Enhanced Recovery After Surgery Protocol for Colorectal Surgical Patients

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PROBLEM INTRODUCTION

- A care center in central Illinois performs colorectal surgeries in their facility. No Enhanced Recovery After Surgery (ERAS) protocol exists for their colorectal surgery population.
- This project aimed to create an ERAS protocol that utilizes evidence-based practice, focusing on intraoperative recommendations.
- Project implementation occurred in August 2024.
- Implementing ERAS protocols decreases intraoperative stress and reduces the overall length of hospital stay while accelerating surgical recovery.

LITERATURE REVIEW

- Databases: CINAHL and Medline
- Keywords: ERAS, colorectal surgery, laparoscopic, perioperative, ERAS + anxiety, ERAS + NPO

Preoperative Guidelines	Intraoperative Guidelines	Postoperative Guidelines
• Anxiolysis • PONV Prophylaxis • Antibx Administration • NPO • Mechanical Bowel Prep	• Anesthetic and Cerebral Monitoring • Drain Placement • Intraoperative Fluid/Electrolyte Therapy • Prevention of Intraoperative Hypothermia	• NG/OG Tubes and Foley Catheter • Postoperative Analgesia • Postoperative Fluid/Electrolyte Balance • Thromboprophylaxis

PROJECT METHODS

1. Identification of problem/need and stakeholder meeting
2. Project proposed with objective to stakeholders
3. Literature review conducted with current guidelines
4. Creation of ERAS Protocol for colorectal surgical patients
5. In-person educational meeting with anesthesia staff to review proposed protocol and identify areas of weakness
6. Staff surveys to assess knowledge pre and post education

Outpatient Colorectal Surgery ERAS Protocol

Preoperative

- ☐ Anxiolysis in the Preoperative Period
- ☐ Multimodal PONV prophylaxis
- ☐ Antibiotic Administration
- ☐ Preoperative fasting and carbohydrate loading
  - ☐ 12 oz. carbohydrate drink 2 hours prior to surgical procedure

Intraoperative

- ☐ Fluid Euvolemia (GDFT 4:2:1 Rule) - ☐ LR ☐ NS
  - ☐ Pt Weight _____ kg. – Estimated hourly fluid administration _____ ml
- ☐ Normothermia (Temperature > 36°C)
- ☐ Avoid drain placement
- ☐ Cerebral Monitoring (ex. BIS monitoring)

Postoperative

- ☐ Avoidance nasal/oral gastric tubes
- ☐ Multimodal approach to pain
- ☐ Post-operative pain control
  - ☐ Neuraxial Anesthesia _____
  - ☐ Regional Anesthesia _____
- ☐ Fluid Euvolemia – fluid administration to maintain hemodynamic stability
  - ☐ Maximum amount of fluid administration _____ ml
- ☐ Thromboprophylaxis – consult pharmacy for appropriate recommendation

EVALUATION

Positives	Negatives
100% of CRNA anesthesia providers completed educational training and pre/post surveys	Small sample group and limited time with each CRNA provider – 15 minutes
Post education survey indicated understanding of ERAS protocol	PNB performed by anesthesiologists only
Identified need for additional information on Lidocaine drip for analgesia and safety profile	Unable to speak with colorectal surgeons

IMPACT ON PRACTICE

- Utilization of Lidocaine drip for opioid-sparing pain control
- Improved education on preoperative patient optimization prior to induction of anesthesia
- Identified area of weakness of comfort level with PNB administration
- Improvement in overall knowledge of all components within an ERAS protocol

CONCLUSIONS

- Providers appreciated a protocol that identified the components of an ERAS protocol impacted by anesthesia
- Holistic approach with all protocol components, and participation from all providers in charge of the plan of care
- Future researchers could expand these guidelines into other surgical populations such as orthopedics and gynecology

Developing an Algorithm for the Use of Magnesium Sulfate and Ketamine for Analgesia

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PROBLEM INTRODUCTION

- In the United States, nearly 100 million people deal with chronic pain (Dayer et al., 2019)
- In 2022, nearly 100,000 Americans died from overdoses (Stahler et al., 2023)
- How do you provide adequate analgesia while at the same time dealing with the opioid epidemic?
- It is believed that antagonism of the NMDA receptor can both provide analgesia as well as prevent wind-up and potential chronic pain

