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Pharmacological Approaches to Postoperative Nausea and Vomiting Prevention

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Abstract

Background: The nationwide incidence of PONV ranges from 10-80%, varying widely due to differences in patient and anesthetic risk factors. PONV has implications including prolonged patient recovery, increased duration of hospital admissions, increased healthcare costs, and lower patient satisfaction. The literature suggests that utilizing a PONV guideline can decrease the risk and severity of PONV. No practice guidelines were available in the NMCSD anesthesia department to guide anesthesia provider's management of PONV.

Purpose: Implement a PONV practice guideline identifying key risk factors with a suggested algorithm for prophylactic treatment to increase adherence to PONV evidence-based practice among anesthesia providers at NMCSD.

Project Design: A PONV practice guideline was developed utilizing the 2014 Society of Ambulatory Anesthesia (SAMBA) PONV consensus guidelines and antiemetics on the NMCSD pharmacy formulary. The primary outcome was provider guideline adherence with a secondary outcome of PONV incidence. A baseline of anesthesia provider trends to PONV management were collected to include Apfel scoring, perioperative anti-emetic administration, and the incidence of PONV. Anesthesia providers were then educated by a formal presentation about the PONV practice guideline, current PONV management trends, and PONV incidence. Six months following implementation and education, data was collected regarding provider guideline adherence and PONV incidence.

Analysis of Results: Results showed 29% of providers were adherent to the guideline post-implementation. Incidence of nausea decreased from 14.9% to 6.5% and the administration of

rescue medication by PACU staff decreased from 20.2% to 12%. Low guideline adherence may have resulted from strict adherence evaluation criteria and inadequate education to the anesthesia providers.

Organizational Impact: There was an increased staff awareness of evidenced-based PONV recommendations and potential cost savings with a decrease in rescue antiemetics utilized. The guideline could be disseminated to other Military Treatment Facilities as a future project goal.

Introduction

PONV can be a significant concern in patients undergoing general anesthesia. The incidence of PONV ranges from 10-80%, with a wide variation due to individual patient risk factors and type of anesthetic delivered (Gan et al, 2014). PONV is associated with complications that may negatively impact the patient's quality of perioperative care leading to decreased patient satisfaction and increased healthcare costs (Tabrizi, Malhotra, Turnbull, & Goode, 2019). The literature suggests that PONV severity and incidence is reduced by utilizing an evidenced-based guideline to help direct PONV management. The 2014 Society of Ambulatory Anesthesia (SAMBA) PONV consensus guidelines provide recommendations for patient risk factor stratification through the Apfel scoring system paired with pharmacologic prophylactic treatments (Gan et al, 2014). A key component to the success of the Apfel scoring system is correctly matching a patient's risk factors with the appropriate prophylactic treatment (Apfel, 1999). The anesthesia department at Naval Medical Center San Diego (NMCSD) was not utilizing an evidence-based guideline incorporating Apfel scoring to guide PONV management. The leadership in the NMCSD anesthesia department requested the creation of an NMCSD specific practice guideline to help direct provider's management of PONV and potentially decrease the incidence and severity of PONV.

Significance of the Problem

PONV has the potential to cause complications that can affect patient care and healthcare economics (Krzyzanowski et al, 2018). Patients often rate PONV worse than post-operative pain, severely decreasing satisfaction of care (Krzyzanowski et al, 2018). PONV can cause physical adverse effects that include aspiration, esophageal rupture, pneumothorax, suture dehiscence, and subcutaneous emphysema (Apfel et al., 2004). These complications can be

associated with prolonged recovery times leading to increased duration of hospital admissions and healthcare costs totaling over 100 million dollars annually (Parra-Sanchez et al, 2012). Reports of prolonged Post Anesthesia Care Unit (PACU) admissions for PONV may delay discharge times and increase nursing care requirements (Parra-Sanchez et al, 2012). Literature indicates that unresolved PONV accounts for unanticipated hospital admissions (Tabrizi, Malhotra, Turnbull, & Goode, 2019). These additional times and staffing requirements extrapolate to an approximate cost increase of over 400 dollars per patient (Krzyzanowski et al, 2018).

Due to the severe impact PONV may have on patient care and healthcare costs, it was imperative to the NMCSD leadership to examine the current practice of the anesthesia department's management of PONV. Additionally, the NMCSD anesthesia and surgical services leadership recently partnered to create Enhanced Recovery After Surgery (ERAS) pathways. ERAS pathways have become increasingly prevalent to optimize patient outcomes perioperatively. A key component in ERAS protocols at NMCSD was prophylaxis to prevent PONV. The NMCSD ERAS pathways recommended PONV prevention but failed to provide specific guidance determining high-risk patients and outlining treatments. Without guidance in the ERAS pathways, anesthesia providers relied on anecdotal experience rather than evidenced-based practice to determine risk and prophylactic treatment for the prevention of PONV.

In 2014, SAMBA published the "Consensus Guidelines for the Management of Postoperative Nausea and Vomiting" outlining prevention and treatment strategies to reduce PONV (Gan et al, 2014). The guideline recommends the use of Apfel scoring to evaluate a patient's risk for PONV. On the Apfel scoring scale, one point is assigned for each of the following risk factors: female gender, non-smoker, history of PONV, and use of peri-operative

opioids, resulting in a score from 0-4. Scores of 0, 1, 2, 3, and 4 correlates with approximately 10%, 21%, 39%, 61% and 79% incidence of PONV, respectively (Apfel et al, 1999). In conjunction with the Apfel score, the SAMBA guideline recommends specific medications with the patient's stratified risk level to help reduce the risk and severity of PONV (Gan et al, 2014). The objective of this EBP project was to use the 2014 SAMBA PONV consensus guidelines, new evidence since its publication, and the available anti-emetics in the NMCSD pharmacy formulary to construct an NMCSD specific guideline for PONV prophylactic management.

Clinical Question

Does education and implementation of a PONV practice guideline at NMCSD increase adherence to PONV evidence-based practice among anesthesia providers?

Focus Areas

There were five focus areas to help guide the project. First, the literature was appraised for evidence regarding the project topic utilizing specific inclusion and exclusion criteria. Second, a guideline was synthesized utilizing the 2014 SAMBA PONV consensus guidelines, new relevant literature since that publication, and available antiemetics on the NMCSD pharmacy formulary. Third, pre-implementation data was collected to assess anesthesia provider PONV management trends and PONV incidence. Fourth, NMCSD anesthesia providers were educated by presentation about the PONV practice guideline, current management trends, and PONV incidence. Six months later, post-implementation data was collected regarding provider adherence to PONV guidelines and PONV incidence. Lastly, the fifth focus area was evaluation of project results and sustainment plan development.

Relevance to Military Nursing

Complications of PONV may have a major impact to the Military Health System (MHS)

and force readiness. PONV has the potential to impact military readiness by increasing time to recovery (Krzyzanowski et al, 2018). Prolonged and avoidable hospital admissions reduce force wide medical readiness, preventing active duty members from supporting the military mission. PONV complications may also increase total cost of care in the MHS system by increasing military staffing requirements from extended or unanticipated admissions (Krzyzanowski et al, 2018). Lowering per-capita cost while maintaining or improving quality of care is a pillar of the MHS Quadruple Aim (DHA, 2017). Adherence to this pillar by lowering the incidence of PONV has the potential to result in a decrease in military healthcare costs. Uncomplicated recoveries may also increase medical readiness due to shorter length of stay after surgery and reductions in staffing burdens on military nursing.

