

Nausea and vomiting

BY

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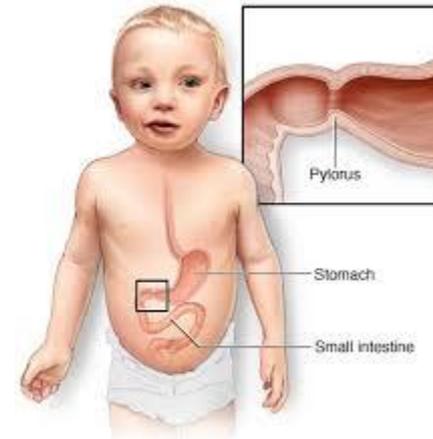
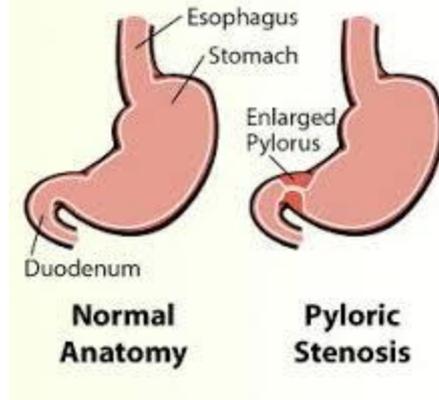
Nausea and vomiting

- Nausea and vomiting are symptoms that have many possible causes.

Specific questions asks to patients

- 1. Age
- The very young and the elderly are most at risk of dehydration as a result of vomiting.
- Vomiting of milk in infants less than 1 year old may be due to infection or feeding problems or, rarely, an obstruction such as pyloric stenosis.

- In pyloric stenosis, there is thickening of the muscular wall around the outlet of the stomach, which causes a blockage.
- It typically occurs, for unknown reasons, in the first few weeks of life in a first-born male.
- In some babies, early exposure to oral erythromycin has been implicated as a risk factor.



- The vomiting is frequently projectile in that the vomit is forcibly expelled a considerable distance.
- The condition can be cured by an operation under general anaesthetic lasting about half an hour called a pyloromyotomy.
- The pharmacist must distinguish, by questioning, between vomiting (the forced expulsion of gastric contents through the mouth) and regurgitation (where food is effortlessly brought up from the throat and stomach)

2. Pregnancy

- Nausea and vomiting are very common in pregnancy, usually beginning after the first missed period and occurring early in the morning.
- Pregnancy should be considered as a possible cause of nausea and vomiting in any woman of childbearing age who presents at the pharmacy complaining of nausea and vomiting.
- Nausea and vomiting are more common in the first pregnancy than in subsequent ones

3. Duration

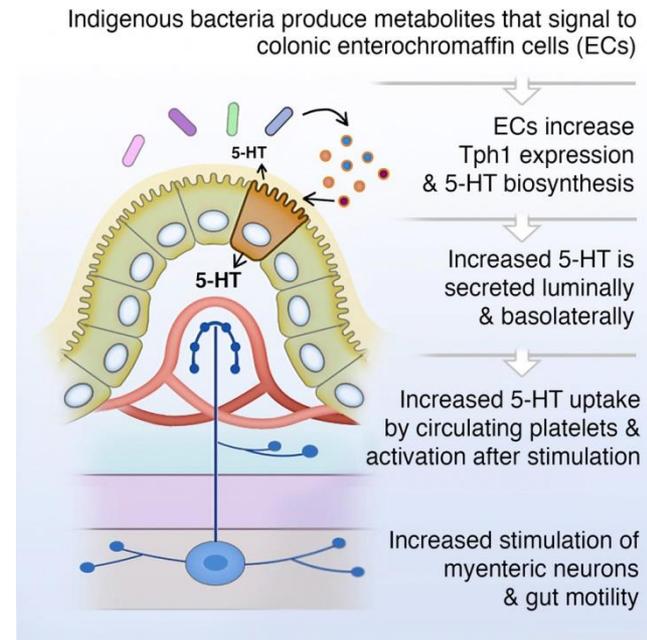
- Anyone presenting with chronic vomiting should be referred to the doctor since such symptoms may indicate the presence of a peptic ulcer or gastric cancer.

4. Associated symptoms

- An acute infection (gastroenteritis) is often responsible for vomiting, and, in these cases, diarrhoea also be present.
- Careful questioning about food intake during the previous 2 days may give a clue as to the cause.
- In young children, rotavirus is the most common cause of gastroenteritis; this is highly infectious and so it is not unusual for more than one child in the family to be affected. In such situations, there are usually associated cold symptoms

Mechanism of vomiting during bacterial and viral infection

- Toxin excreted from infected cell stimulate type of sensory cell called enterochromaffin in the wall of digestive tract.
- Viral toxin stimulates the cells to release serotonin.
- These cells can communicate with the brain via the vagus nerve.