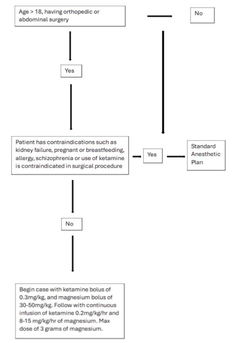
LITERATURE REVIEW

- Databases included PubMed, Cochrane Database of Systematic Reviews, and MEDLINE Complete
- Search was from 2013 to the present and included keywords *magnesium*, *magnesium sulfate*, *ketamine*, *Ketalar, ketamine hydrochloride*, *analgesia*, *surgery*, *orthopedic*, *abdominal*, *laparoscopic*, *opioid-free anesthesia*, and *opioid-sparing*
- Magnesium sulfate and ketamine create a synergistic effect by antagonizing the NMDA receptor at different sites
- Creation of a standardized protocol for patients
- Decrease in side effects caused by opioids

PROJECT METHODS

- Stakeholder and IRB approval obtained
- Extensive review of articles from 2013 to the present
- Development of a ketamine and magnesium sulfate infusion protocol for intraoperative use in abdominal and orthopedic cases was created
- 10 question pre and post-test evaluation was created to assess knowledge gained and likelihood of using the protocol

Ketamine and Magnesium Sulfate Infusion Algorithm



EVALUATION

- Anesthesia providers from a central acute care hospital in Illinois underwent a pre and post-test evaluation undermining their knowledge of the opioid epidemic as well as knowledge of magnesium and ketamine. An educational presentation was given between the tests.
- The pre-test score average was 63% while the post-test score average was 85%. Determining an increase in knowledge after the educational presentation.
- Only 12.5% of the providers present routinely administer magnesium sulfate and ketamine as an adjunct in their perioperative anesthesia plan.
- 81.25% agreed to the implementation of a magnesium sulfate and ketamine infusion protocol for their facility.
- The only major limiting concern the anesthesia providers had was the limited access and availability of magnesium sulfate as the medication is not stocked in the OR rooms. Rather, they would have to obtain the magnesium from pharmacy which could delay the case.

IMPACT ON PRACTICE

- Decreased opioid use and side effects for patients
- Potential decrease in chronic pain for patients
- An alternative analgesic approach for patients who have substance use disorder
- Potential to be expanded and used in all types of surgeries

CONCLUSIONS

- Currently there are a variety of opioid-sparing techniques that are used
- Creation of a standardized protocol helps with that
- Anesthesia providers are receptive to the idea and studies show that patients have adequate analgesia with a decrease in opioids
- Potential in the future to be used in a variety of cases as well as help with the prevention of chronic pain in patients

Acknowledgements

We would like to acknowledge and thank Dr. Bednarchik, Dr. Ertel, Belleville Memorial Hospital and the many others that helped with our project.

Impact of the Anatomage Table on Student Registered Nurse Anesthetists' Perception of Learning Anatomical Structures for Peripheral Nerve Blocks

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PROBLEM INTRODUCTION

SIUE Nurse Anesthesia (NA) program lacks a stand-alone anatomy course. Students enter with varied anatomy knowledge despite required undergraduate anatomy credits.

Understanding anatomical structures is essential for safely administering PNBs.

Using the AT to review relevant anatomical structures related to PNBs may reinforce SRNA's knowledge, enhance retention, and increase satisfaction with reviewing anatomy.

LITERATURE REVIEW

Several themes identified in the review of literature include students' perception of the Anatomage Table, student engagement, and confidence.

Students who participated in virtual dissection modules felt more involved in their education and thought it was valuable to their curriculum (Boscolo-Berto et al., 2020)

Combining traditional and interactive methods to teaching anatomy fosters a multimodal teaching approach that enhances student outcomes.

Previous research suggests students view the Anatomage Table as a valuable learning tool, suggesting that incorporating a peripheral nerve block module using the table would likely be well-received.

Virtual dissection tools provide interactive learning experiences. Active learning is promoted when students have dedicated access to the table, thus fostering engagement (Boscolo-Berto et al., 2020).

PROJECT METHODS

Non-experimental knowledge improvement project

Pre-survey and post-survey design

IRB exempt

Population thirty-one 2nd year SRNAs at SIUE

Group size was 4-5 students

25-minute education sessions

EVALUATION

•The sample size: thirty-one 2nd year SIUE SRNA students. More than 80% of participants were between the age of 25-35 and between 3-10 years of Nursing experience.

•Responses to the open ended-question in the post-survey asking what participants found the most beneficial included the following: color coding the nerves, highlighting muscles and nerves, brachial plexus anatomy, overview, rotating the images, packet/module, the mouse, vertical orientation of the table, and verbal explanation.

•66% percent of students reported strongly agreeing that their confidence in AT usage had increased after the module.

