THE GI JOURNEY: A COMPREHENSIVE REVIEW OF THE GASTROINTESTINAL TRACT

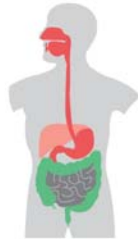
NOLA CURRY, PHARM D

OBJECTIVES

- Identify gastrointestinal illness frequently experienced by hospice patients
- Recognize common medications and dosing used to palliate gastrointestinal illnesses
- Apply assessment findings to create an appropriate plan of care to palliate symptoms based on patient specified factors.

DIGESTIVE TRACT

Oral cavity
Pharynx
Esophagus
Stomach
Small/large intestines
Accessory organs



XEROSTOMIA

- Background
  - Affects up to 20% of the elderly population
  - Dry mouth often related to hypofunction of the salivary gland or changes in the biochemical composition of saliva
  - Saliva is a mixture of secretions from major and minor salivary glands
    - 99% water
    - Electrolytes
    - Organic components (immunoglobulin, protein, enzymes, mucins)
  - Function is to keep mucous membranes moist, digest food, cleanse the oral cavity, lubricates for easy chewing/swallowing, maintains neutral pH balance, prevent tooth decay
  - Decrease production may lead to difficulties in tasting, chewing, swallowing, and speaking, dental decay, an/or oral infections

ADA 2017

XEROSTOMIA (CONTINUED)

- Who is at risk?
  - Chemotherapy (acute)
  - Radiation to head/neck (acute or chronic)
  - Physiological or Disease related
    - Autoimmune disease
    - Aging
    - Diabetes
    - Alzheimer's or Parkinson's disease
    - Hypertension
    - Stroke
    - Lifestyle
  - Medication

ADA 2017

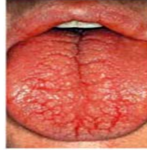
MEDICATIONS KNOWN TO CAUSE XEROSTOMIA

- Antihistamines
- Antidepressants
- Anticholinergics
- Antihypertensive
- Antipsychotics
- Anti-Parkinson agents
- Diuretics
- Sedatives
- Antiemetic
- Antianxiety
- Decongestants
- Analgesics
- Antidiarrheal
- Bronchodilators
- Skeletal muscle relaxants

ADA 2017

ASSESSMENT

- Constant sore throat
- Hoarseness
- Dry nasal passages
- Inflammation of the lips
- Difficulty speaking/swallowing
- Poor appetite
- Weight loss
- Ulcer of tongue/buccal mucosa
- Oral Candidiasis



ADA 2017

MANAGEMENT OF XEROSTOMIA

Non-pharmacological

- Frequent sips of water/ ice chips
- Lip lubricants every 2 hours
- Chewing sugar free gum or sucking hard candy
- Avoid salty or spicy foods
- Avoid alcohol, tobacco, and caffeine
- Drink fluids while eating
- Humidifier at night

Pharmacological

- Salivary stimulants
- Topical fluoride
- Saliva substitutes
- Drug substitutions
- Daytime administration of anticholinergic drugs
- Divide large doses vs. daily doses

ADA 2017

OVER THE COUNTER PRODUCTS

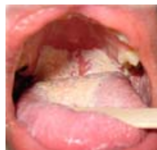
CANDIDIASIS

- Background
  - Infection caused by a yeast, Candida
  - Candida normally lives in the digestive tract and on skin
  - Multiply and cause infections if environment changes to encourage growth
  - Thrush is Candidiasis in the mouth and throat
  - Esophageal candidiasis is one of the most common infections in people living with HIV/AIDS

CDC, 2017

SYMPTOMS

- White patches on the inner cheeks, roof of mouth, and throat
- Redness or soreness
- Cottony feeling in the mouth
- Loss of taste
- Pain with swallowing
- Cracking and redness at the corners of the mouth



CDC 2017

CANDIDIASIS

- Who is at risk?
  - Wear dentures
  - Have diabetes
  - Have cancer
  - HIV/AIDS
  - Take antibiotics or corticosteroids
  - Take medications that cause dry mouth
  - Smoke

CDC 2017

CANDIDIASIS

Prevention

- Good oral health
- Rinse mouth or brush teeth after using inhaled corticosteroids
- Prophylaxis antibiotics?

