Can ondansetron help children with vomiting due to gastroenteritis?

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Clinical question
In children presenting with vomiting associated with gastroenteritis, what are the benefits and harms of ondansetron?

Evidence
A systematic review1 of 6 RCTs (5 in emergency department [ED] setting and 1 inpatient; N = 745) examined oral and intravenous (IV) administration of ondansetron.

- Ondansetron significantly (P < .05) improved
  - admission rates (7.5% with ondansetron vs 14.6% with placebo, number needed to treat [NNT] = 14);  
  - need for IV fluids (13.9% vs 33.9%, NNT = 5); and  
  - continued vomiting in the ED (16.9% vs 37.8%, NNT = 5).
- There was no change in return to care.
- There was increased diarrhea (no numbers given).

An updated Cochrane systematic review2 considered 6 RCTs (5 RCTs from above review and 1 new RCT, N = 777), all in the ED.

- Only oral treatments were analyzed, with similar results:
  - Statistically significant (P < .05) reduction in admission (NNT = 17), need for IV rehydration (NNT = 5), and persistent vomiting (NNT = 5), but no reduction in return to care.

Context
- Evidence for other medications for vomiting due to gastroenteritis in pediatric populations is poor or limited.1
  - A more recent RCT found dimenhydrinate suppositories helped stop vomiting (NNT = 5) but did not reduce admission rates.3
- Ondansetron appears cost-effective in the ED setting.4
- An evidence-based review of ondansetron for gastroenteritis by the Canadian Paediatric Society5 recommended
  - a single oral dose of ondansetron for children (aged 6 months to 12 years)
    - with mild to moderate dehydration or failed oral rehydration and
    - not predominantly moderate to severe diarrhea.
- Ondansetron can be administered by IV or orally (dissolving formulations are available).
  - Oral dose examples: 2 mg if patient weighs 8 to 15 kg, 4 mg if patient weighs 15 to 30 kg, and 6 to 8 mg if patient weighs more than 30 kg.

Bottom line
While most cases of pediatric gastroenteritis are self-limiting, studies from the emergency setting show that a single dose of oral ondansetron can help reduce vomiting, the need for IV fluids, and hospital admission.

Implementation
In stable children with dehydration due to gastroenteritis, oral rehydration therapy (ORT) is the cornerstone of treatment.6 Very frequent and very small doses of ORT are recommended; handouts are available from the Canadian Paediatric Society7 to guide parents on signs of dehydration and use of ORT. A non-randomized Canadian study8 suggested that standardized pathways for managing dehydration due to gastroenteritis in the ED might reduce IV use and length of stay with no effect on revisit rates. Adding ondansetron to such standardized gastroenteritis treatment pathways might benefit patients further.

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The opinions expressed in this Tools for Practice article are those of the authors and do not necessarily mirror the perspective and policy of the Alberta College of Family Physicians.

References