Organizing Framework

The Iowa Model was the organizational framework that was chosen to guide this Evidence-Based Practice (EBP) project. The Iowa Model includes selection of a topic, forming a team, evidence retrieval, grading the evidence, developing an EBP standard, implementing EBP, and evaluating the results of the implementation (Titler, M. & Moore, J., 2010). The Iowa model incorporates three decision points to guide selection and implementation of an EBP project. The decision points include: priority of the topic, sufficient evidence for appraisal, and determining sustainability of the change (Iowa Model Collaborative et al., 2017). Leadership and project members at NMCSD identified PONV and lack of an evidenced-based guideline as a high priority. Evidence supported the utilization of a guideline to manage PONV prophylaxis. A sustainment plan for the project was created based on evaluation results and the need for the development of a structured education strategy.

Project Design

General Approach

The general approach to the project was to create an NMCSD evidence-based practice guideline for identifying PONV risk factors with a suggested algorithm for prophylactic treatment. The guideline was developed utilizing the 2014 SAMBA PONV consensus guidelines, relevant literature since that publication, and antiemetics currently on the NMCSD formulary. The primary outcome was provider guideline adherence with a secondary outcome of PONV incidence. Primary and secondary outcomes were collected prior to guideline implementation. Anesthesia providers were then educated by formal presentation about the PONV practice guideline, current practices, and PONV incidence. Six months following implementation and education, the same information was collected regarding provider adherence and PONV incidence.

Setting

The project was conducted at NMCSD, one of the largest military treatment facilities on the west coast. The main operating room at NMCSD provides an average of 100 surgical procedures per day. The anesthesia department within the surgical services department was the primary setting of interest. There were a total of 75 anesthesia providers to include 24 active duty anesthesiologists, 17 contract anesthesiologists, 27 active duty CRNAs, and 7 contract CRNAs.

Procedural Steps

A literature search was conducted utilizing the US National Library of Medicine National Institutes of Health (PubMed) and Cumulative Index to Nursing and Allied Health Literature (CINAHL). Search terms included PONV, total intravenous anesthetic (TIVA), and related

medications to PONV available in the NMCSD formulary (aprepitant, dexamethasone, diphenhydramine, ondansetron, haloperidol, midazolam, propofol, promethazine). Multiple arrangements and spellings of the search terms were used, and searches were done for generic and brand names of medications. The inclusion criteria were PONV outcomes and guidelines in adult populations undergoing general anesthesia, English language, and articles from 2013 to 2018. Publication types were limited to meta-analysis or meta-synthesis articles. Exclusion criteria included articles with pediatric patients, treatments with Complementary and Alternative Medicine (CAM), obstetrics, and medications not available at NMCSD.

The PubMed search yielded 56 results with Medical Subject Heading (MeSH) terms of PONV in the title and abstract. CINAHL yielded 19 results with identical search terms and limitations. There were 21 duplicates found with Endnote software that yielded a total of 54 peer-reviewed abstracts and articles. Articles were evaluated by title and abstract using inclusion and exclusion criteria. Articles that contained studies from Fujii et al. were excluded because they were considered fraudulent through an investigation done by the Japanese Society of Anesthesiologists (Habib & Gan, 2013). After initial review, 19 articles remained and were further examined by full article review. After the full articles were reviewed by all three reviewers, 15 articles remained and were considered to meet all inclusion criteria and have no exclusion criteria.

Data from the articles were placed into an evidence table, where reviewers ensured articles were relevant to the PICOT question. All 15 articles were meta-analysis and deemed level I evidence. Article quality was determined utilizing the Preferred Reporting Items of Systematic reviews and Meta-Analyses (PRISMA) 2009 checklist. The checklist provided 27 items to assess study quality and ensure minimum standards were met in all article sections.

Five articles met all 27 checklist items deeming them high-quality articles. Five articles met 26 of the checklist items, one article met 25 of the checklist items, two articles met 24, and two articles met 23 of the checklist items.

The reviewers identified if the articles supported or deviated from the 2014 SAMBA PONV consensus guidelines. All 15 articles had results consistent with the consensus guidelines with the exception of two. With the majority of evidence supporting the SAMBA guidelines, it was decided to utilize these guidelines to develop the NMCSD specific guideline pending that recommended medications were available in the NMCSD pharmacy formulary. The only two articles that deviated from the consensus guidelines were related to the antiemetic aprepitant. The 2014 SAMBA PONV consensus guidelines recommended 40 mg dose of aprepitant. However, a new meta-analysis by Liu et al. (2015), found that a dose of 80 mg and 125 mg is the most efficacious at preventing PONV when compared to a 40 mg dose by mouth. Another more recent article by Singh et al. (2016), also resulted that an 80 mg dose was more efficacious than the 40 mg dose. Due to budgetary and availability limitations at NMCSD pharmacy, it was determined to use the 40 mg dose of aprepitant for the guideline.

The NMCSD PONV practice guideline was designed for an anesthesia provider to assess a patient's PONV risk using Apfel scoring, with a coinciding suggested algorithm for prophylactic treatment (see appendix G). The guideline indicated that a low-risk Apfel score, defined as 0-1, required no prophylaxis medications. At a medium-risk Apfel score, defined as 2, the provider would administer 1 or 2 interventions. Interventions included administering 4 mg of ondansetron intravenously (IV) at the end of surgery and/or 4 mg of dexamethasone IV at induction of anesthesia (Gan et al, 2014). At a high-risk Apfel score, defined as 3-4, the guideline recommended administering 2 or more anti-emetics. The antiemetics were the same

recommended in the medium-risk category plus the addition of TIVA in replacement of inhaled anesthetics (Gan et al., 2014). If the patient had contraindications to ondansetron or dexamethasone, a list of alternative medications was provided. The alternative medications included: haloperidol 0.5-2 mg IM/IV at end of surgery, promethazine 6.25 mg- 12.5 mg IV at induction, or aprepitant 80 mg po 1-3 hours before surgery (Liu et al., 2015).

The primary outcome of provider adherence was determined by evaluating the patient's Apfel score and corresponding intervention including medication accuracy, dosage, and timing. If the Apfel score correctly corresponded with the recommended intervention, the provider would be determined adherent. The secondary outcome of PONV incidence was evaluated as nausea or vomiting in the PACU, defined as presence of nausea or vomiting at any point during the PACU stay.