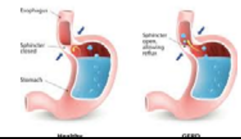
Treatment

- Oropharyngeal
  - Nystatin Suspension 100,000 units/mL: Administer 4-6 mL four times a day for a minimum of 7 days or two days after symptoms resolve.
- Esophageal
  - Fluconazole: 200 mg on day 1, then 100 to 400 mg daily for 21 days and for at least two weeks following resolution of symptoms.

CDC 2017

GASTROESOPHAGEAL REFLUX DISEASE (GERD)

- Background
  - GERD: any symptom or complication resulting from the reflux of gastric contents into the esophagus or beyond, into the oral cavity, or lung
  - Acid reflux can occur with or without tissue damage
  - Symptoms range from mild to severe, infrequent to frequent
- Prevalence
  - 18- 28% in the United States



SYMPTOMS

- Burning sensation in your chest
- Chest pain
- Difficulty swallowing
- Regurgitation of food or sour liquid
- Sensation of lump in the throat
- Chronic cough
- Laryngitis
- New or worsening asthma
- Disrupted sleep

Kahrilas 2018

MANAGEMENT OF GERD

Non-pharmacological

- Lifestyle modifications
  - Smoking cessation
  - Elevate head of bed
  - Avoid meals 2-3 hours before bedtime
  - Avoid food and drink triggers

Pharmacological

- Antacids
- Histamine 2 receptor blocker
- Proton Pump inhibitors

Kahrilas 2018

PHARMACOLOGICAL MANAGEMENT

- Antacids
  - Neutralize gastric pH within 5 minutes, only lasts for 30-60 minutes
  - Used for intermittent relief for mild symptoms that occur less than once a week
  - Examples: Tums, Maalox, Rolaids, Mylanta
- Surface agents and Alginates
  - Sucralfate (Carafate) adheres to mucosal surface, promotes healing, and protects from peptic injury
  - Sodium alginate floats within the stomach and neutralizes the postprandial acid pocket
- H2 receptor blocker
  - Limits acid secretion by blocking histamine in the gastric parietal cell
  - Onset is 2.5 hours, duration 4-10 hours
  - Use is limited due to tachyphylaxis within 2-6 weeks of use
  - Example Axid, Pepcid, Tagamet

Kahrilas 2018

PHARMACOLOGICAL MANAGEMENT

- Proton Pump Inhibitors (PPIs)
  - Most effective for erosive esophagitis an/or frequent, or severe symptoms of GERD
  - Irreversibly bind to and inhibit the hydrogen-potassium (H-K) ATPase pump
  - Smallest effective dose given daily for 8 weeks
  - Most effective when taken 30 minutes before the first meal of the day
  - Refractory GERD

