

Managing Nausea



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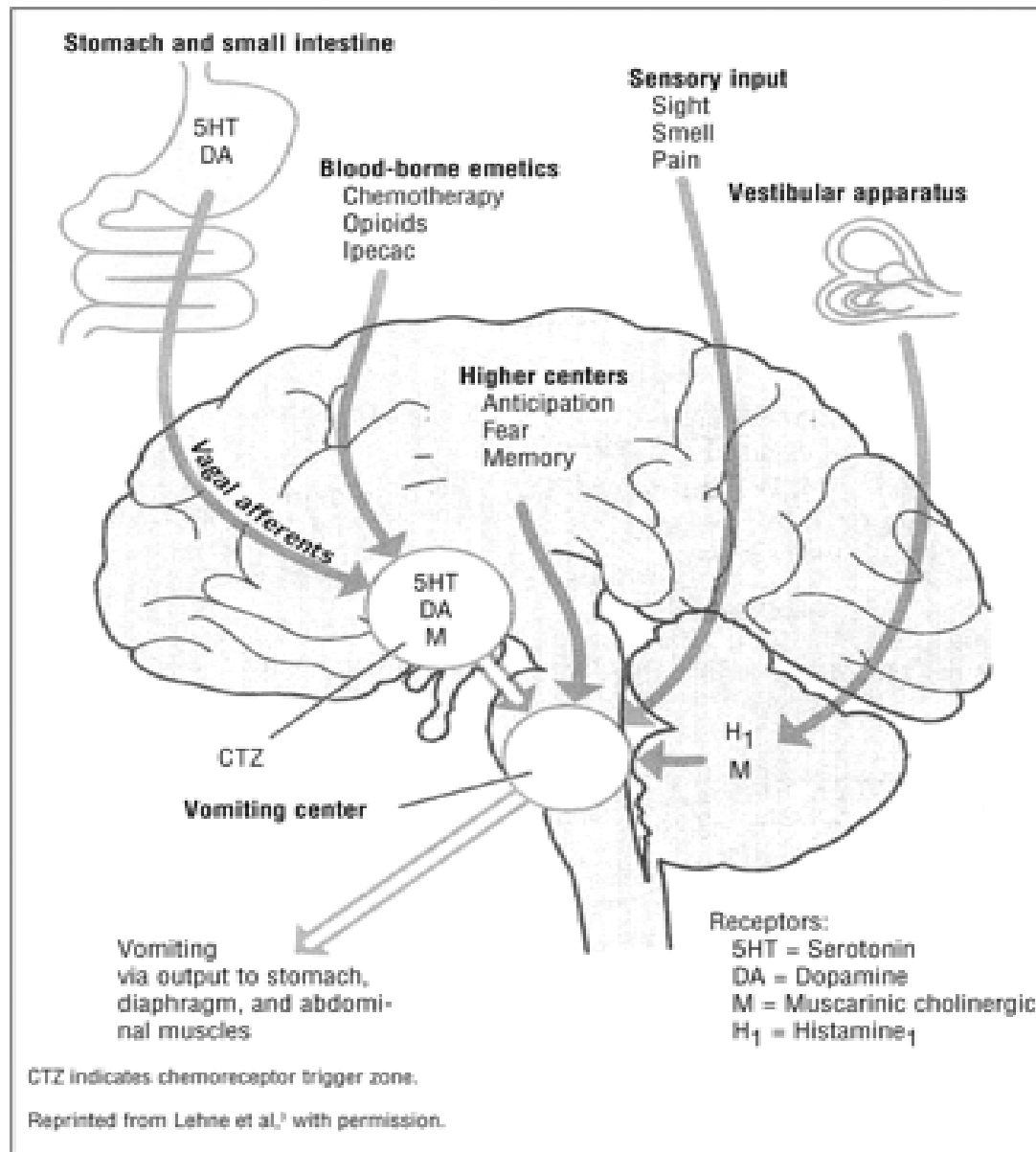
Objectives

- Pathophysiology of nausea
- Use vomit to direct assessment
- Cure nausea and manage nausea
- Choices for medical management – pros and cons
- Utilize case studies understand the complexity

Causes of Nausea



- Vomiting centre
- Chemoreceptor trigger zone
- Cerebral cortex
- Vestibular systems
- Gut and serosal visceral surfaces



Garrett, K., Tsuruta, K., Walker, S., Jackson, S., Sweat, M. (2003). Managing nausea and vomiting. Critical Care Nurse, Vol23 (1), p. 31-52.