•Twenty-four out of twenty-nine responses (83%) preferred using the computer mouse over the touch screen.

•86% of participants preferred vertical orientation of the Anatomage table over the typical horizonal orientation when learning.

IMPACT ON PRACTICE

Immediate impact is to enhance current SRNAs' knowledge on brachial plexus anatomy for safer peripheral nerve block administration.

The developed module remains available for future student use to support ongoing learning for future cohorts.

CONCLUSIONS

Confidence levels associated with the brachial plexus nerve blocks increase from 67% to 79%. In terms of the perceived benefit of the AT's use, 83% of students reported in the post-survey that the AT use enhanced their spatial awareness related to the anatomy of the brachial plexus.

The post-survey shows that 86% of students preferred working with the table in the horizontal orientation compared to the vertical orientation.

Additionally, 83% of the students preferred to use the mouse over the touch screen. The mouse control helped eliminate issues related to the touch screen and allowed for quicker table navigation. These small changes may considerably impact student involvement and satisfaction when using the Anatomage table and should be investigated further.

The Impact of High-Fidelity Simulation on Student Registered Nurse Anesthetists' Identification and Management of Medication Errors and Vasoplegia

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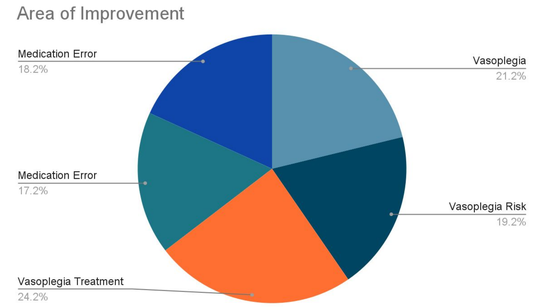
PROBLEM INTRODUCTION

- This project aimed to improve the knowledge of student registered nurse anesthetists (SRNAs) in the Nurse Anesthesia Program (NAP) at Southern Illinois University Edwardsville (SIUE).
- Through high-fidelity simulations, SRNAs learned about critical scenarios which have a low frequency of occurrence but produce a high morbidity and mortality rate.
- High-fidelity simulations (HFS) create a positive learning environment for students by utilizing advanced technology to create an active patient scenario and provide ample time for critical thinking, followed by an examination of correct and incorrect actions.
- Simulation allows students to amass knowledge from infrequent scenarios in current practice that lead to high mortality rates and utilize learned knowledge in future clinical practice.

PROJECT METHODS

- This project incorporated a high-fidelity simulation environment designed to educate second-year registered nurse anesthetists (SRNAs).
- Scenarios were presented to improve SRNAs' recognition and response to the unfolding clinical situation.
- The first scenario included a patient who experiences vasoplegia.
- The second scenario involves a medication error.
- Students were brought into the mock operating room, and oriented to the current surroundings.
- The SRNA was provided report on the patients H&P.
- Medications and interventions already provided to the patient were also described.



IMPACT ON PRACTICE

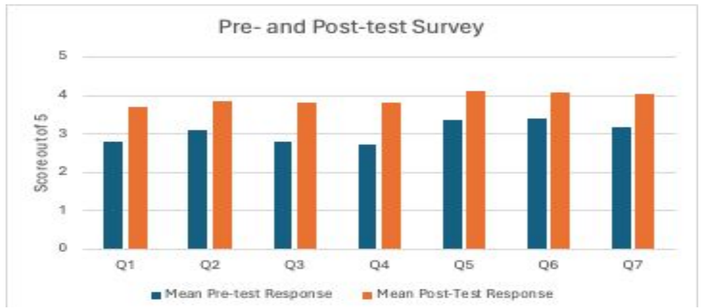
- The strengths of this DNP project are the educational benefits for the second-year SRNAs. These students left the simulations with a newfound appreciation for vasoplegia and medication errors while learning to identify strategies and treatment options for these high-fidelity situations.

LITERATURE REVIEW

- HFS expands safety and communication techniques while increasing exposure to critical scenarios. HFS hastens the recognition of intraoperative events within the SRNA population.
- In surveys conducted across fourteen European simulation centers, many participants stated that debriefing was the most essential part of the HFS.
- Vasoplegia is presents as refractory hypotension with a low systemic vascular resistance. Vasoplegia may be induced by sepsis, cardiac surgery or angiotensin-converting enzyme inhibitor administration, amongst other causes. The mortality rate of patients that present with vasoplegic syndrome that persists for 36-48 hours can be near 25%.
- Medication errors cause l.3 million injuries yearly, making it a serious issue within the perioperative period. It is estimated that 3 to 6% of hospital stays incur adverse drug events, and 30 to 40% of those events are preventable errors.

