol if needed for reference. Nineteen respondents (61 percent) indicated that they felt unknowledgeable about the ERAS protocol

before its rollout, but understood their specific role in the protocol. Analyses of survey responses revealed ineffective ERAS protocol education was most often noted in those nurses who were members of the PACU float pool. This finding is significant because recovery float pool nurses comprise 23 percent of the perioperative unit staff.

Patient education. Eighty-three percent (n=20) of participants marked "agree" regarding lack of patient education as a barrier to ERAS protocol success (see Appendices G and I). Participants felt that more preoperative patient education regarding ERAS would help manage unmotivated patients and postoperative expectations surrounding adequacy of postoperative pain management.

Interdisciplinary communication. Lack of feedback for performance is a barrier that was identified by 100 percent of respondents that chose to answer the question (see Appendix I). Participants were then asked, "Do you think that CHH GYN ERAS protocol is improving outcomes for their intended patients?" While ten chose 'yes,' 13 chose either 'no' or 'unsure.' This finding could be directly related to lack of feedback regarding the protocol. Open-ended explanations revealed that many nurses are unsure of how patients are selected for the ERAS protocol, what constitutes an ERAS success, and what is considered an ERAS failure.

Discussion

The survey respondents identified multiple barriers that they believe affected their ability to successfully implement the new ERAS protocol within the PACU at CHH. The most prominent were poor communication, insufficient staff and patient education, and lack of feedback. The majority of respondents indicated that they did not feel knowledgeable about ERAS concepts or the GYN ERAS protocol prior to its rollout. Responses to open-ended

questions demonstrated either partial or complete lack of knowledge surrounding the intended outcomes of the ERAS protocol (see Appendix G).

Unfortunately, the rollout of the protocol coincided with the beginning of the coronavirus pandemic. This resulted in health system-wide operational changes such as elective surgery cancellation, work-from-home mandates, and alterations to staffing. The authors believe that this unprecedented situation may have negatively impacted information sharing and instruction regarding the ERAS protocol. Institutional priorities shifted to modifying operations in the interest of public and staff health, which may have diminished the goals of department-specific initiatives. Another potential factor that affected staff knowledge was the reported lack of education. The authors feel that there a significant knowledge gap exists which disproportionately impacts the PACU float pool nursing staff. This represents an opportunity for conducting educational sessions aimed at the inclusion of all nursing staff who practice in the PACU.

In addition to staff education, respondents also identified that they believe patients were inadequately educated regarding the postoperative goals and discharge criteria leading to inappropriate expectations in the perioperative period. When specifically asked to clarify factors felt to negatively impact patient outcomes, “patient expectations” was most frequently stated; followed closely by “pain” and “sedation” (see Appendix F). Some examples of survey responses that illustrate these concerns are: “patients aren’t typically educated in preop about the process and purpose [of ERAS],” and “patients rarely understand [the ERAS protocol].” The authors believe that inadequate patient education may be associated with patient expectations that are discordant with certain realities of the surgeries that they undergo. Thus, there is an

opportunity for improvement by implementing additional in-depth staff and pre-operative patient education.

The survey respondents did not uniformly agree on who they identified as the ERAS champion at CHH. The majority of the respondents indicated the current nurse manager as the individual to contact for ERAS questions, followed by the charge nurse and the surgeons respectively. Although the responses indicate that a nurse manager may be the de facto ERAS champion, it does not account for whether this role has been officially assigned. This is consistent with our findings that an ERAS champion is not identified in the ERAS protocol design. While the current nurse manager does field questions regarding the ERAS protocol, the passive adoption of this critical role might be incompatible with the role described in the literature which seeks for an active, engaged champion selected among the nursing staff. This individual should also be highly visible and actively involved in the process of data collection, feedback on protocol performance, and regular auditing. Experts agree that the absence of an ERAS champion is a harbinger of poor communication and it negatively impacts success. The failure to identify an ERAS champion exposes a major weakness in the protocol's design, and should be considered a barrier to successful implementation.

Communication is a fundamental building block essential to protocol success that is present in every barrier identified at CHH. Therefore, our workgroup recommendations include: (1) provision of regular feedback to PACU nursing staff regarding the status of the ERAS protocol and patient outcomes; (2) appointment of an ERAS champion among the nursing staff; (3) education of float pool nurses on the core principles of ERAS protocols as well as components of the GYN ERAS protocol at CHH; and (4) a separate evaluation of the process in

which pre-operative education is provided to patients who are chosen to be enrolled in the ERAS protocol.