- Vomiting without other symptoms, in the very young, can be caused by serious infection such as meningitis and is an indication for immediate referral.
- The vomiting of blood may indicate serious disease and is an indication for urgent referral, since it may be caused by haemorrhage from a peptic ulcer or gastric cancer.

- Vomit with a faecal smell means that the GI tract may be obstructed and requires urgent referral.
- Nausea and vomiting may be associated with a migraine.
- Any history of dizziness or vertigo should be noted as it may point to inner ear disease, for example, labyrinthitis or Meniere's disease as a cause of the nausea.

5. Alcohol intake

- People who drink large quantities of alcohol may vomit, often in the morning.
- This may be due to occasional binge drinking or chronic ingestion of alcohol.
- People with problem drinking and alcohol dependence often feel nauseous and retch in the morning.
- The questioning of patients about their intake of alcohol is a sensitive area and should be approached with tact.

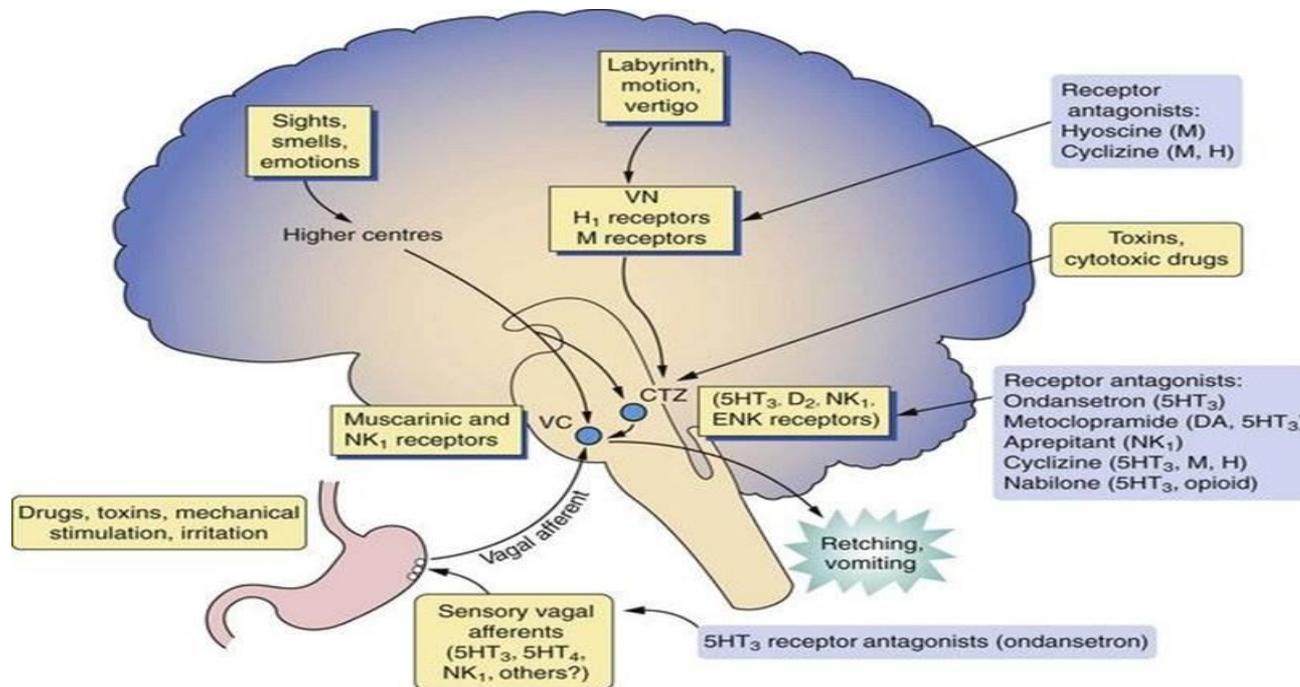
6. Medication

- Prescribed and OTC medicines Aspirin and NSAIDs are common causes.
- Some antibiotics may cause nausea and vomiting, for example, erythromycin (which stimulates stomach contraction).
- Oestrogens, corticosteroids and opioid analgesics may also produce these symptoms.
- Symptoms can sometimes be improved by taking the medication with food,.

- Opioid induced nausea and vomiting is very common, and some people are particularly susceptible to this; when initiating strong opioids such as morphine, an antiemetic should always be co-prescribed.
- Digoxin toxicity may show itself by producing nausea and vomiting, and such symptoms in a patient who is taking digoxin, especially an older person.
- Vomiting, with loss of fluids and possible electrolyte imbalances, may cause problems in older people taking digoxin and diuretics.

