IMPACT OF AN EDUCATIONAL IN-SERVICE ON MULTIMODAL POSTOPERATIVE
NAUSEA AND VOMITING (PONV) PROPHYLAXIS AND TREATMENT PROTOCOL FOR
ADULT GYNECOLOGICAL SURGICAL PATIENTS

by

Victoria Paulsen

A DNP project submitted to the
School of Nursing
State University of New York
in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice

December, 2019
DNP Project Approval Form

This is to certify that
______________________________
(Name of Student)

successfully defended their project entitled:

Impact of an Educational In-Service on a Multimodal Postoperative Nausea and Vomiting (PONV) Prophylaxis and Treatment Protocol for Adult Gynecological Surgical Patients

on ________________________, 2019.

(Date)

DNP Project Advisor
Loralee Sessanna, DNS, CNS, FCN, AHN-BC
(Typed Name)

(Signature)

Committee Member 1*
(Typed Name)

(Signature)

Committee Member 2*
(Typed Name)

(Signature)

Committee Member 3*
(Typed Name)

(Signature)

*If applicable
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Abstract

Postoperative nausea and vomiting (PONV) is a common and distressing complication for adult gynecological surgery patients undergoing general anesthesia. Research findings support that anesthesia care providers using multimodal PONV prophylaxis and treatment protocols among high-risk, gynecological surgery patients incur a lower incidence of PONV and reduced length of stay in the post-anesthesia care unit (PACU). The purpose of this Doctor of Nursing Practice (DNP) project was to determine the impact of an educational in-service provided to anesthesia providers at a local community hospital in Western New York on use of a multimodal PONV prophylaxis and treatment protocol to decrease incidence of PONV and length of stay in the PACU for adult gynecological surgery patients receiving general anesthesia. Specific aims for this project were to decrease incidence of PONV and decrease PACU length of stay for adult gynecological surgery patients receiving general anesthesia. Pre-intervention, a retrospective chart review monitoring anesthesia provider incidence of PONV and PACU length of stay was performed and a Likert-style scale survey was administered to determine perceived anesthesia provider barriers to a multimodal PONV prophylaxis and treatment protocol. Following the in-service, a second chart review was performed to evaluate the impact of the in-service. Data analysis included independent paired t-tests and Chi-Square correlation tests to determine relationships among variables measured for the chart reviews and descriptive statistics for survey data. Although project findings were not statistically significant, findings provided insight for PONV evidence-based practice guidelines to be brought to the forefront for future research.

Keywords: postoperative nausea and vomiting, multimodal prophylaxis, gynecologic procedures, Apfel risk assessment score
Acknowledgements

I would like to acknowledge and express my sincere gratitude towards those who have assisted me throughout this process. I would like to thank my family, especially my brother, Brian, who has always encouraged me to chase my dreams and supported me throughout this process. I would also like to thank my DNP project advisor, Dr. Loralee Sessanna, who has provided unwavering support, guidance, and encouragement throughout this process. Without your wisdom, patience, and guidance, I couldn’t have completed this project. Lastly, I would like to thank Dr. Barrick and Dr. Marks for being such tremendous resources during this process. Your efforts have not gone unnoticed and are so very much appreciated.
Postoperative nausea and vomiting (PONV) is a common and distressing complication after surgery and general anesthesia with incidence ranging from 30% in the general postsurgical patient population to 80% in high-risk patients (Tabrizi, Malhotra, Turnbull, & Goode, 2019). Gynecologic surgery has been considered an independent risk factor for PONV with increased incidence related to age, obesity, motion sickness, history or previous PONV, and pain during the postoperative period (de Souza, Costa, & Chaves, 2016). PONV is defined as nausea or nausea and vomiting which occurs during the first 24 to 48 hours after surgery or anesthesia (Tabrizi et al., 2019). Although usually short-term, PONV has been identified by patients as more feared than postoperative pain (Hooper, 2015). Untreated or prolonged PONV is correlated with increased cost of care resulting from extended post-anesthesia recovery area (PACU) length of stay and increased unplanned hospital admissions (Hooper, 2015). Due to the extensive impact of PONV on patient experience, it is vital that perioperative and perianesthesia healthcare team members work together to reduce patient risk through implementing evidence-based practice multimodal prophylactic PONV treatment (Hooper, 2015).

**Background and Significance**

According to Kranke (2015), an anesthesiologist, Patricia Kapur, described PONV as the ‘big little problem’ of anesthesia in 1991. Kapur conveyed that this postoperative complication was very distressing to patients but not to anesthesia care providers. At that time, PONV was a perplexing postoperative complication with an unacceptably high incidence and knowledge concerning the additive effects of antiemetics was in its early stages of development. In the years to follow, different antiemetic drugs were evaluated through sound randomized control trials and significant meta-analyses. These drugs currently comprise the fundamental basis for anti-PONV protocols consisting of treatment with low-dose corticosteroids (dexamethasone), 5-HT3 antagonists (ondansetron), a potent D2-antagonist (droperidol), antihistamines (dimenhydrinate), and NK-1 antagonists such as aprepitant (Kranke, 2015).
Many healthcare organizations have created a multimodal antiemetic protocol integrating several recommendations to reduce risk of PONV based on the Society of Ambulatory Anesthesia (SAMBA) guidelines that were developed in 2007 (Brookes et al., 2015). The SAMBA guideline consensus recognizes the simplified Apfel risk assessment score as the gold standard for PONV risk stratification and this tool is widely accepted by anesthesia professionals worldwide (Brookes et al., 2015). The SAMBA guidelines identify patients at risk for PONV, determine their risk factor score for PONV, and determine the optimal approach to PONV treatment (Hooper, 2015).

The simplified Apfel risk assessment score (Appendix A) was first developed in 1999 as a scoring guideline for identifying patients at high risk for PONV and consists of a four-factor risk score (Sherif, Hegde, Mariswami, & Ollapally, 2015). This risk assessment tool produces a score between zero and four based on the following elements: female gender, previous history of PONV or motion sickness, smoking status, and the need for postoperative opioids (Thomas, Maple, Norcross, & Muckler, 2019). The corresponding risk for PONV is 10%, 20%, 40%, 60%, and 80%, respectively (Thomas et al., 2019). Since 82% of women in the United States (US) are non-smokers and because major abdominal surgery requires postoperative opioids while also having longer surgical durations, this surgical population usually has a starting PONV risk score of 60% according to the simplified Apfel risk assessment score (Bauchat & Habib, 2015).

The impact and complications of PONV for patients, their families, and the healthcare system are considerable. Those patients who experience PONV could develop hematomas, wound dehiscence, intra-oral bleeding, anxiety, agitation, dehydration, electrolyte imbalances, and in the worst case, aspiration or esophageal bleeding (Brookes et al., 2015). Therefore, it is vital that policies involving multimodal prophylaxis and treatment of PONV in high-risk populations, such as the gynecological surgery population, are reviewed and modified consistently based on patient outcomes. Evidence-based research supports that patients are willing to pay out of pocket to avoid PONV and
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have associated this complication with increased dissatisfaction with care (Brookes et al., 2015). PONV is an immense post-surgical complication that can be reduced with proper education of anesthesia care providers through devising an in-service to advocate for a multimodal antiemetic policy that includes combination therapy with prophylactic agents from multiple classes for high-risk patients (Brookes et al., 2015).

**Purpose, Aims, and Objectives**

The purpose of this Doctor of Nursing Practice (DNP) project was to determine the impact of an educational in-service provided to anesthesia providers at a local community hospital in Western New York on use of a multimodal PONV prophylaxis and treatment protocol to decrease incidence of PONV and length of stay in the PACU for adult gynecological surgery patients receiving general anesthesia. Specific aims for this project were to decrease incidence of PONV and decrease PACU length of stay for adult gynecological surgery patients receiving general anesthesia. Pre-intervention, a retrospective chart review monitoring anesthesia provider incidence of PONV and PACU length of stay was performed and a Likert-style scale survey was administered to determine perceived anesthesia provider barriers to a multimodal PONV prophylaxis and treatment protocol. Following the in-service, a second chart review was performed to determine if PONV and PACU length of stay decreased for adult gynecological surgery patients receiving general anesthesia.

**Theoretical Framework**

The purpose of this DNP project was to provide an in-service to anesthesia providers on the necessity of implementing a multimodal PONV prophylaxis and treatment protocol for gynecologic surgery patients receiving general anesthesia in effort to reduce the incidence of PONV and decrease length of stay in the PACU. This project utilized the theoretical framework developed by Kurt Lewin, known as the change theory (Cummings, Bridgman, & Brown, 2016). Lewin theorized a three-step model for change that includes unfreezing, change, and refreezing as the basis for the model.
According to Lewin, for change to occur, prior learning or behavior has to be rejected and replaced by new behavior (Hussain et al., 2018). This DNP project required an in-service and the implementation of a new clinical practice guideline. Applying Lewin’s three-step model for change may assist in overcoming barriers to change that can surface during the process of implementing a new multimodal PONV prophylaxis and treatment protocol.