EVALUATION

- This DNP Project was evaluated through an anonymous Qualtrics survey. The survey was administered to the participants after the simulation was completed.
- A 5-point Likert scale survey was utilized to assess the participants' understanding of vasoplegia and medication errors.
- The responses were evaluated to determine an increase in SRNA confidence and competence after the completion of the simulation.
- Measured outcomes for the survey below include:
  1. Confidence level of vasoplegia identification
  2. Knowledge level of vasoplegia treatment options
  3. Confidence level of vasoplegia treatment
  4. Knowledge level of risk factors for vasoplegia
  5. Knowledge level of methods to prevent medication errors
  6. Confidence level of preventing medication errors
  7. Confidence level of identifying medication errors



CONCLUSIONS

- Seven pre- and post-simulation questions assessed students' knowledge level and confidence level regarding vasoplegia and medication errors.
- Participants improved confidence and knowledge levels overall in all categories when comparing the pre- and post-simulation survey.
- In our post-simulation survey, we asked participants to rate their overall simulation experience in relation to their current education.
- 93.5% of students agreed that the simulation increased their confidence in providing safe anesthesia.
- Twenty-five of the thirty-one participants strongly agreed that the simulation provided value to their education.
- Of the participants, twenty-three strongly agreed their critical thinking skills were enhanced. Student participants are concurrently enrolled in Theoretical Foundation of Anesthesia II; when surveyed, 29 out of 31 indicated the simulation correlated with content from the course.

REFERENCES

Enhanced Recovery After Cardiac Surgery

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PROBLEM INTRODUCTION

Cardiac surgical patients face significant risks during surgery and postoperative recovery

Cardiac surgeries remain associated with high rates of postoperative morbidity and mortality, ranging from 5% to 75%, depending on patient factors and the type of procedure performed (Mertes et al., 2022).

ERAS protocols in cardiac surgery remain underdeveloped

Although cardiac disease is the leading cause of death in the U.S., there are very few ERAS protocols tailored for cardiac surgery recovery, despite the proven success of such programs in other surgical fields (Engelman et al., 2019).

ERAS protocols show promise in cardiac surgery

"Fast-track" programs have demonstrated benefits, including reduced opioid use, earlier extubation, & shorter hospital stays.

Multimodal perioperative strategies have been associated with decreased morbidity and increased patient satisfaction (Mertes et al., 2022).

LITERATURE REVIEW

Preoperative Phase:
prehabilitation components- such as physical exercise, carbohydrate loading, prophylactic anxiolysis, antiemetics, and analgesics

Intraoperative Phase:
Multimodal pain management with methadone, ketamine, magnesium, and dexmedetomidine, as well as the use of regional anesthesia

Postoperative Phase:
supported by the literature included early extubation, glycemic control, and early mobilization

42 articles reviewed from PubMed, MEDLINE Complete, CINAHL, and CDSTR

(Grant et al., 2023; Lobova et al., 2021; (Markham et al., 2019; Engelman et al., 2019; Heybati et al., 2023; Mertes et al., 2022)

PROJECT METHODS

- Meeting with facility stakeholders to identify the need/problem
- Proposal of project objectives and expected outcomes to stakeholders
- Review of literature and existing non-cardiac/cardiac ERAS protocols
- Development of an evidence-based ERACS protocol
- Creation of educational tools, including flyers and handouts Approval process through the Institutional Review Board (IRB) at SIUE
- Implementation of education through in-person presentations, email distribution, and printed handouts
- Utilization of an anonymous understanding and willingness to adopt ERAS
- Evaluation of comprehension, barriers, and overall acceptance of the ERAS protocol

EVALUATION

Educational material was disseminated to cardiac anesthesia staff.
- 9 individuals started the survey, with 8 completing the survey

88%
- respondents reported a knowledge of ERAS protocols for cardiac surgery before the presentation
- correctly identified that carbohydrate loading does NOT increase the risk of adverse events in the perioperative period

100%
- correctly identified the goal of ERACS
- correctly identified that early extubation is a part of ERACS

75%
- correctly identified the components of ERACS
- correctly identified that opioids are NOT the primary focus of perioperative analgesia in ERACS

IMPACT ON PRACTICE

Impact at a large metropolitan hospital

- Improve patient outcomes and speeds up recovery
- Reduces ICU and hospital length of stay → lowering costs
- Education that ERACS does NOT have to be implemented in an "all or nothing" fashion

CONCLUSIONS

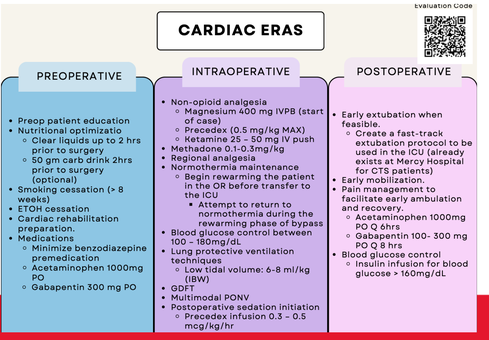
Improves Outcomes:
ERACS protocols enhance anesthesia practice, reduce hospital stays, cuts costs, and benefits patients.

