

MOTOR-SPARING LABOR EPIDURAL MANAGEMENT

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HEALTH SCIENCES 2024**

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DISCLOSURES

The views expressed in this presentation do not reflect official policy or position of the following:

- **Naval Medical Center Portsmouth**
- **Department of the Navy**
- **Department of Defense**
- **Defense Health Agency**
- **U.S. Government**

There are no financial conflicts of interest to disclose.

PROBLEM STATEMENT

- **NMRTC Portsmouth underutilized 0.0625% bupivacaine with 2 µg/ml of fentanyl among laboring parturients.**
- **NMRTC Portsmouth Anesthesia providers were also unfamiliar with employing Programmed Intermittent Bolus (PIEB), a technique to reduce medication consumption and motor-blockade.**
- **Current practice uses continuous epidural infusions (CEI) with 0.125% bupivacaine with 2 µg/ml of fentanyl for laboring parturients.**

RELEVANCE TO MILITARY HEALTHCARE

2016: U.S. GAO reported a lack of women's healthcare in military treatment facilities

2020: U.S. GAO recommended MTF standardization of women's healthcare

Impact Goals:

- Educate anesthesia providers
- Increase PIEB utilization
- Assess satisfaction with EBP implementation



PICO QUESTION

- P:** Anesthesia Providers at NMRTC Portsmouth
- I:** Drug concentration of 0.0625% bupivacaine with 2µg/mL of fentanyl via delivery therapy of PIEB
- C:** Current practice of 0.125% bupivacaine with 2µg/mL of fentanyl via CEI
- O:** Utilization of PIEB, anesthesia provider satisfaction

LITERATURE REVIEW

Zakus, et al. 2019 – DB prospective, 40 women, optimal dosing, 34% above T6

Mazda, et al., 2022 – TB RCT, 90 women, optimal dosing, optimal speed, anesthesia level, and complications measured with speed

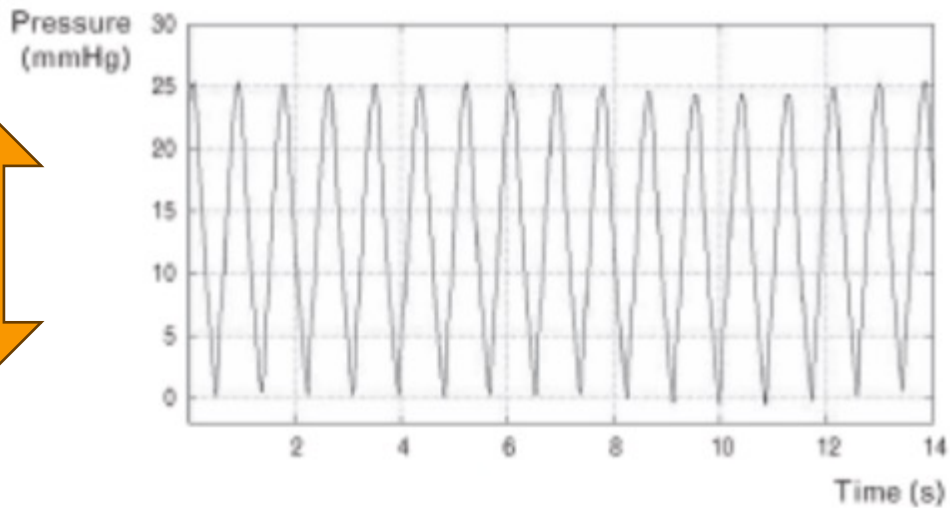
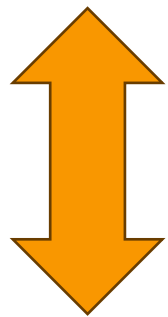
Wong, et al., 2011 – 190 women with a CSE and PIEB, less drug in interval reduction without compromising analgesia

Hussain, et al., 2020 – Meta-analysis of 3133 patients, moderate to high evidence to support PIEB/IEB vs. CEI, no difference in instrumental deliveries/C-sections



