Nausea & Vomiting: A Palliative Perspective

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Objectives

- Review nausea and vomiting, including symptom progression during illness trajectories
- Discuss nausea and vomiting etiologies and associated treatment options
- Highlight education and management of nausea and vomiting during advanced illnesses
Nausea

- Unpleasant sensation of being about to vomit
- Back of the throat and epigastrium
- Non-observable
- Autonomic symptoms
  - Pallor, cold sweat, salivation, tachycardia
- Anorexia, loss of appetite
- May occur alone or in combination with additional symptoms
  - Vomiting, dyspepsia, or gastrointestinal symptoms
- Patient description
Vomiting

- Expulsion of gastric contents through the mouth or nose
- Cause: forceful and sustained contractions of abdominal muscles and diaphragm
- Metabolic disturbances, malnutrition, electrolyte imbalances
- Interruptions in treatments
- Patient description
Nausea and Vomiting: Pathophysiology

- CTZ: Neurotransmitters
- Vestibular System: Motion
- Cortical Centers: Anxiety, Brain
- Vagus (+ other) Nerve: Gastroparesis
Patient Assessment

- Initial and ongoing
- Pathophysiology
- History
  - Pattern, triggers, pain, dysphagia, thirst, hiccups, heartburn, constipation
- Physical exam
- Diagnostic testing
- Differential diagnoses
Nausea and Vomiting: Malignant Disease

- Etiology
  - Multifactorial
  - Simultaneously vs. sequentially

- Anti-tumor treatment
- Acute complication
- Gastroparesis
- Drug-induced constipation
Nausea and Vomiting: Malignant Disease

- Highly Emetogenic Therapy
  - 5-HT3 antagonists, corticosteroids, neurokinin-1 (NK1) antagonists

- Moderately Emetogenic Therapy
  - 5-HT3 antagonists, corticosteroids

- Low Emetogenic Risk
  - Corticosteroids
Nausea & Vomiting: Common Causes

<table>
<thead>
<tr>
<th>Chemical &amp; Drug Induced</th>
<th>Gastric Stasis</th>
<th>GI Obstruction &amp; Irritation</th>
<th>Increased Intracranial Pressure</th>
<th>Vestibular</th>
<th>Psychological</th>
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<tbody>
<tr>
<td>Electrolyte imbalance</td>
<td>Stomach cancer</td>
<td>Cancer related</td>
<td>Cerebral edema</td>
<td>Opioids</td>
<td>Anxiety</td>
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<td>Organ failure</td>
<td>Ascites</td>
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<td>Opioids</td>
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<td>Distension or compression</td>
<td>Bleeding</td>
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<td>Antibiotics</td>
<td>Anticholinergics</td>
<td>Delayed gastric emptying</td>
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<td>Constipation</td>
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<td>Chemo/radiation</td>
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Increased Intracranial Pressure:
- Cerebral edema
- Tumor
- Bleeding
- Meningeal disease

Vestibular:
- Opioids
- Motion sickness

Psychological:
- Anxiety
- Anticipatory
Nausea & Vomiting: Treatment
Nonpharmacologic Therapy

- Self-management techniques
- Complementary and alternative medicine
  - Music, aromatherapy, massage, exercise, cognitive distraction
- Acupuncture
- Desensitization
- Hypnosis
Pharmacologic Therapy

- Prokinetics
- Dopamine Antagonists
- Antihistamines
- 5-HT3 Antagonists
- Corticosteroids
- Benzodiazepines
- Anticholinergics
- Octreotide
- NK1 Antagonists
- Cannabinoids*
Prokinetic Agents

- Stimulate motility (upper GI tract)
- Four potential MOA
  - 5-HT4 receptor agonist (gut), 5-HT3 antagonist, motilin receptor activation, dopaminergic antagonist
- Extrapyramidal symptoms
- Gastric stasis
- Dose reductions
- Contraindications
- Adverse effects

- Class Example: Metoclopramide
Dopamine Receptor Antagonists

- Antiemetic doses typically lower than antipsychotic doses
- Dopamine blockade in CTZ
- Many have broad spectrums of activity
  - Histamine, muscarinic, serotonergic, alpha-adrenergic receptor antagonism
- Side effect profile

- Class Example: Haloperidol
- Class Example: Prochlorperazine
- Class Example: Olanzapine
Antihistamines

- H₁ receptor blockade in vomiting center, CTZ, vestibular nuclei
- Nausea and vomiting associated with movement, dizziness, vertigo
- Adverse effects

- Class Example: Promethazine
- Class Example: Hydroxyzine
Selective 5-HT3 Receptor Antagonists

- Antagonize 5-HT3 receptors centrally in the CTZ and peripherally in the gut wall
- Prevention of chemotherapy-induced and radiation induced nausea and vomiting
- Adverse effects

- Class Example: Ondansetron
Corticosteroids

- Mechanism poorly understood
- Multi-drug prophylactic regimens
- Useful: increased intracranial pressure, hypercalcemia of malignant disease
- Obstruction
- Adverse effects: long-term, short-term

- Class Example: Dexamethasone
Benzodiazepines

- Gamma-aminobutyric acid (GABA) effects
- Anticipatory nausea
- Anxiolytic
- Combination therapy
- Adverse effects

- Class Example: Lorazepam
Anticholinergic Agents

- Muscarinic receptor antagonists
- Nausea associated with movement or dizziness
- Refractory nausea (bowel obstruction)
- Formulation flexibility
- Adverse effects
  - Avoid/use caution in elderly patients

- Class Example: Scopolamine
NK1 Receptor Antagonists

- Prevent substance P from binding to NK1 receptors
- Acute and delayed prevention of chemotherapy-induced nausea and vomiting
- Combination therapy

- Class Example: Aprepitant
Somatostatin Analogs

- Acts like somatostatin- inhibits hormones including growth hormone, glucagon, insulin, LH
- Inhibits gastric, pancreatic and intestinal secretions
- Reduces GI motility
  - Helpful in high volume emesis
- Intestinal obstruction(s)
- Adverse effects
- Class Example: Octreotide
Cannabinoids

- Cannabinoid receptors in brainstem
- Mu opioid receptors
- Chemotherapy-induced nausea and vomiting
- Legality
- Adverse effects

- Class Example: Dronabinol
- Class Example: Marijuana
Self-Management Strategies

**Dietary**
- Small, frequent meals
- Reduce strong food odor
- Avoid spicy, fatty, salty foods
- Premedicate

**Environmental**
- Avoid food when not hungry
- Fresh air
- Avoid strong odors
- Avoid triggers

**Psychological**
- Relaxation
- Meditation
- Breathing exercises
- Distraction
Refractory Nausea & Vomiting

- Combination therapy
- Patient suffering
- Palliative sedation
# References


- Del Fabbro, E. Assessment and management of nausea and vomiting in palliative. In: UpToDate, Post TW (Ed), UpToDate, Waltham, MA. Accessed September 2022.


Thank you

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