



Hospice Pharmacotherapy 101: Gastrointestinal Symptoms

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Disclosure

- I have no relevant financial relationships with manufacturers of any commercial products and/or providers of commercial services discussed in this presentation.
- This discussion will include the use of medications for off-label indications.

Objectives

- Review pathophysiology and assessment of common gastrointestinal (GI) symptoms in end of life
- Discuss treatment options for common GI symptoms in end of life
- Develop a plan for addressing GI symptoms based on clinical presentation and patient-specific goals of care

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GI Symptoms: Pathophysiology and Underlying Causes

	Anorexia/Cachexia	Nausea/Vomiting	Constipation	Diarrhea
Gastrointestinal	<ul style="list-style-type: none"> •Gastric stasis •Nausea/vomiting •Bowel obstruction •Dysphagia •Mucositis •Abdominal malignancy or metastases 	<ul style="list-style-type: none"> •Gastric stasis •Constipation •Bowel obstruction •Abdominal malignancy or metastases •Recent abdominal surgery •Ileus •Pancreatitis •Peptic ulcer disease •Local radiation 	<ul style="list-style-type: none"> •Gastric stasis •Bowel obstruction •Diverticular disease •Hemorrhoids •Irritable bowel syndrome 	<ul style="list-style-type: none"> •Gastroenteritis •C. difficile infection •Fecal impaction •Pancreatic cancer •Carcinoid syndrome •Colorectal cancer •Local radiation •Inflammatory bowel disease •Irritable bowel syndrome •Intestinal resection
Other comorbidities	<ul style="list-style-type: none"> •Anxiety •Depression 	<ul style="list-style-type: none"> •Autonomic dysfunction •↑ intracranial pressure (CNS malignancy, head trauma) •Vertigo (Meniere's disease, labyrinthitis) •Metabolic disturbances (hyperglycemia, hypercalcemia, hyponatremia, uremia) •Renal or hepatic failure •Anxiety 	<ul style="list-style-type: none"> •Autonomic dysfunction •Depression •Diabetes •Amyotrophic lateral sclerosis •Spinal cord compression •Dehydration •Electrolyte disturbances (hypercalcemia, hypokalemia) •Hypothyroidism 	<ul style="list-style-type: none"> •Diabetes •Hyperthyroidism •Lymphoma •Anxiety
Medications	<ul style="list-style-type: none"> Stimulants, antidepressants, methylphenidate, nicotine replacement therapy, chemotherapy 	<ul style="list-style-type: none"> Opioids, antibiotics, non-steroidal anti-inflammatory drugs (NSAIDs), antidepressants, digoxin, chemotherapy 	<ul style="list-style-type: none"> Opioids, antacids, anticholinergics, antihistamines, calcium channel blockers, diuretics 	<ul style="list-style-type: none"> Antibiotics, digoxin, colchicine, laxatives, metoclopramide, magnesium antacids, chemotherapy

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GI Symptoms: Assessment

	Anorexia/Cachexia	Nausea/Vomiting	Constipation	Diarrhea
Characteristics	<ul style="list-style-type: none"> •Reduced intake •Dysphagia •Altered food perception 	<ul style="list-style-type: none"> •Does vomiting accompany the nausea? •Does nausea accompany the vomiting? •Does vomiting relieve nausea? •Quality of emesis (amount, color, presence of undigested food, etc.) 	<ul style="list-style-type: none"> •Normal bowel movement pattern •Duration of constipation •Quality of stool (amount, texture, color, etc.) •Physical exam: abdominal tenderness/distention, hemorrhoids 	<ul style="list-style-type: none"> •Onset of diarrhea •Frequency of bowel movements •Quality of stool (amount, texture, color, etc.) •Mucus or blood present in stool
Associated Symptoms	<ul style="list-style-type: none"> •Early satiety •Nausea/vomiting •Constipation •Pain •Anxiety •Depression 	<ul style="list-style-type: none"> •Pain •Anxiety •Reflux •Headache •Confusion •Vision changes •Change in bowel habits 	<ul style="list-style-type: none"> •Nausea/vomiting •Pain •Bloating or flatulence •Anorexia •Lethargy •Feeling of incomplete evacuation 	<ul style="list-style-type: none"> •Nausea/vomiting •Pain •Fever
Triggers		<ul style="list-style-type: none"> •Sight or smell of food •Onset shortly after eating and/or drinking •Movement or position changes 	<ul style="list-style-type: none"> •Changes in dietary intake, fluid intake, and/or physical activity 	<ul style="list-style-type: none"> •Changes in dietary intake
Medications	<ul style="list-style-type: none"> •Stimulants, antidepressants, methylphenidate, nicotine replacement therapy, chemotherapy 	<ul style="list-style-type: none"> •What medications have been tried and have they been effective? •Is the patient able to take medications? •Opioids, antibiotics, non-steroidal anti-inflammatory drugs (NSAIDs), antidepressants, digoxin, chemotherapy 	<ul style="list-style-type: none"> •What medications have been tried and have they been effective? •Opioids, antacids, anticholinergics, antihistamines, calcium channel blockers, diuretics 	<ul style="list-style-type: none"> •What medications have been tried and have they been effective? •Antibiotics, digoxin, colchicine, laxatives, metoclopramide, magnesium antacids, chemotherapy

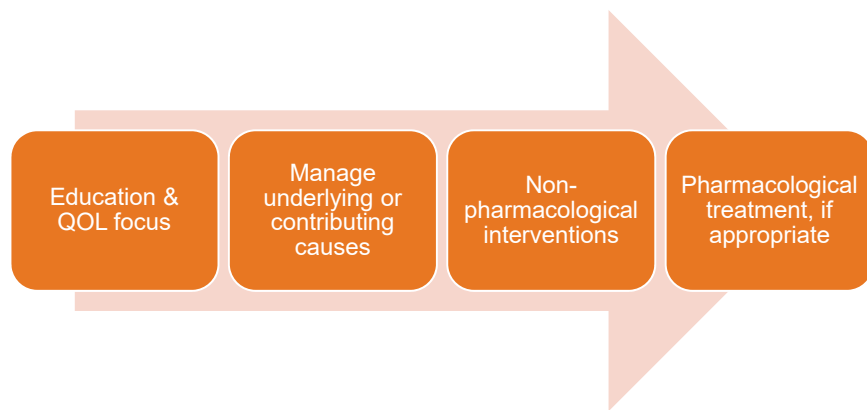
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Take Note!