History

- Timing of symptoms
- Food and fluid intake
- Drugs
- Pain
- Bowel habits
- Urinary output
- Affect of daily life



Examination

- Assessment of hydration
- Signs of infection
- Presence of jaundice
- Neurological exam
- Rectal exam
- Abdominal exam



Nausea = Vomit



Causes of Nausea

- V – Vestibular
- O – Obstruction
- M – DysMotility, EMotions
- I – Infection/ Inflammation
- T - Toxins

The Causes of Nausea and Vomiting (V.O.M.I.T.),
2nd ed (Hallenbeck, J.).

www.eperc.mcw.edu/fastFact

Categorize the Causes

<p style="text-align: center;">V</p> <p>Movement related</p>	<p>Features of abdominal tumor, vestibular disease or increased opioids</p>
<p style="text-align: center;">O</p> <p>Malignant bowel obstruction</p>	<ul style="list-style-type: none">• Onset insidious, can remain partial• Abdo pain 90%, colic 70%• Vomiting early – high• Vomiting later – large• Exclude constipation
<p style="text-align: center;">M</p> <p>Gastric stasis</p>	<ul style="list-style-type: none">• Fullness, epigastric pain, reflux, hiccoughs• Timing of vomiting• Symptoms resolved with vomiting

Categorize the Causes

<p style="text-align: center;">M</p> <p>Emotions/Anxiety</p>	<ul style="list-style-type: none">•Anticipatory•Challenged coping mechanisms, stress•Diagnosis of exclusion
<p style="text-align: center;">I</p> <p>Irritation or stretching of the meninges</p> <p>Irritation of mechanoreceptors Pelvic or abdominal tumor</p>	<ul style="list-style-type: none">•Headache, nausea lying flat, neurological signs and papilloedema•Confirmed on CT and MRI •Nausea and vomiting from stretched mechanoreceptors.•Diffuse pain, with or without radiating component•Radiology needed to confirm diagnosis
<p style="text-align: center;">T</p> <p>Chemical/Metabolic Toxicity</p>	<ul style="list-style-type: none">•Start of medication•Hypercalcemia with confusion•Confusion•Polyuria, nocturia•Blood chemistry, lytes, urea, creatinine,ca

Reversible Causes of Nausea



- Hypercalcemia – hydration and bisphosphonates
- Uremia – rehydration
- Gastritis – PPI
- Infection – ABX
- Constipation – laxatives
- Corticosteroids – decr. edema
- Emotions -anxiolytics

Metoclopramide (Maxeran)

- Dopamine antagonist and serotonin antagonist
- Affects the chemoreceptor trigger zone (CTZ)
- Affects gastric motility
- Affects acetylcholine – potential EPS
- Not for Parkinson's
- Po or sub cut

Chlorpromazine (Largactil), Prochlorperazine (Stemetil)

- Block dopamine receptors in the CTZ and blocks vagus nerve in GI tract
- Effective with opioid induced nausea
- Po or sub cut



Cropped from an original painting, *Miracle of Marco Spagnolo* (1681)
by [Giovanni Dall'Orto](#)

Ondansetron (Zofran), Granisetron(Kytril)

- 5HT3 antagonist
- Targets serotonin receptors in the CTZ
- Randomized control studies with chemotherapy
- Not impacting dopamine receptors therefore useful when risk of EPS is high
- No impact on motion sickness
- Po
- Expensive

Haloperidol (Haldol)

- D2 antagonists
- Negligible anticholinergic activity therefore less sedation but greater EPS
- Not prokinetic Ideal for opioid induced nausea
- Not with Parkinson's
- PO or Sub cut

Methotrimeprazine (Nozinan)

- Broad spectrum of anti-emetic activity
- Potent 5HT₃ and D₂ antagonism
- Sedating
- Start low dose

Aprepitant (Emend)