Lewin’s theory has three primary concepts consisting of driving forces, restraining forces, and equilibrium (Hussain et al., 2018). Lewin relates that driving forces are those that facilitate change causing a shift in the equilibrium towards change, while restraining forces are those that hinder or create barriers to change. The notion of equilibrium depicts a time when change will not occur because the driving forces equal the restraining forces (Cummings et al., 2016). In this DNP project, anesthesia providers could be considered both driving forces and restraining forces to change depending on how they perceive the intended change. Since the future of change is uncertain, some anesthesia providers may not support the implementation of a multimodal PONV prophylaxis and treatment protocol unless they feel that their coping abilities and competency in practice will remain the same.

The first phase described by Lewin in the three-step change model is unfreezing. During this phase, techniques are utilized to destabilize the current practice in effort to introduce a new practice (Hussain et al., 2018). According to Lewin, successful organizational change may be planned but requires the current practice or system to unfreeze (Hussain et al., 2018). In order for change to occur, management or the stakeholders for change must be able to explain the rationale for change to the organization in a manner that motivates a change in practice. In this DNP project, the unfreezing phase consisted of presenting an in-service for anesthesia providers on the benefits of implementing a multimodal PONV prophylaxis and treatment protocol in a high-risk patient population.
The second phase of the Lewin’s change model relates the change process or moving phase. This phase illustrates that when employees become involved in the process of change within an organization, they contribute to knowledge sharing both explicitly and implicitly, which leads to a continuum of change. During this phase, developing professional support and strong leadership allows for evolving a base of influence with employees, motivating them to commit to change while assisting them in overcoming any barriers that may be encountered (Hussain et al., 2018). The moving phase of this DNP project occurred during the two weeks following the in-service to allow for implementation of the new multimodal PONV prophylaxis and treatment protocol among gynecological surgical patients, while receiving feedback from anesthesia providers on the barriers met with this change. Based on their feedback, modifications to the protocol were not required. As the moving phase consists of employing a change in practice, evaluating the change, and modifying the change based on feedback or recommendations, this stage was pivotal in this DNP project.

The last phase of Lewin’s model is the refreezing phase. This phase promotes maintaining the change of practice or behavior to allow for long-term behavior modification (Hussain et al., 2018). At this time, it is vital to determine techniques that promote the change in practice while overcoming potential obstacles that may occur causing a return to the previous practice. The multimodal PONV prophylaxis and treatment protocol presented in this DNP project could be adopted by hospital stakeholders and formulated into a policy. This phase may have the greatest potential for changing clinical practice as it encourages a long-term change in practice, which may lead to reducing the incidence of PONV and decreasing PACU length of stay among this high-risk population.

**Literature Review**

Evidence-based literature related to the use of a multimodal PONV prophylaxis protocol and incidence of PONV and PACU length of stay among adult female patients undergoing gynecologic procedures receiving general anesthesia was gathered, reviewed, synthesized, and then evaluated.
Databases searched for this review included Cumulative Index to Nursing and Allied Health Literature (CINAHL Plus with Full Text), PubMed, Medline, OVID, and Cochrane Review. The databases for this review were limited to the English language, female patients aged 18-75 years, and literature published within the years of 2014-2019. The search was conducted using the following keywords both solely and in various combinations: PONV, postoperative nausea and vomiting, multimodal PONV prophylaxis protocol, gynecological, decreased length of stay, simplified Apfel risk assessment score, female, and incidence of PONV. The following summary conveys findings resulting from investigating multimodal PONV prophylaxis protocol use on the incidence of PONV and PACU length of stay among female gynecological surgical patients receiving general anesthesia.

Bauchat and Habib (2015) addressed how the last two decades have seen significant changes in the surgical approach to gynecologic surgery. The authors completed a review of meta-analyses, randomized controlled trials (RCTs), and large prospective impact studies conducted in the gynecologic surgery population exploring facets of the Enhanced Recovery After Surgery (ERAS) protocol over which anesthesiologists exercise the most influence (Bauchat & Habib, 2015). The authors discovered that there are four contributing factors to a successful ERAS protocol which include anesthetic choice, nonopioid multimodal pain management, PONV prophylaxis, and fluid management (Bauchat & Habib, 2015). The authors maintained that although operative time is longer with minimally invasive surgery, there are benefits such as the patient’s hospital stay is significantly shorter, along with analgesic and antiemetic needs being significantly reduced compared with open surgery (Bauchat & Habib, 2015). This study is relevant to this DNP project because the gynecological surgery population is at high-risk for PONV, thus, a multimodal antiemetic strategy must be employed.

Brookes et al. (2015) conducted a prospective, clinical trial with a retrospective comparison group to test the hypothesis that implementation of a multimodal PONV protocol would reduce prevalence of postoperative nausea (PON) and postoperative vomiting (POV) in patients undergoing
LeFort I osteotomy. The intervention group (n = 93) received a multimodal antiemetic protocol while the comparison group (n = 137) was managed conventionally at the discretion of the anesthesia care team (Brookes et al., 2015). The occurrence of PONV were extracted from medical records and the data was analyzed bivariately with Fisher’s exact and Wilcoxon rank-sum tests (Brookes et al., 2015). This study found that following a multimodal PONV protocol correlated with a significantly decreased prevalence of PONV in patients undergoing LeFort I osteotomy, which is a high-risk patient population for PONV (Brookes et al., 2015).

DeWinter et al. (2018) conducted a quasi-experimental design, uncontrolled before-and-after study to assess provider performance before and after the implementation of a simplified PONV prophylaxis algorithm on the incidence of PONV. An audit was conducted prior to the introduction of this simplified version to assess compliance with the current PONV guidelines (DeWinter et al., 2018). Following the first audit of patient medical records (n=211), a simplified PONV prophylaxis was implemented using Apfel’s risk score indicating that female patients should receive triple prophylaxis and male patients should receive double prophylaxis (DeWinter et al., 2018). Fisher’s exact and Mann-Whitney U tests were used to compare groups and assess for validity and reliability of the data (DeWinter et al., 2018). One year after implementation of this algorithm, a second audit (n=201) was conducted revealing the overall incidence of PONV within 24 hours after surgery was substantially lower than before the implementation of the algorithm and adherence with this protocol was noticeably higher (DeWinter et al., 2018). This study strongly relates to this DNP project since it supported that implementing a PONV algorithm reduced the incidence of PONV within 24 hours after surgery, thus also decreasing PACU length of stay, which are the primary objectives of this project.

Pym and Ben-Menachem (2018) conducted a prospective, pre-post intervention study involving 628 non-cardiac adult surgical patients with more than two risk factors for PONV following general anesthesia. The pre-intervention group (n = 333) of moderate or high-risk patients was reviewed and
found a baseline adherence to the PONV guideline of 9% (Pym & Ben-Menachem, 2018). The intervention involved educating anesthesia providers and PACU nurses on a multimodal PONV protocol through an oral presentation that was also disseminated via email and laminated as an available reference in the OR suites. The post-intervention group (n = 295) of moderate or high-risk patients revealed a 19.3% adherence rate to the PONV guideline (Pym & Ben-Menachem, 2018). Though the authors found that further efforts would be required along with an in-service to support increased adherence to a PONV prophylaxis and treatment protocol, this study is relevant to this DNP project as the intervention utilized is similar to the intended educational in-service that will be devised for the project site.

Lastly, Tabrizi et al. (2019) performed a retrospective, pre-implementation and post-implementation quality improvement (QI) project describing the implementation of a PONV guideline and its impact on providers’ compliance with PONV risk assessment using the Apfel’s risk score. The sample included female gynecologic or breast surgery patients (n = 294) in an ambulatory surgical center (Tabrizi et al., 2019). Postimplementation of the guideline, the overall incidence of PONV was substantially lower and anesthesia providers’ compliance of Apfel’s risk score documentation greatly increased. This study found that the implementation of a PONV guideline can reduce the PONV incidence and improve anesthesia providers’ compliance with PONV risk assessment and its documentation (Tabrizi et al., 2019). By improving anesthesia care provider’s compliance with a PONV risk stratification and assessment tool presented to them during an in-service, the incidence of PONV should potentially decrease, which is one of the primary aims of this DNP project.