A thorough patient assessment is key to selecting the appropriate medication

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General Treatment Approach



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Anorexia/Cachexia

Anorexia/Cachexia: Background

- Definitions
 - Anorexia: reduced or loss of appetite as reported by the patient
 - Cachexia: severe loss of body weight, muscle mass, and fat loss; increased protein catabolism
 - Cachexia of chronic disease is not reversible with nutrition
 - Anorexia and cachexia are experienced by most terminally ill patients
 - Often part of the dying process
 - Most commonly associated with late-stage cancer
 - Often most distressing to the family/caregivers
 - Associated symptoms (nausea, anxiety, constipation) can be more distressing for the patient
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Anorexia/Cachexia: Family/Caregiver Education

- Physical changes at end-of-life
 - Anorexia and cachexia are a normal part of decline
 - Reassurance of comfort
 - People can be comfortable with little to no food or drink
 - Forced feeding will not prolong life and can lead to complications
 - Caregiver support
 - Weight loss is not a reflection of poor caregiving
 - Identify religious beliefs or culture
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Anorexia/Cachexia: Non-Pharmacologic Interventions

- Meal planning
 - Give small, frequent meals and allow patient to eat until satisfied
 - Serve meals in a room separate from where the patient sleeps
 - Offer soft foods that are easier to swallow
 - Avoid meals with strong odors unless requested
 - Enlist social work/spiritual care support
 - Generate ideas for spending time with the patient other than over meals
 - Suggest alternatives to feeding when there is a sense of wanting to “do” something
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Anorexia/Cachexia: Pharmacological Treatment Considerations

- Medications should only be considered as adjuncts to non-pharmacologic interventions
 - Ensure that the patient desires appetite stimulation prior to initiating medications
 - Medications that improve appetite have limited benefit and are associated with adverse effects
 - Weight gain is typically adipose tissue
 - Not an increase in protein utilization or muscle mass
 - Discontinue medication if no benefit within 2-6 weeks of treatment
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Anorexia/Cachexia: Pharmacological Treatment

Medication	Adult Starting Dose	Comments
Corticosteroids		
Prednisone (Deltasone®)	10 mg PO QAM	<ul style="list-style-type: none"> Useful for patients who may benefit from a corticosteroid for pain or dyspnea
Dexamethasone (Decadron®)	2 mg PO QAM	<ul style="list-style-type: none"> Useful for patients who may benefit from a corticosteroid for pain or dyspnea Potentially causes less edema than prednisone
Antidepressant		
Mirtazapine (Remeron®)	7.5 mg PO HS	<ul style="list-style-type: none"> Useful for patients with insomnia or depression
Hormonal Agent		
Megestrol (Megace®)	400 mg PO daily	<ul style="list-style-type: none"> Risk of thromboembolism in elderly and those with limited mobility May take up to 8 weeks to see benefit
Cannabinoid		
Dronabinol (Marinol®)	2.5 mg PO BID	<ul style="list-style-type: none"> May be less effective than other options Lowers seizure threshold; may cause syncope
Antihistamine		
Cyproheptadine (Periactin®)	4 mg PO TID	<ul style="list-style-type: none"> Limited data on effectiveness Associated with sedation and depression

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Mini Case 1 - Poll Question

A 71 year old male with prostate cancer complains of decreased appetite and weight loss. He desires an appetite stimulant so that he can enjoy his favorite foods again. He is no longer ambulating and prognosis is weeks to month. Medical history includes bone metastases, atrial fibrillation, CVA, and COPD.

Which of the following appetite stimulants is **NOT** the best choice for this patient?

- A. Megestrol
- B. Prednisone
- C. Mirtazapine
- D. Dexamethasone

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Mini Case 1 - Poll Question

A 71 year old male with prostate cancer complains of decreased appetite and weight loss. He desires an appetite stimulant so that he can enjoy his favorite foods again. He is no longer ambulating and prognosis is weeks to month. Medical history includes bone metastases, atrial fibrillation, CVA, and COPD.

Which of the following appetite stimulants is **NOT** the best choice for this patient?