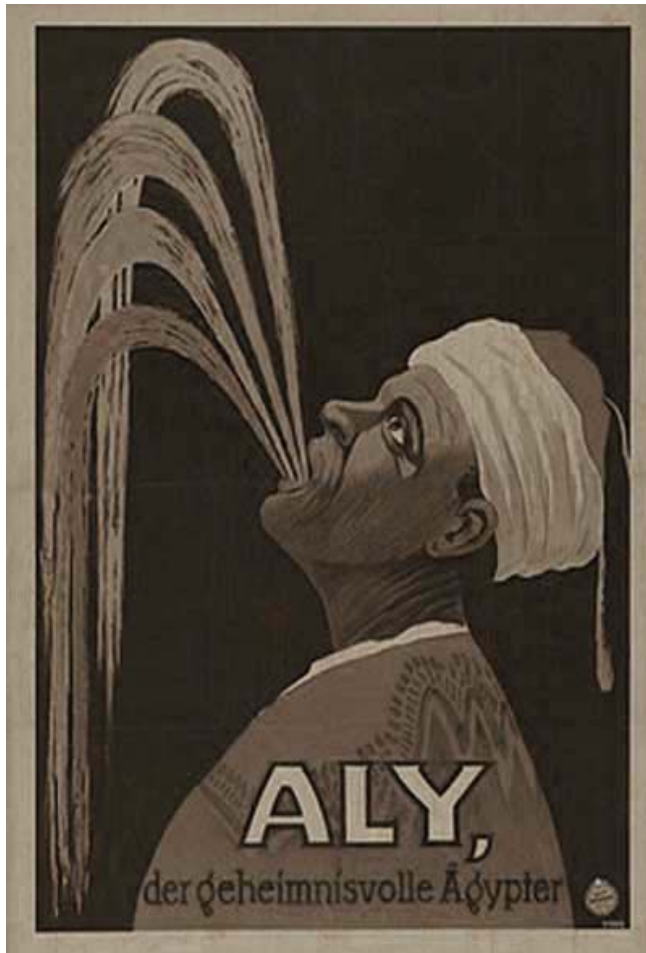


- Inhibits substance P
- Especially useful against CINV
- Especially with cisplatin based chemotherapy protocols
- Po

Dexamethasone (Decadron)

- Steroid
- Additive emetic effects with 5HT3, & metoclopramide
- Mechanism unknown
- Decreases edema
- Adverse effects – glucose intolerance, myopathy, osteopenia, and infections
- Po or sub cut

Nabilone, Dronabinol



- (THC)-
Tetrahydrocannabinoid
synthetic derivatives
- Direct inhibition of the
vomiting centre in the
medulla
- Low antiemetic
efficacy and adverse
side effects

Domperidone (Motilium)

- Antidopamine and GI prokinetic agent
- Similar to Maxeran
- Less EPS as poorly transient at blood brain barrier
- Parenteral formulation not easily accessible

Dimenhydrinate (Gravol)



- Antihistamine effects
- Useful for motion related nausea
- Bowel obstruction
- Of 2nd line for brain primary or mets
- Metabolites

Scopolamine

- Pure anticholinergic
- Useful for treatment of motion sickness
- Decreases gut secretions and decr. bowel cramping
- Sedating

Principles for Managing Emesis

- Principle of breakthrough tx is to give an additional agent from a different class. No one drug class is superior.
- Antiemetic drug choice dependant upon assessment
- ATC vs. PRN
- Ø po
- Multiple current agents
- Hydration

Along with treatments....

- Separate fluids from solid foods
- Size and type of meals; cold foods, non spicy, often juicy foods
- Cleansing mouth (assess for mouth ulcers), drinking water
- Hard tart candies
- Environment



Mr. N - 50 year old male

- Admitted after GP found lung nodules
- Sx: Weakness, fatigue, nausea
- Tx: admitted for lung biopsy
- Started on opioids on admission for thoracic pain 6/10
- What do we want to do?



