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

Diana Pelzer, MSN, RN, CAPA; Jennifer Cox, BSN, RN; Elizabeth Burgess, MD; and Rachel Baker, PhD, RN
TriHealth Bethesda Butler Hospital, Perioperative Services

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;

Purpose

- Experts in the field have called for research study comparing which route (IV or po) is more effective.

In patients undergoing outpatient surgical procedures under general anesthesia, how does the administration of IV acetaminophen, compared to the administration of po acetaminophen, affect the following postoperative outcome measures during the recovery room (Phase I and II) stay:

- Patient reports of pain
- Postoperative opioid consumption

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

Results

- All 120 enrollees were included in statistical analysis.
- There was no significant differences in satisfaction with pain control.

Outcome Measure	Oral Group	IV Group	p-value (Significance level is 0.05)
Highest Pain Score	M = 4.37/10 SD = 3.226	M = 4.12/10 SD = 3.092	p = 0.578
Received Opioids Postoperatively	43.3%	48.3%	p = 0.583
Postoperative MME (MME = Morphine Milligram Equivalents)	M = 5.3607 SD = 5.8730	M = 4.3482 SD = 5.2819	p = 0.323
Nausea	8.3%	10%	p = 0.500
Vomiting	1.7%	3%	p = 0.500
Low O2 Saturation	23%	15%	p = 0.177
Length of Stay (in minutes)	M = 92.88 SD = 29.911	M = 88.25 SD = 26.651	p = 0.378
Patient Satisfaction	M = 9.77/10 SD = 0.528	M = 9.45/10 SD = 0.950	p = 0.166

Conclusions

- Data analysis revealed no significant differences between any of the outcome measures between the two groups.
- 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 O_2 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.
- 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.
- In a separate subset analyses of patients without nerve block, and in patients age 65 and over, some outcomes were trending toward significance. Further studies with larger sample size in these populations may be warranted.

References

See handout for list of references.

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