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Nausea/Vomiting

Nausea/Vomiting: Background

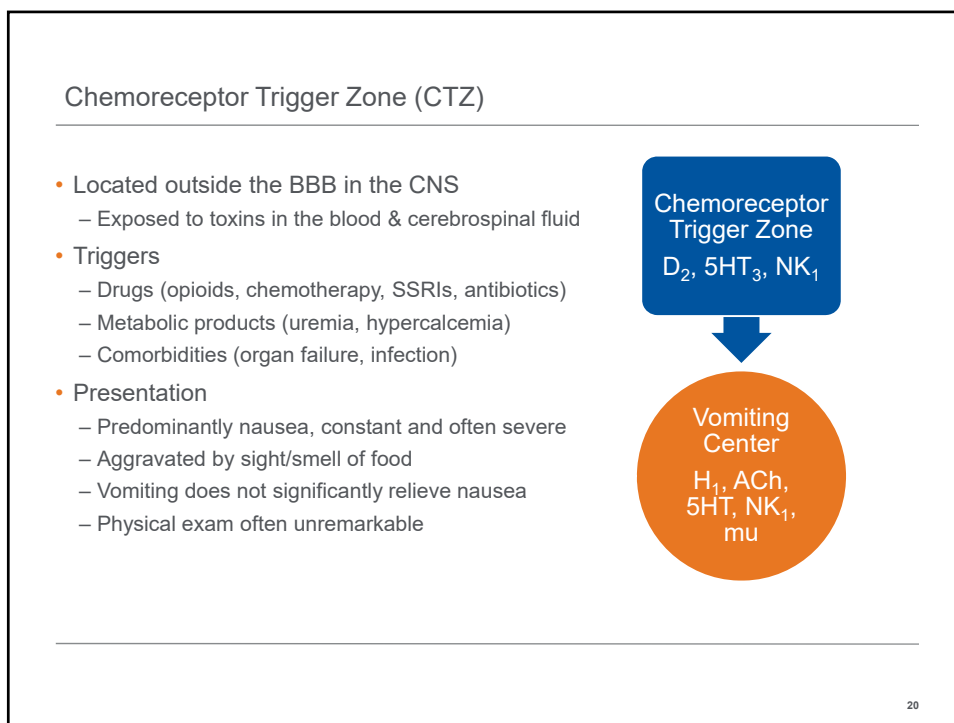
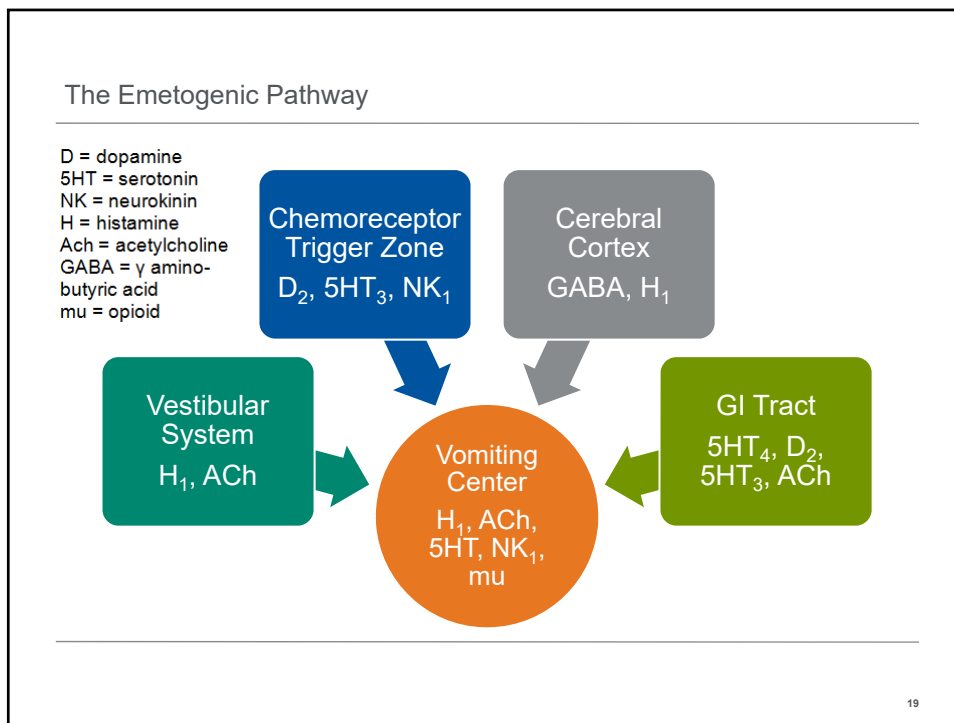
- Definitions
 - Nausea: Unpleasant subjective feeling that one will imminently vomit
 - Vomiting (emesis): Expulsion of gastric contents through the mouth
 - May often have nausea without vomiting, or (less frequently) vice versa
 - Most report nausea is more common and more disabling
 - Prevalence
 - Advanced cancer patients – up to 70%
 - Palliative patients with non-malignant conditions – up to 50%
 - Opioid use – up to 40%
 - Reported more often by women than men
 - Causes substantial psychological distress
 - Creates fears of starvation, dehydration, or disease progression
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Nausea/Vomiting: Treatment Approach

- Empiric treatment
 - Use same medication for initial treatment regardless of presentation
 - Less-preferred method among most hospice and palliative care practitioners
 - Mechanism-based treatment
 - Treatment selection guided by presentation of symptoms and knowledge of the emetogenic pathway
 - Method used by most hospice and palliative care practitioners
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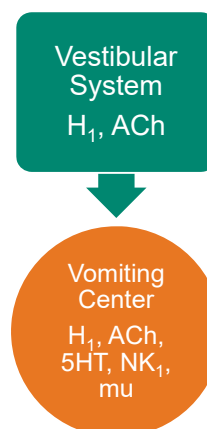
Chemoreceptor Trigger Zone (CTZ)

Medication	Adult Starting Dose	Routes of Administration	Comments
Dopamine Antagonists			
Haloperidol (Haldol®)	0.5 mg q4h	PO, SL, PR, IV, SC, IM	<ul style="list-style-type: none"> Versatile, low cost, minimal sedation Low EPS risk at low starting doses Avoid in Lewy body dementia
Prochlorperazine (Compazine®)	10 mg PO q6h 25 mg PR q12h	PO, PR, IV, IM	<ul style="list-style-type: none"> More sedating than haloperidol Use tablets PO and suppositories PR Suppositories are high cost
Chlorpromazine (Thorazine®)	25 mg q6h	PO, IV, IM	<ul style="list-style-type: none"> High risk for orthostatic hypotension and sedation Avoid in Lewy body dementia
Promethazine (Phenergan®)	12.5 mg q6h	PO, PR, IV, IM	<ul style="list-style-type: none"> Very sedating; might be most useful for stopping emesis Suppositories are high cost
5HT₃ Antagonists			
Ondansetron (Zofran®)	8-24 mg prior to chemo or surgery	PO, SL, IV, IM	<ul style="list-style-type: none"> Continue 1-2 weeks beyond procedure Cost at pharmacy is variable Last-line for most hospice patients