Prior to guideline dissemination to staff, non-identifiable patient information was collected for a two-week period in the PACU to include Apfel score, type of anesthetic, antiemetics administered (dosage and timing), and PONV incidence upon admission/discharge of PACU. After pre-implementation data was collected, anesthesia providers were educated by a formal power-point presentation about the practice guideline and current trends in anesthesia department PONV management and incidence. The education session outlined all specifics related to the guideline including a detailed explanation of Apfel scoring and recommended prophylactic treatments. The guideline was then placed with other anesthesia department consensus guidelines and disseminated as paper and electronic copies for provider reference. Six months post-implementation, data was collected again for a two-week period in the PACU to include Apfel score, type of anesthetic, antiemetics administered (dosage and timing), and PONV incidence upon admission/discharge of PACU.

HIPAA Concerns

There were no violation concerns regarding the Health Insurance Portability and Accountability Act of 1996 (HIPAA). During the course of the project, no personally identifiable information (PII) or protected health information (PHI) was collected. The project was submitted as a quality improvement project at NMCSD and received Institutional Review Board exemption. All non-identifiable information that was collected from the medical record was stored on a common-access card enabled computer in a password-protected file. The file was contained on a computer behind a locked access door.

Project Results

A total of 94 patient charts were reviewed prior to PONV guideline implementation (i.e., Non-Guideline Group (NG)) and 92 charts were reviewed following guideline implementation (Guideline Group (G)). Group comparisons were conducted using percentage values for both primary and secondary project outcomes. For the primary outcome of adherence, 37% of anesthesia providers were adhering to the project's PONV guideline; i.e., medication type, dose, and timing; however, the post-implementation, or G group (n=92), only 29% of providers appropriately adhered to PONV guideline recommendations. For the secondary outcome of PONV, the G group reported less nausea than the NG group, 6.5% vs 14.9%. Lastly, no difference between vomiting frequency was found between groups.

Additional comparisons made between the groups was administration of rescue antiemetic medications in the PACU and intraoperative dexamethasone. The use of rescue medication by PACU staff decreased from 20.2% in the NG group to 12% in the G group. Intraoperative dexamethasone administration was increased in the G group at 80.4% when compared to the NG group at 76.6%. Also, the timing of the dexamethasone (15 min prior to

induction) was more aligned with the guideline in the G group at 69.9%, as compared to 63.8% in the NG group.

Analysis of the Results

The primary outcome for the project was to measure provider adherence to a NMCSD evidenced-based PONV guideline. The decrease in guideline adherence following the implementation of the PONV guideline by anesthesia staff could be multifactorial. First, the criteria for adherence was extremely strict and may have contributed to the low overall adherence. Adherence was measured in a binary fashion and if a provider failed any aspect of the guideline (type of medication, dosing, or timing), they were considered non-adherent. For example, if a provider administered dexamethasone to a patient at a dose of 10 mg instead of the recommended 4 mg dose for PONV, the provider failed to remain adherent to the guideline despite other indications for greater corticosteroid dosage requirements perioperatively. This example could be extrapolated to all other parts of the guideline, which could have resulted in the decreased adherence.

Also, the project timing was not ideal for dissemination and training of all staff. Education occurred during the summer months, which coincides with peak permanent change of station season for military providers. The increase in provider turnover with no additional education sessions may have affected adherence to the guideline. In addition, project members only provided one training session, potentially leaving some providers without knowledge of the guideline.

Another factor that may have resulted in decreased adherence were several changes in medication supply and unanticipated shortages during the project implementation. The NMCSD pharmacy had changes in the availability or concentrations of dexamethasone, ondansetron, and

aprepitant during the project timeframe. These variations could have changed a provider's decisions on types or dosing of antiemetics and potentially affected adherence.

Despite a decrease in adherence to the PONV guideline, there were several trends noted in the G group that suggested improvements in PONV prophylaxis. The secondary project outcome was PONV incidence and the G group exhibited a decreased rate of nausea at 6.5% compared to 14.9% in the NG group. The use of rescue medication by PACU staff also decreased in the G group (20.2%) versus the NG group (12%). Additionally, the G group seemed to align more with guideline recommendations for administration of intraoperative dexamethasone (80.4% vs. 76.6%) and correct dexamethasone timing (69.9% vs 63.8%) than compared to the NG group. These trends may indicate that providers were practicing PONV prophylaxis more consistently with the guideline.

Organizational Impact

Despite the failure of the guideline to have a high level of adherence in the NMCSD anesthesia department, there was still increased awareness of evidenced-based PONV management strategies. There were anecdotal discussions amongst providers regarding an increased assessment of pre-operative risk for PONV utilizing Apfel scoring. Another impact may be a potential cost-savings in military medicine with an increased adherence to a PONV guideline. The results showed a potential trend of less rescue medication utilized in the PACU that could be extrapolated to a reduced cost of care if adherence was increased.

The guideline also has the potential to reach other Military Treatment Facilities (MTFs). With certain exceptions, pharmacy formularies are nearly identical amongst MTFs. This EBP project has the potential to not only impact NMCSD but other MTFs if adequate support were achieved from pertinent stakeholders.

Future Direction and Conclusion

There are multiple areas of improvement that may increase future adherence of the guideline among NMCSD anesthesia providers. As previously discussed, adherence was potentially decreased for a multitude of reasons such as strict adherence criteria, provider turnover, inadequate number of training sessions, medication shortages, or simply a failure to achieve departmental support of all the stakeholders. Future recommendations would focus on readdressing adherence criteria, evaluating an improved education strategy, anticipating formulary changes, and proactive engagement of leadership support. Additionally, a pre and post survey to anesthesia providers may have provided better insight to reasons why providers weren't adhering to the guidelines.

The 2014 SAMBA PONV Guidelines have been pivotal in the management of prophylactic treatment in PONV. Apfel scoring and recommended treatments are a simple, effective, and evidence-based solution to help prevent the undesirable outcomes of PONV. It is reasonable to anticipate that new research will continue to emerge in this area. Further evaluation of emerging evidence and revision to the NMCSD guideline will be critical to the sustainment and success of this project.

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Apendix A

Citi Certificates

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** melissa richling (ID: 5742792)
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- **Institution Affiliation:** Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
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- **Curriculum Group:** OUSD P&R Human Research
- **Course Learner Group:** Biomedical Investigators and Research Study Team
- **Stage:** Stage 1 - Biomedical Investigators

- **Report ID:** 20623934
- **Completion Date:** 27-Aug-2016
- **Expiration Date:** 27-Aug-2019
- **Minimum Passing:** 80
- **Reported Score*:** 95

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Avoiding Group Harms - U.S. Research Perspectives (ID: 14080)	27-Aug-2016	3/3 (100%)
Recognizing and Reporting Unanticipated Problems Involving Risks to Subjects or Others in Biomedical Research (ID: 14777)	27-Aug-2016	5/5 (100%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	27-Aug-2016	5/5 (100%)
Module for Non-DoD Personnel Conducting Research Involving Human Subjects Supported by the DoD (ID: 16769)	27-Aug-2016	No Quiz
History and Ethics of Human Subjects Research (ID: 498)	27-Aug-2016	7/7 (100%)
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	27-Aug-2016	5/5 (100%)
Informed Consent (ID: 3)	27-Aug-2016	5/5 (100%)
Social and Behavioral Research (SBR) for Biomedical Researchers (ID: 4)	27-Aug-2016	4/4 (100%)
Records-Based Research (ID: 5)	27-Aug-2016	3/3 (100%)
Genetic Research in Human Populations (ID: 6)	27-Aug-2016	5/5 (100%)
Vulnerable Subjects - Research Involving Children (ID: 9)	27-Aug-2016	3/3 (100%)
Vulnerable Subjects - Research Involving Pregnant Women, Human Fetuses, and Neonates (ID: 10)	27-Aug-2016	3/3 (100%)
FDA-Regulated Research (ID: 12)	27-Aug-2016	4/5 (80%)
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	27-Aug-2016	4/5 (80%)
Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 912)	27-Aug-2016	No Quiz
Cultural Competence in Research (ID: 15166)	27-Aug-2016	4/5 (80%)

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid independent Learner.