Kahrilas 2018

PROTON PUMP INHIBITORS

DRUG	USUAL ADULT DOSES	AVAILABILITY	COST (AWP 15-DAY SUPPLY)	NG OR G TUBE ADMINISTRATION?	COMMENTS
Dexlansoprazole (*Dexilant*)	30 – 60 mg daily (30 mg daily if liver disease)	30, 60 mg caps	60 mg daily: **$$$**	No	Capsule can be opened and contents sprinkled onto applesauce; give immediately
Esomeprazole (*Nexium*)	20 – 40 mg daily (20 mg daily if liver disease)	20, 40 mg caps (Rx)	40 mg daily (Rx): **$$$**	Yes – granules from capsules or suspension can be given via NG or G tube	Capsule can be opened and contents sprinkled onto applesauce
		20 mg caps (OTC)	20 mg daily (OTC): **$**		
		20, 40 mg granules for suspension	40 mg daily (suspension): **$$$**		
Lansoprazole (*Prevacid*)	15 – 30 mg daily (Reduce dose if liver disease)	15, 30 mg caps (Rx)	30 mg daily (Rx): **$$**	Yes – granules from capsules or ODT (dissolved) can be given through NG or G tube	Capsule can be opened and contents sprinkled on applesauce, *Ensure* pudding, cottage cheese, yogurt or strained pears or mixed with apple, orange or tomato juice; give immediately
		15 mg caps (OTC)	15 mg daily (OTC): **$**		
		15, 30 mg ODT	30 mg daily (ODT): **$$$**		
Omeprazole (*Prilosec*)	20 – 40 mg daily	20, 40 mg caps (Rx)	40 mg daily (Rx caps): **$$**	Yes – granules from capsules can be given through NG or G tube	Rx capsule can be opened and contents sprinkled onto applesauce; give immediately
		20 mg tabs (OTC)	20 mg daily (OTC tabs): **$**		
Omeprazole/ sodium bicarbonate (*Zegerid*)	20 – 40 mg daily	20/1100, 40/1100 mg capsules (Rx)	40/1100 mg daily (Rx): **$$$**	Yes – suspension can be given through NG or G tube	Capsules should be taken intact. Caution on sodium content: 20, 40 mg caps contain 300 mg sodium per capsule; 20, 40 mg powders for suspension contain 460 mg sodium per packet
		20/1100 mg caps (OTC)	20/1100 mg daily (OTC): **$**		
		20/1680, 40/1680 mg powder for suspension	40/1680 mg daily (suspension): **$$$**		
Pantoprazole (*Protonix*)	20 – 40 mg daily	20, 40 mg tabs	40 mg daily (tabs): **$$**	Yes – suspension can be given through NG or G tube	Cannot crush tablets
		40 mg granules for suspension	40 mg daily (suspension): **$$$**		
Rabeprazole (*Aciphex*)	20 mg daily	20 mg tabs	20 mg daily: **$$$**	No	

$=<$20 $$=$20-$100 $$$=>$100

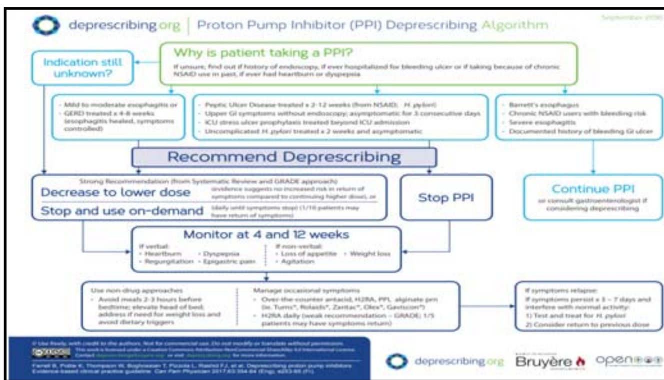
Hospice Pharmacy Solutions

Updated June 2018

OTHER APPROVED USES FOR PROTON PUMP INHIBITORS

- Peptic ulcer disease
- Zollinger-Ellison syndrome
- NSAID-associated ulcers
- Eradication of *Helicobacter pylori*
- ICU Stress ulcer prophylaxis

Kahrilas 2018



NAUSEA/VOMITING (N/V)

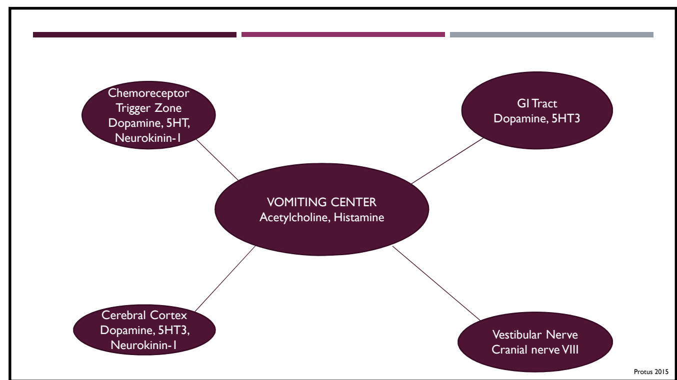
- Background
  - Nausea: unpleasant sensation of being about to vomit, can occur alone or can accompany vomiting
  - Vomiting: expulsion of gastric contents through the mouth caused by forceful/sustained contraction of the abdominal muscles and diaphragm
- Prevalence
  - 30-60 % of patients with terminal cancer no longer receiving anti-tumor treatment
  - 43-49% in patient with HIV/AIDS
  - 17-48% in patients with heart failure
  - 30-43% in patients with CKD
  - 4-18 % in patients with end stage COPD