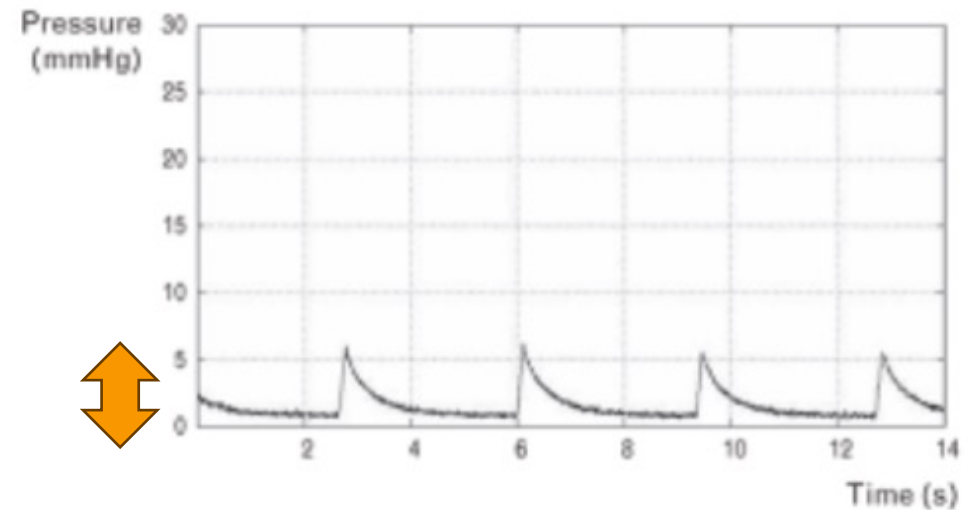
LITERATURE REVIEW

PROGRAMMED INTERMITTENT EPIDURAL BOLUSES



CONSISTENT VOLUME

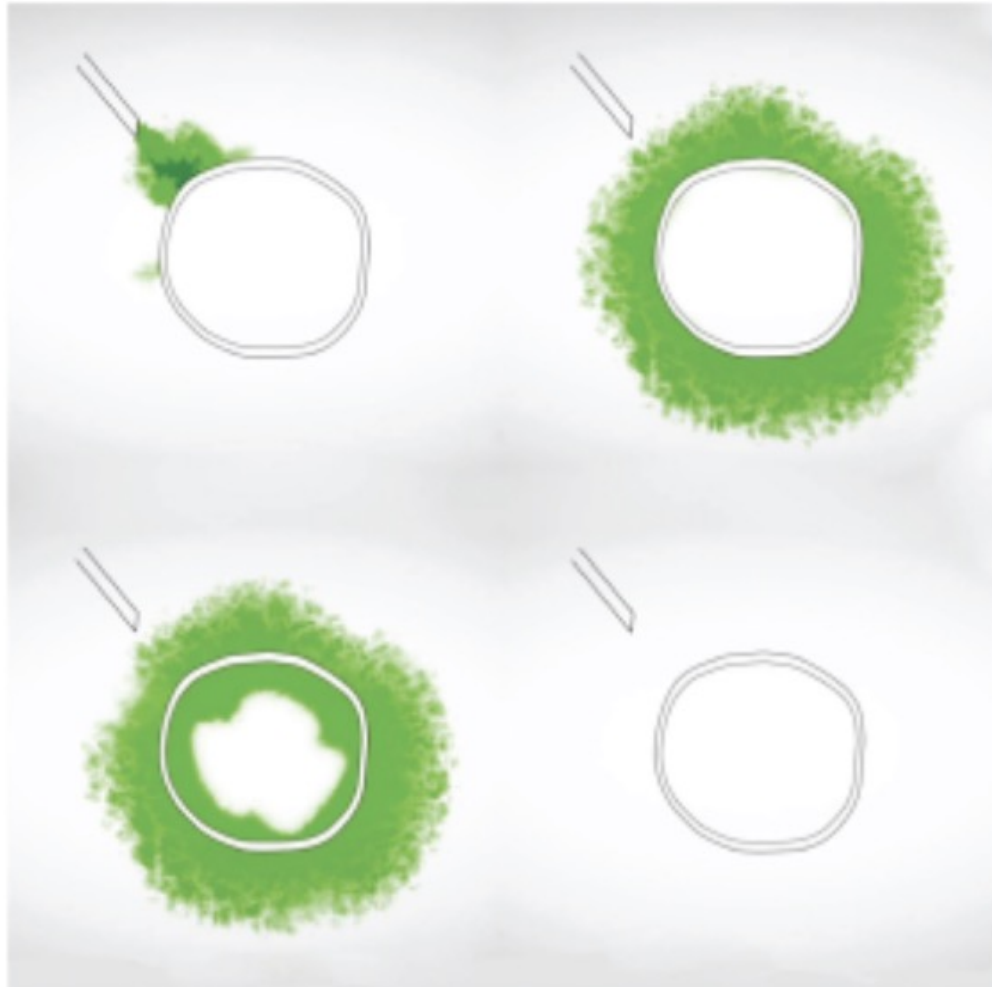
CONTINUOUS EPIDURAL INFUSIONS



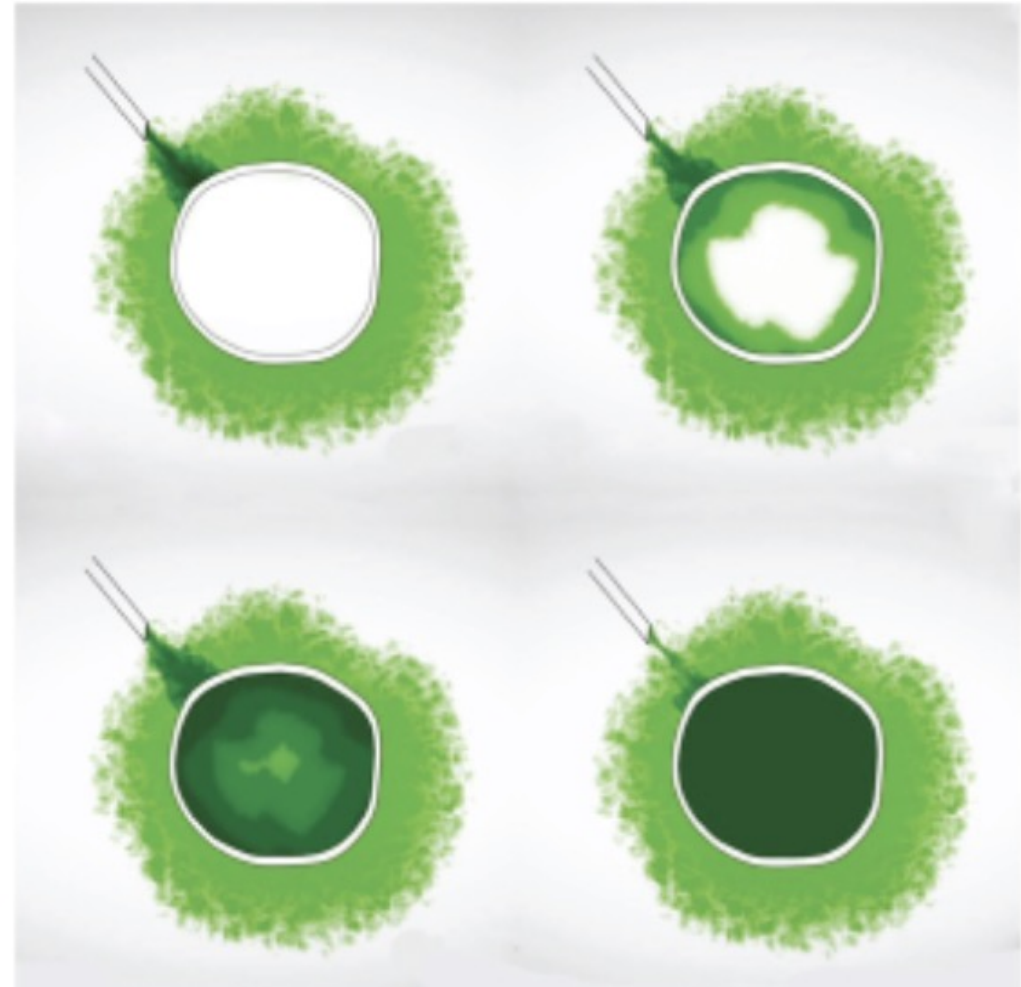
POSTULATED REGRESSION



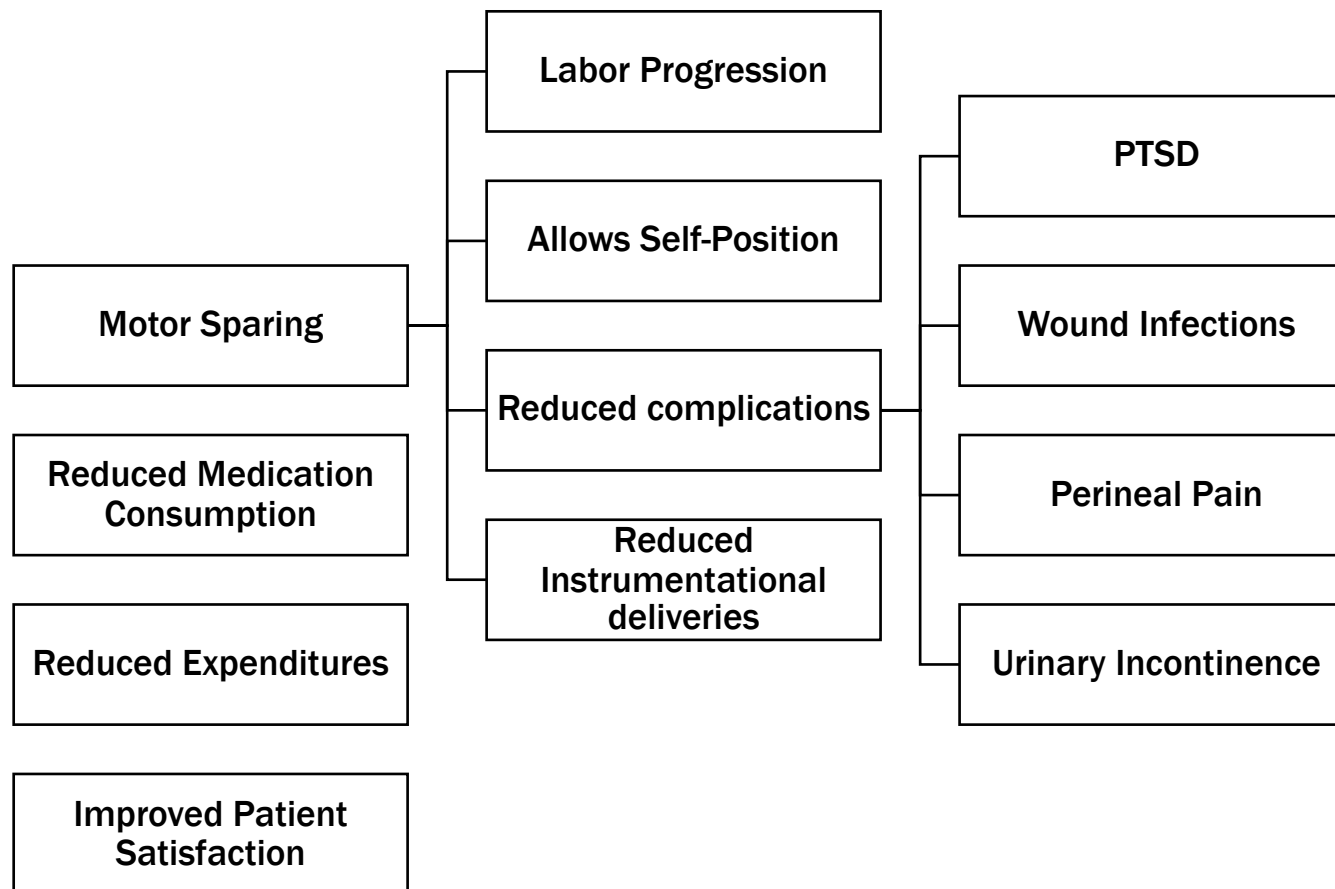