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COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 2 OF 2
COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** melissa richling (ID: 5742792)
- **Email:** melissa.richling@usuhs.edu
- **Institution Affiliation:** Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
- **Institution Unit:** USN
- **Phone:** 7034241458

- **Curriculum Group:** OUSD P&R Human Research
- **Course Learner Group:** Biomedical Investigators and Research Study Team
- **Stage:** Stage 1 - Biomedical Investigators

- **Report ID:** 20623934
- **Report Date:** 27-Aug-2016
- **Current Score**:** 95

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
History and Ethics of Human Subjects Research (ID: 498)	27-Aug-2016	7/7 (100%)
Informed Consent (ID: 3)	27-Aug-2016	5/5 (100%)
Social and Behavioral Research (SBR) for Biomedical Researchers (ID: 4)	27-Aug-2016	4/4 (100%)
Records-Based Research (ID: 5)	27-Aug-2016	3/3 (100%)
Genetic Research in Human Populations (ID: 6)	27-Aug-2016	5/5 (100%)
Vulnerable Subjects - Research Involving Children (ID: 9)	27-Aug-2016	3/3 (100%)
Vulnerable Subjects - Research Involving Pregnant Women, Human Fetuses, and Neonates (ID: 10)	27-Aug-2016	3/3 (100%)
FDA-Regulated Research (ID: 12)	27-Aug-2016	4/5 (80%)
Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 912)	27-Aug-2016	No Quiz
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	27-Aug-2016	4/5 (80%)
Avoiding Group Harms - U.S. Research Perspectives (ID: 14080)	27-Aug-2016	3/3 (100%)
Cultural Competence in Research (ID: 15166)	27-Aug-2016	4/5 (80%)
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	27-Aug-2016	5/5 (100%)
Recognizing and Reporting Unanticipated Problems Involving Risks to Subjects or Others in Biomedical Research (ID: 14777)	27-Aug-2016	5/5 (100%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	27-Aug-2016	5/5 (100%)
Module for Non-DoD Personnel Conducting Research Involving Human Subjects Supported by the DoD (ID: 16769)	27-Aug-2016	No Quiz

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COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Nicole Pendry (ID: 5744135)
- **Email:** nicole.pendry@usuhs.edu
- **Institution Affiliation:** Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
- **Phone:** 8159319210

- **Curriculum Group:** OUSD P&R Human Research
- **Course Learner Group:** Biomedical Investigators and Research Study Team
- **Stage:** Stage 1 - Biomedical Investigators

- **Report ID:** 20629145
- **Completion Date:** 30-Aug-2016
- **Expiration Date:** 30-Aug-2019
- **Minimum Passing:** 80
- **Reported Score*:** 90

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Avoiding Group Harms - U.S. Research Perspectives (ID: 14080)	29-Aug-2016	3/3 (100%)
Recognizing and Reporting Unanticipated Problems Involving Risks to Subjects or Others in Biomedical Research (ID: 14777)	29-Aug-2016	4/5 (80%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	29-Aug-2016	5/5 (100%)
Module for Non-DoD Personnel Conducting Research Involving Human Subjects Supported by the DoD (ID: 16769)	29-Aug-2016	No Quiz
History and Ethics of Human Subjects Research (ID: 498)	29-Aug-2016	7/7 (100%)
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	29-Aug-2016	5/5 (100%)
Informed Consent (ID: 3)	29-Aug-2016	4/5 (80%)
Social and Behavioral Research (SBR) for Biomedical Researchers (ID: 4)	30-Aug-2016	4/4 (100%)
Records-Based Research (ID: 5)	30-Aug-2016	3/3 (100%)
Genetic Research in Human Populations (ID: 6)	30-Aug-2016	4/5 (80%)
Vulnerable Subjects - Research Involving Children (ID: 9)	30-Aug-2016	3/3 (100%)
Vulnerable Subjects - Research Involving Pregnant Women, Human Fetuses, and Neonates (ID: 10)	30-Aug-2016	3/3 (100%)
FDA-Regulated Research (ID: 12)	30-Aug-2016	5/5 (100%)
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	30-Aug-2016	5/5 (100%)
Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 912)	30-Aug-2016	No Quiz
Cultural Competence in Research (ID: 15166)	30-Aug-2016	2/5 (40%)

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COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)

COMPLETION REPORT - PART 2 OF 2
COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Nicole Pendry (ID: 5744135)
- **Email:** nicole.pendry@usuhs.edu
- **Institution Affiliation:** Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
- **Phone:** 8159319210

- **Curriculum Group:** OUSD P&R Human Research
- **Course Learner Group:** Biomedical Investigators and Research Study Team
- **Stage:** Stage 1 - Biomedical Investigators

- **Report ID:** 20629145
- **Report Date:** 30-Aug-2016
- **Current Score**:** 90

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
History and Ethics of Human Subjects Research (ID: 498)	29-Aug-2016	7/7 (100%)
Informed Consent (ID: 3)	29-Aug-2016	4/5 (80%)
Social and Behavioral Research (SBR) for Biomedical Researchers (ID: 4)	30-Aug-2016	4/4 (100%)
Records-Based Research (ID: 5)	30-Aug-2016	3/3 (100%)
The Federal Regulations - SBE (ID: 502)	30-Aug-2016	Quiz Not Taken
Genetic Research in Human Populations (ID: 6)	30-Aug-2016	4/5 (80%)
Vulnerable Subjects - Research Involving Children (ID: 9)	30-Aug-2016	3/3 (100%)
Vulnerable Subjects - Research Involving Pregnant Women, Human Fetuses, and Neonates (ID: 10)	30-Aug-2016	3/3 (100%)
FDA-Regulated Research (ID: 12)	30-Aug-2016	5/5 (100%)
Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 912)	30-Aug-2016	No Quiz
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	30-Aug-2016	5/5 (100%)
Avoiding Group Harms - U.S. Research Perspectives (ID: 14080)	29-Aug-2016	3/3 (100%)
Cultural Competence in Research (ID: 15166)	30-Aug-2016	2/5 (40%)
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	29-Aug-2016	5/5 (100%)
Recognizing and Reporting Unanticipated Problems Involving Risks to Subjects or Others in Biomedical Research (ID: 14777)	29-Aug-2016	4/5 (80%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	29-Aug-2016	5/5 (100%)
Module for Non-DoD Personnel Conducting Research Involving Human Subjects Supported by the DoD (ID: 16769)	29-Aug-2016	No Quiz