Protus 2015

CAUSES

- Anxiety
- Autonomic dysfunction
- Bowel obstruction
- Constipation
- Increased intracranial pressure
- Infection
- Medications
  - Antibiotics
  - Chemotherapy
  - NSAIDs
  - Opioids
- Metabolic abnormalities
- Peptic ulcer disease

Protus 2015

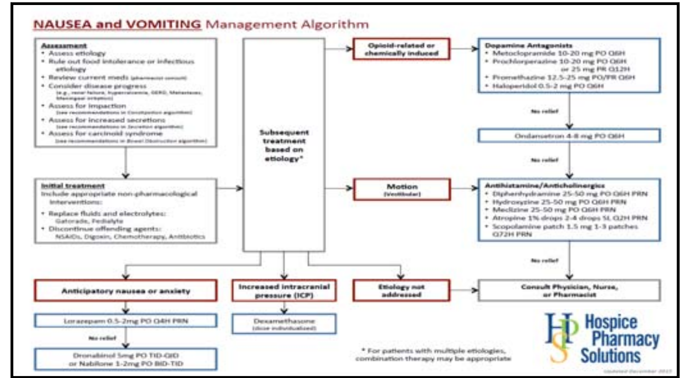


Protus 2015

NON-PHARMACOLOGICAL MANAGEMENT

- Relaxation techniques
- Avoid strong odors, food, and other triggers
- Eliminate offending medications if possible
- Promote good oral care
- Offer clear liquids
  - Sip liquids slowly
  - Sipping off spoons to prevent gulping
- Small, frequent meals
  - Cold foods more tolerable
  - Bland foods
  - Avoid greasy, fried, spicy

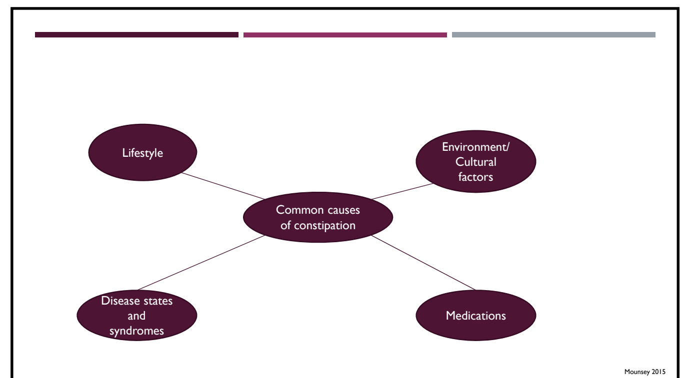
Protus 2015



CONSTIPATION

- Background
  - Constipation is caused by the slow movement of fecal matter through the intestine allowing excess fluid and electrolytes absorption from the colon while delaying elimination
  - Leads to painful passage of dry hard stool
  - Increased risk in hospice patients due to the use of opioids
- Prevalence
  - Up to 90% of patients treated with maintenance opioids experience constipation
  - Approximately 50% of hospice patients experience constipation even without opioid therapy

Mounsey 2015



Mounsey 2015

MEDICATIONS CAUSING CONSTIPATION

- Antacids
- Anticholinergic
- Antidepressants
- Antiemetic
- Antiepileptic
- Antihistamines
- Antihypertensive
- Antiparkinson agents
- Antipsychotic drugs
- Bile acid sequestrants
- Chemotherapy
- Diuretics
- Iron supplements
- NSAIDs
- Opioid analgesics