Conclusion

Experts agree that barriers to successful ERAS protocol implementation are multifactorial in nature. To the best of our knowledge, no prior survey to assess the rollout of an ERAS protocol has been done at this facility. Though there were a number of themes and potential problem areas that were identified by our workgroup, we found the following deficiencies to be the most prominent: (1) inadequate pre-emptive education surrounding patient expectations included in the GYN ERAS protocol; (2) lack of education of float pool nursing staff in the PACU about ERAS concepts and facility protocol; (3) no formal appointment of an ERAS champion selected from the nursing staff; (4) absence of ongoing protocol audits with provisions to provide regular feedback provided to all nursing staff.

One important limitation of this project was our inability to explore what effects the roles and delivery of patient care by anesthesia and preoperative anesthesia clinic staff may have had on the barriers that we identified. The barriers identified in this project should serve as a genesis for development of relatively straightforward and practical interventions to improve the GYN ERAS protocol.

References

- ACOG Committee Opinion No. 750. (2018). *Obstetrics & Gynecology*, 132(3).
<https://doi.org/10.1097/aog.0000000000002818>
- Balfour, A., Burch, J., Fecher-Jones, I., & Carter, F. J. (2019). Understanding the benefits and implications of Enhanced Recovery After Surgery. *Nursing standard (Royal College of Nursing (Great Britain) : 1987)*, 34(7), 70–75. <https://doi-org.liboff.ohsu.edu/10.7748/ns.2019.e11437>
- Bauchat, J. R., & Habib, A. S. (2015). Evidence-Based Anesthesia for Major Gynecologic Surgery. *Anesthesiology Clinics*, 33(1), 173–207.
<https://doi.org/10.1016/j.anclin.2014.11.011>
- Brown, D., & Xhaja, A. (2018). Nursing Perspectives on Enhanced Recovery After Surgery. *The Surgical clinics of North America*, 98(6), 1211–1221. <https://doi-org.liboff.ohsu.edu/10.1016/j.suc.2018.07.008>
- Cohen, R., & Gooberman-Hill, R. (2019). Staff experiences of enhanced recovery after surgery: systematic review of qualitative studies. *BMJ Open*, 9(2). <https://doi.org/10.1136/bmjopen-2018-022259>
- Gramlich, L., Nelson, G., Nelson, A., Lagendyk, L., Gilmour, L. E., & Wasylak, T. (2020). Moving enhanced recovery after surgery from implementation to sustainability across a health system: a qualitative assessment of leadership perspectives. *BMC Health Services Research*, 20(1). <https://doi.org/10.1186/s12913-020-05227-0>
- Gustafsson, U. O., Scott, M. J., Hubner, M., Nygren, J., Demartines, N., Francis, N., Rockall, T. A., Young-Fadok, T. M., Hill, A. G., Soop, M., de Boer, H. D., Urman, R. D., Chang, G. J., Fichera, A., Kessler, H., Grass, F., Whang, E. E., Fawcett, W. J., Carli, F., Lobo, D.

- N., ... Ljungqvist, O. (2019). Guidelines for perioperative care in elective colorectal surgery: Enhanced Recovery After Surgery (ERAS®) Society Recommendations: 2018. *World journal of surgery*, 43(3), 659–695. <https://doi-org.liboff.ohsu.edu/10.1007/s00268-018-4844-y>
- Hawkes, B., & Hendricks-Jackson, L. (2017). Current theories of change management. In *Nursing professional development: review and resource manual* (pp. 139–145). American Nurses Credentialing Center. <https://www.nursingworld.org/~49379b/globalassets/catalog/sample-chapters/npsamplechapter.pdf>.
- Huang, J., Cao, C., Nelson, G., & Wilson, R. D. (2019). A review of Enhanced Recovery After Surgery principles used for scheduled caesarean delivery. *Journal of obstetrics and gynaecology Canada : JOGC = Journal d'obstetrique et gynecologie du Canada : JOGC*, 41(12), 1775–1788. <https://doi-org.liboff.ohsu.edu/10.1016/j.jogc.2018.05.043>
- Kahokehr, A., Sammour, T., Zargar-Shoshtari, K., Thompson, L., & Hill, A. G. (2009). Implementation of ERAS and how to overcome the barriers. *International Journal of Surgery*, 7(1), 16–19. <https://doi.org/10.1016/j.ijso.2008.11.004>
- Moline B. M. (2001). Pain management in the ambulatory surgical population. *Journal of perianesthesia nursing: official journal of the American Society of PeriAnesthesia Nurses*, 16(6), 388–398. <https://doi-org.liboff.ohsu.edu/10.1053/jpan.2001.28754>
- Nelson, G., Altman, A., Nick, A., Meyer, L., Ramirez, P., Achdari, C., Antrobus, J., Huang, J., Scott, M., Wijk, L., Acheson, N., Ljungqvist, O., Dowdy, S. (2016). Guidelines for pre- and intra-operative care in gynecologic/oncology surgery: Enhanced Recovery After

Surgery (ERAS®) Society recommendations — Part I. *Gynecologic Oncology*, 140(2), 313–322. <https://doi.org/10.1016/j.ygyno.2015.11.015>