In conclusion, the review of literature supported that multimodal PONV prophylaxis protocols implemented in the intraoperative and postoperative setting have a strong potential to reduce the incidence of PONV and decrease PACU length of stay among high-risk patient populations, such as gynecological surgery patients. The literature reviewed revealed a general theme that great attention to
PONV management should be a standard component of perianesthesia quality care in order to uphold excellence in clinical practice. Overall, the literature findings demonstrated that all patients, particularly high-risk patients, should receive targeted multimodal antiemetic prophylaxis based on risk stratification established preoperatively in effort to avoid this dreaded complication.

**Study Design**

This study utilized a quantitative design, using a retrospective chart review and Likert-style survey with open-ended questions to guide an in-service on the use of a multimodal PONV prophylaxis and treatment protocol while determining barriers to implementing such a protocol into anesthesia practice. After receiving University at Buffalo (UB) IRB approval (Appendix A), access from an administrator in the surgical department at the hospital was granted and a pre-intervention retrospective chart review monitoring the incidence of PONV within 24 hours post-anesthesia care and the PACU length of stay at a local hospital in WNY was performed from October to November 2019. This retrospective chart review was performed two weeks prior to conducting the in-service for anesthesia providers over a two-week period to determine the incidence of PONV among adult female gynecological surgical patients who received general anesthesia that were transferred to the PACU then discharged home or admitted to the hospital due to intractable PONV. The PACU length of stay and the number of antiemetics administered to gynecological surgery patients preoperatively, intraoperatively, and postoperatively was also be determined through this retrospective patient chart review.

Dexter, Leodolter, Wong, O’Brien, & Hindman (2019) developed a Likert-style survey for CRNAs to evaluate anesthesiologist’s clinical performance. Prior to conducting an in-service provided to anesthesia providers on the benefits of utilizing a multimodal PONV prophylaxis and treatment protocol among this high-risk patient population, a quantitative Likert-style survey was disseminated to those who consented to participating in the study (Appendix E). The survey assessed if a
multimodal PONV prophylaxis and treatment protocol is currently employed at this facility, and if not, how do anesthesia providers assess for PONV among this surgical population. Also, personal preferences and possible barriers to implementing a protocol that may exist was revealed through this survey. This method evaluated a clinical gap in practice among anesthesia providers at this local hospital prior to receiving an in-service on this postoperative complication.

To be included in the study, anesthesia providers had to consent to participation in the survey and/or the in-service (Appendix G and I). Two separate email invitations to attend the in-service presentation and participate in the survey were distributed to all anesthesia providers at this facility (Appendix F and H). An outline of the in-service PowerPoint presentation is illustrated in Appendix C and Appendix E illustrates the survey collection tool distributed to anesthesia providers. Patients between the ages of 18-75 were included if they had a non-obstetric gynecological surgery procedure under general anesthesia. A post-intervention chart review was conducted two weeks following the in-service presentation by the project investigator over a two-week period to collect the number of antiemetic medications administered and the duration of time spent in the PACU, compared to pre-intervention, among gynecological surgery patients. The findings of this study was presented to the anesthesia providers and also will be disseminated at a local university for research day as a research poster presentation in Spring 2020.

Methodology

The independent variables in this study included the number of antiemetics administered preoperatively, intraoperatively, and postoperatively. This independent variable has a ratio level, meaning that it has a rank order and a level of importance along with the ability to have a significant zero point as the number of antiemetics administered could be zero. The dependent variables consisted of the incidence of PONV and the length of stay (minutes) in the PACU. The dependent variables have a ratio level of measurement since they have a rank order, importance of difference between
values, and a significant zero point. The independent variables have the potential to greatly influence the dependent variables and were the primary focus of the data collection procedures.

The primary outcomes of this study were the effect of the in-service on the number of antiemetics administered by an anesthesia provider, the simplified Apfel risk assessment score assigned preoperatively (Appendix B), and the PACU length of stay. The secondary outcomes were to determine barriers to the implementation and use of a multimodal PONV prophylaxis and treatment protocol in the gynecological surgery population. The in-service consisted of a one-hour long interactive session for anesthesia providers employed at the hospital focusing on the current evidence-based literature encouraging the use of a multimodal PONV prophylaxis and treatment protocol in effort to reduce the incidence of PONV and PACU length of stay. The in-service also described the simplified Apfel risk assessment score as a risk stratification tool devised to combat PONV among high-risk patient populations. The simplified Apfel risk assessment scoring tool can be found on Appendix B. Since this in-service was presented after the survey was distributed, the information conveyed was devised based on the personal preferences, possible barriers indicated, and knowledge deficits of anesthesia care providers.

Data Collection

Two weeks prior to conducting the in-service, data from patients who underwent a non-obstetric inpatient or outpatient gynecological surgical procedure under general anesthesia was obtained from electronic medical records (EMRs) over a two-week period. The project investigator collected data on the number of antiemetics administered preoperatively, intraoperatively, and postoperatively; the simplified Apfel risk assessment score assigned preoperatively; and the length of stay in the PACU. Two weeks after the in-service, EMRs of this patient population were reviewed by the project investigator over a two-week period to determine if a change in practice occurred resulting in the reduction in the incidence of PONV and length of stay in the PACU. The data collection tools
used were pre and post-intervention chart reviews and the simplified Apfel risk assessment score assigned preoperatively. The data collection tool utilized for the pre and post-intervention retrospective chart reviews is found in Appendix D.

The simplified Apfel risk assessment score (Appendix B) has been validated several times and considered a reliable scoring system since its development due to its ease of use, simplicity, specificity, and sensitivity to the factors it evaluates, especially among moderate to high risk patient populations (Smith & Ruth-Sahd, 2016). Also, the SAMBA guidelines include this scoring system as their identified risk model, which relates that it is a reliable and validated tool widely used in the anesthesia community for identifying patients at risk for PONV (Smith & Ruth-Sahd, 2016). This scoring system is widely accepted among anesthesia professionals and is considered the gold standard for PONV risk assessment, as evidence by it being promoted by SAMBA.

Furthermore, a validated and reliable survey tool modified from Dexter et al. (2019) was disseminated to anesthesia providers who participated in the study. The survey was anonymously answered by anesthesia providers (N=10). This Likert-style scale survey tool (Appendix E) was provided to anesthesia providers to help determine perceived barriers to implementing a multimodal PONV prophylaxis and treatment protocol into practice. The results of the survey were used to devise an in-service presentation on the use of the simplified Apfel risk assessment score as a risk stratification encouraging implementation of a multimodal PONV prophylaxis and treatment protocol among non-obstetric gynecological surgery patients receiving general anesthesia.

Data Analysis

Data was compiled in Microsoft Excel for statistical analysis using IBM Statistical Package for Social Sciences (SPSS) version 26. Data analysis was guided by a quantitative methods expert on faculty in the School of Nursing at UB. Incidence of PONV, time spent in PACU, the assigned Apfel risk assessment score, and the mean number of antiemetics administered preoperatively.
intraoperatively, and postoperatively were extracted from an audit of patient EMRs. Descriptive
variables were examined through performing independent paired t-tests of the total sample of the time
spent in PACU for both the pre- and post-chart reviews. This test was appropriate for comparing the
means of this data as the time spent in PACU are a ratio level of measurement. Using t-test for
equality of means, it was determined that the variances were assumed to be equal. Chi-square
correlation tests were examined to compare the mean number of antiemetics administered
preoperatively, intraoperatively, and postoperatively before and following the in-service.

Data analysis for the quantitative survey distributed to anesthesia providers was also conducted.
The responses collected from questionnaires were examined for similar patterns and then summarized,
documented, and organized based on the frequency of like responses. The key areas of this study
involved verifying if a multimodal PONV prophylaxis and treatment protocol exists at this hospital and
if not, how do anesthesia providers determine what antiemetic treatment regimen they will administer.
Also, the perceived barriers of adhering to a multimodal PONV prophylaxis and treatment protocol
were identified through analysis of this survey.

**Protection of Human Rights**

After approval of this project was received by the UB Institutional Review Board (IRB),
consent was obtained from the anesthesia providers who agreed to participate in the pre-intervention
survey. Participants were provided with a tangible form encompassing the specific details of the
project which highlighted that participation in the study was completely voluntary and that they could
cease to participate at any given time. Consent from patient subjects was not required as the anesthesia
records were accessed retrospectively. No identifiable data was collected from the EMRs and the
survey data was anonymous. Data collected was de-identified and stored on a password protected
computer that was only accessible to the project investigator. Data will be stored on a password
protected computer for three years according to the UB IRB protocol. Consent was obtained from the
anesthesia providers prior to their in-service participation (Appendix G). The anesthesia providers were informed that their participation was voluntary, that they may receive no direct benefit to participating in the project other than contributing to future knowledge regarding PONV management for adult gynecological surgical patients, that they would receive no compensation for project participation, and that there were no foreseeable risks for participating in this project other than those normally encountered in everyday life.