PROGRAMMED INTERMITTENT EPIDURAL BOLUSES



CONTINUOUS EPIDURAL INFUSIONS



WHY DO WE CARE?



ORGANIZING FRAMEWORK



RE-AIM Model

Reach

- NMRTC Anesthesia Providers

Effectiveness

- Provider Satisfaction

Adoption

- Stakeholder Identification

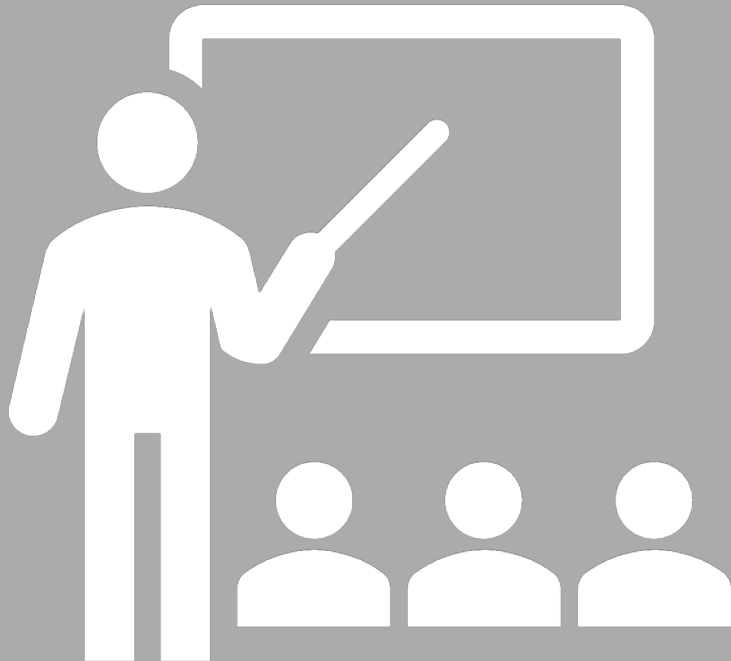
Implementation

- New Practice Promotion

Maintenance

- Top-Down Leadership for Support

PROJECT DESIGN



Qualitative Action Research

- Delivery of a Pre/Post Knowledge Evaluation
- Recommended PIEB Regimen
 - 1st Hand Bolus
 - 11 mL every 40 minutes
 - 0.0625% bupivacaine with 2 µg/ml of fentanyl
 - Delivered by the CADD-Solis