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Vestibular System

- Vestibulocochlear nerve
 - Carries input from inner ear to brainstem
 - Labyrinthine inputs can trigger the vomiting center
- Triggers
 - Movement in the inner ear
 - Opioids
 - Tumors at base of skull
- Presentation
 - Intermittent symptoms
 - Nausea/vomiting with position changes
 - When raising the head of the bed, getting out of bed
 - Nausea/vomiting with movement
 - Walking, wheelchair movement, riding in a car



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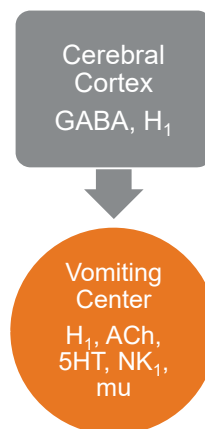
Vestibular System

Medication	Adult Starting Dose	Routes of Administration	Comments
Antihistamines			
Meclizine (Dramamine® Less Drowsy, Antivert®)	25 mg q6h	PO	<ul style="list-style-type: none"> Least sedating; available OTC Drug of choice for vertigo Anticholinergic side effects
Hydroxyzine (Vistaril®, Atarax®)	25 mg q6h	PO, IM	<ul style="list-style-type: none"> May also treat anxiety Sedating; anticholinergic side effects
Anticholinergics			
Scopolamine (Transderm-Scop®)	1.5 mg TD patch behind ear q72h	TD	<ul style="list-style-type: none"> Prophylaxis and treatment of motion sickness; blocks vomiting center Sedating; anticholinergic side effects Do not cut patches
Glycopyrrolate (Robinul®)	0.2 mg SC q6h 1 mg PO q6h	SC, IV, IM, PO	<ul style="list-style-type: none"> Does not cross blood-brain barrier Less sedation; higher cost
Hyoscyamine (Levsin®)	0.125 mg q4h	PO, SL	<ul style="list-style-type: none"> Might already be in the patient's home for terminal secretions

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Cerebral Cortex

- Receives input from the 5 senses
- Triggers
 - Anxiety, recalling past events
 - Irritation or increased intracranial pressure (ICP)
- Presentation
 - Anxiety
 - Waves of nausea, with or without vomiting
 - Nausea may be relieved by distraction
 - Increased ICP
 - Diurnal headache, nausea (possibly diurnal)
 - Neurological signs might be present



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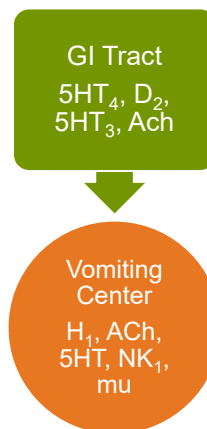
Cerebral Cortex

Medication	Adult Starting Dose	Routes of Administration	Comments
Anxiolytics			
Lorazepam (Ativan®)	0.5 mg q4h	PO, SL, PR, IV, SC, IM	<ul style="list-style-type: none"> Benzodiazepine of choice in elderly population Any benzo will treat anxiety; choice driven by patient-specific factors
Hydroxyzine (Vistaril®, Atarax®)	25 mg q6h	PO, IM	<ul style="list-style-type: none"> Antihistamine with weak anxiolytic properties Sedating; anticholinergic side effects
Corticosteroid			
Dexamethasone (Decadron®)	4 mg BID	PO, PR, SC, IV	<ul style="list-style-type: none"> Readily crosses blood-brain barrier Useful for nausea from raised ICP Give twice daily doses in the morning and early afternoon to avoid insomnia

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Gastrointestinal (GI) Tract

- Input received from peripheral pathways
 - Mechanoreceptors and chemoreceptors
 - GI tract, viscera, serosa
 - Input directed to both the CTZ and vomiting center
- Triggers
 - Impaction, obstruction (stool, metastases)
 - Autonomic dysfunction (e.g., Parkinson's)
 - Medications (opioids, NSAIDs)
 - GI bleeding, ulceration
 - GI malignancy, liver disease, bile duct obstruction
 - Local radiation

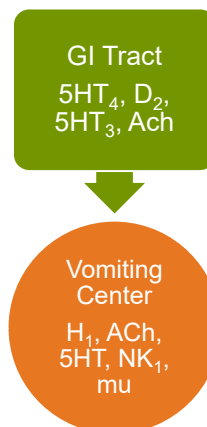


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Gastrointestinal (GI) Tract

• Presentation

- Gastric stasis
 - Epigastric pain, fullness, nausea, early satiety, reflux
 - Vomiting large volumes; projectile vomiting
 - Vomiting relieves the nausea
- GI irritation
 - Dark, tarry stools, coffee ground emesis
 - Diarrhea, nausea, occasional vomiting, altered bowel habits