**Ethical Considerations**

Data for this project was attained after receiving access permission from an administrator in the surgical department at the hospital. A reciprocal IRB agreement exists with UB’s IRB and the hospital IRB where the project took place. The principal ethical consideration involved with this study design is protecting patient confidentiality. Due to the protection of human rights, strategies were taken as described above to ensure that patient information remained confidential and was accessed solely by the project investigator.

**Results**

The results from the analysis of the pre- and post-intervention chart reviews revealed information about the differences between the two patient groups. However, these differences were found to not be significant. The EMRs reviewed pre-intervention (N=72) related patients received zero (N=67), one (N=5), and two (N=0) antiemetics preoperatively. The EMRs reviewed post-intervention (N=64) related patients received zero (N=57), one (N=6), and two (N=1) antiemetics preoperatively. Next, the EMRs reviewed pre-intervention (N=72) discovered patients received zero (N=1), one (N=0), two (N=63), and three (8) antiemetics intraoperatively. The EMRs reviewed post-intervention (N=64) discovered patients received zero (N=1), one (N=4), two (N=50), and three (N=9) antiemetics intraoperatively. Lastly, the EMRs reviewed pre-intervention (N=72) revealed patients received zero (N=5), one (N=60), two (N=5), and three (N=2) antiemetics postoperatively. The EMRs
reviewed post-intervention (N=64) revealed patients received zero (N=35), one (N=16), two (N=12), and three (N=1) antiemetics postoperatively. Though statistical significance was not found among the Chi-square correlation tests that were performed, 87.5% of patients received at least two antiemetics intraoperatively pre-intervention while 84% of patients received at least two antiemetics intraoperatively post-intervention. Also, 11% of the total patients experienced PONV in the PACU in the intraoperative pre-intervention group, whereas 14% of the total patients experienced PONV in the PACU in the intraoperative post-intervention group. Even though statistical significance was not achieved in this study, the low incidence of PONV and high percentage of antiemetics administered relate that anesthesia providers attempt to make their best effort for their patients to avoid experiencing PONV.

Based on the survey results that were analyzed, several patterns emerged though the results were not significant. 50% of respondents replied “yes”, 30% replied “no”, and 20% replied “I don’t know” when asked if there was a PONV prophylaxis and treatment protocol at their facility. However, 60% respondents replied “a protocol does not exist” when asked if they follow an existing PONV prophylaxis and treatment protocol at their facility. Also, 20% of respondents replied that they “agree” when asked if the reluctance of the anesthesiologist to have an antiemetic administered to the patient is a perceived barrier to following a PONV prophylaxis and treatment protocol, and both of these respondents were Certified Registered Nurse Anesthetists (CRNAs). Yet, 80% of respondents replied “disagree” or “strongly disagree” when asked this question. 70% of respondents indicated they were CRNAs, 20% indicated they were anesthesiologists, and 10% indicated they were an anesthesia resident. Overall, the survey revealed that there seems to be confusion among the respondents whether a PONV prophylaxis and treatment protocol existed at their facility, but when asked if they assess and treat for PONV based on their personal preference, 70% replied “always” and 30% replied “usually”. Despite the study results not revealing any significance, it is apparent that anesthesia providers realize
PONV causes a great displeasure to patients and administer antiemetics accordingly in an effort to avoid this complication.

**Project Deliverables**

Two project deliverables were presented to the project site. The first was to provide an in-service on a PONV risk assessment tool describing the simplified Apfel risk assessment scoring tool along with a prophylactic and treatment protocol for CRNAs. The second deliverable was to distribute a survey instrument to anesthesia providers on their personal PONV practices.

**APNs Contribution to Scholarship and Practice**

The Advanced Practice Nurses’ (APNs) contribution to scholarship and practice was significant in this DNP project. APNs are prepared to create, implement, and advocate for health care policies as they are powerful influencers in policy development (American Association of Colleges of Nursing [AACN], 2006). Since this DNP project involved designing, implementing, and advocating for adherence to a PONV prophylaxis and treatment policy, the APNs role in this process is crucial. In addition, contribution in the process of policy development is pivotal to creating a health care system that meets the needs of its consumers. It is important for APNs to be engaged in developing PONV prophylaxis and treatment policies since they assume a leadership role in health care and in the eye of the public. Therefore, their role in creating or modifying policies within the health care arena has ability to increase the quality of care provided to certain patient populations, such as gynecological surgery patients receiving general anesthesia. The APN role in developing PONV prophylaxis and treatment protocols is paramount as contributing to the development of these protocols will support reducing the incidence of PONV among gynecologic general anesthesia patients, thereby improving health care outcomes of this population and promoting excellence in perianesthesia practice.
DNP Essentials Addressed

Several DNP essentials were addressed in this DNP project. A primary Essential recognized in this project is Essential II, *Organizational and Systems Leadership for Quality Improvement and Systems Thinking*. This Essential applied to this project since implementing a PONV prophylaxis and treatment protocol at the hospital correlated to a quality improvement and systems thinking (QI) objective. For quality improvement of patient care to occur, organizational and systems leadership must promote policies and protocols based on evidence-based practice research that has been conducted in that particular area of clinical practice. A second DNP Essential addressed in this project was Essential III, *Clinical Scholarship and Analytical Methods for Evidence-Based Practice*. This Essential related to implementing a PONV prophylaxis and treatment protocol since this protocol was devised through evaluating evidence-based practice research and best clinical practice guidelines on this topic in effort to influence improvements in practice and, in turn, health care outcomes. Finally, Essential V, *Health Care Policy for Advocacy in Health Care*, was conveyed in this project since healthcare policy creates a framework that can either enable or hinder the delivery of healthcare services or the ability of the provider to engage in practice to address healthcare needs. If a well-developed, universally recognized multimodal PONV prophylaxis and treatment protocol is adhered to by CRNAs providing general anesthesia to gynecologic surgery patients, the incidence of PONV should decrease along with PACU length of stay among this high-risk population.

Conclusion

The introduction of a simplified PONV risk stratification guideline for the management of PONV in adult gynecological surgical patients has significant potential to reduce the incidence of PONV and decrease PACU length of stay among this high-risk patient population. This complication is often feared more by patients than post-surgical pain, which is why PONV prophylaxis is an important issue at the forefront of healthcare in surgical environments and requires implementing
PONV PROPHYLAXIS AND TREATMENT

evidence-based protocols to combat this problem. Great attention to PONV management should be a standard component of perianesthesia quality care in order to uphold excellence in clinical practice. Patients should receive targeted multimodal antiemetic prophylaxis based on risk stratification established preoperatively in effort to avoid this undesirable and distressful complication. Every patient experiencing PONV causing a delay in discharge from the PACU results in increased cost of care, increased postoperative complications, and a decline in patient satisfaction. Since reimbursement in healthcare is strongly interrelated to the absence of complication and patient satisfaction, it is imperative to reduce the incidence of PONV. Taking a proactive approach in preventing PONV in gynecological surgical patients will likely ensure improved patient satisfaction, patient safety, quality care, and beneficial financial outcomes for this institution.

**Strengths and Limitations**

The strengths of this project were that it was inexpensive and convenient to conduct as it was conducted at one of the hospitals the project investigator visits for clinical rotations. There were a few limitations to this study. One limitation was that only one project site was used for data collection, which contributed to the small sample size of gynecological surgery patient charts and anesthesia providers at this project site. A greater amount of time would have possibly allowed for a larger sample size of survey participants as the anesthesia providers could have received several reminders of the request for their participation. Another limitation to this study was that continued adherence to the PONV risk stratification scoring guideline was unable to be fostered effectively due to time constraints. Lastly, the simplified Apfel risk assessment score was unable to be measured preoperatively in the pre- and post-retrospective chart reviews due to time constraints. Since this facility uses EMRs to document their preoperative assessments, this scoring tool was unable to be added to their EMR system within the time period of the study.
Future Implications and Recommendations

The implications for those who experience PONV can be relentless. PONV experiences lead to delays in discharge from PACU, increased unanticipated hospital admissions for uncontrolled PONV, increased cost of care to the institution and patient, increased postoperative complications, and a decline in patient satisfaction. Conducting this study revealed that great attention to PONV management should be a standard component of perianesthesia quality care in order to uphold excellence in clinical practice. In addition, all patients, especially those at high-risk, should receive targeted multimodal antiemetic prophylaxis based on risk stratification established preoperatively.
References


### Table 1

*Independent Paired T test for Equality of Means*

<table>
<thead>
<tr>
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<th>df</th>
<th>Sig. (2-tailed)</th>
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<td>.624</td>
<td>-3.066</td>
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### Table 2