Nelson, G., Altman, A., Nick, A., Meyer, L., Ramirez, P., Achantari, C., Antrobus, J., Huang, J., Scott, M., Wijk, L., Acheson, N., Ljungqvist, O., Dowdy, S. (2016). Guidelines for postoperative care in gynecologic/oncology surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations — Part II. *Gynecologic Oncology*, 140(2), 323–332. <https://doi.org/10.1016/j.ygyno.2015.12.019>

Nelson, G., Bakkum-Gamez, J., Kalogera, E., Glaser, G., Altman, A., Meyer, L. A., . . . Dowdy, S. C. (2019). Guidelines for perioperative care in gynecologic/oncology: Enhanced Recovery After Surgery (ERAS) Society recommendations-2019 update. *Int J Gynecol Cancer*, 29(4), 651–668. doi:10.1136/ijgc-2019-000356

Pearsall, E. A., & McLeod, R. S. (2018). Enhanced Recovery After Surgery: Implementation Strategies, Barriers and Facilitators. *The Surgical clinics of North America*, 98(6), 1201–1210. <https://doi-org.liboff.ohsu.edu/10.1016/j.suc.2018.07.007>

Pearsall, E. A., Meghji, Z., Pitzul, K. B., Aarts, M. A., McKenzie, M., McLeod, R. S., & Okrainec, A. (2015). A qualitative study to understand the barriers and enablers in implementing an enhanced recovery after surgery program. *Annals of surgery*, 261(1), 92–96. <https://doi-org.liboff.ohsu.edu/10.1097/SLA.0000000000000604>

Rapport, F., Clay-Williams, R., Churrua, K., Shih, P., Hogden, A., Braithwaite, J. The struggle of translating science into action: Foundational concepts of implementation science. *J Eval Clin Pract.* 2018; 24: 117–126. <https://doi-org.liboff.ohsu.edu/10.1111/jep.12741>

Scott, M. J., & Miller, T. E. (2015). Pathophysiology of Major Surgery and the Role of Enhanced Recovery Pathways and the Anesthesiologist to Improve

Outcomes. *Anesthesiology Clinics*, 33(1), 79–91.

<https://doi.org/10.1016/j.anclin.2014.11.006>

Wagner, J., & Udod, S. (2018). Common change theories and application in different nursing situations. In *Leadership and influencing change in nursing*. essay, University of Regina Press. <https://leadershipandinfluencingchangeinnursing.pressbooks.com/chapter/chapter-9-common-change-theories-and-application-to-different-nursing-situations/>.

Which Process Improvement Methodology Should You Use? Choosing a Process Improvement Methodology | Lucidchart Blog. (2020, September 4).

<https://www.lucidchart.com/blog/process-improvement-methodologies>.

Appendix A: Project Charter and Timeline

Project Title: Barriers to ERAS at OHSU



Project Sponsor(s): OHSU School of Nursing, Department of Anesthesia		Project Owner(s): Nicholas Willis, Angel Sidell, Nathan Kania, Maja Jozanovic	
Problem Statement: What is the current process in ERAS implementation for minimally invasive GYN surgeries at OHSU? What are the barriers to successful implementation of the ERAS protocol for minimally invasive hysterectomies at the Ambulatory Surgery Center at OHSU?			
Measurable Targets: <ul style="list-style-type: none"> Staff perceptions/attitudes Staff familiarity about ERAS protocol Provider variability Patient outcomes (length of stay, complications) Presence of ERAS champions Interdisciplinary communication effectiveness 	Objectives: <ul style="list-style-type: none"> Explore current ERAS practices Identify barriers to ERAS implementation 	In Scope: <ul style="list-style-type: none"> Collect data about current practices Analyze collected data to identify improvement opportunities 	Out of Scope: <ul style="list-style-type: none"> Implement institutional changes to processes and practices
High Level Process Map:		List of Plan-Do-Study-Act (PDSA) cycles:	
<pre> graph LR A[Definition of ERAS at OHSU] --> B[Stakeholders] B --> C{Identifying barriers} C -- No barriers --> D((end)) C -- X number of barriers --> E[Impact or change] E --> F[Evaluation] F --> G((end)) </pre>		<ul style="list-style-type: none"> Plan <ul style="list-style-type: none"> Gathering data, interviews, survey Identify stakeholders Identify gaps in knowledge Identify gaps in communication Do <ul style="list-style-type: none"> Construct a fishbone diagram of barriers present to successful QI (ERAS) implementation in CHH Study <ul style="list-style-type: none"> Compare knowledge before and after Assess staff satisfaction Act <ul style="list-style-type: none"> Provide CHH stakeholders with findings 	
Project Start: 9/17/2020	30-Day Check-In: 11/8/2020	60-Day Check-In: 12/2/2020	90-Day Check-In: Poster/Presentation date:

Project Title: Barriers to ERAS at OHSU

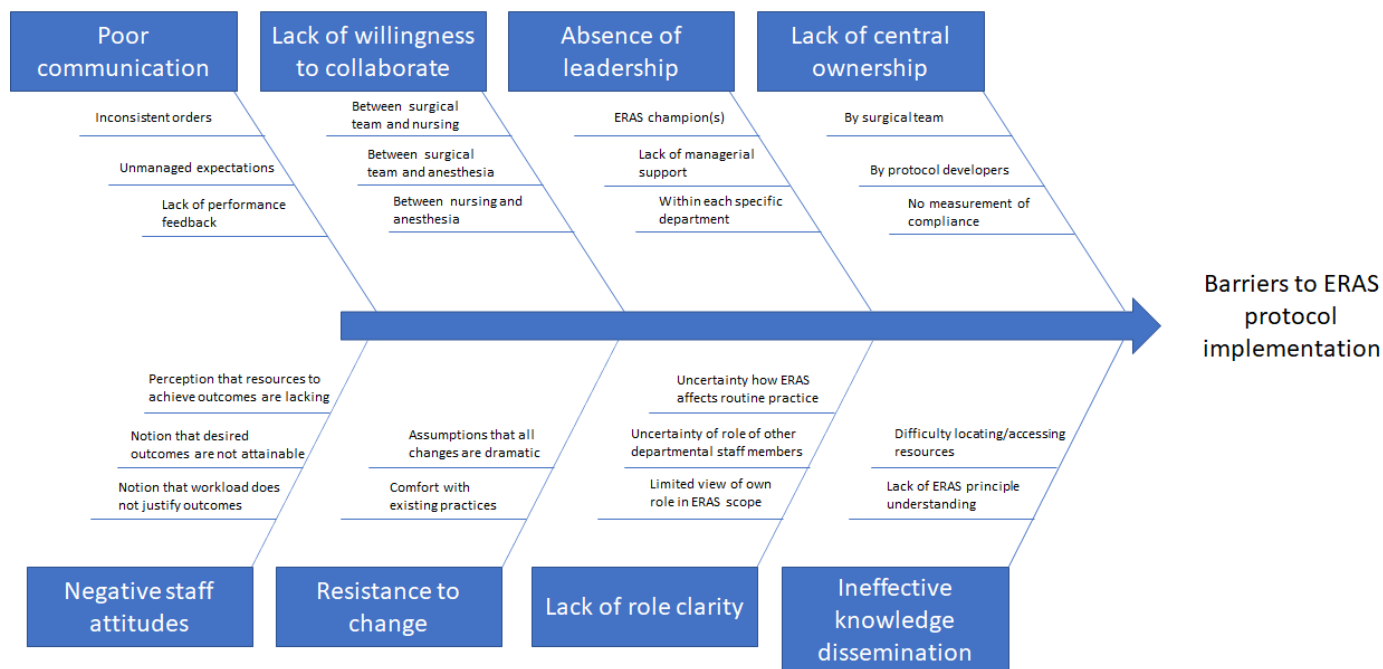


Project Leadership: Champions of this project		Core Committee Members: who is available to provide guidance/expertise																																							
<table border="1"> <thead> <tr> <th>Name</th> <th>Role</th> </tr> </thead> <tbody> <tr> <td>Nicholas Willis</td> <td>contributor</td> </tr> <tr> <td>Angel Sidell</td> <td>contributor</td> </tr> <tr> <td>Nathan Kania</td> <td>contributor</td> </tr> <tr> <td>Maja Jozanovic</td> <td>contributor</td> </tr> </tbody> </table>	Name	Role	Nicholas Willis	contributor	Angel Sidell	contributor	Nathan Kania	contributor	Maja Jozanovic	contributor	<table border="1"> <thead> <tr> <th>Name</th> <th>Role</th> </tr> </thead> <tbody> <tr> <td>Douglas Arditti, DNP, CRNA</td> <td>Project chair</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>	Name	Role	Douglas Arditti, DNP, CRNA	Project chair											<table border="1"> <thead> <tr> <th>What</th> <th>When</th> </tr> </thead> <tbody> <tr> <td>Meeting with PACU manager</td> <td>10/19/2020</td> </tr> <tr> <td>Meeting with Quality Educator</td> <td>10/26/2020</td> </tr> <tr> <td>IRB Submission</td> <td>2/10/2021</td> </tr> <tr> <td>Survey for PACU staff</td> <td>3/4/2021-4/2/2021</td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table>		What	When	Meeting with PACU manager	10/19/2020	Meeting with Quality Educator	10/26/2020	IRB Submission	2/10/2021	Survey for PACU staff	3/4/2021-4/2/2021				
Name	Role																																								
Nicholas Willis	contributor																																								
Angel Sidell	contributor																																								
Nathan Kania	contributor																																								
Maja Jozanovic	contributor																																								
Name	Role																																								
Douglas Arditti, DNP, CRNA	Project chair																																								
What	When																																								
Meeting with PACU manager	10/19/2020																																								
Meeting with Quality Educator	10/26/2020																																								
IRB Submission	2/10/2021																																								
Survey for PACU staff	3/4/2021-4/2/2021																																								
Deliverables: <ul style="list-style-type: none"> Background + Problem Statement Literature Review Project Charter Project Outline Rationale Stakeholder Survey Final Proposal 	Results PENDING																																								
Project Start: 9/17/2020	1st Check-In: 11/8/2020	2nd Day Check-In: 12/2/2020	3rd Check-In: Poster/Presentation date:																																						