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COMPLETION REPORT - PART 1 OF 2
COURSEWORK REQUIREMENTS*

* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Mark Sebald (ID: 5744117)
- **Institution Affiliation:** Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
- **Institution Email:** mark.sebald@usuhs.edu
- **Phone:** 7136143078

- **Curriculum Group:** OUSD P&R Human Research
- **Course Learner Group:** Biomedical Investigators and Research Study Team
- **Stage:** Stage 1 - Biomedical Investigators

- **Record ID:** 20629107
- **Completion Date:** 28-Aug-2016
- **Expiration Date:** 28-Aug-2019
- **Minimum Passing:** 80
- **Reported Score*:** 83

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED	SCORE
Avoiding Group Harms - U.S. Research Perspectives (ID: 14080)	28-Aug-2016	3/3 (100%)
Recognizing and Reporting Unanticipated Problems Involving Risks to Subjects or Others in Biomedical Research (ID: 14777)	28-Aug-2016	3/5 (60%)
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	28-Aug-2016	5/5 (100%)
Module for Non-DoD Personnel Conducting Research Involving Human Subjects Supported by the DoD (ID: 16769)	28-Aug-2016	No Quiz
History and Ethics of Human Subjects Research (ID: 498)	28-Aug-2016	5/7 (71%)
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	28-Aug-2016	4/5 (80%)
Informed Consent (ID: 3)	28-Aug-2016	4/5 (80%)
Social and Behavioral Research (SBR) for Biomedical Researchers (ID: 4)	28-Aug-2016	4/4 (100%)
Records-Based Research (ID: 5)	28-Aug-2016	3/3 (100%)
Genetic Research in Human Populations (ID: 6)	28-Aug-2016	5/5 (100%)
Research Involving Children (ID: 9)	28-Aug-2016	3/3 (100%)
Research Involving Pregnant Women, Fetuses, and Neonates (ID: 10)	28-Aug-2016	3/3 (100%)
FDA-Regulated Research (ID: 12)	28-Aug-2016	4/5 (80%)
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	28-Aug-2016	4/5 (80%)
Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 912)	28-Aug-2016	No Quiz
The Federal Regulations - SBE (ID: 502)	28-Aug-2016	2/5 (40%)

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COMPLETION REPORT - PART 2 OF 2
COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Mark Sebald (ID: 5744117)
- **Institution Affiliation:** Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 603)
- **Institution Email:** mark.sebald@usuhs.edu
- **Phone:** 7136143078

- **Curriculum Group:** OUSD P&R Human Research
- **Course Learner Group:** Biomedical Investigators and Research Study Team
- **Stage:** Stage 1 - Biomedical Investigators

- **Record ID:** 20629107
- **Report Date:** 15-Mar-2019
- **Current Score**:** 83

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Basic Institutional Review Board (IRB) Regulations and Review Process (ID: 2)	28-Aug-2016	4/5 (80%)
Informed Consent (ID: 3)	28-Aug-2016	4/5 (80%)
Social and Behavioral Research (SBR) for Biomedical Researchers (ID: 4)	28-Aug-2016	4/4 (100%)
Records-Based Research (ID: 5)	28-Aug-2016	3/3 (100%)
Genetic Research in Human Populations (ID: 6)	28-Aug-2016	5/5 (100%)
Research Involving Children (ID: 9)	28-Aug-2016	3/3 (100%)
Research Involving Pregnant Women, Fetuses, and Neonates (ID: 10)	28-Aug-2016	3/3 (100%)
FDA-Regulated Research (ID: 12)	28-Aug-2016	4/5 (80%)
History and Ethics of Human Subjects Research (ID: 498)	28-Aug-2016	5/7 (71%)
Avoiding Group Harms - U.S. Research Perspectives (ID: 14080)	28-Aug-2016	3/3 (100%)
Recognizing and Reporting Unanticipated Problems Involving Risks to Subjects or Others in Biomedical Research (ID: 14777)	28-Aug-2016	3/5 (60%)
Office of the Under Secretary of Defense (Personnel and Readiness) (ID: 912)	28-Aug-2016	No Quiz
Populations in Research Requiring Additional Considerations and/or Protections (ID: 16680)	28-Aug-2016	5/5 (100%)
Conflicts of Interest in Research Involving Human Subjects (ID: 488)	28-Aug-2016	4/5 (80%)
The Federal Regulations - SBE (ID: 502)	28-Aug-2016	2/5 (40%)
Module for Non-DoD Personnel Conducting Research Involving Human Subjects Supported by the DoD (ID: 16769)	28-Aug-2016	No Quiz

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

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Appendix B

USU Form 3202N

USUHS FORM 3202N
DANIEL K. INOUYE GRADUATE SCHOOL OF NURSING
EVIDENCE-BASED PRACTICE/PERFORMANCE IMPROVEMENT PROPOSAL

VPR Date Stamp

Project Number: GSN-61-10262 (VPR will assign)

Project Title: Development of PONV Practice Guidelines at NMCSD

SECTION A: STUDENT POC INFORMATION

1. Name (Last, First, MI): Sebald, Mark, T Student E-mail: mark.sebald@usuhs.edu
2. Home Address: [redacted]

SECTION B: COMMITTEE CHAIR / SENIOR MENTOR INFORMATION

3. Name (Last, First, MI): Tozer, Kimberly
4. Telephone: (619) 453-6779 Fax: E-mail: kimberly.tozer@gmail.com
5. USUHS Building/ Room No.:

SECTION C: PROJECT INFORMATION

6. Attach the Abstract for the proposal, including the following sections: Site Location of the Project, Title, Authors, Background or Problem/Issue, Clinical Question/Purpose, Project Design, Anticipated Organizational Impact/Implications for Practice and also include the Proposed Timeline. Single space the abstract and use Times New Roman font, size 12.
7. Is this proposal related to an active research project of the Chair/Senior Mentor identified in Section B? ☐ Yes ☒ No
   If yes, complete below; if no, proceed to Part 8.
   Project Number: _____
   Project Title: _____
   Project Start Date: _____ Project End Date: _____
8. Anticipated period of performance: Project Start Date: 4/1/2018 Project End Date: 9/15/2018
9. Performance Site(s): Naval Medical Center San Diego
10. Does this project involve any classified information? (Contact the USUHS Security Office for guidance) ☐ Yes ☒ No
11. Do you have a funding source for this project? ☐ Yes ☒ No ☐ NA
    If yes, specify the funding agency and the amount provided:

SECTION D: SIGNATURES

The following signatures attest to the validity of the above information:

[redacted]

Student (Project Point of Contact for the Group) (Signature and Date) Chair/Senior Mentor (Signature and Date)

[redacted]

Chair/Program Director (Signature and Date) Chair/Program Director (Signature and Date)

[redacted]

DNP Project Director or PhD Director (Signature and Date) Associate Dean for Academic Affairs, GSN (Signature and Date)

[redacted]

Associate Dean for Research, GSN (Signature and Date) Dean, DKI Graduate School of Nursing (Signature and Date)

In light of the above signatures, the project is approved.

