

Article Review: RCT of Antiemetic Efficacy in the ED

Nausea and vomiting are very common presenting symptoms for patients coming into the emergency department. Most of these patients are treated with an antiemetic; however, very little literature exists to show if one antiemetic works better than any other or better than placebo for undifferentiated nausea/vomiting. An article entitled, “Antiemetic Use for Nausea and Vomiting in Adult Emergency Department Patients: Randomized Controlled Trial Comparing Ondansetron, Metoclopramide, and Placebo” by Dr. Egerton-Warburton, Diana, et al. that was published in *Annals of Emergency Medicine* last month attempted to determine the efficacy of antiemetics in the emergency department.

Methods:

- Randomized, double-blinded, controlled trial
- 270 patients, 2 urban emergency departments in Australia
 - Patients enrolled Sept 2009 – April 2010
 - Excluded if unstable, requiring critical intervention, pregnant/breastfeeding, Parkinson’s disease, use of previous antiemetics or IV fluids in the past 8 hours, symptoms motion-related (vertigo), undergoing chemo/radiotherapy, or allergy to study medications
- Compared metoclopramide, ondansetron, and placebo
 - 87 patients received 4 mg IV ondansetron
 - 88 patients received 20 mg IV metoclopramide
 - 83 patients received 4 mL IV normal saline (placebo)
- All patients also received IV normal saline at a rate of 250 mL/hr
- Primary outcome was change in nausea at 30 minutes post-treatment
 - Measured by self-reported visual analog scale for nausea severity
- Secondary outcomes: patient satisfaction, need for additional antiemetic therapy, adverse effects

Results:

- 258 patients included in the final analysis, baseline characteristics were well-matched
- **No statistically significant difference** between the 3 groups after 30 minutes for all outcomes
- 9 adverse effects reported
 - 6 in pts who received metoclopramide – **2 akathisia, 2 restlessness, 1 muscle twitching, 1 diaphoresis**
 - 2 with ondansetron – **1 dizziness, 1 stinging at injection site**
 - 1 with placebo having **shaking/restlessness**

Limitations:

- Convenience sample
- No data on what other treatments pts received that may have effected nausea/vomiting such as opioids, steroids, or sedatives

- Self-reported episodes of vomiting can be highly variable depending on the patient and their interpretation of vomiting
- Only measured outcomes at 30 minutes post medication administration, checking again at 60 or 90 minutes may have changed the need for re-dosing of medication or return of nausea

Conclusions:

- With no significant difference in symptom reduction or patient satisfaction between the 3 groups, **treatment with IV saline may be just as effective as medications for treating undifferentiated nausea/vomiting in the emergency department**
- These results are supported by 2 previous studies on ED nausea/vomiting
 - Braude, et al 2006² – Approximately 25 pts in each group with no statistically significant difference in efficacy for 10 mg IV metoclopramide, 10 mg IV prochlorperazine, and placebo
 - 1.25 mg IV Droperidol did show a significant reduction in nausea/vomiting compared to the others; however, it also had a significantly higher rate of akathisia
 - Barrett, et al. 2011³ – Approximately 40 pts in each group with no statistically significant difference in efficacy for 4 mg IV ondansetron, 10 mg IV metoclopramide, 12.5 mg IV promethazine, and placebo.
- Metoclopramide may be associated with more adverse effects and therefore may not be the first choice for undifferentiated nausea/vomiting in the emergency department

How this Changes/Adds to Current Practice:

- **Consider treating undifferentiated nausea/vomiting in the emergency department with IV fluids first and then adding an anti-emetic if their symptoms do not improve**

References // Further Reading:

1. Diana Egerton-Warburton, Robert Meek, Michaela Mee, and George Braitberg. "Antiemetic Use for Nausea and Vomiting in Adult Emergency Department Patients: Randomized Controlled Trial Comparing Ondansetron, Metoclopramide, and Placebo." *Annals of Emergency Medicine*, 64.5 (Nov 2014): 526-32. <http://www.ncbi.nlm.nih.gov/pubmed/24818542>
2. Darren Braude, Tricia Soliz, Cameron Crandall, Greg Hendey, James Andrews, Lori Weichenthal. "Antiemetics in the ED: a Randomized Controlled Trial Comparing 3 Common Agents." *Am J Emerg Med*, 24 (Aug 2006) 177-182. <http://www.ncbi.nlm.nih.gov/pubmed/16490647>
3. TW Barrett, DM DiPersio, CA Jenkins, M Jack, NS McCain, AB Storrow, LM Singleton, P Lee, C Zhou, CM Slovis. "A Randomized, Placebo-Controlled Trial of Ondansetron, Metoclopramide, and Promethazine in Adults." *Am J Emerg Med*, 29.3 (Mar 2011) 247-255. <http://www.ncbi.nlm.nih.gov/pubmed/20825792>
4. <http://www.ncbi.nlm.nih.gov/pubmed/24184010>