SURVEY QUESTIONS

Labor Epidural Management - NMCP										
1. How satisfied are you with labor epidurals at NMCP?	1	2	3	4	5	6	7	8	9	10
2. What medication solution concentration do you typically use for labor epidurals?	0.125%					0.0625%				
3. What medication regimen do you typically use for labor epidurals?*	CEI					PIEB				
4. Are you familiar with Programmed Intermittent Epidural Bolus (PIEB)?	Yes					No				
5. Have you used PIEB? If no, continue to Question 7.	Yes					No				
6. If yes, were you satisfied with it?	1	2	3	4	5	6	7	8	9	10

*Mann-Whitney did not meet significance for questions 1, 6

*Fisher's Exact test did not meet significance for questions 2-5

SURVEY QUESTIONS

7. Why or why not?																
8. Have you ever used 0.0625% bupivacaine with 2µg/ml fentanyl for a labor epidural? If no, continue to Question 10.							Yes		No							
9. If yes, were you satisfied with it?							1	2	3	4	5	6	7	8	9	10
10. Why or why not?																
11. Are you willing to use PIEB with 0.0625% bupivacaine with 2µg/ml fentanyl for a labor epidural?							Yes		No							
12. Why or why not?																
13. Do you have any other thoughts or concerns about implementing this practice?																

*Mann-Whitney did not meet significance for question: 9

*Fisher's Exact test did not meet significance for questions: 8, 11

GOALS

- **80% Anesthesia Staff Survey Completion**
- **Determine knowledge**
- **Determine epidural satisfaction**
- **Establish baseline for EBP implementation of PIEB regimen**

DISCUSSION OF RESULTS

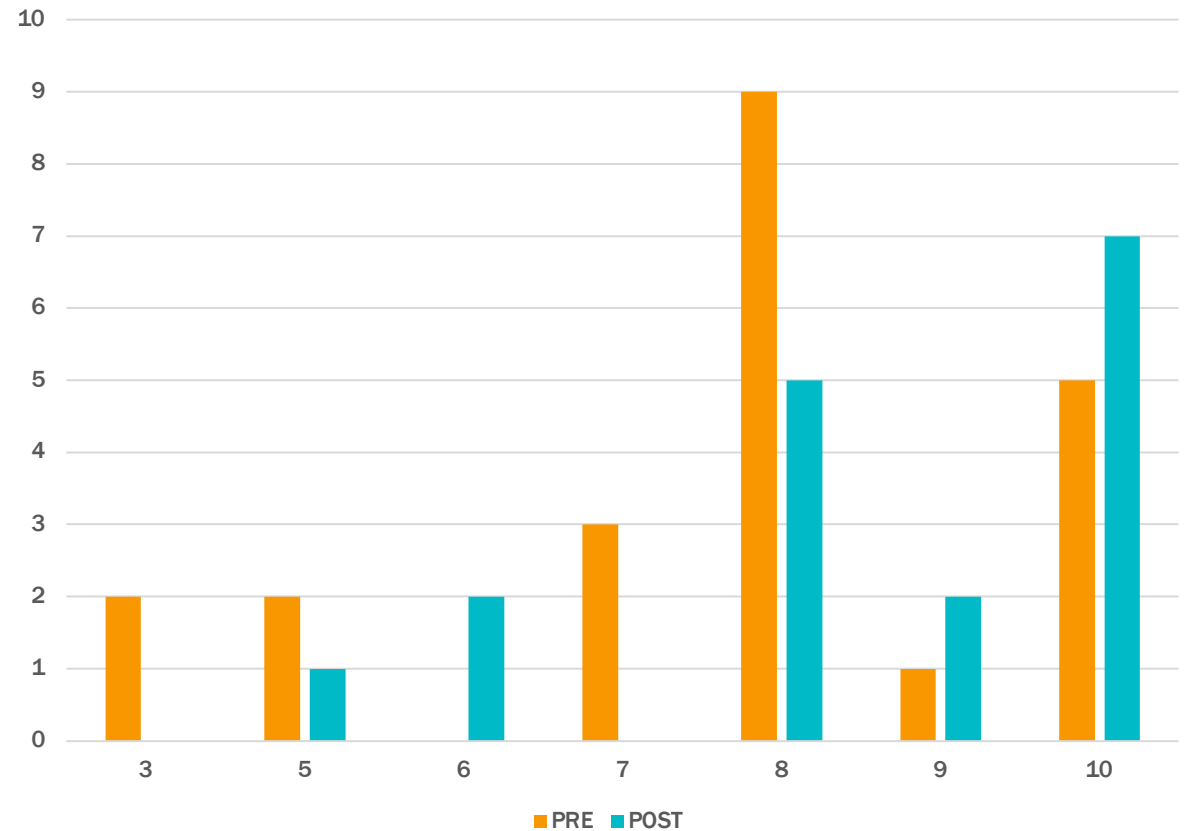
- **Statistically, there were no differences made between the PRE and Post surveys for any questions using:**
 - **Mann-Whitney test or Fisher's Exact test**
- **Increased awareness of PIEB**
- **Identified barriers to implementation of PIEB**

SURVEY RESULTS

Q1: LABOR EPIDURAL SATISFACTION

How satisfied are you with labor epidurals solutions currently available at NMCP?