[redacted] 30 Nov 2018

USUHS Vice President for Research Date

USUHS Form 3202N (VPR) - Revised Sep 2015 v1.2
Previous versions are obsolete

Appendix C

MTF IRB/PI Letter of Determination

NMCSD Quality Improvement & Process Improvement Proposal

For CID Use Only
QI Number:

NMCSD.QI.2018.0012

INTENT TO ENGAGE IN PERFORMANCE IMPROVEMENT PROJECT INVOLVING LIVING HUMAN BEINGS OR IDENTIFIABLE PATIENT INFORMATION

Complete and submit this form to Maria Devore when an investigator proposes a performance improvement project involving humans that s/he does not believe constitutes human subject research. The investigator must provide adequate information for the IRB Chair/ Vice Chair and/ or delegate to determine whether the project constitutes human subject research. If the reviewer determines that a project is not human subjects research, the IRB will have no on-going involvement with the project. If the project is deemed to meet the definition of human subject research, a complete IRB submission will be required.

A data sharing agreement checklist must also be included in this submission. Contact the Clinical Investigation Department or Maria Devore for the most recent version.

Be as specific as possible when answering the below questions.

Investigator Name (LAST, FIRST):	Rank, Designation and/or Degree:
Richling, Melissa	LT, USN, SRNA
E-mail:	**Phone Number:**
melissa.l.richling.mil@mail.mil	703-424-1458
Command:	**Department:**
Naval Medical Center San Diego	Anesthesia

Project Title:

Development of PONV Practice Guidelines at Naval Medical Center San Diego

NMCSD Version: April 2017

1. Describe the problem that this project will identify and improve. Specifically mention the population/ program and provide the background, evaluation, and method of implementation.

The incidence of Postoperative Nausea and Vomiting (PONV) reportedly ranges from 30-80%, varying widely based upon individual patient risk factors and type of surgical procedure performed (Gan et al, 2014). PONV has implications including increased duration of hospital stay, prolonged recovery, increased cost, and decreased patient satisfaction (Apfel, 2014).

Apfel scoring is a widely accepted tool used to assess risk for PONV. This scoring system assigns one point for each of the following individual patient risk factors; female gender, non-smoking status, history of PONV, and use of perioperative opioids. These four risk factors are added together, and a higher score is associated with a greater likelihood of experiencing PONV.

Literature suggests prophylactic administration of antiemetics reduce the risk and severity of PONV when a practice guideline is utilized. The most widely accepted consensus guidelines for the management of PONV is the Society of Ambulatory Anesthesia (SAMBA) PONV consensus guidelines published in 2014. Here at NMCSD, standard of care is to administer prophylactic medication for PONV; however, types of medications and timing of administration varies from provider to provider. To date, no PONV guideline currently exists at NMCSD. In addition, recently implemented anesthesia pathways for specific surgical procedures (e.g., bariatric surgery) emphasize PONV prophylaxis. Taken together, PONV management at NMCSD is not guided by potential risk factors (Apfel scoring) and/or recommended PONV practice guidelines.

2. Do you have intentions to publish and/or present the outcome/findings of this project?

- (●) YES
- ( ) NO

If YES, please indicate the forum in which you primarily plan to disseminate the information (e.g. local conference, international conference, peer-reviewed manuscript)

We are presenting our findings to the Graduate School of Nursing faculty and students at Uniformed Services University of the Health Sciences in Bethesda, Maryland for our DNP project.

3. Does the project include testing the safety and efficacy of a drug or device in a human subject?

- ( ) YES
- (●) NO

If YES, please explain:

PONV medications are routinely administered to patients receiving any type of anesthesia and is considered "standard of care." However, no current PONV prophylactic guideline exists at NMCSD to better inform provider practice.

4. Do you PRIMARILY intend the information you learn from this project to be generalizable beyond your institution?

Research is defined as a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. Activities which are designed to contribute "generalizable knowledge" would be those whose original intent is to make public via oral presentation, poster, or journal publication outside of the Command at which the activity occurs, or outside of an Educational program (PhD program, for example) for which the activity was done.

◯ YES
◉ NO

If Yes, please explain:

This performance improvement project is designed to implement already existing evidence-based PONV guidelines developed by SAMBA tailored to NMCSD medications on formulary and will ONLY be implemented in the anesthesiology department at NMCSD.

5. Do you PRIMARILY intend the information you learn to provide immediate and continuous improvement and feedback at your institution?

◉ YES
◯ NO

If Yes, please explain:

Information learned from this performance improvement project is intended to improve practice at NMCSD. Initially, a baseline incidence rate of PONV will be used to demonstrate a need for the PONV prophylaxis guideline at NMCSD. We will provide immediate staff education regarding prophylactic medications held locally compared to what is recommended in the SAMBA consensus guidelines. After implementation of the PONV prophylaxis guideline, project members will evaluate provider adherence to the guidelines at 3 and 6 months following education to the anesthesiology department and on an annual basis thereafter. This information will be provided to the anesthesia department for continuous quality improvement.

6. Are the activities or interventions considered standard of care?

(●) YES
( ) NO

If Yes, please explain:

PONV medications are routinely administered to patients receiving any type of anesthesia and is considered "standard of care." However, no current PONV prophylactic guideline exists at NMCSD to better inform provider practice. The guideline that we will implement is intended to standardize practice and improve patient satisfaction.

7. Are participants expected to benefit directly from these activities?

(●) YES
( ) NO

If Yes, please explain:

Patients will potentially experience decreased incidence of PONV, PACU length of stay, and higher satisfaction with their healthcare. The anesthesia providers will also benefit because leadership will be able to better track PONV incidence and implement other modalities in the future as new evidence becomes available. Also, standardized management of PONV has the possibilty of improving patient outcomes. Furthermore, a guideline will help strengthen the ERAS pathways that mention PONV prophylaxis but do not provide guidance.

8. Will you collect data from living individuals through some type of intervention?

( ) YES
(●) NO

If Yes, please explain:

No patient identification will be collected nor will any patient be assigned any sort of identification number. This continuous improvement project requires the collection of preoperative Apfel scores, type of anesthetic, perioperative anti-emetics, postoperative opioids, length of anesthetic, nausea, vomiting, and length of PACU stay, from the medical record, as documented by the PACU nurses.

9. Will you interact in ANY way with a living individual?

◉ YES
○ NO

If Yes, please explain:

Project members will assess PONV within 15 minutes of admission and immediately prior to discharge from the PACU (anesthesia recovery). Part of the discharge criteria from the PACU is the cessation of nausea and vomiting. We will not deviate from the way it is asked by current PACU nurses with the exception of different time intervals. Nursing staff will ask the patients directly if they feel nauseous or if they vomited during their stay in the PACU as part of standard of care, not a specific part of the project. Project members will assess provider adherence to guidelines by retrospective chart review in which no personally identifying information (PII) of the patient or the provider will be collected or stored.