Challenges Exist:
- Staff resistance due to long-standing practices requires continued education and support.

Feasible Implementation:
- Backed by evidence, success depends on provider adherence and "buy-in".

Future Focus:
- Education and outcome evaluation are key for sustained impact

QR code for ERACS protocol



Ultrasound Guided Peripheral IV Insertion Protocol at Hillsboro Area Hospital

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PROBLEM INTRODUCTION

Importance of Peripheral IV Placement

- -Peripheral Intravenous Catheter (PIVC) placement is a routine yet essential procedure in nursing practice, significantly influencing patient care quality (Blair, 2021).
- Complications from unsuccessful IV insertions—such as infiltration, extravasation, infection, and patient discomfort—negatively affect patient outcomes and healthcare satisfaction (MollKhosrawi et al., 2023).

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Challenges with Traditional IV Placement

- •Nurses frequently encounter multiple barriers impacting successful PIVC placement, including technical difficulties, clinician experience, patient physiology, and decision-making challenges (Archer-Jones et al., 2020; Lian et al., 2017).
- Despite these benefits, significant hurdles to widespread adoption remain, including specialized training, high costs, equipment maintenance, and limited availability in rural healthcare settings (Blair, 2021; Filipovich et al., 2021).

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Benefits and Adoption of Ultrasound-Guided IV Placement

- •Ultrasound-guided peripheral IV (USGPIV) insertion has emerged as a contemporary solution, enhancing precision and increasing first-time insertion success rates, especially in patients with difficult intravenous access (DIVA) (Liu et al., 2023; Sahota et al., 2019).
- This project seeks to overcome these barriers at Hillsboro Community Hospital by developing a structured training manual aimed at improving nurses' proficiency in USGPIV insertion, ultimately enhancing patient satisfaction, clinical outcomes, and overall care quality.

PROJECT METHODS

Project Design

Objective: Develop a structured, evidence-based training guide for ultrasound-guided peripheral IV catheter (PIVC) insertion.

Target Group: Pre-anesthesia and ER nurses at Hillsboro Area Hospital.

Purpose: Enhance first-attempt success rates for patients with difficult intravenous access, improving overall patient outcomes and experience.

Implementation

Initial Training:

- Distribution of a PowerPoint presentation covering:
  - Literature review findings
  - Indications and contraindications for ultrasound-guided PIVC
  - Vascular anatomy identification
  - Fundamentals and techniques of ultrasonography

Hands-On Workshop:

- Conducted over two days at Hillsboro Area Hospital.
- Practical training includes:
  - Practicing ultrasound-guided techniques on mannequin arms.
  - Supervised real-patient ultrasound-guided PIV insertions by designated experienced practitioners, "super users".

IMPACT ON PRACTICE

Enhanced Patient Care:

- Improved first-attempt IV insertion success rates, especially in patients with difficult IV access.
- Reduced patient discomfort and enhanced overall patient satisfaction through efficient IV placements.

Advanced Nursing Competency:

- Increased skill level and confidence among pre-anesthesia and ER nurses in utilizing ultrasound-guided PIVC insertion.
- Promotion of evidence-based practice and standardized care within the hospital.

Institutional Benefits:

- Elevated quality of care leading to improved hospital reputation and potentially increased patient volumes.
- Foundation for ongoing training and quality improvement initiatives within Hillsboro Area Hospital.

LITERATURE REVIEW

. Effectiveness of Ultrasound-Guided PIV Placement

- Ultrasound guidance significantly improves first-time success rates, reducing insertion attempts and patient discomfort, especially beneficial in difficult intravenous access (DIVA) patients (Liu et al., 2023; Sahota et al., 2019).
- Empirical evidence consistently supports ultrasound's effectiveness in enhancing patient satisfaction, reducing complications like infiltration and extravasation, and increasing healthcare productivity (Bagley, 2022; Peters et al., 2021).

