

Development and Implementation of a Perioperative Enhanced Recovery Protocol to Reduce Anesthesia-specific Variability

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Abstract:

Background: Enhanced recovery protocols (ERP) have been shown to improve perioperative outcomes but protocol adherence is important. At Dartmouth-Hitchcock Medical Center (DHMC), a surgeon led ERP for elective colorectal surgery had been instituted without specific intra-operative anesthetic care recommendations leading to wide variability in the use of opiate-based pain management. To standardize intraoperative care, we developed a specific perioperative pathway to promote multimodal analgesia and rationalize fluid management that was integrated into the overall ERP. The goal of this quality improvement project was to determine if introducing standardized perioperative care within an established ERP would change established practice and lower perioperative opioid use.

Methods: In early 2016, the perioperative care pathway was presented to the anesthesia clinicians at a quality conference and was integrated into the anesthesia electronic medical record with reminders and built in order sets. Data collected was grouped into a pre-protocol (06/2015 – 01/2016) and post-protocol (02/2016-3/2016) period. No other intervention was made during this time.

Results: Data for this 19 month period included 53 pre-protocol and 86 post-protocol elective colorectal cases. In the pre-protocol group, the average intraoperative morphine equivalence was 21.8 mg and the average PACU morphine equivalence was 7.1 mg (average total 28.9 mg). In the post-protocol group, average intraoperative and PACU morphine equivalence was 9.4 mg and 7.4 mg respectively (average total 16.8 mg). This represented a 42% decrease in opioid use ($p= 0.000003$). There was no statistically significant difference in max pain score or total fluid administration between the pre- and post-protocol groups.

Discussion: A growing body of literature indicates implementation of an ERP reduces opioid analgesic use in the perioperative period among patients undergoing colorectal surgery.³ This quality improvement initiative sought to evaluate the effect of simply implementing a standardized intraoperative ERP on perioperative opiate use in these patients. We found a significant decrease in total opioid use in the perioperative period after protocol implementation. We did not find ERP adherence intraoperatively led to an increased opioid analgesic requirement in the immediate postoperative period. There was no significant difference in PACU opioid use between the pre and post protocol groups, and there was no difference in the maximum pain score between groups. Instituting a standardized protocol can reduce intraoperative opiate use over a one year period without significantly impacting patient comfort or PACU opiate consumption.

¹Ahmed, J., et al. "Enhanced recovery after surgery protocols - compliance and variations in practice during routine colorectal surgery." *Colorectal Disease*, vol. 14, no. 9, 2012, pp. 1045–1051., doi:10.1111/j.1463-1318.2011.02856.x.

²Martin, David, et al. "Enhanced recovery implementation in colorectal surgery—temporary or persistent improvement?" *Langenbecks Archives of Surgery*, vol. 401, no. 8, Nov. 2016, pp. 1163–1169. doi:10.1007/s00423-016-1518-9.

³Spanjersberg WR, Reurings J, Keus F, van Laarhoven CJHM. "Fast track surgery versus conventional strategies for colorectal surgeries (Review). Cochrane Database of Systematic Reviews 2011, Issue 2. Art. No.: CD007635. DOI: 10.1002/14651858.CD007635.pub2.