10. Will you have access to individually identifiable information?

◉ YES
○ NO

If Yes, please explain:

Although we have access to PII, no individually identification information will be collected. Apfel scoring (female gender, non-smoking status, history of PONV, and use of perioperative opioids), type of anesthetic, perioperative anti-emetics, postoperative opioids, length of anesthetic, length of PACU stay, and evaluation of nausea and vomiting during the PACU period will be assessed. However, at no time will any patient identifiers be collected, nor will subject's be assigned an ID number. We will have access to the patient's medical record on Innovian and Essentris. We will not collect any individually identifiable information. We are assessing this information in a patient care area at Naval Medical Center San Diego and keeping this information on a government computer that is locked and is located in an office which also has a lock.

11. Will you be utilizing the electronic medical record in any way?

◉ YES
○ NO

Please use this space to include any other information you would like considered in the determination of this review:

We will review the patient's medical record on Innovian and Essentris to evaluate provider adherence to the guideline. We are assessing preoperative Apfel score, type of anesthetic, perioperative anti-emetics administered, postoperative opioids, length of anesthetic, and length of PACU stay. No PII will be recorded nor will we collect information identifying specific providers. We will not be measuring individual provider adherence, but the anesthesia department as a whole.

Project Lead and Department Head

The information provided clearly states the intention and plan for this project. All responsibilities and resources needed in conducting this project lies with the project lead and their respective department.

Project Lead
Signature and Date:

Department Head
Signature and Date:

CID DETERMINATION

(CID USE ONLY)

More information is required to complete review, specifically:

◉ This is a Performance Improvement / Quality Assurance project.

NOTES:

○ This appears to be a human subject research project and warrants full submission to the IRB

NOTES:

Reviewer Signature and Date: [redacted]

DO NOT COMPLETE THIS PAGE, CID USE ONLY

Reviewer Checklist: Human Subject Research-vs.- Quality Improvement/Process Improvement

Each Assessed Element must meet criteria for Quality Improvement in order for this project to be conducted without IRB review and approval. This form must accompany the signed QI checklist submitted by the POC of the project.

Assessed Element	*Human Subject Research*	*Quality Improvement*	*Notes*
Intent	☐ Contribute to "generalizable" knowledge	■ Improve a program or service or ensure it conforms with expected norms	
Design	☐ Develop or contribute to "generalizable" knowledge, may involve randomization of individuals to different treatment regimens or processes.	■ Not intended to develop or contribute to "generalizable" knowledge, does not involve randomization of individuals, but may involve comparison of variations in programs	
Effect on Program or Practice Evaluated	☐ It is not the specific intent that findings of the activity will directly affect institutional or programmatic practice; however, they may influence future policies	■ Findings of the activity are expected to directly affect institutional practice and may identify corrective action(s) needed	
Population	☐ Usually involves a subset of individuals; generally, statistical justification for sample size is used to ensure endpoints are met	■ Includes all or most receiving a particular treatment or process; exclusion of information from some individuals significantly affects conclusions	
Benefits	☐ Participants may or may not benefit directly; benefit, if any, to individuals is incidental or delayed	■ Participants are expected to benefit directly from the activities	
Dissemination of Results	☐ The intent to publish or present the findings is generally presumed at the outset; dissemination of information usually occurs in research/scientific publications or other research/scientific fora; results expected to develop or contribute to "generalizable" knowledge	■ The intent to publish or present is generally NOT presumed at the outset; dissemination of information does not occur beyond the institution evaluated; dissemination of information may occur in quality improvement publications; when published or presented to a wider audience, the intent is to suggest potentially effective models, strategies, assessment tools or provide benchmarks or base rates rather than to develop or contribute to "generalizable" knowledge.	

Appendix D

PAO Clearance

PUBLIC AFFAIRS OFFICE

AUTHORED WORKS #1587

APPROVED ON: 3/5/2019

Media Type	OTHER
Title of Work	Pharmacological Approaches to Postoperative Nausea and Vomiting Prevention
Intended Audience	Uniformed Services University Graduate School of Nursing
Submission Deadline	4/5/2019 12:00:00 AM
Summary of Provocative Material	2019-02-28
Author of Work	Richling, Melissa L. LT
Grade/Rank	LT
Directorate & Dept	DSS 00259-ANESTHESIOLOGY-04AN00
Role	[Role]
Department Head	Wallace, Scott C. CDR
Clinical Director	Bopp, Eric J. CDR
Phone Number	703-424-1458
Alternate POC	[Alternate POC]
POSTER/PRESENTATION INFORMATION	
Event Name & Date	[POS-01 Event] 2/28/2019 [PRE-01 Event] [PRE-02 Date]
Event Open to Media?	[POS-03 Media] [PRE-03 Media]
Location of Event	[POS-04 Location] [POS-04 Location]
FLYER INFORMATION	
Flyer Display Location	[FLY-01 Display]
Flyer Display Duration	0
OTHER: BLOG, SOCIAL MEDIA, ETC. INFORMATION	
Description of Narrative	Final report
Post Location	Uniformed Services University
Link to Blog/Website	[OTH-03 URL]
Journal/Article, Case Report/Series or Book/Chapter Name	[OTH-04 Name]

VIDEO INFORMATION	
Video Use	[VID-01 Use]
Video Circulation	[VID-02 Circulation]
Video Stored Location	[VID-03 Location]
Video Producer	[VID-04 Produced]
Video Subject Matter Expert	[VID-05 SME]
Video Scriptwriter	[VID-06 Scriptwriter]
Video Narrator Reqd?	False
Video Filename	[VID-08 Filename]

APPROVAL LOG:

(2019-02-28T10:30:54) Approved by Dept Head: SCOTT.WALLACE.
(2019-02-28T10:45:39) Approved by Clinical Director: ERIC.BOPP.
(2019-02-28T11:00:12) Approved by OPSEC: ALAINA.SIMMONS.
(2019-03-05T14:39:57) Approved by PAO: MIGUEL.ALVAREZ.