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Gastrointestinal (GI) Tract

Medication	Adult Starting Dose	Routes of Administration	Comments
Prokinetics			
Metoclopramide (Reglan®)	5-10 mg 30 mins before meals and at bedtime	PO, PR, IV, SC, IM	<ul style="list-style-type: none"> • Upper GI tract prokinetic • Also useful in CTZ nausea and partial bowel obstruction • Use smallest dose for shortest time
Erythromycin	250 mg TID before meals	PO	<ul style="list-style-type: none"> • Gastric motilin agonist • Caution QT prolongation • Limit use to 4 weeks or less
Proton Pump Inhibitor			
Omeprazole (Prilosec®)	20-40 mg daily	PO	<ul style="list-style-type: none"> • Use for GERD or GI ulcer 4-8 weeks, depending on indication • OTC dosage forms most cost-effective

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Nausea/Vomiting: Miscellaneous Therapies

- Olanzapine (Zyprexa®)
 - May exert action on several portions of the emetogenic pathway
 - Studied in chemotherapy-induced nausea/vomiting
 - Starting dose for palliative care: 5mg PO at bedtime
 - Side effects: sedation, dry mouth, constipation, weight gain, hyperglycemia
 - Good option for nausea/vomiting refractory to other therapies, but high cost
- Cannabinoids
 - CB₁ cannabinoid receptors found throughout CNS, GI tract, and rest of the body
 - CB₁ receptor agonists such as Δ⁹-THC from the cannabis plant have an effect on nausea and vomiting
 - FDA-approved cannabinoids: dronabinol (Marinol®) and nabilone (Cesamet®)
 - Not more effective than traditional antiemetics; high cost
 - Only approved for chemotherapy-induced nausea/vomiting
 - Lowers seizure threshold; may cause hypotension and syncope

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Opioid-Induced Nausea/Vomiting

- Multiple emetogenic pathways involved
 - Chemoreceptor trigger zone
 - Gastroparesis and constipation
 - Sensitization of the vestibular nerve
- Generally occurs with opioid initiation or dose escalation
 - Tolerance develops after 3-5 days of continued use
- Treatment
 - Schedule one of the following for several days, then taper and d/c:
 - Haloperidol 0.5-1 mg by mouth q8h
 - Metoclopramide 5-10 mg by mouth QID
 - Could also attempt to lower opioid dose by 10-20%, but may compromise pain control

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Take Note!

People develop tolerance to the nauseating effects of opioids typically within 3-5 days of use.

If the opioid dose cannot be reduced without compromising pain control, schedule haloperidol 0.5mg PO every 8 hours for 7 days then taper and discontinue.

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Patient Case: Amanda Anderson

45 year old female on hospice with recurrent breast cancer and lung metastases. Patient is primary care provider for 2 children under the age of 10, and has a supportive husband who works full time outside of their home.

Medications:

- Glucophage (Metformin®) 1000 mg PO BID
 - Glucotrol (Glipizide XL®) 10 mg PO qam
 - Dexamethasone (Decadron®) 4 mg PO qam
 - Morphine ER (MS Contin®) 15 mg PO q8h ATC
 - Morphine sulfate 20mg/ml solution (Roxanol®) 5 mg PO q4h PRN breakthrough pain
 - Lorazepam (Ativan®) 0.5 mg PO QHS and 0.25 mg PO q4h PRN anxiety
-

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Patient Case: Amanda Anderson

At the next RN visit, Amanda says she is sleeping better at night and her feelings of being overwhelmed have diminished. However, she now complains of nausea.

Assessment:

- No diet changes; drinking 3-5 glasses of water per day with medications
 - Nausea is moderate, constant, and not associated with movement
 - The smell of food makes nausea worse
 - Has not had a BM in 3 days (normal BM pattern is once daily)
 - Abdomen is mildly distended
 - Hard stool is present in the rectal vault
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Patient Case: Amanda Anderson

What might be the cause of Amanda's nausea?

- A. Gastric stasis
 - B. Chemoreceptor trigger zone
 - C. Increased intracranial pressure
 - D. More than 1 of the above
-

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Patient Case: Amanda Anderson

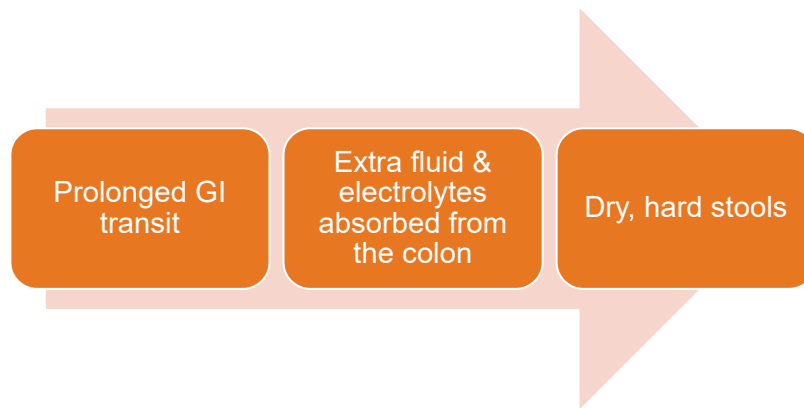
What might be the cause of Amanda's nausea?

- A. Gastric stasis
- B. Chemoreceptor trigger zone
- C. Increased intracranial pressure
- D. More than 1 of the above**

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Constipation

Constipation



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Constipation: Background

- Constipation is a common and distressing symptom, especially in patients with advanced illness
 - Some studies show a prevalence of 23-70% in patients with a terminal illness
 - This prevalence approaches 90% in patients on opioid therapy
- Normal bowel frequencies vary with each patient
 - In general, having infrequent, hard, small bowel movements may indicate constipation
- Opioid-induced constipation (OIC)
 - Opioids relieve pain by activating the mu-opioid receptor in the central nervous system
 - They also activate mu-receptors in the GI tract
 - Reduces fluid secretion and increase water absorption from the colon
 - Activation of the mu-receptor in the large intestine reduces peristalsis of the bowel