Gynecologic ERAS Implementation Project Timeline (2020 – 2021)

	November Weeks 1-2	November Weeks 3-4	December	January	February	March	April	May	June	July
-Background/ problem description -Lit review -Select/write specific aims -Create process map	X									
-Outline -Select IS method -Select change theory	X									
-Meet w/ stakeholders	X									
-Discuss root cause analysis appropriateness		X								
-Final project proposal			X							
IRB Submission				X						
-Release survey					X	X				
-Analyze ERAS data						X	X			
-Final data analysis and organization							X	X		
-Project dissemination									X	X

Appendix B: Fishbone Diagram:



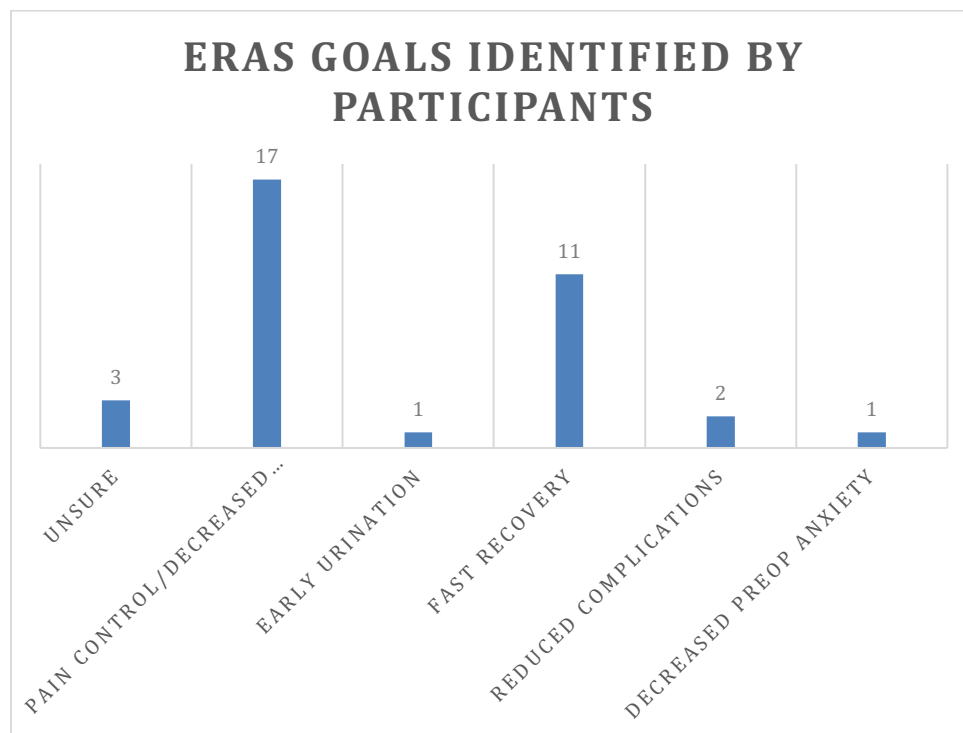
Appendix C: Survey Tool

1. What unit do you work in?
 - (fill in the blank)
2. Are you aware that there is an ERAS protocol for the post-operative management of minimally invasive GYN surgical patients in the PACU at CHH?
 - Yes
 - No
3. Do you know where to find this protocol?
 - Yes
 - No
4. Did you feel ready/knowledgeable about ERAS before the rollout of the GYN ERAS protocol?
 - Yes
 - No
5. What are the goals and major principles of ERAS?
 - (fill in the blank)
6. Do you ever feel uncertain about your role in caring for patients that are assigned the ERAS protocol?
 - Yes
 - No