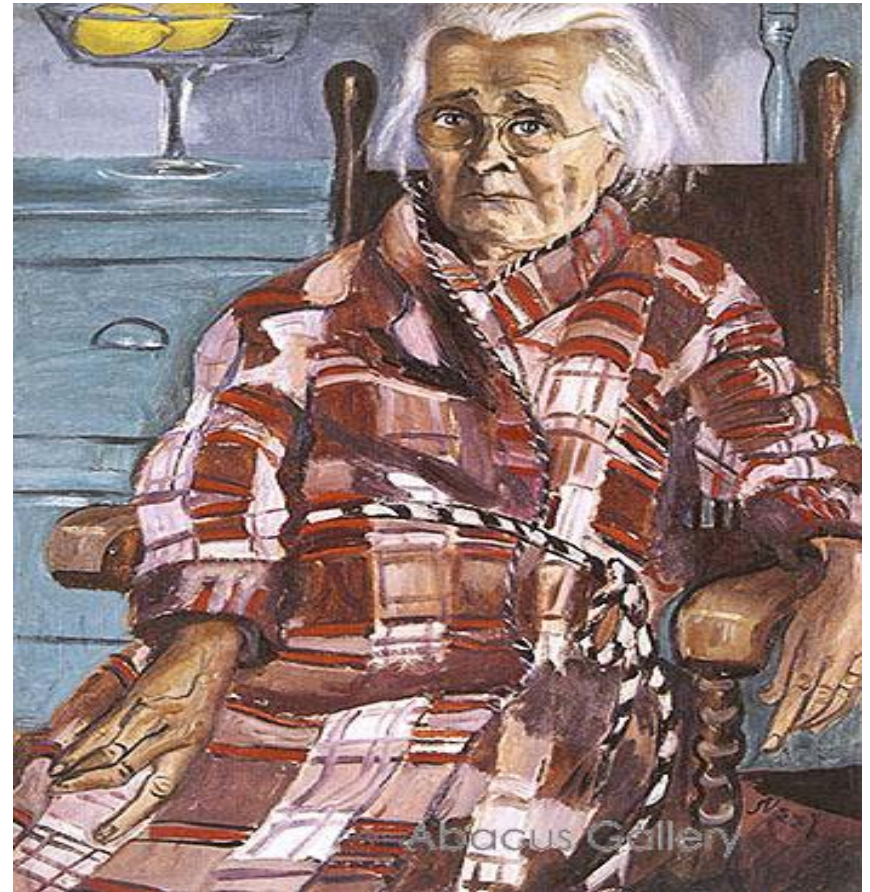
What to do?

- Hydrate
- Assess/ treat hypercalcemia
- Bone scan to assess involvement
- Bowel routine
- Correct electrolyte imbalances
- Antiemetic ATC vs. PRN



Mrs. M – 78 year old with metastatic ovarian ca

- Admitted abdominal distention, nausea
- What do we want to do?



