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COMPARING NERVE BLOCK PAIN PUMPS TO STANDARD OF CARE IN PATIENTS FOLLOWING CARDIOTHORACIC SURGERY

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IMPLEMENTATION OF A CRITERIA-BASED ALGORITHM FOR ALBUMIN UTILIZATION FOLLOWING CARDIAC SURGERY

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INTRODUCTION: Although there is ample evidence supporting goal-directed fluid therapy during the perioperative period in cardiac surgical patients, there is inconsistent data on the fluid of choice. Existing literature has shown conflicting results between crystalloids vs. colloids (specifically albumin), creating ambiguity regarding albumin's safety, efficacy, and place in therapy. The goal of this study was to develop and implement a criteria-based algorithm for albumin utilization following cardiac surgery and analyze its ability to standardize quality of care, enhance appropriateness of albumin utilization, and optimize documentation.

METHODS: The implemented process strategy incorporated a multi-phase approach: (1) criteria-based albumin algorithm implementation; (2) provider education; and (3) enhancements to the electronic medical record software to facilitate accurate documentation. All adult cardiac surgery patients who received postoperative albumin during the following periods were included: provider-driven prescribing (retrospective control, 4 months) versus criteria-based prescribing per algorithm (prospective study cohort, 4 months). The primary objective of the study was to evaluate the impact of this intervention on albumin utilization/appropriateness and quality of care (ICU length of stay, ventilator days, vasopressor use, and Hi-Flow/BIPAP post-extubation, dialysis requirement, and blood product transfusion/FFP). Secondary endpoints included the accuracy of albumin utilization documentation following enhancements to the electronic medical record software.

RESULTS: Following implementation, per-patient albumin vial requirements (5.27 vs. 4.03, p=0.67) and appropriateness of albumin utilization was maintained between groups (98% versus 95%, p=0.13). All quality of care metrics were similar between the groups. The accuracy of albumin utilization documentation demonstrated a statistically significant increase of 8% (89% vs 97% p=0.0003) following criteria-based algorithm implementation. Safety outcomes of mortality and incidence of adverse events were similar between cohorts.

CONCLUSIONS: Development and implementation of a criteria-based algorithm to drive albumin utilization in postoperative cardiac surgery patients is safe and feasible.

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COMPARING NERVE BLOCK PAIN PUMPS TO STANDARD OF CARE IN PATIENTS FOLLOWING CARDIOTHORACIC SURGERY

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INTRODUCTION: Post-operative pain management following cardiothoracic surgery (CTS) can be challenging. Although opioids are commonly prescribed, multimodal strategies are used to decrease opioid consumption. One strategy includes the use of local anesthetics via peripheral nerve block pain pumps (PNBPP). However, literature in CTS patients is limited and conflicting. This study evaluated the efficacy and safety of PNBPP in patients following CTS.

METHODS: This was a quasi-experimental study that included adult patients admitted to the cardiac intensive care unit following CTS. The intervention group included those who received PNBPP and they were compared to a group that received standard of care (SOC). The primary endpoint was the total oral morphine milligram equivalents (MMEs) used in the four days following surgery. Secondary endpoints included adverse events, incidence of post-operative ileus, time to first bowel movement, pain scores, length of stay and cost of intervention. Statistical analysis was performed with Chi-square, Fisher's exact, Mann-Whitney U and t-tests where appropriate (IBM SPSS Statistics Software version 28.0.1.1). A sample size of 126 was calculated to detect a 50% reduction in opioid consumption with an alpha of 0.05 and power of 80%.

RESULTS: Baseline characteristics were similar between groups with a median age of 60 and 63 in the PNBPP and SOC groups, respectively. The majority of patients were male and had a coronary artery bypass graft performed. Median oral MMEs was 375 (IQR: 268.5, 457.5) in the SOC group compared to 304.5 (IQR: 240, 416) in the PNBPP group (p-value 0.189). When comparing the SOC and PNBPP groups, incidence of post-operative ileus was 2 (3.2%) and 12 (19%) (p-value 0.005) with median time in hours to first bowel movement of 68.38 (IQR: 50.31, 85.50) and 66.11 (IQR: 50.28, 76.13) (p-value 0.336). There was no significant difference between groups in pain scores or length of stay. Median cost (USD) of PNBPP therapy was $125 in those that received an electronic pump and $3,138 in those that received an elastomeric pump.

CONCLUSIONS: Addition of PNBPP post-CTS did not significantly reduce opioid consumption compared to SOC. Larger studies are needed to better define the role of PNBPP in post-operative pain management following CTS.