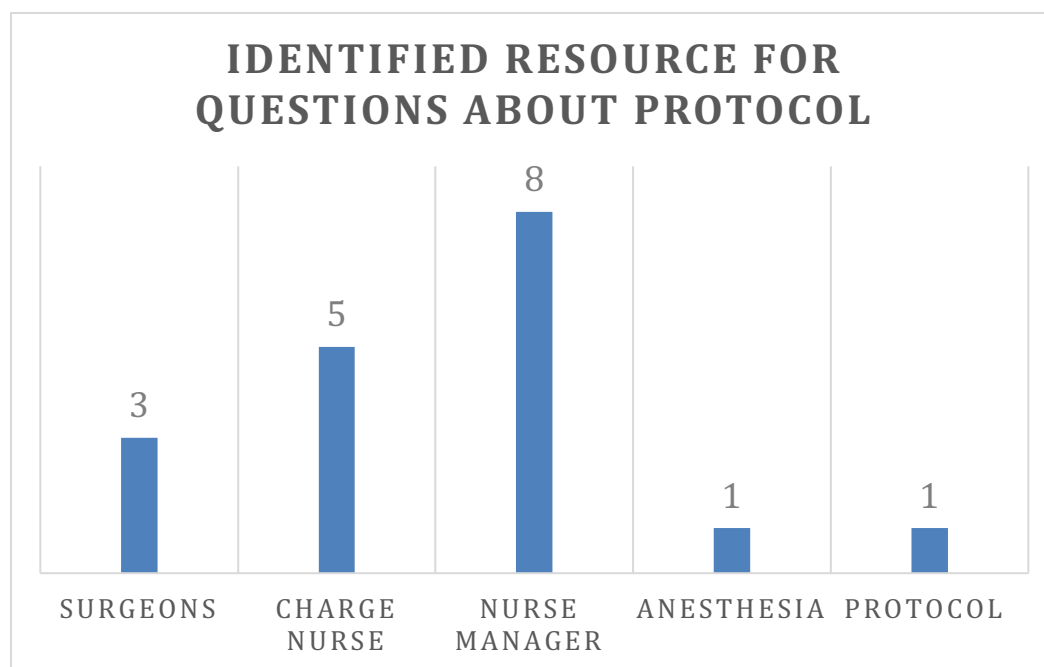
7. Do you feel like all participating teams (Patients, Preop, Surgeons, Anesthesia, PACU) have appropriate understanding of the GYN ERAS protocol?
 - Yes
 - No
 - If no, please explain (fill in the blank)
8. Is there someone you can go to with questions/clarification regarding the GYN ERAS protocol?
 - Yes
 - No
9. If yes, who?
 - (fill in the blank)
10. Researchers have identified a number of reasons that ERAS protocols may not produce the patient outcomes for which they were designed. Please provide a stance on these common reasons for ERAS protocol limitations, based upon your own experience with the GYN ERAS protocol.
 - Lack of communication between perioperative team members (Agree/Disagree)
 - Inadequate Patient education about ERAS protocols (Agree/Disagree)
 - Lack of education for nurses about ERAS protocols (Agree/Disagree)
 - Not having consistent postop orders for GYN ERAS patients (Agree/Disagree)
11. Do you think that CHH's GYN ERAS protocol is improving outcomes for their enrolled patients? (please add a short explanation about your opinion)
 - Yes (fill in the blank)
 - No (fill in the blank)

12. Do you ever receive feedback about the successful or unsuccessful patient outcomes for those enrolled in the ERAS protocol?
 - Yes
 - No
13. If Yes, how is this feedback being delivered to you? (i.e. data charts, verbal feedback, etc.)
 - (fill in the blank)
14. Thinking back to your last GYN ERAS protocol patient that had a prolonged PACU stay or unplanned admission, what factors do you believe contributed to that extended stay?
 - (Fill in the blank)
15. Consider your past experience caring for patients who are assigned to the GYN-ERAS protocol at CHH. What in your opinion are the principal factors that have an unfavorable effect on achieving the best patient outcomes?
 - (Fill in the blank)
16. Thank you so much for taking the time to complete this survey, your responses are greatly appreciated!

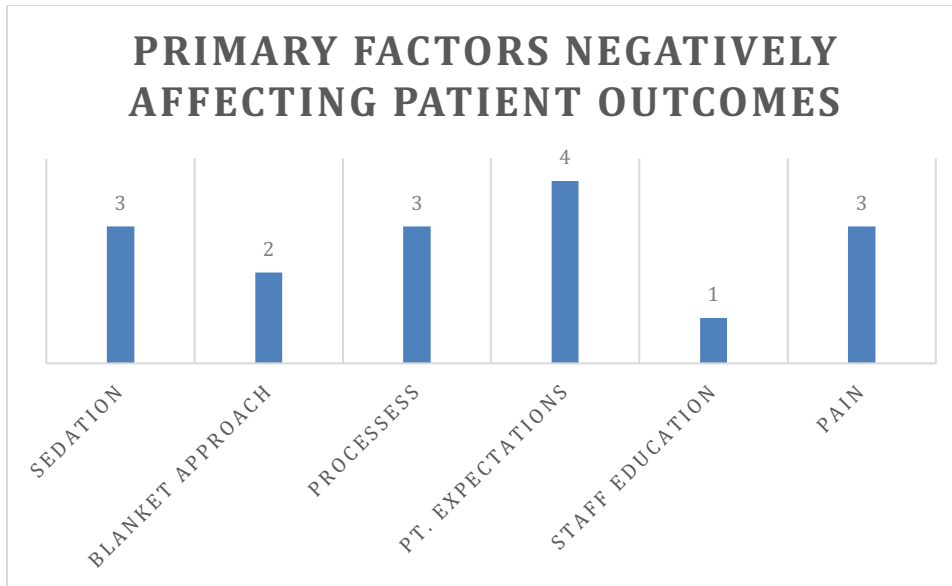
Appendix D: ERAS Protocol Goals Identified by Survey Respondents



