Background

IV Acetaminophen was added to a multimodal preemptive analgesia approach to perioperative pain management since its FDA approval in 2010. In 2014 the cost of a single dose increased from $11 to $33. As a result, our projected spend for 2024 was to exceed $1.3MM. There was no clinical criteria to assign patients in deciding which patients should receive IV Acetaminophen before/postop. Also, we lacked alternative evidence practices for managing post-op pain (i.e. oral preop meds.) This team was charged to investigate other options for managing post-op pain (i.e. oral preop meds.). This team was charged to investigate other options for managing post-op pain.

Goals - All completed

1. Develop guidelines for the best practices for the use of oral preoperative analgesic medications
2. Develop guideline for the use of IV acetaminophen in the hospital
3. Evaluate safeguards that enhance safety monitoring with the use of IV acetaminophen
4. Review literature:

   • Dose for adults weighing 140-200 lbs. is 1 gram every 4 hours
   • Dose for adults weighing 200 lbs. or more is 1 gram every 6 hours
   • Maximum dose is 4 grams every 24 hours

5. Evaluate POE order sets with premedication

   • Oral analgesics with drugs like Gabapentin, Celecoxib and
   
8. Roll out new protocol/practices

   • Developed changes focused on medication
   • Sought/received approval of guideline by Periop Operations Committee and then OR Executive Committee

   • Created/implemented ongoing audit of IV Acetaminophen usage

Survey

Comparison Survey of Medication Options

IV Acetaminophen

Ketorolac (Toradol®)

Celecoxib (Celebrex®)

For More Information Contact: Kathy Cunningham, MHA, BCPS kcunning@bidmc.harvard.edu; Susan Dorion, RN sdorion@bidmc.harvard.edu; Esvar Sundar, MD esumar@bidmc.harvard.edu

Team

Elena G. Canacari, RN, CNOR
Meghan Connolly, RN, MSN, APR
Kathy Cunningham, MHA, BCBS
Susan Dorion, RN, MSN
Mary Ellis, RN
Mary Gryzbinski, RN, BSN
Soumya Mahapatra, MD
Mariannne McAuliffe, RN, MSN
Peter Pancza, MD
Ross W. Simon, BA
Esvar Sundar, MD
Richard Whyte, MD

Results

Key Accomplishments

• Developed changes focused on medication
• Using feedback from survey, developed practice guideline for IV Acetaminophen
• Modified Provider Order Entry (POE) requiring indication for using IV Acetaminophen
• Created POE alert to reorder IV Acetaminophen every 24 hours
• Added IV acetaminophen to hospital formulary
• Rolled-out new protocol/practices educating all staff
• Sought/received approval of guideline by Periop Operations Committee and then OR Executive Committee
• Created/implemented ongoing audit of IV Acetaminophen usage

Next Steps

• Ongoing monitoring of hospital-wide usage of IV Acetaminophen
• Maintain stakeholders as resource group to ensure sustainability of improvements

Guidelines for Perioperative Intravenous Acetaminophen Use

Indications:

2. Intravenous acetaminophen use should be restricted to patients still having >6/10 pain despite use of opioid analgesia and/or oral or non-opioid analgesics and having risk factors to alternatives.

3. IV acetaminophen may be considered in patients who are NPO to oral pills and ingredients. Consider the use of liquid Acetaminophen in patients who are unable to swallow liquids.

4. Patient has abscess skin defects to opioids (e.g. cellulitis, dermatitis, ulcers). Patients with acne rosacea or skin irritation. Consideration for IV's to include patients with:

   • Documented NSAID allergy or hypersensitivity to aspirin or other NSAIDS
   • Sev. CVA, CHD or diabetes or 24-24 hour if in 72 hours
   • Active GI bleed
   • Pregnancy
   • Therapeutically anticoagulated
   • Spinal surgery patients who are at high risk for developing a clinically significant hernia

Contraindications:

1. Intravenous acetaminophen is contraindicated in patients:

   • In patients with known hypersensitivity to acetaminophen or any of the excipients in the product formulation (e.g. methylparaben, citric acid).

   • In patients with severe hepatic impairment or severe active liver disease.

Warnings and Precautions:

1. Do not exceed the maximum recommended daily dose of acetaminophen by (all routes of delivery and all acetaminophen containing products including combination products).

2. Use caution when administering acetaminophen in patients with the following conditions:

   • Severe hepatic impairment or active hepatitis
   • Alcoholism
   • Chronic malnutrition
   • Severe hypoglycemia
   • Severe renal impairment (creatinine clearance < 30 mL/min)

3. Discontinue acetaminophen immediately if symptoms associated with allergy or hypersensitivity occur.

Dosage:

1. Intravenous acetaminophen orders must be renewed every 24 hours with rationale for continuation.

   • Dose for adults weighing 60-100 lbs. is 625 mg in 0.9% normal saline given over 15 minutes.

   • Dose for adults weighing >100 lbs. is 625 mg in 0.9% normal saline given over 15 minutes.

   • Dose for adults weighing >100 lbs. is 750 mg in 0.9% normal saline given over 15 minutes.

Administration:

1. Intravenous acetaminophen is not compatible with chlorpromazine and diazepam administration in the same IV tubing.