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Constipation: Prevention

- Identify patient specific factors that may contribute to constipation
 - Disease states
 - Lifestyle
 - Environmental
 - Medications
 - Discontinue medications if possible
 - Add stool softeners/laxatives to prevent constipation
-

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Constipation: Non-Pharmacologic Interventions

- Fluid
 - Increase fluid intake as the patient can tolerate
 - 2 liters of fluid daily required for the prevention of constipation
 - Consider foods with a high water content
 - Soups, fruits, yogurt
 - Fiber
 - Fiber alone is not sufficient at preventing opioid induced constipation
 - May cause impaction without adequate water intake (1.5 liters daily)
 - Avoid in patients at an increased risk of bowel obstruction, immobile/limited mobility
 - Dietary fiber vs fiber supplement
 - Environmental
 - Appropriate privacy, bedside commodes
 - Footstool for optimal positioning
-

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Non-pharmacological nutritional additions

Bran-Applesauce-Prune (BAP)	<ul style="list-style-type: none"> • 1 cup applesauce + 1 cup oat bran + $\frac{3}{4}$ cup prune juice • 1-2 tablespoons daily
Powder Pudding	<ul style="list-style-type: none"> • 1 cup prune juice + 1 cup bran cereal + 1 cup applesauce • 2 tablespoons daily
Yakima Paste	<ul style="list-style-type: none"> • Boil 1 lb prunes + 1 lb raisins + 1 lb figs + 16 oz brewed senna tea for 5 minutes • Add 1 cup brown sugar + 1 cup lemon juice to form paste • Freeze and serve 1-3 teaspoons daily
Senna Tea	<ul style="list-style-type: none"> • 3-4 ounces of tea leaves to 2.5 cups boiling water and steep for 5 minutes

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Constipation: Pharmacological Treatment

- Goal is to restore normal bowel frequency and prevent further constipation
- Clinical Pearls
 - Evaluate the cause of constipation in order to determine the most appropriate medication
 - Patients taking opioids will require a stimulant laxative (with or without a stool softener)
- Medication Options
 - Stimulants
 - Stool softener
 - Lubricants
 - Osmotic laxatives
 - Bulk forming agents (fiber)
 - Opioid antagonists
 - Other miscellaneous agents

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Stimulant Laxatives

- Direct stimulation of the myenteric plexus
 - Improves propulsive action, shortens transit time

Medication	Adult Starting Dose	Comments
Senna (Senokot®, Ex-Lax®)	2 tabs PO daily	<ul style="list-style-type: none"> • Liquid formulation available • Onset of action 6-12 hours
Senna + docusate (Senna S®)	2 tabs PO daily	<ul style="list-style-type: none"> • Crushed docusate has a bitter taste • Onset of action 6-12 hours
Bisacodyl (Dulcolax®)	10 mg PR daily PRN 5-15 mg PO daily	<ul style="list-style-type: none"> • Oral onset of action 6-12 hours • Rectal onset of action 15-60 mins • Oral tablet is enteric coated • Suppositories not effective if rectum is full of stool

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Stool Softener

- Increases fluid secretion into the colon
- Reduces surface tension
- Promotes penetration of water into stool

Medication	Adult Starting Dose	Comments
Docusate sodium (Colace®)	100 mg PO BID	<ul style="list-style-type: none"> • Onset of action 12-72 hours • Ineffective without adequate fluid intake • Crushed tablets have a bitter taste • Liquid formulation available, also has bitter taste & may cause throat irritation

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Lubricants

- Softens and lubricates impacted stool

Medication	Adult Starting Dose	Comments
Mineral oil (Fleet Oil®)	15-45 ml PO in 24 hours	<ul style="list-style-type: none"> • Aspiration risk
Vaseline® Balls	3 balls PO daily until BM	<ul style="list-style-type: none"> • Off-label use • Good for high impactions • Less aspiration risk • Do not use with docusate

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Osmotic Laxatives

- Increases intestinal volume and consistency by retaining osmotic equivalent of water in the intestine

Medication	Adult Starting Dose	Comments
Glycerin	1 suppository PR daily PRN	<ul style="list-style-type: none"> • For dry, hard stool in the rectum
Milk of Magnesia	30-60 ml PO daily to BID	<ul style="list-style-type: none"> • Onset of action 30 minutes to 3 hours
Sorbitol 70%	15-30 ml PO daily to QID	<ul style="list-style-type: none"> • Cramping, flatulence • More palatable than lactulose • Onset of action 12-96 hours
Lactulose (Chronulac®)	15-30 ml PO daily to QID	<ul style="list-style-type: none"> • Cramping, flatulence • Onset of action 12-96 hours
Polyethylene glycol (Miralax®)	17 g in 8oz water daily	<ul style="list-style-type: none"> • May mix in water, juice, soda, coffee or tea • Onset of action 12-96 hours
Magnesium citrate	195-300 ml PO daily	<ul style="list-style-type: none"> • Onset of action 30 minutes to 6 hours • Caution magnesium toxicity in renal failure

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Bulk Forming Agents (Fiber)

- Add volume and soften stool
- All are available OTC
- Require 8oz of water
- Avoid in patients who are at risk for bowel obstruction
- Products
 - Psyllium (Metamucil®), methylcellulose (Citrucel®), calcium polycarbophil (Fiber-Con®), inulin (Fiber Choice®), wheat dextrin (Benefiber®)

Medication	Adult Starting Dose	Comments
Fiber supplements	1-3 doses PO per day	<ul style="list-style-type: none"> • Soluble fiber tends to cause less gas and bloating • Wheat dextran and inulin are clear-dissolving • Onset of action 12-72 hours

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Enemas

- Use when rapid relief is required
- Induce BM by distension of rectum and colon

