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Appropriateness of intravenous acetaminophen use in the emergency departments across a multi-hospital community health system

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OBJECTIVE

The objective of this study was to evaluate adherence to institutional restriction criteria for intravenous acetaminophen use in the emergency departments within a community hospital system.

BACKGROUND

- Intravenous (IV) acetaminophen is an analgesic frequently used instead of opioids in the emergency departments (ED) across Parkview Health.
- Current literature demonstrates comparable efficacy for pain relief with IV acetaminophen when compared to oral or rectal administration.
- Barnaby et al. compared 1 gram of IV acetaminophen with 1 mg of IV hydromorphone in adults with acute pain in the ED. The hydromorphone group had statistically greater analgesia effects.
- Blok et al. evaluated the addition of IV acetaminophen did not decrease opioid requirement in adult patients with acute pain during their ED stay.
- IV acetaminophen is significantly more expensive than other oral, rectal, and intravenous alternatives which leads to restricted use criteria at Parkview Health.

METHODS

- Inclusions: > 18 years old, in the ED, and received at least one dose of IV acetaminophen.
- Exclusions: did not have at least one recorded pain score after IV acetaminophen administration.
- Primary endpoint: number of inappropriate IV acetaminophen doses given in the ED as defined by the current restriction criteria within the health system.
- ED restriction criteria: patients greater than 65 years of age with hip fracture or for surgical patients in the peri-operative period.

RESULTS

- Characteristics of Institute
  - Pain Score Upon Arrival, mean ± SD
  - Fever Upon Arrival, N (%)
  - Erosion During Visit, N (%)
  - Length of ED Stay, mean ± 5th hours
  - Auto-Verified IV Acetaminophen Dose, N (%) (0.5 vs 0.2)

- Outcomes
  - Proprietary Prescribed Doses
  - All Other Opioids

- IV Acetaminophen Doses Ordered by Provider Specialty
  - Inappropriately
  - Appropriately

- REFERENCES


DISCUSSION & CONCLUSIONS

- Data analysis from this retrospective medication use evaluation shows that 62.4% of IV acetaminophen doses are ordered for patients that do not meet criteria for use.
- Auto-verification was used on 66.7% of all IV acetaminophen doses, with 39.6% of those orders being inappropriate based on restriction criteria.
- Removing acetaminophen from the auto-verification list would allow more pharmacist intervention.
- The total study population experienced a mean decrease in pain scores of 1.8±3.3 after the administration of intravenous acetaminophen. Since 61.6% of patients required additional analgesic medications, this may indicate that IV acetaminophen may not be adequate alone for pain control.
- Future Directions:
  - Education for providers on non-oral analgesics, multi-modal pain control, and review of restriction criteria is needed to limit inappropriate ordering of intravenous acetaminophen for patients in the ED.
  - Take off the auto-verify list.
  - Further limitations can be put on providers by not supplying IV acetaminophen in the ED Pyxis. Having the medication come from main pharmacy allows for pharmacy intervention in doses that do not meet the institution's restriction criteria.
  - Increase awareness of the atrophic traumatic headache pain panel and non-opioid pain panels to give providers other tools to help with pain control.