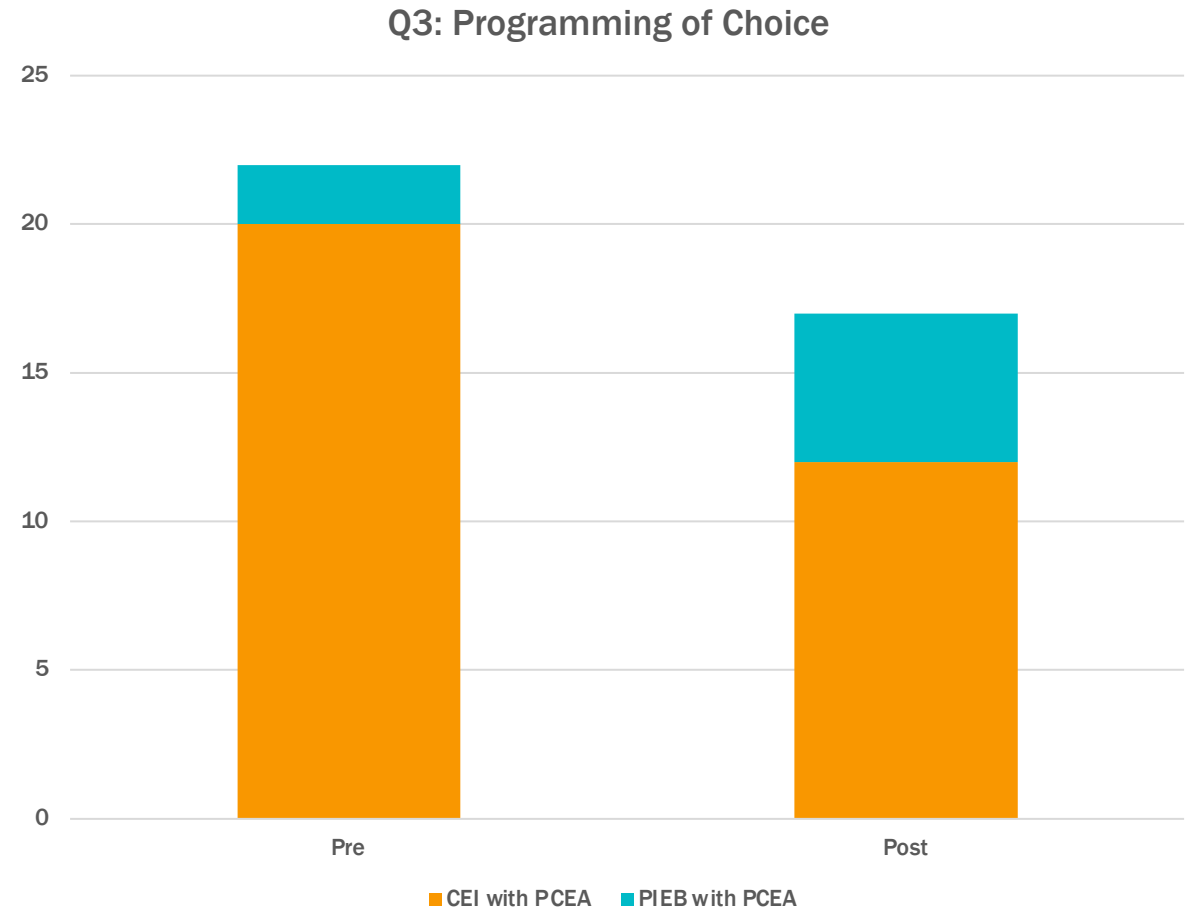
Q1: Satisfaction with Labor Epidurals at NMCP