Medication	Adult Starting Dose	Comments
Mineral oil enema (Fleet Oil Enema®)	1 enema PR daily PRN	<ul style="list-style-type: none"> • Onset of action 30-60 minutes
Castile Soap enema	1 enema PR daily PRN	<ul style="list-style-type: none"> • AKA "soap suds" • Onset of action 15-30 minutes
Sodium phosphates enema (Fleet®)	1 enema PR daily PRN	<ul style="list-style-type: none"> • Onset of action 15-30 minutes • Increased cramping and electrolyte imbalances • FDA black box warning for acute phosphate nephropathy
Docusate (DocuSol Mini®)	1 enema PR 1-3 times daily PRN	<ul style="list-style-type: none"> • Onset of action 15-30 minutes

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Opioid Antagonists

- Peripherally acting mu opioid receptor antagonist
 - Does not compromise pain control
- Indicated for opioid-induced constipation (OIC) only

Medication	Adult Starting Dose	Comments
Methylnaltrexone (Relistor®)	<i>Weight-based:</i> 38-63 kg: 8 mg SC daily PRN 62-114 kg: 12 mg SC daily PRN 450 mg PO daily	<ul style="list-style-type: none"> • 2nd line for OIC after stimulants • Avoid in bowel obstruction • Onset of action 30-60 mins
Naloxegol (Movantik®)	25 mg PO QAM on an empty stomach	<ul style="list-style-type: none"> • OIC in chronic non-cancer pain • Do not crush or chew • Avoid grapefruit
Naldemedine (Symproic®)	0.2 mg PO daily	<ul style="list-style-type: none"> • OIC in chronic non-cancer pain

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Miscellaneous Agents

- Increase intestinal secretion of fluid and electrolytes
- Shorten transit time

Medication	Adult Starting Dose	Comments
Guanylate Cyclase-C Agonists		
Linacotide (Linzess®)	145 mcg PO daily	<ul style="list-style-type: none"> • Indicated for constipation-predominate IBS or chronic idiopathic constipation • Do not open or chew capsules
Plecanatide (Trulance®)	3 mg PO daily	<ul style="list-style-type: none"> • Indicated for chronic idiopathic constipation • May be crushed and mixed with water or applesauce for patients with swallowing difficulty
Chloride channel activator		
Lubiprostone (Amitiza®)	24 mcg PO BID	<ul style="list-style-type: none"> • 2nd line for OIC after stimulants • Do not open or chew capsules • Concurrent use with methadone may diminish effectiveness of lubiprostone

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Patient Case: Amanda Anderson

45 year old female on hospice with recurrent breast cancer and lung metastases. Patient is primary care provider for 2 children under the age of 10, and has a supportive husband who works full time outside of their home.

Medications:

- Glucophage (Metformin®) 1000 mg PO BID
 - Glucotrol (Glipizide XL®) 10 mg PO qam
 - Dexamethasone (Decadron®) 4 mg PO qam
 - Morphine ER (MS Contin®) 15 mg PO q8h ATC
 - Morphine sulfate 20mg/ml solution (Roxanol®) 5 mg PO q4h PRN breakthrough pain
 - Lorazepam (Ativan®) 0.5 mg PO QHS and 0.25 mg PO q4h PRN anxiety
-

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Patient Case: Amanda Anderson

At the next RN visit, Amanda says she is sleeping better at night and her feelings of being overwhelmed have diminished. However, she now complains of nausea.

Assessment:

- No diet changes; drinking 3-5 glasses of water per day with medications
 - Nausea is moderate, constant, and not associated with movement
 - The smell of food makes nausea worse
 - Has not had a BM in 3 days (normal BM pattern is once daily)
 - Abdomen is mildly distended
 - Hard stool is present in the rectal vault
-

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Patient Case: Amanda Anderson

What is the best intervention for Amanda at this time?

- A. Give a glycerin suppository to soften stool and relieve constipation now
- B. Add senna-docusate 1 tablet PO BID to the routine medication regimen
- C. Add haloperidol 0.5 mg tab PO/SL/PR q4h PRN nausea/vomiting
- D. All of the above

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Patient Case: Amanda Anderson

What is the best intervention for Amanda at this time?

- A. Give a glycerin suppository to soften stool and relieve constipation now
- B. Add senna-docusate 1 tablet PO BID to the routine medication regimen
- C. Add haloperidol 0.5 mg tab PO/SL/PR q4h PRN nausea/vomiting
- D. **All of the above**

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Diarrhea

Diarrhea: Background

- Diarrhea: Passage of liquid or unformed stool in increasing frequency
 - Frequency is patient-specific
 - Stool is $\geq 90\%$ water; accompanied by gas, bloating, urgency, abdominal discomfort
 - Imbalance of absorption and secretion properties of GI tract
- Present in 10% or less at hospice admission
- Chronic diarrhea associated with recent chemotherapy or carcinoid tumors of GI tract

Diarrhea: Management of Underlying Issues

- Fecal impaction
 - Evacuate bowels; do not use anti-diarrheals
- Diet
 - Reduce intake of the offending food
- Infection
 - Initiate bulking agent; consider antibiotics if appropriate
- Recent antibiotics
 - Stool culture; start antibiotic (vancomycin or fidaxomicin) if suspect *C. difficile*
- Medications
 - Discontinue offending agent; use alternatives or lower the dose

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Diarrhea: Non-Pharmacologic Interventions

- BRAT diet
 - Bananas, rice, apples, toast
- Eat small, frequent meals that are low in fiber
- Avoid “trigger” foods/drinks
 - Caffeine, alcohol, dairy products, spicy foods, high-fiber and high-fat foods
- Rehydrate!
 - Drink water and other clear liquids; parenteral hydration, if appropriate
- Discontinue laxatives
- Barrier cream to perianal area

