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Background: The recent opioid epidemic in the United States has damaged the country's public health system and led to devastating patient outcomes. Healthcare providers are responsible to do their part in reducing these negative consequences. The purpose of this quality improvement project was to develop and implement an evidence-based protocol for an intraoperative lidocaine infusion during gastric surgery. The project consisted of five parts: (1) development of an evidenced-based Intraoperative Lidocaine Infusion Protocol, (2) education of the anesthesia team, (3) collection of baseline data, (4) implementation of the Intraoperative Lidocaine Infusion Protocol and (5) evaluation of the results.
Method: Baseline patient outcome data were collected through chart review on 25 patients of one surgeon, undergoing gastric surgery prior to protocol implementation. Subsequently, education was provided to the anesthesia providers of Kalamazoo Anesthesiology regarding the lidocaine protocol components and associated benefits. After implementation, provider adherence to the protocol was assessed, as well as patient outcomes for those who received all components of the lidocaine protocol. Patient outcome data included intraoperative medications given, time to first bowel sound, time to first bowel movement, Post-Anesthesia Care Unit (PACU) discharge time and hospital discharge time. Pain score, opioid administration, cumulative opioid administration and antiemetic administration were assessed over the following postoperative time intervals: 0 to < 1 hour, 1 to < 4 hours, 4 to < 8 hours, 8 to < 12 hours, and 12 to < 24 hours. Intellectus Statistics was utilized for data computation.
Results: The amount of opioids administered (in morphine milligram equivalents) intraoperatively and postoperatively were lower in those who received the Intraoperative Lidocaine Infusion Protocol. Opioid administration from 12-24 hours postoperatively was 78% lower in the protocol group ($P < .001$). The Intraoperative Lidocaine Infusion Protocol led to a 46% decrease in the average amount of cumulative opioids administered in the first 24 hours postoperatively. There was no significant difference in number of antiemetics administered intraoperatively, postoperative nausea and vomiting or time to first bowel sounds. A significant difference was found in the average time to PACU discharge, measured in hours postoperatively. The pre-protocol group experienced a shorter PACU stay (M = 3.31; SD = 1.88) compared to the protocol group (M = 5.01; SD = 2.47) ($P = .040$). On average, the protocol group was discharged from the hospital approximately 13 hours sooner than the pre-protocol group ($P = .018$).
Discussion: Despite knowledge of current literature and the lidocaine protocol components, anesthesia providers had a low level of adherence to the protocol. Patients who did receive all elements of the protocol demonstrated decreased consumption of opioids in the postoperative period. These results are consistent with several studies included in the literature review. The lidocaine (protocol) group was discharged from the hospital an average of 13 hours earlier than those who did not receive lidocaine. This finding is also represented in several studies. Data findings from this project still indicate that lidocaine infusions could play a role in reducing overall healthcare costs by reducing hospital length of stay. The profession of nursing has a duty to advocate for the health of patients and communities. Nursing interventions that are safe, evidence-based, fiscally responsible, and improve patient outcomes should be adopted by the nursing profession. In the future, projects may choose to explore the efficacy of lidocaine infusions in a variety of surgeries. This could further reduce the use of postoperative opioids on a widespread scale, and thereby reduce the individual and systemic associated consequences.