*Crosstabs and Chi Square Tests*  
*PONV Medications given preoperatively*

<table>
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<tr>
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<th>Post</th>
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</tr>
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<table>
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<tr>
<td>Likelihood Ratio</td>
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Asymptomatic significance (2-sided): .489, .404, .311
## Table 3

**Crosstabs and Chi Square Tests**  
*PONV Medications given intraoperatively*

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<td>Asymptomatic Significance (2-sided)</td>
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<td></td>
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<td>Wave ➢ Pre 1 ➢ Post 1</td>
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<td>Wave</td>
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Table 4

*Crosstabs and Chi Square Tests*  *PONV Medications given postoperatively*

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<th>Crosstabs</th>
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<td>Asymptomatic</td>
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<td>Significance</td>
</tr>
<tr>
<td></td>
<td>(2-sided)</td>
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</table>

<table>
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<th>Df</th>
<th>Asymptotic</th>
<th>Significance (2-sided)</th>
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<tr>
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<tr>
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<td>.059</td>
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N of Valid Cases: 136
Appendix A

UB IRB Approval

University at Buffalo Institutional Review Board (UBIRB)
Office of Research Compliance | Clinical and Translational Research Center Room 5018
875 Ellicott St. | Buffalo, NY 14203
UB Federalwide Assurance ID#: FWA00008824

STUDY EXEMPTION

October 13, 2019

Dear Victoria Paulsen,

On 10/11/2019, the University at Buffalo IRB reviewed the following submission:

<table>
<thead>
<tr>
<th>Type of Review:</th>
<th>Initial Study</th>
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<tr>
<td>Title of Study:</td>
<td>Impact of an Educational In-Service on a Multimodal Postoperative Nausea and Vomiting (PONV) Prophylaxis and Treatment Protocol for Adult Gynecological Surgical Patients</td>
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<tr>
<td>Investigator:</td>
<td>Victoria Paulsen</td>
</tr>
<tr>
<td>IRB ID:</td>
<td>STUDY00003800</td>
</tr>
<tr>
<td>Funding:</td>
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</tr>
<tr>
<td>Grant ID:</td>
<td>None</td>
</tr>
<tr>
<td>IND, IDE, or HDE:</td>
<td>None</td>
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<td>Documents Reviewed:</td>
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<td>• Appendix I- Email Invitation to Participate in a Research Study In-Service.pdf, Category: Recruitment Materials;</td>
</tr>
<tr>
<td></td>
<td>• Appendix D- Survey Collection Tool.docx, Category: Surveys/Questionnaires;</td>
</tr>
<tr>
<td></td>
<td>• Appendix C- Data Collection Tool.docx, Category: Other;</td>
</tr>
<tr>
<td></td>
<td>• Scientific review form.pdf, Category: Other;</td>
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<tr>
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<td>• Adult Consent to Participate in a Research In-Service Presentation, Category: Consent Form;</td>
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<tr>
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<td>• Appendix H- HIPAA Waiver.docx, Category: Other;</td>
</tr>
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<td>• Paulsen-HRP-503- Version 2.docx, Category: IRB Protocol;</td>
</tr>
<tr>
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<td>• Appendix B- Outline of Educational In-Service .docx, Category: Other;</td>
</tr>
<tr>
<td></td>
<td>• Adult Consent to Participate in a Research Survey, Category: Consent Form;</td>
</tr>
<tr>
<td></td>
<td>• Appendix E- Email Invitation to Participate in a Research Study Survey.pdf, Category: Recruitment Materials;</td>
</tr>
<tr>
<td></td>
<td>• Appendix A- Apfel Risk Assessment Scoring Tool.docx, Category: Other;</td>
</tr>
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</table>

The University at Buffalo Institutional Review Board has considered the submission for the project referenced above on 10/11/2019 and determined it to be Exempt.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the Click system.

UBIRB exemption is given with the understanding that the most recently approved procedures will be followed and the most recently approved consenting documents will be used. If modifications are needed that may change the exemption
determination, please contact the UB IRB Office. Also, see the Worksheet: Exempt Determination (HRP-312) for information on exemption criteria and categories.

As principal investigator for this study involving human participants, you have responsibilities to the SUNY University at Buffalo IRB (UBIRB) as follows:

1. Ensuring that no subjects are enrolled prior to the IRB approval date.

2. Ensuring that the UBIRB is notified of:
   - All Reportable Information in accordance with the Reportable New Information Smart Form.
   - Project closure/completion by submitting a Continuing Review/Modification/Study Closure Smart Form in Click.

3. Ensuring that the protocol is followed as approved by UBIRB unless minor changes that do not impact the exempt determination are made.

4. Ensuring that the study is conducted in compliance with all UBIRB decisions, conditions, and requirements.

5. Bearing responsibility for all actions of the staff and sub-investigators with regard to the protocol.

6. Bearing responsibility for securing any other required approvals before research begins.

If you have any questions, please contact the UBIRB at 716-888-4888 or ub-irb@buffalo.edu.
### Appendix B

**Simplified Apfel Risk Assessment Score**

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female Gender</td>
<td>1</td>
</tr>
<tr>
<td>Non-Smoker</td>
<td>1</td>
</tr>
<tr>
<td>History of PONV</td>
<td>1</td>
</tr>
<tr>
<td>Postoperative opioids</td>
<td>1</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td>0-4</td>
</tr>
</tbody>
</table>

Basic PONV risk if no risk factors are present is 10%. Risk increases to 20%, 40%, 60%, and 80% for each additional risk factor.
Appendix C

Outline of Educational In-Service

PONV Prophylaxis and Treatment for Gynecological Surgery Patients: An Educational In-Service for Anesthesia Providers

1. Explain purpose of presentation and topic
   a) The purpose of this study is to provide an in-service for anesthesia providers at a local community hospital in WNY where a large number of non-obstetric gynecological surgery procedures are performed on utilizing a multimodal PONV prophylaxis and treatment protocol in this population.
   b) The aims of this study are to decrease incidence of PONV and decrease PACU length of stay for adult gynecological surgery patients receiving general anesthesia. Pre-intervention, a retrospective chart review monitoring anesthesia provider incidence of PONV and PACU length of stay will be performed and a Likert-style scale survey will be administered to determine perceived anesthesia provider barriers to a multimodal PONV prophylaxis and treatment protocol. Following the in-service, a second chart review will be performed to determine if PONV and PACU length of stay decreased for adult gynecological surgery patients receiving general anesthesia.
   c) The intervention may help to reduce the incidence of PONV, decrease PACU length of stay, improve patient quality of life, and potentially help the healthcare system financially.

2. Explain quantitative Likert-survey results and need for in-service presentation

3. Review how to calculate risk for PONV with the simplified Apfel risk assessment scoring tool
   a) Dependent risk factors are not additive
   b) Independent risk factors (one point for each risk factor)
      - Female
      - Non-smoker
      - History of PONV or motion sickness
      - Postoperative opioid use

4. Review guidelines for PONV risk stratification and antiemetic use

<table>
<thead>
<tr>
<th>Apfel Score</th>
<th>Recommended Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
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</tr>
<tr>
<td>2</td>
<td>1 or 2 antiemetic interventions</td>
</tr>
<tr>
<td>3-4</td>
<td>3 or more antiemetic interventions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Apfel Risk Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary (consider first): 4 mg ondansetron IV at end of surgery 4 - 8 mg dexamethasone IV at induction</td>
<td>(+1 point each)</td>
</tr>
<tr>
<td>Secondary: Haloperidol 0.5 - 2 mg IM/IV at end of surgery Phenergan 6.25 - 12.5 mg IV at induction (dilute) Aprepitant 40 mg PO 1-3 hours pre-op Scopolamine 1.5 mg TD &gt;1 hour pre-op Avoidance of volatile agent or nitrous oxide (TIVA) P6 acupoint stimulation or ear PONV protocol</td>
<td>Female Non-smoker Postop opioids Hx PONV or propensity for motion sickness</td>
</tr>
</tbody>
</table>

5. Review current evidence-based literature on utilizing a standardized risk stratification tool, such as the simplified Apfel risk assessment tool, in gynecological surgery patients.
6. Encourage provider adherence to the simplified Apfel risk assessment tool
7. Answer any questions
8. Provide contact information of project investigator
Appendix D
Data Collection Tool

De-identifying number

Number of antiemetics received preoperatively, intraoperatively, and postoperatively

Number of minutes patient spent in PACU

Simplified Apfel risk assessment score assigned preoperatively
Appendix E
Survey Collection Tool

PONV Survey Tool

For each item, please circle your response.