VC and CTZ

- Vomiting center (VC)
- Chemoreceptor trigger zone (CTZ)
 - Both located in the brain
 - Once stimulated, cause the vomiting reflex



Mechanism of Action of antiemetic

- Many different mechanisms of action
- Most work by **blocking one of the vomiting pathways**, thus blocking the stimulus that induces vomiting

Indications

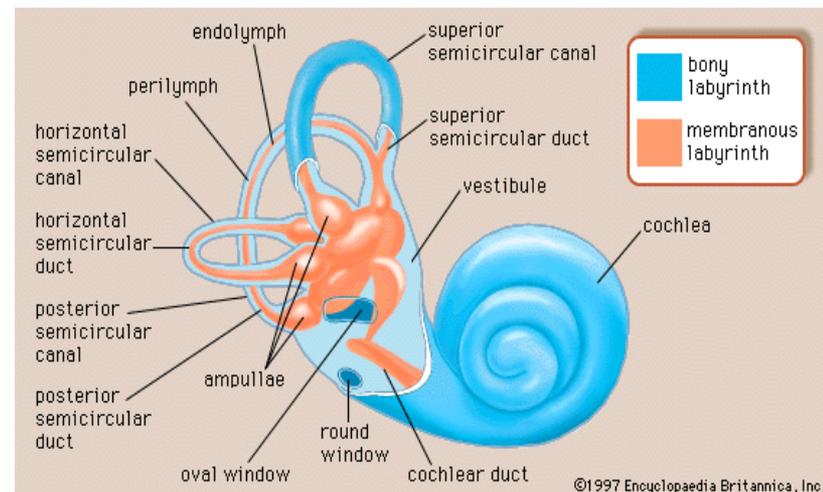
- Specific indications vary per class of antiemetics
- General use: prevention and reduction of nausea and vomiting

Antiemetic agents

- Anticholinergic agents
- Antihistamine agents
- Neuroleptic agents
- Prokinetic agents
- Serotonin blockers
- Tetrahydrocannabinoids (THC)

Mechanism of Action and Indications

- **Anticholinergic agents (ACh blockers)**
 - Bind to and block acetylcholine (ACh) **receptors in the inner ear labyrinth** which is responsible for balance and hearing
 - **Block transmission of nauseating stimuli to CTZ**
 - Also block transmission of nauseating stimuli from the reticular formation to the VC
 - e.g. Scopolamine
 - **Also used for motion sickness**



Mechanism of Action

- Antihistamine agents (H_1 receptor blockers)
 - Prevent cholinergic stimulation in **vestibular and reticular areas**, thus preventing N&V
 - Diphenhydramine (Dramamine), meclizine (Navoproxin), promethazine (Phenergan)
 - Also used for nonproductive cough, allergy symptoms, sedation
 - **Also used for motion sickness**

Mechanism of Action cont...

- Neuroleptic agents
 - Block dopamine receptors on the CTZ
 - chlorpromazine, prochlorperazine
 - Also used for **psychotic disorders, intractable hiccups**

Mechanism of Action cont...

- Prokinetic agents

- Block dopamine in the CTZ
- Cause CTZ to be **desensitized** to impulses it receives from the GI tract
- Also stimulate peristalsis in GI tract, enhancing emptying of stomach contents
- Metoclopramide (Primperan) and Domperidon (motinorm and motelium)
- Also used for **GERD, delayed gastric emptying**

Mechanism of Action cont...

- Serotonin blockers

- Block serotonin receptors in the GI tract, CTZ, and VC
- Dolasetron (Anzemet), granisetron (Kytril), ondansetron (Zofran)
- Used for N&V **for patients receiving chemotherapy** and **postoperative** nausea and vomiting

Mechanism of Action cont...

- **Tetrahydrocannabinoids (THC)**
 - Major psychoactive substance in marijuana
 - **Inhibitory effects on reticular formation, thalamus, cerebral cortex**
 - Alter mood and body's perception of its surroundings
 - dronabinol (Marinol)
 - **Used for N&V associated with chemotherapy, and anorexia associated with weight loss in AIDS patients**

Side Effects

- Vary according to agent used
- Stem from their nonselective blockade of various receptors

Nausea and vomiting hints

- Assess complete nausea and vomiting history, including precipitating factors
- Assess current medications
- Assess for contraindications and potential drug interactions

Nausea and vomiting hints

- Many of these agents cause **severe drowsiness**; warn patients about driving or performing any hazardous tasks
- Taking **antiemetics with alcohol** may cause **severe CNS depression**
- Teach patients to **change position slowly to avoid postural hypotensive effects**

Nausea and vomiting hints

- For chemotherapy, antiemetics are often given $\frac{1}{2}$ to 3 hours before a chemotherapy agent
- Monitor for therapeutic effects
- Monitor for adverse effects