Mounsey 2015

BOWEL REGIMEN

- PREVENTION IS KEY
  - Establish patients' normal bowel pattern and habits, regimen must be patient-specific
    - Bristol Stool Chart
  - Assess prior and current use of laxatives
  - Note any changes in lifestyle habits such as fluid/dietary intake and activity level
  - Continual assessment of bowel pattern
  - Note any changes in medications (increase in dose, new agent, etc.)
- Caution
  - Use of laxatives containing magnesium salts and phosphate enemas may cause electrolyte imbalances, avoid use in patients with kidney disease

Mounsey 2015

NON-PHARMACOLOGICAL MANAGEMENT

- Increase fluid intake within patients limits
- Consume food with high water content
- Increase dietary fiber*
- Power pudding: blend 1 cup of prune juice, 1 cup of bran cereal, and 1 cup of applesauce. Take 2 tbsp/day. Keep refrigerated for up to 1 week.
- Provide patients with appropriate privacy, bedside commodes, and other assistive devices if possible.
- Avoid bedpans if possible
- Footstools for optimal positioning
- Attempt bowel movement 20-30 minutes after breakfast for most powerful gastro-colic reflex

Mounsey 2015

PHARMACOLOGICAL MANAGEMENT

- Bulking agents
  - Soluble and insoluble, absorb water into intestines to soften stool and increase bilk
  - May increase risk of obstruction/impaction in patients with decreased intestinal motility or opioid induced constipation(OIC)
  - Aspiration risk
  - Example: Psyllium, Methylcellulose, and Polycarbophil
- Stool Softeners
  - Surfactant that allows the mixing of water and fats, softening the stool
  - Alone is not enough to prevent OIC, must be paired with a stimulant
  - Example: Colace, docusate

Mounsey 2015

PHARMACOLOGICAL MANAGEMENT

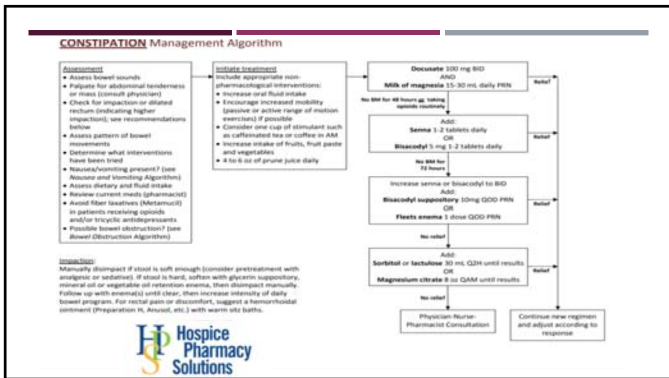
- Stimulant
  - Promote intestinal motility and increase fluid secretion in the bowel
  - Initiate at the start of opioid therapy, constipation is a side effect that does NOT improve with continued use
  - Avoid in patients that increased motility will adversely effect (GI bleed, obstruction)
- Osmotic
  - Non-absorbable, draw water into the intestinal lumen
  - Examples: Lactulose, Sorbitol, polyethylene glycol, magnesium hydroxide

Mounsey 2015

PHARMACOLOGICAL MANAGEMENT

- Enemas/Suppositories
  - Used to clear fecal impactions or in patients who cannot tolerate oral preparations
  - Examples include phosphate, mineral oil, soapsuds, and warm water enemas, Glycerin suppositories
- Opioid Antagonist
  - Decrease the GI effects of opioids without reducing centrally mediated analgesia
  - Expensive, use only after other scheduled bowel regimen fails
  - Examples: Relistor, Entereg, Movantik

Mounsey 2015



DIARRHEA

- Background
  - Passage of liquid or unformed stool at an increased frequency
  - Results from imbalance of absorption and secretion of the intestinal tract
  - Acute, persistent, or chronic
  - Often self limiting, but may lead to other complications
- Prevalence
  - Affects 7-10% of patients at the time of hospice admission
  - Up to 80% of patients who have recently received chemotherapy or those with GI tumors have persistent or chronic diarrhea