. Training Methods and Skill Retention

- Diverse training methods identified include didactic teaching, simulation-based mastery learning (SBML), and virtual reality (VR) simulations, all demonstrating improved knowledge, confidence, and practical skills among nurses (Amick et al., 2022; Park & Yoon, 2023; Rochlen et al., 2022).
- Structured programs combining didactic instruction, simulated practice, and mentorship significantly enhance proficiency, confidence, and retention of skills in ultrasound-guided IV insertion (McKinney et al., 2022; Andersen et al., 2021).

Barriers and Limitations in Training

- High cost, resource availability, specialized skill acquisition, and equipment maintenance are key challenges, particularly in rural healthcare environments (Blair, 2021; Filipovich et al., 2021).
- Current evidence emphasizes the need for standardized, comprehensive training programs to ensure consistent skill retention and widespread adoption (Bagley, 2022; Recker et al., 2023).

EVALUATION

Post-Training Survey:

- Five-question multiple-choice survey using a Likert scale.
- Conducted anonymously online via Qualtrics for confidentiality.

Evaluation Focus:

- Effectiveness of educational materials and content.
- Nurses' confidence and likelihood of using ultrasound-guided IV insertion post-training.
- Identification of beneficial aspects of the training program.
- Suggestions for additional training and improvements.

Data Utilization:

- Gather feedback to refine future training sessions.
- Enhance training effectiveness and usability based on participant insights

CONCLUSIONS

· **Effective Training:**
Structured ultrasound-guided IV training significantly improves nurses' proficiency and confidence.

· **Patient Care:**
Enhanced first-attempt IV placement reduces patient discomfort and improves overall clinical outcomes.

· **Institutional Impact:**
Adoption of evidence-based ultrasound techniques positively impacts hospital reputation and patient satisfaction.

· **Future Recommendations:**
Ongoing training and support are essential to sustain skills and adapt to evolving best practices.

REFERENCES

SCAN ME

Pediatric Preoperative Medication Management and NPO Guidelines

Cierra Jethro BSN, SRNA & Kristine Vogt, BSN, SRNA
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PROBLEM INTRODUCTION

Pediatric preoperative medication management and NPO guidelines can be a source of confusion for anesthesia providers, patients, and caregivers (Ghirmire et al., 2022.)

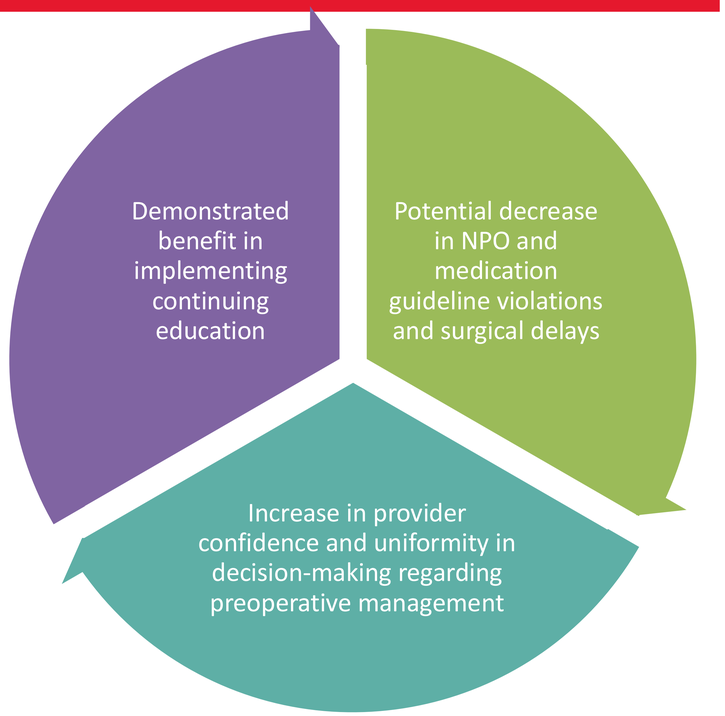
At a pediatric tertiary care center in Missouri, ambiguous NPO and medication guidelines have led to frequent violations and non-compliance among patients and caregivers.

Fasting periods for children are often longer than necessary, leading to significant dehydration and increased discomfort for children (Kafrouni & Ojaimi, 2018).