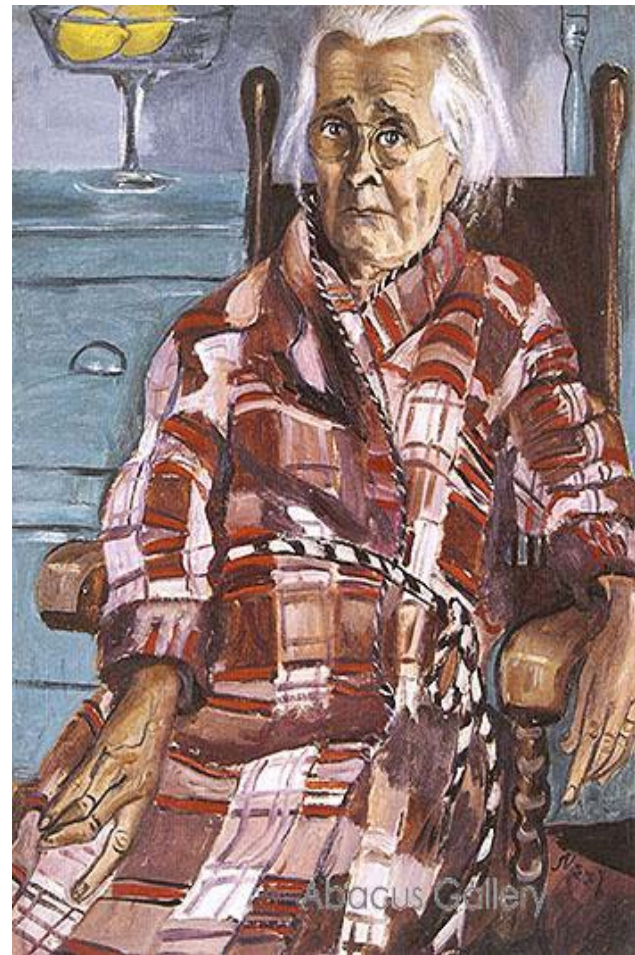


R

supine

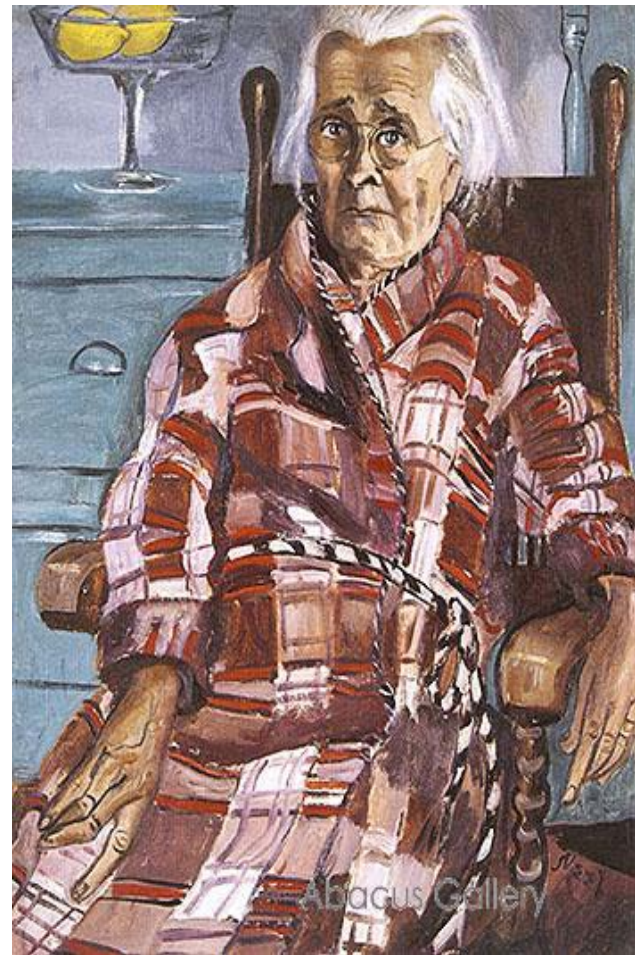
Mrs. M – 78 year old with metastatic ovarian ca

- Hydrate
- Bowel routine
- Maxeran controlled nausea 2 days
- Recurrence with aggressive emesis



Mrs. M – 78 year old with metastatic ovarian ca

- Start Dex
- Start Octreotide
- Start Haldol
- Surgical consult
- NG
- Venting PEG



Mrs. J – 69 year old female treated for breast ca



- 69 year old
- Treated for breast ca with Adriamycin and Cyclophosphamide
 - Decadron 20mg at treatment then 8mg b.i.d.
 - Granisetron 1mg Q12h

Mrs. J – 69 year old female treated for breast ca



- Regimen needs to be adjusted!
- Changed Granisetron for Ondansetron 8mg q12h
- Continue Decadron
- Adjuvant Aprepitant (Emend) 125 mg po ac chemo and 80mg po daily x 2 days

Significant points



- You need to continually reassess
- Side effects of antiemetics
- Layered treatments
- You can feel desperate to relieve the suffering of nausea

“Quick-Pick” Antiemetic List

Opioid induced nausea	Metoclopramide, domperidone or haloperidol
Malignant bowel obstruction	Haloperidol (1 st line), or dimenhydrinate or 5HT3 antagonist (2 nd line)
Chemotherapy or radiotherapy induced	5HT3 antagonist (1 st line), cannabinoids (2 nd line), corticosteroids, metochlopramide
Anticipatory or anxiety related	Benzodiazepine anxiolytic
Motion sickness	Dimenhydrinate, prochlorperazine or hyosine hydrobromide

Questions?

