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Enteral Acetaminophen is Better than Intravenous

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Disclosures

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- None relevant to this topic

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What makes a "better" drug?

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"Selling" a drug

- More effective
- Less side effects
- Less expensive
- Specific patient population need

Triple Aim of Medical Care

- Better Population Health
- Good Experience of Care
- Lower Per Capita Cost

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More Effective?

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- Cochrane collaborative review cautioned interpretation as numbers were too small to determine superiority.

McNicol ED, et al. Single-dose intravenous paracetamol or propacetamol for prevention or treatment of postoperative pain: a systematic review and meta-analysis. *Br J Anaesth.* 2011;106(6):764-75.

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More Effective?

- "We concluded that in the ambulatory surgery population the efficacy of oral and intravenousacetaminophen is equivalent." *Patel, et al. Journal of Clinical Anes 2019*
- "For patients who can take an oral dosage form, no clear indication exists for preferential prescribing of IV acetaminophen." *Jabril, et al. Can J Hosp Pharrm 2015*
- "Intravenous acetaminophen to multimodal analgesia dose not demonstrate a significant benefit in reducing pain and opioid consumption compared oral formulation after total knee arthroplasty and total hip arthroplasty." *Sun, et al. Medicine 2018.*
- "Use of IV acetaminophen did reduce MEQ doses, but not with clinical significance." *Pettersson, et al. J Cardiothoracic Vasc Anes 2005*

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More Effective?

- "Neither intravenous nor oral acetaminophen provides additional analgesia in the immediate postoperative period when administered as an adjunct to multimodal analgesia in patients undergoing TKA in the setting of a spinal anesthetic." *O'Neal, et al. Am J Arthroplasty 2017.*
- "I.V. propacetamol, administered as a 15-min infusion, is a fast-acting analgesic agent. It is more effective in terms of onset of analgesia than a similar dose of oral acetaminophen." *Moller, et al. BJA 2005*
- "In patients undergoing hip or knee arthroplasty, oral acetaminophen given preoperatively was equivalent to i.v. acetaminophen administered in the operating suite in controlling pain in the immediate postoperative period. I.V. acetaminophen was not superior to oral acetaminophen in reducing postoperative nausea and vomiting, time to ambulation, time to first dose of as-needed pain medication, length of PACU stay, or total length of hospital stay." *Hickman, et al. Amer J of Health-Sys Pharm 2018.*

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Less Side Effects?

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IV Acetaminophen

Less common-Adults

- Abnormal breath sounds
- bloating or swelling of the face, arms, hands, lower legs, or feet
- difficult or labored breathing
- difficulty opening the mouth
- dizziness, faintness, or lightheadedness when getting up suddenly from a lying or sitting position
- irregular heartbeat
- lockjaw
- loss of appetite
- muscle pain or cramps
- muscle spasm, especially of the neck and back
- nausea or vomiting
- nervousness
- numbness or tingling in the hands, feet, or lips
- pain at the injection site
- slow or fast heartbeat
- sweating
- tightness in the chest
- unusual tiredness or weakness

Incidence not known

- Abdominal or stomach pain or tenderness
- clay colored stools
- dark urine
- decreased appetite
- difficulty with swallowing
- flu-like symptoms
- loss of appetite
- puffiness or swelling of the eyelids or around the eyes, face, lips, or tongue
- right upper stomach tenderness
- skin rash, itching, or hives
- tightness in the chest
- yellow eyes or skin

Symptoms of overdose

- Black, tarry stools
- bleeding gums
- bloating of the abdomen or stomach
- blood in the urine or stools
- chills
- difficult or painful urination
- general feeling of discomfort or illness
- light-colored stools
- pinpoint red spots on the skin
- sudden decrease in the amount of urine
- unpleasant breath odor
- vomiting of blood

Enteral Acetaminophen

Rare

- Bloody or black, tarry stools
- bloody or cloudy urine
- fever with or without chills (not present before treatment and not caused by the condition being treated)
- pain in the lower back and/or side (severe and/or sharp)
- pinpoint red spots on the skin
- skin rash, hives, or itching
- sore throat (not present before treatment and not caused by the condition being treated)
- sores, ulcers, or white spots on the lips or in the mouth
- sudden decrease in the amount of urine
- unusual bleeding or bruising
- unusual tiredness or weakness
- yellow eyes or skin

Symptoms of overdose

- Diarrhea
- increased sweating
- loss of appetite
- nausea or vomiting
- stomach cramps or pain
- swelling, pain, or tenderness in the upper abdomen or stomach area

From Micromedex

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Less Side Effects?

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Ayhan Yaman, et al. Paracetamol infusion-related severe hypotension and cardiac arrest in a child. *The Turkish Journal of Pediatrics* 2016; 58: 550-553.

- 2 y/o female with fever/sepsis
- Presented to ED
- Given IV paracetamol
- Coded following infusion
  - Intubated 4 days
  - Pressor support
  - Labs consistent with infection
  - No anaphylaxis
  - No neurologic changes
- Believed due to “rapid” infusion

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Less Expensive?

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IV

- 24 for $129.35 (sdv)
- 10 for $266.40 (sdv)
- 10 for $112.48 (bag)
- 20 for $112.48 (bag)
- 24 for $138.13 (500 mg)

- Average per 500 mg dose: $ 6.04

Enteral

- 100 tab of 500 mg for $2.42
- 120 mg sup x 12 for $3.46
- 325mg UD tub 30 for $27.81
- 160 mg for alcohol, dye, and sugar free elixer 50 UD for $33.45

- Average per 500 mg dose: $ 1.17

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Specific Patient Population?

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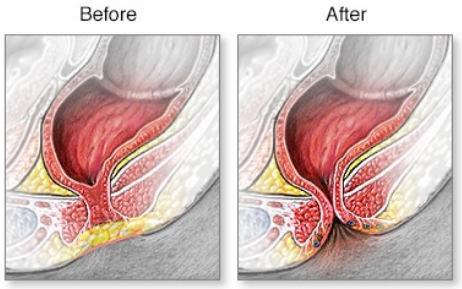

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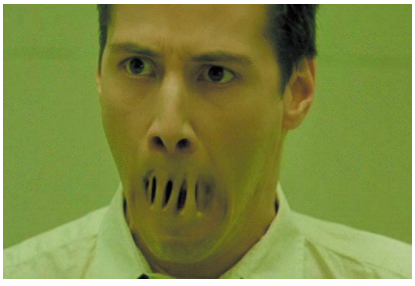

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Conclusion:

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- IV and enteral acetaminophen have similar benefits:
  - Reduce narcotics as part of multi-modal analgesia
  - Do not depress respiration
  - Anti-pyretic
- Enteral form at its MOST expensive is still cheaper
- Can be used in anyone with a GI tract with similar clinical effects
- With 2 ties, a large population it can be used in, and cheaper and wider availability, enteral acetaminophen is superior