1. Please indicate your credentialing:
   - CRNA
   - MD
   - Fellow
   - Resident
   - Other

2. Please indicate your age in the ranges listed below.
   - 25-29
   - 30-34
   - 35-39
   - 40-44
   - 45-49
   - 50-54
   - 55-59
   - 60-64
   - > 65

3. How many years have you been practicing anesthesia?
   - 1-3
   - 4-6
   - 7-9
   - 10-15
   - 16-20
   - > 20

4. Do you know if there is a PONV prophylaxis and treatment protocol or algorithm at your facility?
   - Yes
   - I don’t know
   - No

5. I follow an existing PONV prophylaxis and treatment protocol at this facility.
   - Always
   - Usually
   - Sometimes
   - Rarely
   - A protocol or algorithm does not exist

6. If a PONV prophylaxis and treatment protocol does not exist, I assess and treat for PONV based on my personal preference.
   - Always
   - Usually
   - Sometimes
   - Rarely
   - Never

7. The risk of side effects of the medication is a perceived barrier to following a PONV prophylaxis and treatment protocol.
   - Strongly agree
   - Agree
   - Neither agree nor disagree
   - Disagree
   - Strongly Disagree

8. The complexity of the administration of the medication is a perceived barrier to following a PONV prophylaxis and treatment protocol.
   - Strongly agree
   - Agree
   - Neither agree nor disagree
   - Disagree
   - Strongly Disagree

9. The time consumption of gathering, preparing, and administering the medication is a perceived barrier to following a PONV prophylaxis and treatment protocol.
   - Strongly agree
   - Agree
   - Neither agree nor disagree
   - Disagree
   - Strongly Disagree

10. The cost of the medication is a perceived barrier to following a PONV prophylaxis and treatment protocol.
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly Disagree

11. The reluctance of the surgeon to have a PONV prophylaxis and treatment medication administered to the patient is a perceived barrier to following a PONV prophylaxis and treatment protocol.
    - Strongly agree
    - Agree
    - Neither agree nor disagree
    - Disagree
    - Strongly Disagree
12. The reluctance of the anesthesiologist to have a PONV prophylaxis and treatment medication administered to the patient is a perceived barrier to following a PONV prophylaxis and treatment protocol.

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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Appendix F

Email Invitation for In-Service Project Participation

You are invited to participate in a research study titled “Impact of an Educational In-Service on a Multimodal Postoperative Nausea and Vomiting (PONV) Prophylaxis and Treatment Protocol for Adult Gynecological Surgical Patients”. This study is being conducted by Victoria Paulsen, doctoral student of the University at Buffalo Nurse Anesthesia Program for the purpose of comparing the implementation of a PONV prophylaxis and treatment protocol among gynecological surgery patients receiving general anesthesia to administering antiemetics based previously on provider preference.

If you agree to participate, you will be given an information sheet about the study and asked to print your name on a sign-in sheet at the beginning of the in-service presentation. The educational in-service will occur on 11/8/19 at 12 pm in the anesthesia conference room at Millard Fillmore Suburban hospital. It will consist of a one-hour long interactive session focusing on the current evidence-based literature encouraging the use of a multimodal PONV prophylaxis and treatment protocol in effort to reduce the incidence of PONV and PACU length of stay among gynecological surgery patients. The in-service also will describe the simplified Apfel risk assessment score as a risk stratification tool devised to combat PONV among high-risk patient populations.

By printing your name on the sign-in sheet at the educational in-service, you are indicating your consent to participate in this study. The consent form is attached to this email for your review. Your participation is appreciated.

Thank you,

Victoria Paulsen, RN, SRNA, University at Buffalo

vlpaulse@buffalo.edu
Appendix G

In-Service Consent Documentation

University at Buffalo Institutional Review Board (UBIRB)
Office of Research Compliance | Clinical and Translational Research Center Room 5018
875 Ellicott St. | Buffalo, NY 14203
UB Federalwide Assurance ID#: FWA00008824

Adult Consent to Participate in a Research Study

**Title of research study:** Impact of an Educational In-Service on a Multimodal Postoperative Nausea and Vomiting (PONV) Prophylaxis and Treatment Protocol for Adult Gynecological Surgical Patients

**Version Date:** September 12, 2019

**Investigator:** Victoria Paulsen

**Key Information:** The following is a short summary of this study to help you decide whether or not to be a part of this study. More detailed information is listed later on in this form.

**Why am I being invited to take part in a research study?**
You are being invited to take part in a research study because you are an anesthesia provider at Millard Fillmore Suburban Hospital. Your perceptions and opinions on your current clinical practice concerning PONV prophylaxis and treatment will contribute to the knowledge base of this study. Also, this study may contribute a change in your practice and possibly to a policy change at your hospital, advocating for a PONV risk stratification scoring system to be used preoperatively on not only high-risk patients, but all patients presenting for surgery.

**What should I know about a research study?**
- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

**Why is this research being done?**
The purpose of this research is to determine the impact of an in-service for anesthesia providers at a local community hospital in Western New York (WNY) on use of a multimodal PONV prophylaxis and treatment protocol on the incidence of PONV and length of stay in the PACU among adult gynecological surgery patients. Specific aims for this project are to decrease incidence of PONV and decrease PACU length of stay for adult gynecological surgery patients receiving general anesthesia. Pre-intervention, a retrospective chart review monitoring anesthesia provider incidence of PONV and PACU length of stay will be performed and a Likert-style scale survey will be administered to determine perceived anesthesia provider barriers to a multimodal PONV prophylaxis and treatment protocol. Following the in-service, a second chart review will be performed to determine if PONV and PACU length of stay decreased for adult gynecological surgery patients receiving general anesthesia.

Postoperative nausea and vomiting (PONV) is a common and distressing complication after surgery and general anesthesia with incidence ranging from 30% in the general postsurgical patient population to 80% in high risk patients. Gynecologic surgery has been considered an independent risk factor for PONV with increased incidence related to age, obesity, motion sickness, history or previous PONV, and pain during the postoperative period. PONV is defined as nausea or nausea and vomiting which occurs during the first 24 to 48 hours after surgery or anesthesia. Although usually short-
term, PONV has been identified by patients as more feared than postoperative pain. Untreated or prolonged PONV is correlated with increased cost of care resulting from extended post-anesthesia recovery area (PACU) length of stay and increased unplanned hospital admissions. Due to the extensive impact of PONV on patient experience, it is vital that perioperative and perianesthesia healthcare team members work together to reduce patient risk through implementing evidence-based practice multimodal prophylactic PONV treatment.

There are no benefits to you from your taking part in this research. We cannot promise any benefits to others from your taking part in this research. However, possible benefits to others include contributing to future knowledge regarding PONV management for adult gynecological surgical patients at this hospital.

How long will the research last and what will I need to do?

The in-service will consist of a one-hour long interactive session for anesthesia providers employed at the hospital focusing on the current evidence-based literature encouraging the use of a multimodal PONV prophylaxis and treatment protocol in effort to reduce the incidence of PONV and PACU length of stay. The in-service also will describe the simplified Apfel risk assessment score as a risk stratification tool devised to combat PONV among high-risk patient populations, such as gynecological surgery patients.

Participants will be asked to sign-in on the sign-in sheet at the in-service presentation. The names from the sign-in sheet will be used by the researcher to correlate with the final data analysis in the post-intervention records review. Then, participants will attend the one-hour long interactive in-service presentation presented by the researcher consisting of a PowerPoint presentation on the topic.

More detailed information about the study procedures can be found under “What happens if I say yes, I want to be in this research?”

Is there any way being in this study could be bad for me?

More detailed information about the risks of this study can be found under “Is there any way being in this study could be bad for me? (Detailed Risks)”

Will being in this study help me in any way?

There are no benefits to you from your taking part in this research. We cannot promise any benefits to others from your taking part in this research. However, possible benefits to others include contributing to future knowledge regarding PONV management for adult gynecological surgical patients at this hospital.

What happens if I do not want to be in this research?

Participation in research is completely voluntary. You may choose not to enroll in this study.

Your alternative to participating in this research study is to not participate.

Detailed Information: The following is more detailed information about this study in addition to the information listed above.

Who can I talk to?

If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team at vlpaulse@buffalo.edu. You may also contact the research participant advocate at 716-888-4845 or researchadvocate@buffalo.edu.

This research has been reviewed and approved by an Institutional Review Board (“IRB”). An IRB is a committee that provides ethical and regulatory oversight of research that involves human subjects. You may talk to them at (716) 888-4888 or email ub-irb@buffalo.edu if:

- You have questions about your rights as a participant in this research
- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
- You want to get information or provide input about this research.
How many people will be studied?
We expect about 10-20 people will be in this research study.