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Diarrhea: Pharmacological Treatment

Medication	Adult Starting Dose	Comments
Anti-Motility Agents		
Loperamide (Imodium® A-D)	2 tablets (4 mg) PO, then 1 tablet (2 mg) after each loose stool	<ul style="list-style-type: none"> Not recommended in patients with bacterial diarrhea Max 8 tablets (16 mg) in 24h
Diphenoxylate/atropine (Lomotil®)	2 tablets (5 mg) PO, then 1 tablet (2.5 mg) after each loose stool	<ul style="list-style-type: none"> Not recommended in patients with bacterial diarrhea Max 8 tablets (20 mg) in 24h
Codeine	10-60 mg PO BID-QID	<ul style="list-style-type: none"> May use combination product with APAP
Bulking Agents		
Fiber supplements	1-3 PO doses per day	<ul style="list-style-type: none"> Take with 8 oz water
Cholestyramine (Questran®)	1 packet (4 g) PO daily	<ul style="list-style-type: none"> Effective for chologenic (bile salt) or radiation-induced diarrhea
Absorbent/Adsorbent		
Bismuth subsalicylate (Pepto-Bismol®)	2 tablets (or 30 mL) PO every 30-60 mins Max 8 doses per 24h	<ul style="list-style-type: none"> Caution use with ASA; impaction risk May turn stool dark or black in color Avoid in immunocompromised patients

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Bowel Obstruction

Bowel Obstruction: Background

- Up to 28% colorectal cancer patients and up to 51% ovarian cancer patients
 - Abdominal surgery or radiation are risk factors
 - Causes
 - Compression from outside the intestinal tract
 - Narrowing or occlusion of the intestinal lumen
 - Inflammation, fibrosis, trauma, tumor, adhesions, hernia
-

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Bowel Obstruction: Clinical Characteristics

General Symptoms

- Abdominal pain (colicky), distention, nausea/vomiting, absence of bowel movements

High Small Intestine

- Less pain or distention, but severe emesis

Low Small Intestine

- Colicky pain, more distention, hyperactive bowel sounds

Large Intestine

- Lower abdominal pain, severe distention, delayed emesis
 - Possible paradoxical diarrhea (leakage of fluid stool around impaction)
-

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Bowel Obstruction: Treatment Approach

- Surgical intervention may be possible for non-malignant obstructions
- Symptom management & comfort is key for most patients
 - NG tube, PEG tube, or J tube for decompression
 - Pharmacotherapy for managing pain, nausea, and secretions into the bowel
 - Use non-oral routes of administration (SC, IV, SL, PR) when possible

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Take Note!

Treatment approach is different for partial vs. full bowel obstruction

If the patient still has a functioning bowel,
treat as a partial obstruction

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Partial Bowel Obstruction

- Goal: keep bowel functional and alleviate symptoms
 - Prokinetic
 - Metoclopramide 10 mg PO/SL/PR/IV/SC/IM every 6 hours
 - Will help move upper GI tract and treat nausea
 - Avoid in full bowel obstruction; can worsen abdominal pain
 - Keep patient PO if possible
 - Continue laxatives, if appropriate
 - Avoid medications that constipate/slow gut movement
-

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Full Bowel Obstruction

- Goal: “shut down” bowel and aggressively manage symptoms
 - Discuss NPO status with patient
 - Develop a plan to continue other important medications via alternative routes

Medication	Adult Starting Dose	Routes of Administration	Comments
Anticholinergics			
Glycopyrrolate (Robinul®)	0.2 mg q8h	SC, IV	<ul style="list-style-type: none"> • Drug of choice • Does not cross blood-brain barrier
Hyoscyamine (Levsin®)	0.125 mg q6h	SL, SC, IV	<ul style="list-style-type: none"> • SL tablets dissolve easily • Preferred alternative to glycopyrrolate
Scopolamine (Transderm-Scop®)	1.5 mg TD patch behind ear q72h	TD	<ul style="list-style-type: none"> • Patches take 6-8h for onset • Do not cut patches
Somatostatin Analog			
Octreotide (Sandostatin®)	0.1 mg q8h PRN	SC, IV	<ul style="list-style-type: none"> • Expensive; not a first-line option • May require addition of anticholinergic

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Bowel Obstruction: Adjuvant Therapies

- Pain
 - Anticholinergics for colicky pain
 - Opioids
- Nausea/vomiting
 - Haloperidol 0.5-1 mg q4h PRN
 - Helps with nausea related to the obstruction
 - Versatile; can be given SL, PR, SC, IV, IM
 - Avoid in Parkinson's disease and Lewy body dementia
- Inflammation/edema around obstruction
 - Dexamethasone 4-8 mg once or twice daily
 - May be given SC, IV, or IM if unable to take PO

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Mini Case 5 – Poll Question

A 61 year old female on hospice with ovarian cancer has sudden nausea and projectile vomiting after eating and colicky pain in her abdomen. Her abdomen is distended and she has not had a bowel movement in a few days. Full bowel obstruction is suspected.

Which of the following medications should be started to manage her symptoms?

- A. Glycopyrrolate 0.2 mg SC q6h
- B. Dexamethasone 4 mg SC BID
- C. Haloperidol 0.5 mg SL q4h PRN nausea/vomiting
- D. All of the above

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 - B. Dexamethasone 4 mg SC BID
 - C. Haloperidol 0.5 mg SL q4h PRN nausea/vomiting
 - D. All of the above**
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Key Points

- GI symptoms are common at the end of life
 - Develop a mental checklist for assessing GI symptoms
 - Many GI medications are available OTC and via prescription
 - Proper assessment drives treatment selection
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Questions?

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