Preoperative Acetaminophen in Surgical Patients: Does the Administration Route (Intravenous versus Oral) Affect Postoperative Outcomes?

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Background

- Literature supports a multimodal approach to surgical pain management with both opioids and non-opioids (Kwan & Sullivan, 2017).
- The preoperative administration of acetaminophen is part of this approach.
- Prior to the fall of 2016, TriHealth’s standard anesthesia orders included a preoperative dose of IV acetaminophen.
- A change in care was implemented, and oral (po) acetaminophen has become the standard of care.
- Anecdotally, recovery room nurses at Bethesda Butler noticed negative patient outcomes.
- An extensive literature search revealed numerous studies showing significant benefits with the use of IV acetaminophen vs. placebo or no acetaminophen (Apfel et al., 2013; Maiese et al., 2017), but no studies to compare which route (IV or po) is more effective.

Purpose

- Expertise in the field have called for research studies to compare both routes.
- Literature supports a multimodal approach to managing postoperative pain (measured by patient report of pain and opioid consumption), in reducing the incidence of negative opioid effects (postoperative nausea and vomiting, low O2 Saturation), in PACU (Phase I and II) length of stay, and in patient satisfaction rating with efforts to control pain on the day of surgery.

Methods

- Adult patients scheduled for outpatient surgery under general anesthesia were recruited preoperatively on the day of surgery at Bethesda Butler Hospital.
- Types of procedures included ear/nose/throat, gynecologic, general surgery, laparoscopic, orthopedic, plastics and podiatry.
- Informed consent was obtained from 120 patients.
- This was a double-blind, randomized control trial.
- All participants received both an oral capsule and an IV infusion; both the patient and healthcare team were blinded as to which contained acetaminophen and which contained a placebo.
- Data on participant’s pain, opioid administration, adverse events and length of stay were recorded on an audit tool by bedside nurses, and/or via study staff's review of Epic documentation.

Results

- Preoperative Acetaminophen in Surgical Patients: The administration of po acetaminophen was equivalent to IV acetaminophen given preoperatively as part of the multimodal approach to managing postoperative pain in patients able to tolerate preoperative po medications.
- In a separate subset analysis of patients without nerve block, and in patients age 60 and over, some outcomes were trending toward significance. Further studies with a larger sample size in these populations may be warranted.

Conclusions

- Data analysis revealed no significant differences between any of the outcome measures between the two groups.
- The findings support the current TriHealth practice of administering po acetaminophen preoperatively as part of the multimodal approach to managing postoperative pain in patients able to tolerate preoperative po medications.
- The administration of po acetaminophen preoperatively was equivalent to IV acetaminophen given preoperatively in controlling postoperative pain (measured by patient report of pain and opioid consumption); in reducing the incidence of negative opioid effects (postoperative nausea and vomiting, low O2 Saturation); in PACU (Phase I and II) length of stay and in patient satisfaction rating with efforts to control pain on the day of surgery.

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- See handout for list of references.