What happens if I say yes, I want to be in this research?
After consenting, participants will be asked to sign-in on the sign-in sheet at the in-service presentation. The names from the sign-in sheet will be used by the researcher to correlate with the final data analysis in the post-intervention records review. The in-service will consist of a one-hour long interactive session for anesthesia providers employed at the hospital focusing on the current evidence-based literature encouraging the use of a multimodal PONV prophylaxis and treatment protocol in effort to reduce the incidence of PONV and PACU length of stay. The in-service also will describe the simplified Apfel risk assessment score as a risk stratification tool devised to combat PONV among high-risk patient populations, such as gynecological surgery patients.

What happens if I say yes, but I change my mind later?
You can leave the research at any time it will not be held against you.

Is there any way being in this study could be bad for me? (Detailed Risks)
There are no know risks associated with these procedures.

What happens to the information collected for the research?
Efforts will be made to limit the use and disclosure of your personal information, including research study and medical or education records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization.

What will I be told about clinically relevant research results?
The study results will be presented to anesthesia providers at the project site and also disseminated at a local university for research day as a research poster presentation.

Before the in-service begins, the researcher will answer any questions you may have and then ask you if you would still like to participate.
Email Invitation for Survey Participation

You are invited to participate in a research study titled “Impact of an Educational In-Service on a Multimodal Postoperative Nausea and Vomiting (PONV) Prophylaxis and Treatment Protocol for Adult Gynecological Surgical Patients”. This study is being conducted by Victoria Paulsen, doctoral student of the University at Buffalo Nurse Anesthesia Program for the purpose of comparing the implementation of a PONV prophylaxis and treatment protocol among gynecological surgical patients receiving general anesthesia to administering antiemetics based on provider preference.

If you agree to participate, please complete the attached survey by clicking on the link at the bottom of the page at your own pace about your personal practices and experiences treating gynecological surgery patients for PONV. This survey should take around 10-15 minutes to complete. While you may not experience any direct benefits or compensation from participation in this survey, you will be contributing to future knowledge regarding PONV management for adult gynecological surgery patients. Also, your responses to this survey will influence the content of an educational in-service that will be presented on this topic at your institution in roughly two weeks.

By completing and submitting this survey, you are indicating your consent to participate in this study. Your participation is appreciated.

If you would like additional information on this study or on completing the survey, please feel free to contact me at the email address listed below.

Thank you,

Victoria Paulsen, SRNA, University at Buffalo

vlpaulse@buffalo.edu

Survey Link: PONV Prophylaxis and Treatment Survey
Title of research study: Impact of an Educational In-Service on a Multimodal Postoperative Nausea and Vomiting (PONV) Prophylaxis and Treatment Protocol for Adult Gynecological Surgical Patients

Version Date: September 12, 2019

Investigator: Victoria Paulsen

Key Information: The following is a short summary of this study to help you decide whether or not to be a part of this study. More detailed information is listed later on in this form.

Why am I being invited to take part in a research study?
You are being invited to take part in a research study because you are an anesthesia provider at Millard Fillmore Suburban Hospital. Your perceptions and opinions on your current clinical practice concerning PONV prophylaxis and treatment will contribute to the knowledge base of this study. Also, this study may contribute a change in your practice and possibly to a policy change at your hospital, advocating for a PONV risk stratification scoring system to be used preoperatively on not only high-risk patients, but all patients presenting for surgery.

What should I know about a research study?
- Someone will explain this research study to you.
- Whether or not you take part is up to you.
- You can choose not to take part.
- You can agree to take part and later change your mind.
- Your decision will not be held against you.
- You can ask all the questions you want before you decide.

Why is this research being done?
The purpose of this research is to determine the impact of an in-service for anesthesia providers at a local community hospital in Western New York (WNY) on use of a multimodal PONV prophylaxis and treatment protocol on the incidence of PONV and length of stay in the PACU among adult gynecological surgery patients. Specific aims for this project are to decrease incidence of PONV and decrease PACU length of stay for adult gynecological surgery patients receiving general anesthesia. Pre-intervention, a retrospective chart review monitoring anesthesia provider incidence of PONV and PACU length of stay will be performed and a Likert-style scale survey will be administered to determine perceived anesthesia provider barriers to a multimodal PONV prophylaxis and treatment protocol. Following the in-service, a second chart review will be performed to determine if PONV and PACU length of stay decreased for adult gynecological surgery patients receiving general anesthesia.

Postoperative nausea and vomiting (PONV) is a common and distressing complication after surgery and general anesthesia with incidence ranging from 30% in the general postsurgical patient population to 80% in high-risk patients. Gynecologic surgery has been considered an independent risk factor for PONV with increased
incidence related to age, obesity, motion sickness, history or previous PONV, and pain during the postoperative period. PONV is defined as nausea or nausea and vomiting which occurs during the first 24 to 48 hours after surgery or anesthesia. Although usually short-term, PONV has been identified by patients as more feared than postoperative pain. Untreated or prolonged PONV is correlated with increased cost of care resulting from extended post-anesthesia recovery area (PACU) length of stay and increased unplanned hospital admissions. Due to the extensive impact of PONV on patient experience, it is vital that perioperative and perianesthesia healthcare team members work together to reduce patient risk through implementing evidence-based practice multimodal prophylactic PONV treatment.

There are no benefits to you from your taking part in this research. We cannot promise any benefits to others from your taking part in this research. However, possible benefits to others include contributing to future knowledge regarding PONV management for adult gynecological surgical patients at this hospital.

How long will the research last and what will I need to do?
We expect that you will be in this research study for 10-15 minutes, the time that it will take to complete a short survey.

You will be asked to complete a survey on your perceptions and opinions on your current clinical practice concerning PONV prophylaxis and treatment.

More detailed information about the study procedures can be found under “What happens if I say yes, I want to be in this research?”

Is there any way being in this study could be bad for me?
More detailed information about the risks of this study can be found under “Is there any way being in this study could be bad for me? (Detailed Risks)”

Will being in this study help me in any way?
There are no benefits to you from your taking part in this research. We cannot promise any benefits to others from your taking part in this research. However, possible benefits to others include contributing to future knowledge regarding PONV management for adult gynecological surgical patients at this hospital.

What happens if I do not want to be in this research?
Participation in research is completely voluntary. You may choose not to enroll in this study.

Your alternative to participating in this research study is to not participate.

Detailed Information: The following is more detailed information about this study in addition to the information listed above.

Who can I talk to?
If you have questions, concerns, or complaints, or think the research has hurt you, talk to the research team at vlpause@buffalo.edu. You may also contact the research participant advocate at 716-888-4845 or researchadvocate@buffalo.edu.

This research has been reviewed and approved by an Institutional Review Board (“IRB”). An IRB is a committee that provides ethical and regulatory oversight of research that involves human subjects. You may talk to them at (716) 888-4888 or email ub-irb@buffalo.edu if:

- You have questions about your rights as a participant in this research
- Your questions, concerns, or complaints are not being answered by the research team.
- You cannot reach the research team.
- You want to talk to someone besides the research team.
• You want to get information or provide input about this research.

How many people will be studied?
We expect about 10-20 people here will be in this research study.

What happens if I say yes, I want to be in this research?
After consenting, participants will be asked to complete the survey that should take approximately 10-15 minutes to complete. Participants will submit this survey by emailing it back to the researcher or placing it in an assigned envelope in the anesthesia assistant’s office. Then the data will be gathered by the researcher or otherwise organized for analysis.

What happens if I say yes, but I change my mind later?
You can leave the research at any time it will not be held against you.

Is there any way being in this study could be bad for me? (Detailed Risks)
There are no know risks associated with these procedures.

What happens to the information collected for the research?
Efforts will be made to limit the use and disclosure of your personal information, including research study and medical or education records, to people who have a need to review this information. We cannot promise complete secrecy. Organizations that may inspect and copy your information include the IRB and other representatives of this organization.

What will I be told about clinically relevant research results?
The study results will be presented to anesthesia providers at the project site and also disseminated at a local university for research day as a research poster presentation.

Prior to completing the survey, the researcher will answer any questions you may have and then ask you if you would still like to participate.

Why you are being invited to take part in a research study:
• What you should know about the research study
• Why this research is being done
• How long the research will last and what you will need to do
• Any ways being in this study could be bad for you
• Any ways being in this study could help you
• What happens if you do not want to be in this research
• Who you can talk to
• How many people will be studied
• What happens if you say yes, you want to be in this research
• What your responsibilities are if you take part in this research
• What happens if you say yes, but you change your mind later
• What happens to the information collected for the research
• Whether you can be removed from the research without your OK
• Anything else your need to know

Who can I talk to?
If you have questions, concerns, or complaints, or think the research has hurt you, you can talk to the research team at 781-820-8624 or vlpulse@buffalo.edu. You may also contact the research participant advocate at 716-888-4845 or researchadvocate@buffalo.edu.

