

## GI Part 2: Nausea

### Learning Objectives

- Understand the three major ways the brain triggers nausea
- List the complications of nausea
- Compare and contrast the common drug therapies used to treat the different forms of nausea

### UNDERSTANDING NAUSEA

- Central nervous system and the GI tract are involved
- **3 MAJOR WAYS**
  - **Chemoreceptor trigger receptor zone (CTZ)**
    - Located in the brain
    - Receives information via the blood about drugs and hormones
  - **Vestibular apparatus**
    - Parts of brain that detects vertigo
    - Inner ear fluid is used to determine vertigo
    - Responsible for motion sickness specifically
  - **GI tract messengers and signals**
    - Communicate to the brain when GI woes cause nausea
- **Brain chemicals responsible for nausea—the different drugs work on these substances**
  - Serotonin receptors
  - Dopamine
  - Histamine
  - Muscarinic receptors
  - Opioid receptors
  - Neurokinin receptors

### TYPES of Nausea

- **Simple**
  - “Its just nausea, and it will go away.”
  - Self-limiting (problems & symptoms can go away on their own)
  - Queasiness or complaint or discomfort
  - THINK: “Going on the roller-coaster.”
- **Complex**
  - “Another condition or disease is causing the nausea, and it has to be resolved to make the nausea go away.”
  - Underlying symptoms—something else is causing the nausea.
  - THINK: “My fever is making me nauseous.”
  - Accompanied by complications if left untreated—electrolyte imbalances, decreased food intake, dehydration, abdominal pain

## **MOST COMMON CAUSES**

- **Motion sickness**
  - Inner ear fluid imbalance is detected by changes in the vestibular apparatus (the part of the brain that determines vertigo)
- **Stomach distension and decreased gastric emptying**
  - Nerves in the GI tract can provide info to the brain that can cause nausea
  - Delayed stomach emptying (gastroparesis) and abdominal pain
  - Other GI conditions or problems
- **Medications**
  - Some medications possess the side effect of nausea
  - Some individuals are more prone to this side effect than others (because no two patients are the same)
- **Withdrawal**

## **THINGS THAT CAN GO WRONG FROM NAUSEA**

- Dehydration (if there is prolonged fluid loss from vomiting, etc)
- Electrolyte abnormalities (from extended periods of prolonged dehydrating)
- Aspiration—stomach contents can enter the lungs and can possibly cause pneumonia or choking
- Mallory-Weiss Syndrome

## **SIGNS & SYMPTOMS OF DEHYDRATION**

- Dry mouth
- Decreased skin elasticity—shown via “tenting”
- Excessive thirst
- Reduced urinary frequency (you don’t go to the bathroom as much)
- Dizziness/ lightheadedness (especially when standing up!)—indicates “hypostatic hypotension”
- Fainting

## **TIPS AND TRICKS**

- Motion sickness
  - Stare at the horizon line and face forward
  - Shut your eyes
- GI distress
  - Avoid trigger foods
  - Do not rest down after eating (sitting is okay!)
  - Avoid strong odors and ensure fresh air when meals are prepared and eaten

## DRUGS (PREVENTION IS KEY IN THE REALM OF MEDICATION)

### Antihistamines/ anticholinergics

<u>DRUG</u>	<u>DIMENHYDRINATE (Dramamine)</u>	<u>DIPHENHYDRAMINE (BENADRYL)</u>	<u>MECLIZINE (BONINE)</u>	<u>Scopolamine Patch (Transderm Scope)</u>
<u>DOSE</u>	50 to 100 mg every 6 hours	25 to 50 mg every 6 hours	25 to 50mg 1 hour before travel then every 12 to 24 hours	1.5 mg patch every 72 hours

- Helps best with nausea caused by motion sickness
- Common Side Effects
  - Dry mouth and dry eyes
  - Fatigue
  - Constipation
- Caution in patients using CNS depressants (most depression, anxiety, and psych medications)
- Do not drive or operate machinery—these drugs can make you sleepy!
- Take 30 to 60 minutes before travel and continue taking it until the activity is complete

### BISMUTH SUBSALICYLATE (KAOPECTATE® & PEPTO BISMOL®)

- Works topically on the GI mucosa to reduce irritation and therefore nausea
- 524mg every 30 to 60 minutes (max 8 doses/ day)
- Can cause temporary tongue discoloration and darkening of stools
- DO NOT give to CHILDREN (can cause Reye's Syndrome) and if you have an aspirin allergy (rash) because of the salicylate chemical structure in the medication

### PHENOTHIAZINES

- Block dopamine receptors in the chemoreceptor-trigger zone in the brain
- Many dosage forms are available
- Practical for long-term use, but they are older drugs, so we have more options with less side effects
- DRUGS
  - Chlorpromazine (Thorazine®) 50 to 100 mg every 6 to 8 hours as needed
  - Promethazine (Phenergan®) 25 mg orally every 4 to 6 hours as needed
- Side effects
  - Can cause drowsiness
  - Decreased sweating
  - Low blood pressure
  - Visual disturbances
  - RARE: some patients have tremors at high doses

### **SELECTIVE SEROTONIN REUPTAKE INHIBITORS (but not the kind used for depression/ anxiety)**

- Work on serotonin receptors in the gut ONLY
- Does not work in the brain
- Commonly used for chemotherapy induced nausea and vomiting, post-operative nausea, gastroparesis, and HIV/AIDS (to offset the hash side effects from medications)
- **DRUGS**
  - Ondansetron (Zofran®) 4 to 8mg every 12 hours as needed for N/V
- **Side effects**
  - GI distress (either diarrhea or constipation...it varies for patients)
  - Headache(especially if you are prone to getting a headache)
  - Fatigue (feeling sluggish or tired)
- **CAUTIONS!**
  - Do NOT use if patient has a history heart beat abnormalities

### **METOCLOPRAMIDE (REGLAN®)**

- Dopamine Antagonist: blocks dopaminergic receptors in the chemoreceptor trigger zone in the brain
- ↑ lower esophageal sphincter tone (which decreases GI symptoms that can cause nausea)
- Aids in gastric emptying
- Excellent choice for nausea caused by GI disorders specific to impaired motility (or ability to move food along the GI tract)
- Can help reduce nausea associated with the introduction of SSRIs (citalopram, sertraline, etc...)
- Take **before** nausea provoking situations
- **DRUG**
  - Metoclopramide 10 to 15 mg orally 30 minutes before meals and at bedtime
- **Side effects (seen at consistent, frequent high dosing)**
  - Sedation or fatigue
  - Headache
  - Some possible fluid retention (rarer side effect, seen most often during food reintroduction)
  - RARE: tremor, heart beat abnormalities, and lowering of seizure threshold

### **NAUSEA: GENERAL RULES**

- Motion sickness is the only type of nausea that you can self-treat (by taking an anti-histamine medication like Dramamine® or Bonine®)
- Maintain normal hydration regardless of the type of nausea
- Talk to your doctor if you have prolonged nausea because they can help with the different causes to nausea