PROJECT METHODS

- Meeting with stakeholder to identify and assess needs
- IRB and Stakeholder approval obtained
- A pamphlet was developed that included common pediatric medications and research-based recommendations for preoperative use along with NPO guidelines
- Evidence was presented to anesthesia staff in a PowerPoint presentation
- A pre-presentation questionnaire and a post-presentation questionnaire were provided to participants to evaluate knowledge of the guidelines

IMPACT ON PRACTICE

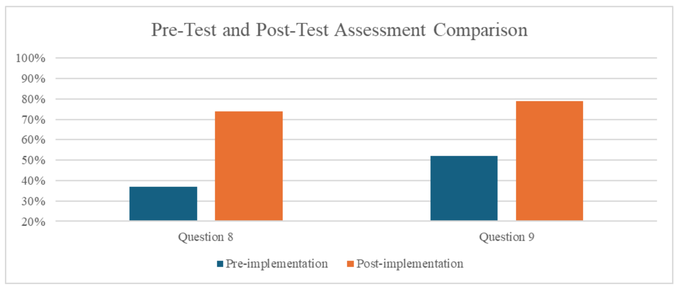


LITERATURE REVIEW

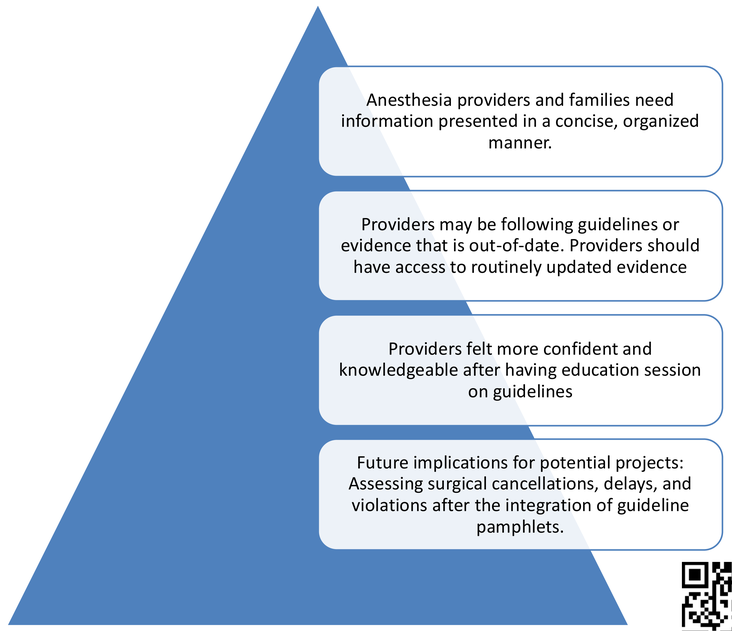
- Databases included: Cumulative Index of Nursing and Allied Health Literature (CINAHL), Medline Complete, Academic Search Complete, and the Cochrane Library
- Most medications that patients take preoperatively can be continued throughout surgery without adverse outcomes.
- Beta-blockers and calcium channel blockers should be continued due to their benefit of decreasing cardiac oxygen demand (Kertai et al., 2018).
- One-hour fasting period for pediatric patients before surgery (Schmitz et al., 2011).
- Daily GLP-1 agonists should be held the day of surgery. Weekly GLP-1 agonists should be held 7 days prior (Joshi, et al., 2022).

EVALUATION

- Nineteen participants attended the PowerPoint presentation and completed the pre- and post-implementation surveys.
- Anesthesia providers reported a 16% increase in knowledge on preoperative medication guidelines and a 4% increase in knowledge on NPO guidelines.
- Participants completed two educational assessment questions. Thirty-seven percent of anesthesia providers correctly answered question 8, which increased to 74% in the post-implementation survey. Fifty-two percent correctly answered question 9 in the pre-implementation survey, which increased to 79% in the post-implementation survey.



CONCLUSIONS



Integration of the Codonic Safe Labeling System into Critical Access Hospitals to Decrease Medication Errors

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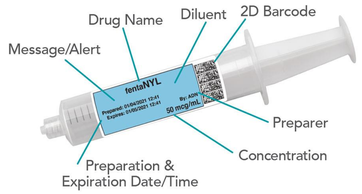
PROBLEM INTRODUCTION

In the operating room, the anesthetist takes on dual responsibilities, acting as both a physician and an independent pharmacist. Their vital tasks encompass prescribing, formulating, diluting, titrating, and administering a broad range of medications and their error rate is higher than other specialties (Cooper & Nossaman, 2013).

According to a survey, 89-98% of nurse anesthesia providers reported making at least one medication error during their careers (Cooper et al., 2012).

Non-standardized medication labeling leads to a higher rate of medication errors despite medication management techniques such as double-checking medications and using color-coded labels (Aldossary et al., 2021).