This research has been reviewed and approved by an Institutional Review Board. You may talk to them at 716-888-4888 or email ub-irb@buffalo.edu if:
  o Your questions, concerns, or complaints are not being answered by the research team
  o You cannot reach the research team
  o You want to talk to someone besides the research team
  o You have questions about your rights as a research subject
  o You want to get information or provide input about this research

When applicable, someone will explain to you:

- Whether you will get treated or paid if injured
- The possibility of unknown risks
- When you may be taken off the research without your agreement
- Added costs from taking part
- What will happen if you stop taking part
- Steps to safely stop taking part

- When new information will be told to you
- The number of people expected to take part
- That the Food and Drug Administration may inspect the records
- What happens to collected data if you stop taking part
- An explanation of www.ClinicalTrials.gov
Appendix J
HIPPA Waiver

UNIVERSITY AT BUFFALO
HUMAN RESEARCH PROTECTIONS PROGRAM

Request for Waiver of the Authorization for
Use of Individually Identifiable Health Information

INSTRUCTIONS

In most situations Federal regulations require that an individual’s signed HIPAA authorization be obtained before their Individually Identifiable Health Information can be acquired, used or disclosed for research purposes in situations where HIPAA applies. A waiver of this authorization requirement allows you to acquire, use or disclose health information without securing such an authorization.

You may apply to the IRB for a waiver of the authorization requirement if several regulatory criteria can be fulfilled. One criterion is key: the research could not practicably be conducted without the waiver. If it will be difficult or impossible for you to secure a signed authorization from your research subjects, you pass an initial test for qualifying for a waiver of the authorization requirement.

Some instances where the request for a waiver of authorization may be appropriate include:

- research on existing health information, e.g., medical records research
- research where a waiver of informed consent is also being requested, e.g., survey research via phone

The criteria that must be satisfied for full waiver of authorization are:

- The research could not practicably be conducted without the waiver or alteration of authorization, i.e., there is no other mechanism available that would permit you to obtain the information needed for study recruitment under HIPAA.
- The research could not practicably be conducted without access to and use of the health information sought in the waiver.
- A brief description of the health information for which use or access has been determined to be necessary. The waiver will permit the researcher to access only this information
- The use or disclosure of health information involves no more than a minimal risk to the privacy of individuals, based on, at least, the presence of the following elements:
  - An adequate plan to protect the identifiers from improper use and disclosure;

1 HIPAA does not define this term and leaves its meaning to the discretion of the IRB
An adequate plan to destroy the identifiers at the earliest opportunity consistent with conduct of the research, unless there is a health or research justification for retaining the identifiers or such retention is otherwise required by law; and

Adequate written assurances are provided that the protected health information will not be reused or disclosed to any other person or entity, except as required by law, for authorized oversight of the research study, or for other research for which the use or disclosure of protected health information would be permitted.

A partial waiver, or alteration, of the HIPAA authorization may also be granted by the IRB in cases where granting a full waiver of authorization is not warranted. These additional mechanisms allow the IRB to alter or eliminate one or more of the regulatory elements normally required in the HIPAA authorization. Consult with the IRB for more information on these options.

You can address all of the above criteria for a full waiver by completing and signing the Waiver of Authorization form and submitting it to the IRB for review.
UNIVERSITY AT BUFFALO
HUMAN RESEARCH PROTECTIONS PROGRAM

Request for Waiver of the Authorization for Use of Individually Identifiable Health Information

Investigator: Victoria Paulsen

Project Title: Impact of an Educational In-Service on a Multimodal Postoperative Nausea and Vomiting (PONV) Prophylaxis and Treatment Protocol for Adult Gynecological Surgical Patients

1. Describe the specific types of Individually Identifiable health information (e.g., name, address, elements of medical record, entire medical record) to be used in this study and where this information will be accessed or obtained:

Identifiable health information from the electronic medical records (EMRs) will include a medical record number, patient name, patient date of birth, and address that will be visible to the researcher. This data will be accessed at Millard Fillmore Suburban Hospital in the anesthesia conference room.

2. Explain why this research project cannot be carried out without use of individually identifiable health information (why is using de-identified data not practicable?).

Individually identifiable health information must be accessed in order to determine that the subjects meet inclusion criteria. Once the EMRs have been identified for inclusion, the data will be de-identified prior to being transferred to a SPSS file.

3. Explain why obtaining a signed authorization from the research subjects is not practicable.

Since this study is a retrospective records review, it would be impractical to attempt to contact all of the persons to whom the records pertain because of the number of records to be viewed and/or the fact that contact information may not be sufficient to do so.

4. Describe the protections that will be put in place to protect the privacy of individually identifiable health information to be used in this study. What steps will be taken to help prevent accidental use or disclosure outside the scope of this project. This includes information maintained or communicated in electronic, written and oral form.

Individually identifiable health information will be de-identified by the removal of any information that makes the records identifiable (or complete destruction). This will occur either by deletion of the identifiable portion of the record, destruction of the links in the master list containing the linking information, or replacement of identifiable information with information to make it unidentifiable. Nothing will then remain that could be used to link back to the identity for de-identified records. The de-identified data will be entered initially into an excel file by the researcher. This data will then be used to create a SPSS file for analysis. The data will be stored on a password protected computer that will only be accessible by the researcher.

5. Describe your plan to assure that the individually identifiable health information will not be re-used or disclosed for other purposes.

Individually identifiable health information will be de-identified within three days of obtaining the data and will only be accessed by the researcher. Once the data has been de-identified, it will be entered initially into an excel file by the researcher before creating a SPSS file for analysis. The data will not be re-used or disclosed for other purposes since the data transferred into a SPSS file will have been de-identified and therefore, revert to being unidentifiable. Also, the data will be stored on a password protected computer that will only be accessible by the researcher.
6. Describe your plan to destroy the personal identifiers at the earliest opportunity or your justification for the need to retain personal identifiers.

Data obtained is identifiable but will be either de-identified or coded within three days of obtaining the data by the researcher. Once the data has been de-identified, it will be entered initially into an excel file by the researcher. This data will then be used to create a SPSS file for analysis. The data will be stored on a password protected computer that will only be accessible by the researcher. After the research study has concluded, the data will be deleted, shredded if on paper, or otherwise destroyed.

Principal Investigator: I attest that the use or disclosure of individually identifiable health information will involve no more than a minimal risk to the privacy of the research subjects involved in this study and that the information will not be reused or disclosed to third parties unless required by law for authorized oversight of the research study.
Significance

- Those patients with exposure to DBS could be at increased risk of confusion, delirium, nausea, vomiting, headaches, dizziness, fatigue, anorexia, and chills. These side effects are believed to be caused by medications used to treat DBS and to the surgery itself.

- It's vital that patients receiving DBS treatment and those with undiagnosed confusional states be identified due to the high risk of postoperative delirium.

DNP Project Question

- Would an educational intervention for staff nurses reduce the incidence of PONV in patients after surgery in the PACU? Research has shown that decreasing the incidence of PONV in patients postoperatively can reduce patient discomfort and improve recovery times.

Purpose, Aims, and Objectives

- To develop and implement an educational intervention for staff nurses that includes the following:

  - Aims:
    1. To decrease the incidence of PONV in patients after surgery in the PACU
    2. To increase staff awareness of PONV prevention strategies

- Theoretical Framework

  - Theoretical framework: Cognitive Theory of Change
  - Concept: Cognitive dissonance theory, which states that individuals experience discomfort when they hold two or more conflicting beliefs or attitudes. This theory is used to explain how educational interventions can change patient behavior and improve postoperative outcomes.
Application of Lewin's Change Theory

Methodology and Design

Data Collection

Literature Review Process

PONV PROPHYLAXIS AND TREATMENT

56
Results: Chi-square

Table 2

<table>
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<th>No</th>
<th>Chi-Square</th>
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<td>Factor B</td>
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Results: Chi-square

Table 3

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<tr>
<td>Factor B</td>
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</tbody>
</table>

Protection of Human Rights and Ethical Considerations

- Informed consent
- Voluntary consent
- Respect for patient autonomy
- Privacy and confidentiality
- Protection from harm
- Confidentiality of data
- Protection of vulnerable groups
- Respect for cultural and ethnic diversity

DNP Essentials Examined

- Knowledge of disease process and pathophysiology
- Understanding of diagnostic and therapeutic interventions
- Effective communication skills
- Critical thinking and problem-solving skills
- Leadership and management skills