SURVEY RESULTS

Q3: MEDICATION REGIMEN

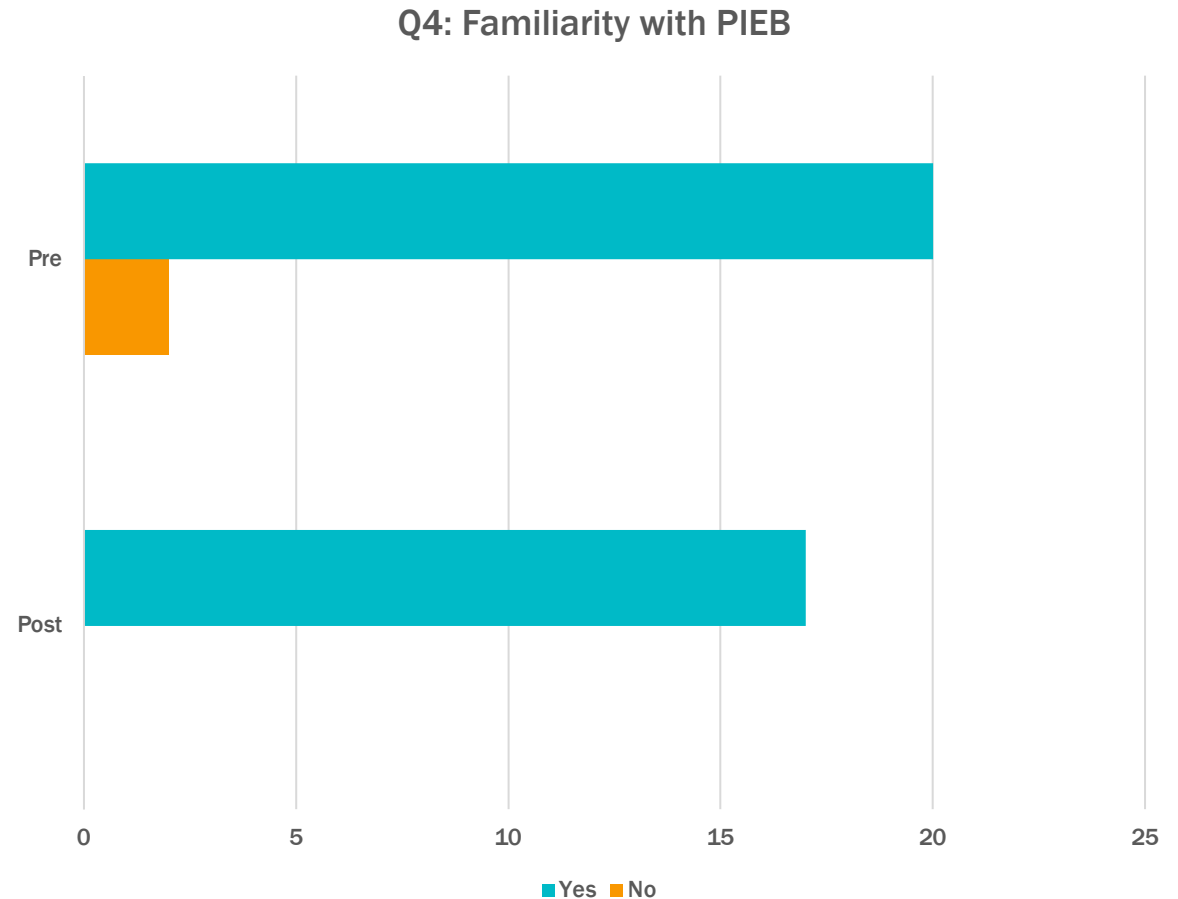
What medication regimen do you typically use for labor epidurals?



SURVEY RESULTS

Q4: PIEB FAMILIARITY

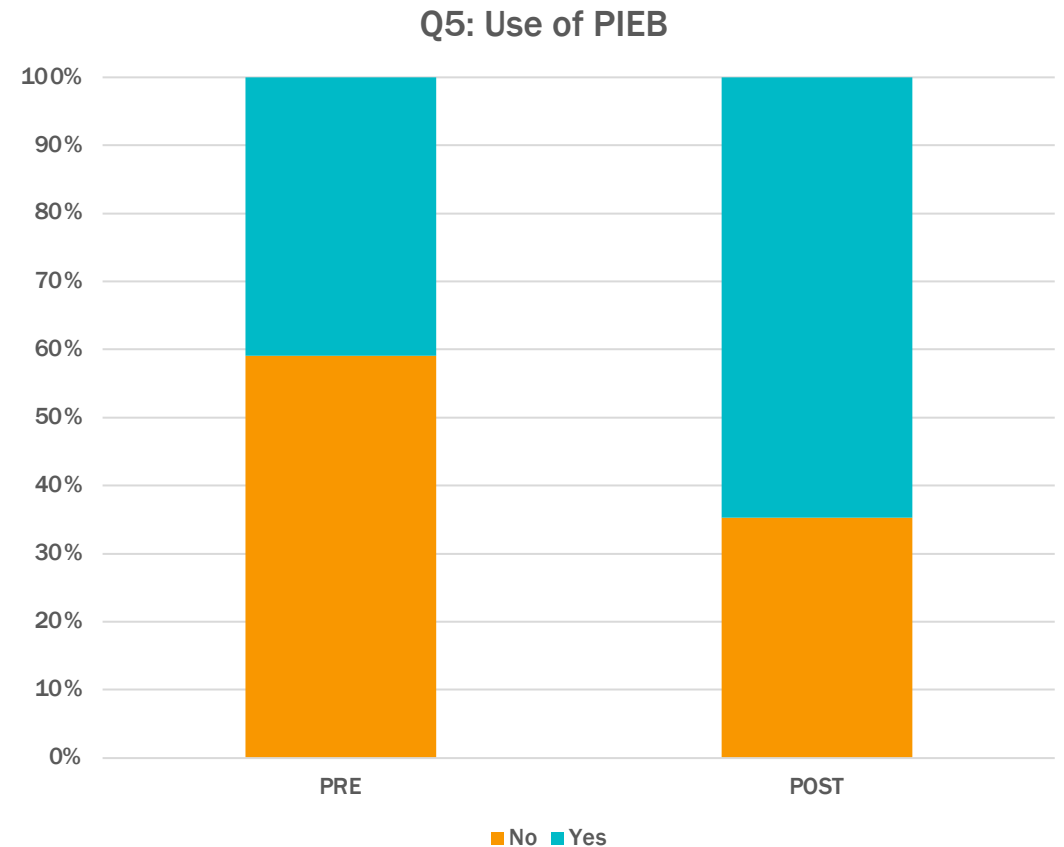
Are you familiar with
Programmed Intermittent Epidural
Bolus (PIEB)?