Anesthesia and rural critical care hospitals are at high risk for medication errors due to the increased use of highly potent, fast-acting, narrow-dose-range drugs in a relatively short time (Hemanth Kumar et al., 2019)



PROJECT METHODS

The project was presented via a PowerPoint presentation in a conference room, aimed at informing and engaging a group of attendees.

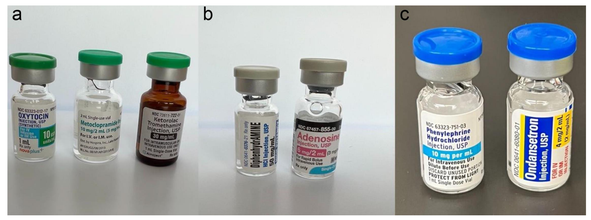
Initially, a larger audience was expected, but only three individuals attended the session, which limited the amount of data available for analysis.

The attendees included a knowledgeable anesthesia provider, a representative from the pharmacy community, and the operating room safety administrator-all crucial stakeholders in the implementation process.

Of the three participants, only two completed the follow-up survey, further constraining the ability to draw definitive conclusions.

IMPACT ON PRACTICE

- The immediate impact of integrating the Codonic Safe Labeling System at the clinical site was an increased awareness among anesthesia providers regarding medication safety. Participants in the knowledge improvement project engaged with the presentation and showed interest in adopting the system.
- Despite limitations in data collection, post-assessment surveys indicated that clinicians were likely to incorporate the system into their practice.
- In the long run, the system is expected to reduce medication errors by ensuring standardized labeling, preventing syringe swaps, and enhancing medication verification through barcode scanning and audible alerts. These improvements can lead to increased patient safety and compliance with industry standards.



LITERATURE REVIEW

The healthcare system in the United States faces serious challenges due to preventable drug errors, with an estimated annual cost of $5.33 billion associated with these mistakes (Langlieb et al., 2023).

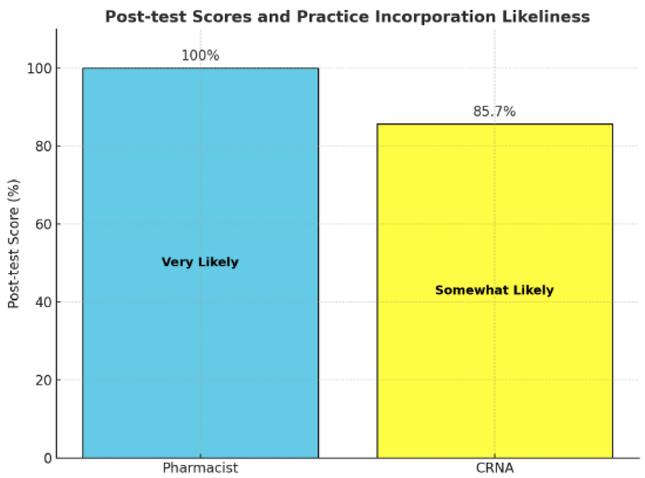
A study by Oglesby et al. indicated that the highest claimant success rates in anesthesia malpractice cases were associated with insufficient anesthesia planning and pharmacological errors, with the latter frequently resulting in significant damages (Oglesby et al, 2022)

Moreover, Petrucci et al. found that 40.1% of insurance complaints regarding anesthetic incidents originated from small hospitals, highlighting their crucial role in delivering care in rural areas where healthcare access is often limited (Petrucci et al., 2021).

The incidence of medication errors in anesthesia has been reported as one error for every 133 anesthetic cases (Webster et al., 2001), which emphasizes the need for improvements in drug management and labeling practices to enhance patient safety (Aldossary et al., 2021).

EVALUATION

- Only two out of the three participants completed the post-assessment surveys for analysis.
- Therefore, while a 66% response rate is acceptable, the total of three responses is too low to draw meaningful trend observations or inferences.



CONCLUSIONS

The implementation of the knowledge improvement project at a small critical access hospital in Hillsboro, Illinois, was a notable success. Improvement in knowledge was demonstrated by the post-test assessment scores, which showed agreement among participants.

The importance of safe labeling systems in the operating room and their impact on reducing medication errors was clearly acknowledged. The staff unanimously agreed that such systems have a vital role in modern operating room practice.

Findings suggest that standardized labeling and barcode scanning technology can improve patient safety and compliance with industry standards.

Future research should include larger, multi-site trials in various hospital settings to assess system scalability, cost-effectiveness, and impact on long-term medication error reduction.

Healthcare institutions are encouraged to pilot the Codonic Safe Labeling System as a proactive step toward improving patient safety and aligning with national safety goals.