Appendix E

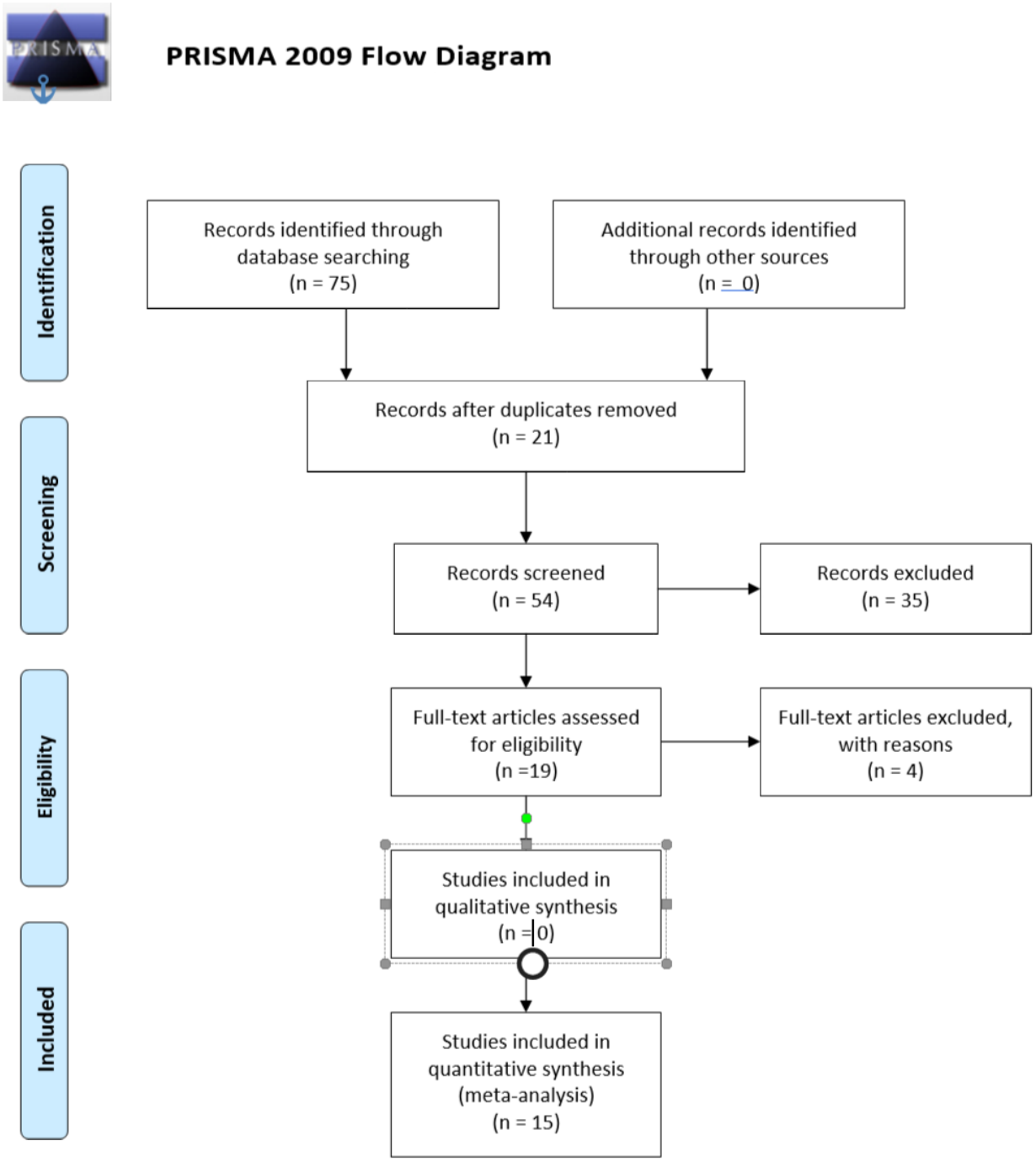
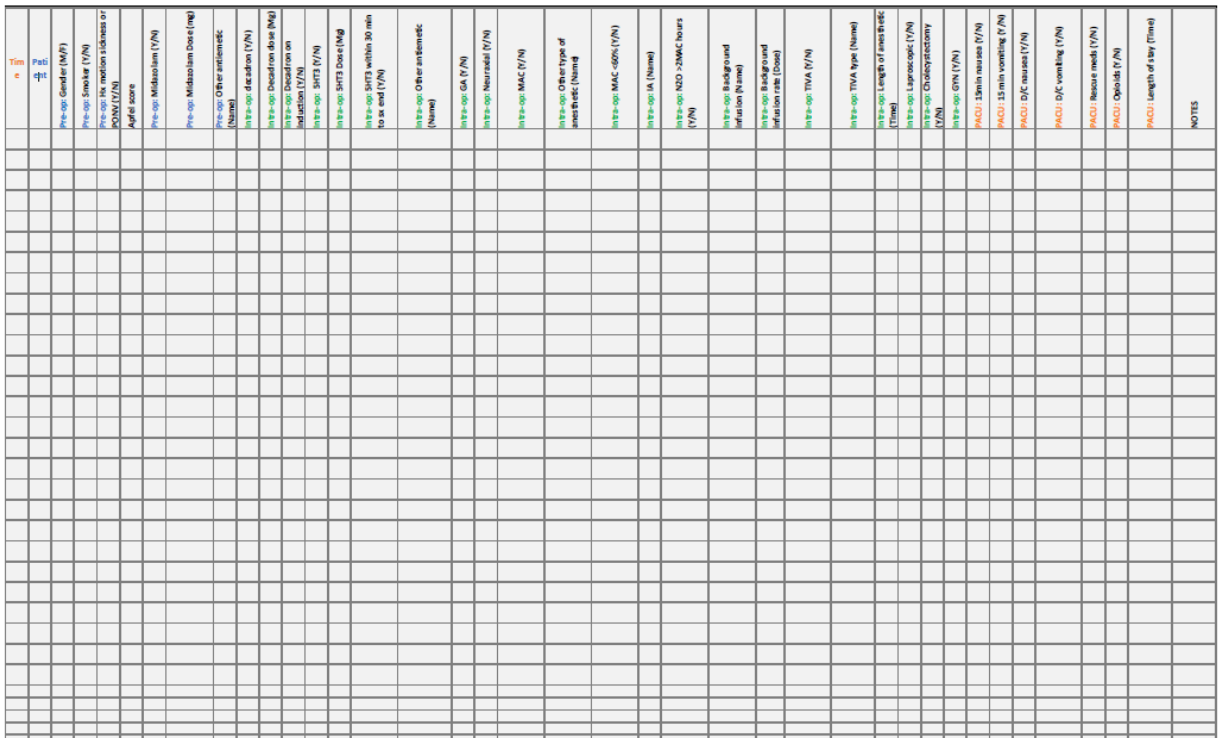


Figure 2: PRISMA Flow Chart of Reviewed Articles

Appendix F

Data Collection Forms



Appendix G

DNP Project Completion Verification Form

Appendix G: Daniel K. Inouye Graduate School of Nursing
DNP Project Completion Verification Form

DOCTOR OF NURSING PRACTICE PROJECT
Completion Verification Form

The DNP Project titled: Pharmacological Approaches to Post-Operative Nausea and Vomiting Prevention was completed at Naval Medical Center San Diego by the following student(s):

(type student name)	*(signature)*	*(date)*
LT Nicole Pendry	[redacted]	09APR 2019
LT Melissa Richling		09APR 2019
LT Mark Sebald		09APR 2019

The DNP Practice Project Team verifies that the following components of the DNP project, accomplished by the above students, is of sufficient rigor and demonstrates doctoral level scholarship to meet the requirements for USUHS GSN graduation:

- Presentation of DNP project to the leadership/stakeholders at the Phase II Site,
- Abstract/Impact Statement (*Appendix F*), and
- DNP Project written report.

Verified by:

(type name)	*(signature)*	*(date)*	
LCDR Kimberly Tozer	[redacted]	09APR 2019	Senior Mentor
CDR Tiffany Uranga		09APR 2019	Team Mentor
CDR Eric Bopp		09APR 2019	Team Mentor & Phase II Site Director

For RNA Students only *- add the following additional signature for final verification of project completion:*

CDR Kennett Radford, PhD, CRNA	[redacted]	17APR2019
RNA Project Director *(type name)*	*(Signature)*	*(Date)*

Form Version: 26 Aug 2017

Appendix H

PONV Guideline