SURVEY RESULTS

Q5: USE OF PIEB

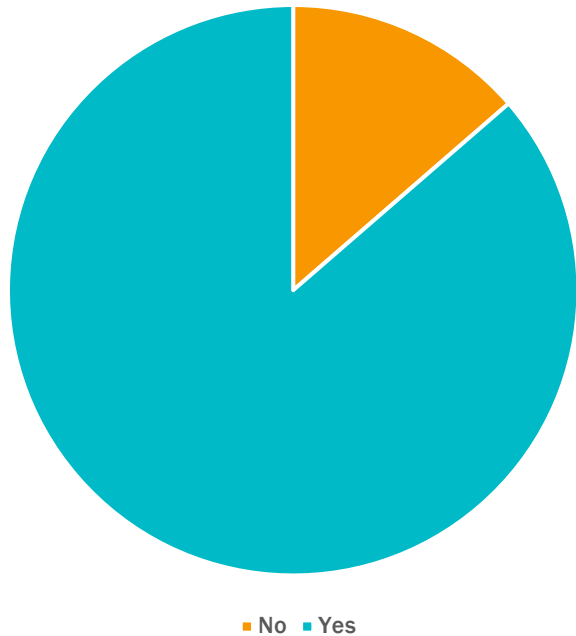
Have you used Programmed Intermittent Epidural Bolus (PIEB)?



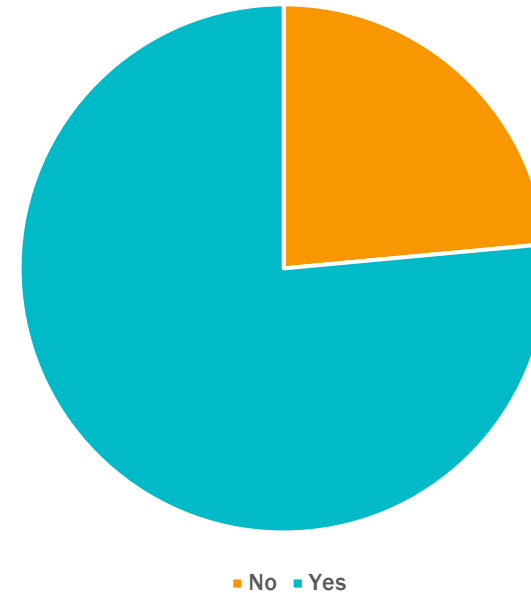
SURVEY RESULTS

Q11: WILLINGNESS TO USE PROGRAMMED INTERMITTED EPIDURAL BOLUS (PIEB)

Q11: Pre-Implementation Willingness to Use PIEB



Q11: Post-Implementation Willingness to Use PIEB



BARRIERS/LIMITATIONS

Multi-disciplinary Staff Support

Charting PIEB in the EHR

Resistance to Change from CEI

**Lack of Consistent Anesthesia
Providers**

Pharmacy Regulations

Supply Shortages

Military Related Turnover

Low Survey Response

Holiday Period

FUTURE RECOMMENDATIONS

- **Increase educational opportunities to staff**
- **Increase interdepartmental collaboration efforts**
- **Create standardized protocol and troubleshooting techniques**
- **Develop template to make documentation easier**
- **Physically having equipment immediately available prior to initiation**

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QUESTIONS?

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