PALLIATIVE CARE NETWORK OF WISCONSIN

FAST FACTS CONCEPTS #5
NAUSEA AND VOMITING: COMMON ETIOLOGIES AND MANAGEMENT
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Background: Nausea and vomiting (N&V) are distinct but usually overlapping symptoms which impact quality and quantity of life for patients with serious illness (1). The array of available anti-emetics can make it difficult to determine the best management approach. This *Fast Fact* offers a framework for identifying common causes and for targeting anti-emetic management.

Definitions: It is important to determine if the patient is experiencing nausea, vomiting, or both, as patients may vomit without preceding nausea or experience nausea without vomiting. Nausea is an unpleasant feeling causing the desire to vomit (2). Vomiting is the contraction of abdominal and diaphragmatic muscles triggering the expulsion of stomach contents (3).

Common etiologies of N&V in patients with serious illness (4-8):
- Malignant bowel obstruction (MBO): See *Fast Facts* #45 and 119 for more specifics.
- Infections: generalized (sepsis, pneumonia, coronavirus) or more localized infectious processes (viral gastroenteritis, cholecystitis, bacterial peritonitis, clostridium difficile).
- Medications: Effects on the chemoreceptor trigger zone (CTZ) or sampling port near the blood brain barrier are thought to be the primary etiology. Collaborate with a pharmacist to examine medications and supplements for emetogenic agents. Common culprits: a) antibiotics; b) opioid-induced nausea (OIN); c) chemotherapy induced nausea and vomiting (CINV); d) antidepressants.
- Intracranial issues (e.g., brain metastases, increase in intracranial pressure, subarachnoid hemorrhage): address the underlying cause as feasible. Dexamethasone may be beneficial.
- Vestibular: when vertigo is present, patients typically describe an experience of the room spinning without much prompting from the clinician. Benign positional vertigo, vestibulitis, and Schwannomas are common vestibular etiologies for N&V.
- Other causes or factors: post-operative nausea and vomiting (PONV), dehydration, migraine, pregnancy, cannabis hyperemesis syndrome, food poisoning.
- Of note, constipation, anxiety, or emotional distress may compound N&V of any cause.

If no obvious cause, or if symptoms ongoing, some experts recommend the following approach based on anecdotal experience **(4-5)***:*
- If predominantly nausea, consider a trial of an antidopaminergic medication.
- If predominantly vomiting, consider trial of 5HT3 antagonist such as ondansetron.
- If symptoms are refractory, consider a different medication class and/or additional workup.

Anti-emetic Groups for N&V (4-9). *Asterisk (*) indicates a risk for QTc prolongation.*
Group 1: Antidopaminergics (D2 antagonists): recommended for nausea related to medications (e.g., OIN) and other perceived toxins including PONV and CINV. Acute motor symptoms such as dystonic reactions are possible. Three categories of antidopaminergics have been described:
- 1A -- more potent and longer acting: examples include haloperidol* (though IV formulations maybe less likely to prolong QTc than oral formulations), olanzapine (see *Fast Fact* #315), chlorpromazine (not a first-line agent per many experts due to risk of sedation). There is little evidence to titrate beyond the recommended dose of haloperidol (1-2 mg/day) and olanzapine (10 mg per day). Controlled data support the use of olanzapine both for CINV and cancer related nausea and vomiting.
- 1B --weaker/shorter acting: examples include prochlorperazine*, trimethobenzamide.
- 1C: Promotility: in addition to antidopaminergic effects, metoclopramide* is a promotility agent for gastroparesis. Use of metoclopramide for 3 months or more is associated with a risk for tardive dyskinesia, particularly in patients with renal/hepatic impairment, diabetes, or who are older than 70.

Group 2: 5HT3 Antagonists: Ondansetron* is the most prescribed antiemetic in this group. Beyond their role for CINV, they are preferred anti-emetic options in patients with Parkinson's, Lewy Body Dementia, or restless leg syndrome, because of lack of effects on the dopamine receptor.

Group 3: Antihistamines and Anticholinergics: Antihistamines with anti-emetic properties include promethazine*, meclizine, diphenhydramine*. Scopolamine is an anticholinergic with anti-emetic properties. Group 3 anti-emetics are most utilized for vertigo-related nausea. While they are commonly prescribed for other types of nausea (e.g., scopolamine to reduce GI secretions from an MBO), they should be used with caution in elderly populations due to their risk for delirium. Parenteral promethazine and diphenhydramine have been associated with misuse from temporary euphoric feelings caution. Of note, promethazine and prochlorperazine (an antidopaminergic) are very different drugs.

Group 4: Miscellaneous

- NK1 antagonists (e.g., arepiptant): primarily used for CINV due to cost and administration issues.
- Dexamethasone has been described as an anti-emetic for CINV, MBO, PONV, and increased intracranial pressure.
- Cannabinoids: prescription agents such as dronabinol (FDA approved for PONV and CINV) and nabilone (FDA approved for CINV) have shown effectiveness in some published trials. Cannabis might provide benefit but needs further research. See *Fast Facts* #93, 279, & 370.
- Inhaled isopropyl alcohol: controlled trials suggest effectiveness for PONV and gastroenteritis (9-12).
- Ginger: systematic reviews have shown anti-emetic effect over placebo for PONV and pregnancy (12,13). There are insufficient data regarding its role for CINV and other types of nausea (15).
- Lorazepam: antiemetic role is limited to *anticipatory* nausea and vomiting (anxiety) (16).

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