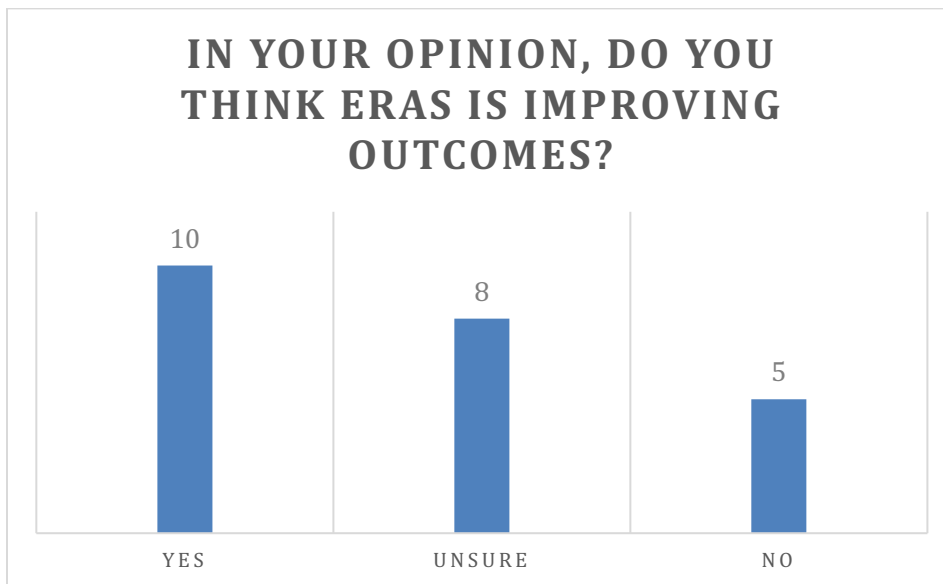
Appendix E: Participants' Identification of ERAS Protocol "Champion"



Appendix F: Factors Believed to Adversely Impact Patient Outcomes



Appendix G: Responses Regarding ERAS Protocol Impact on Patient Outcomes



Appendix H: IRB Determination

IRB MEMO

Research Integrity Office

3181 SW Sam Jackson Park Road - L106RI
Portland, OR 97239-3098

(503)494-7887 irb@ohsu.edu

NOT HUMAN RESEARCH

February 17, 2021

Dear Investigator:

On 2/17/2021, the IRB reviewed the following submission:

Title of Study:	Barriers to Implementation of an Enhanced Recovery After Surgery (ERAS) Protocol for Gynecologic Surgery Patients Encountered by Post-Anesthesia Care Unit (PACU) Nurses at the OHSU Center for Health and Healing
Investigator:	Doug Arditti
IRB ID:	STUDY00022586
Funding:	None

The IRB determined that the proposed activity is not research involving human subjects. IRB review and approval is not required.