Protus 2015

CAUSES OF DIARRHEA

- Overmedicated with laxatives
- Bacterial/viral gastroenteritis
- Chemotherapy
- Comorbidities
- Diet
- Adverse drug effects
- Infection
- Malignancies

Protus 2015

RISK FACTORS ASSOCIATED WITH CLOSTRIDIUM DIFFICILE

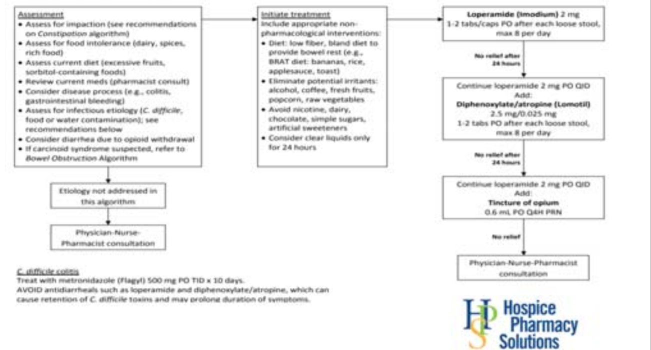
- Advanced age
- Immunosuppression
- Nursing home residents
- Recent hospitalization
- Antibiotic therapy especially cephalosporins, fluoroquinolones, and clindamycin
- Proton Pump Inhibitors

Protus y 2015

NON-PHARMACOLOGICAL MANAGEMENT

- BRAT diet
  - banana rice, apples, toast
- Small, frequent meals low in fiber
- Avoid offending foods
  - Lactose, spicy, caffeine, certain fruit juices
- Rehydrate and replace electrolytes
  - Sport drinks, water, broth
- Barrier cream or ointments if incontinent
- Discontinue laxatives temporarily, restart at lower dose once resolved
- Assess patient for infection prior to initiating anti-diarrheal medication

Protus 2015

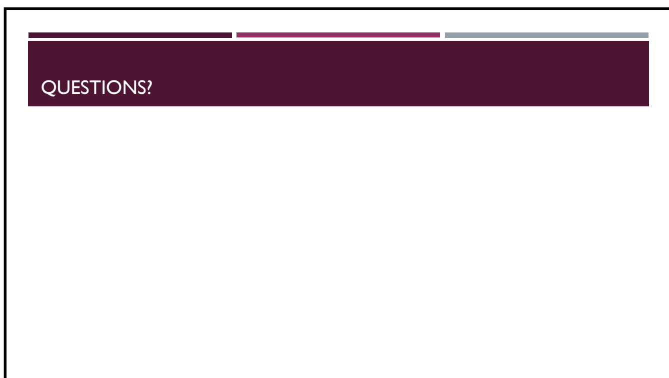


SUMMARY

- Many GI symptoms can be managed with non-pharmacological and pharmacological interventions
- Assessments should include a thorough history, physical assessment, and a list of medications
- Assure medications that may be causing GI symptoms continue to have added benefits that outweigh symptoms
- Call a HPS pharmacist for suggestions on possible drug substitutions to decrease symptoms based on patient-specific factors

REFERENCES

- "Fungal Diseases." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 7 Aug. 2017, www.cdc.gov/fungal/diseases/candidiasis/index.html.
- Kahrilas, Peter. "Medical Management of Gastroesophageal Reflux Disease in Adults." *UpToDate*, Wolters Kluwer, 28 Mar. 2018, www.uptodate.com/contents/medical-management-of-gastroesophageal-reflux-disease-in-adults?search=GERD.
- Mounsey, Anne L., et al. "Management of Constipation in Older Adults." *American Family Physician*, American Academy of Family Physician, 15 Sept. 2015, www.aafp.org/afp/2015/0915/p500.html.
- Protus, Bridget McCrate, et al. *Palliative Care Consultant: a Reference Guide for Palliative Care: Guidelines for Effective Management of Symptoms*. 4th ed., HospiScript Services, 2015.
- "Xerostomia (Dry Mouth)." *Home - American Dental Association*, 12 Sept. 2017, www.ada.org/en/member-center/oral-health-topics/xerostomia.


QUESTIONS?