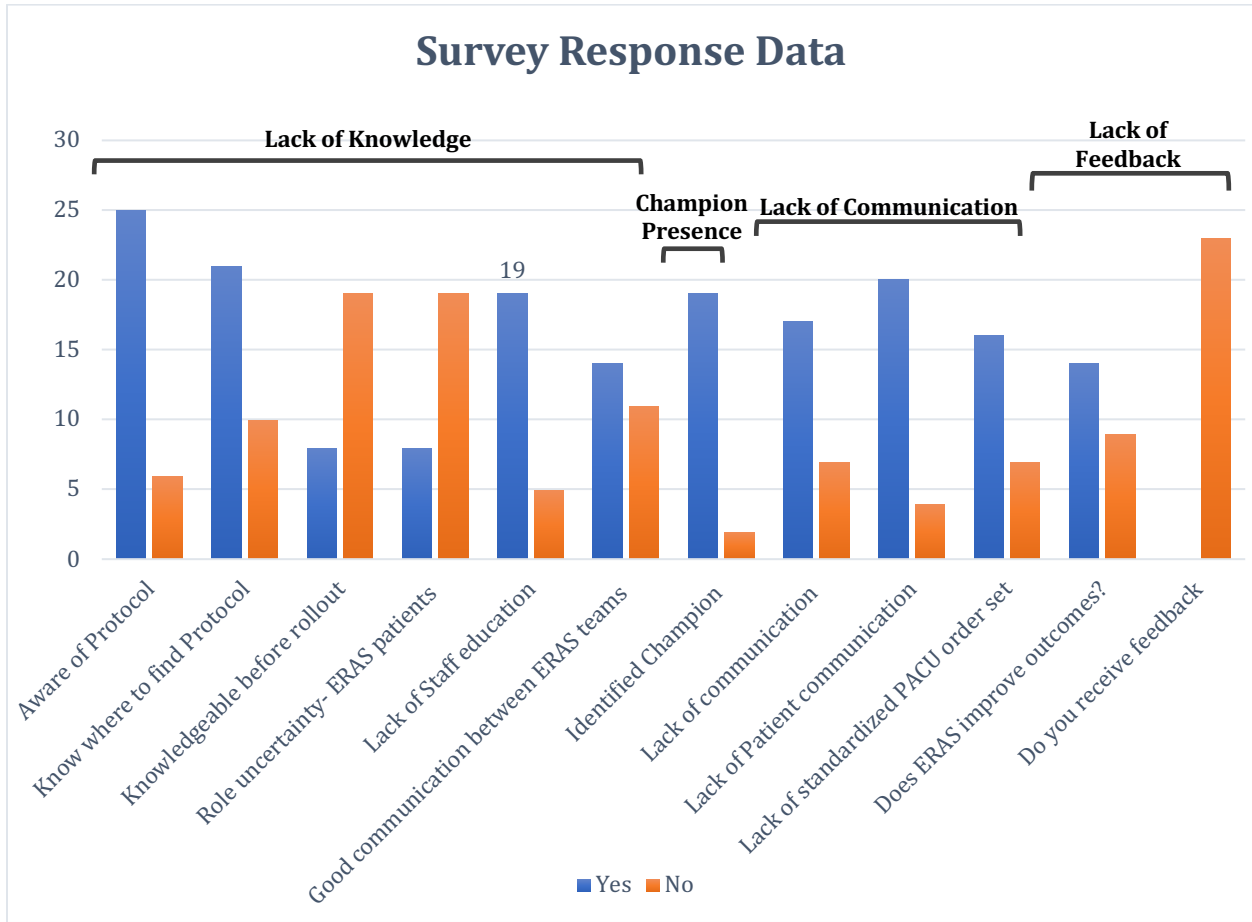
Certain changes to the research plan may affect this determination. Contact the IRB Office if your project changes and you have questions regarding the need for IRB oversight.

If this project involves the collection, use, or disclosure of Protected Health Information (PHI), you must comply with all applicable requirements under HIPAA. See the [HIPAA and Research website](#) and the [Information Privacy and Security website](#) for more information.

Sincerely,

The OHSU IRB Office

Appendix I: Yes/No Responses to Survey Questions



Appendix J: Participant Responses to Survey Items Categorized by Theme

Major Theme/Survey Items	Number of Responses (n)	Yes	No
<ul style="list-style-type: none"> Lack of Knowledge 			
Are you aware that there is an ERAS protocol for the post-operative management of minimally invasive GYN surgical patients in the PACU at CHH?	31	25 (81%)	6 (19%)
Do you know where to find this protocol?	31	21 (68%)	10 (32%)
Did you feel ready/knowledgeable about ERAS prior to the protocol rollout?	27	8 (30%)	19 (70%)
Do you ever feel uncertain about your role in caring for patients that are assigned to the ERAS protocol?	27	8 (30%)	19 (70%)
Lack of education for nurses about ERAS protocols (agree/disagree)	24	19 (79%)	5 (21%)
Do you feel like all participating teams have appropriate understanding of the GYN ERAS protocol?	23	14 (61%)	9 (39%)*
<ul style="list-style-type: none"> Presence of Champion 			
Is there someone you can go to with questions regarding the GYN protocol?	21	19 (90%)*	2 (10%)
<ul style="list-style-type: none"> Lack of Communication 			
Not having consistent postop orders for GYN ERAS patients (agree/disagree)	23	16 (70%)	7 (30%)
Lack of communication between perioperative team members (agree/disagree)	24	17 (71%)	7 (29%)
Inadequate patient education about ERAS protocols (agree/disagree)	24	20 (83%)	4 (17%)
<ul style="list-style-type: none"> Lack of Feedback 			
Do you think that CHH GYN ERAS protocol is improving outcomes for their intended patients?	23	14 (61%)*	9 (39%)*
Do you ever receive feedback about the successful or unsuccessful patient outcomes for those enrolled in the ERAS protocol?	23	0	23 (100%)
*Participants providing this response were asked to further explain their answer			

Appendix K: Demographics of Survey Respondents