CONSTIPATION & DIARRHEA

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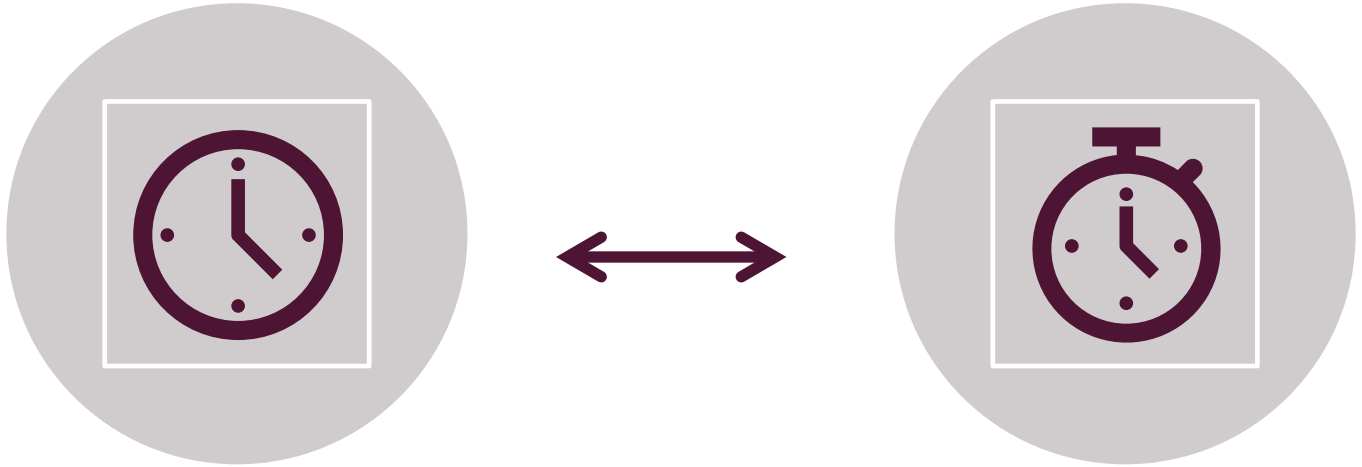
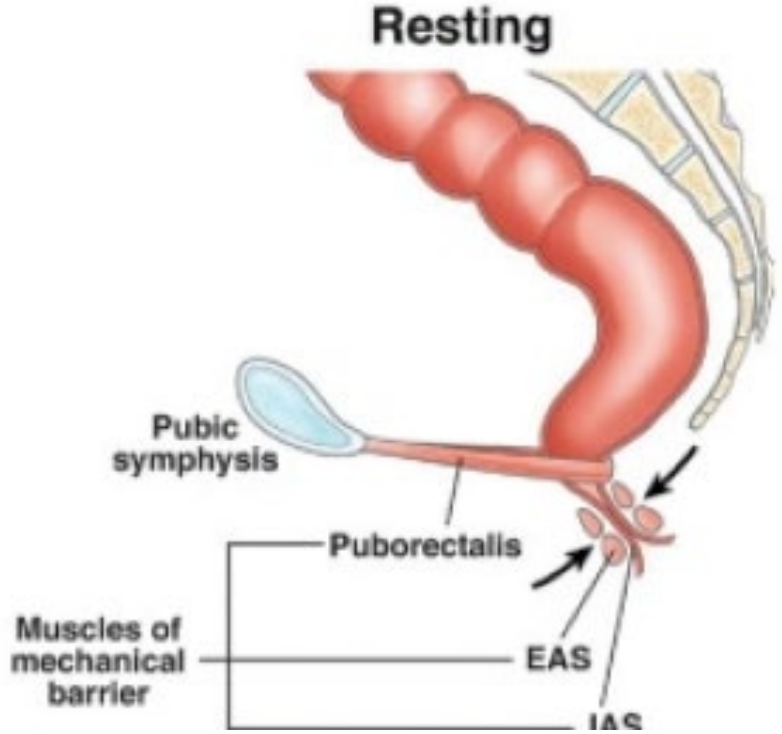
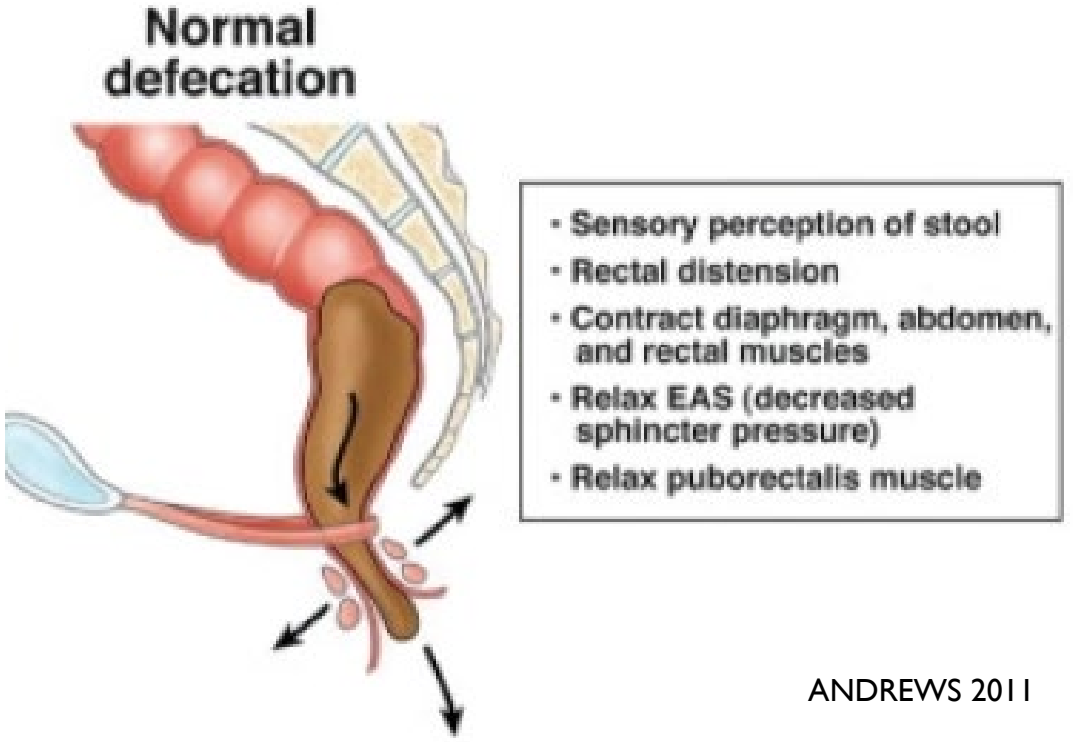
WHAT IS NORMAL?



3 TIMES PER DAY 3 TIMES PER WEEK





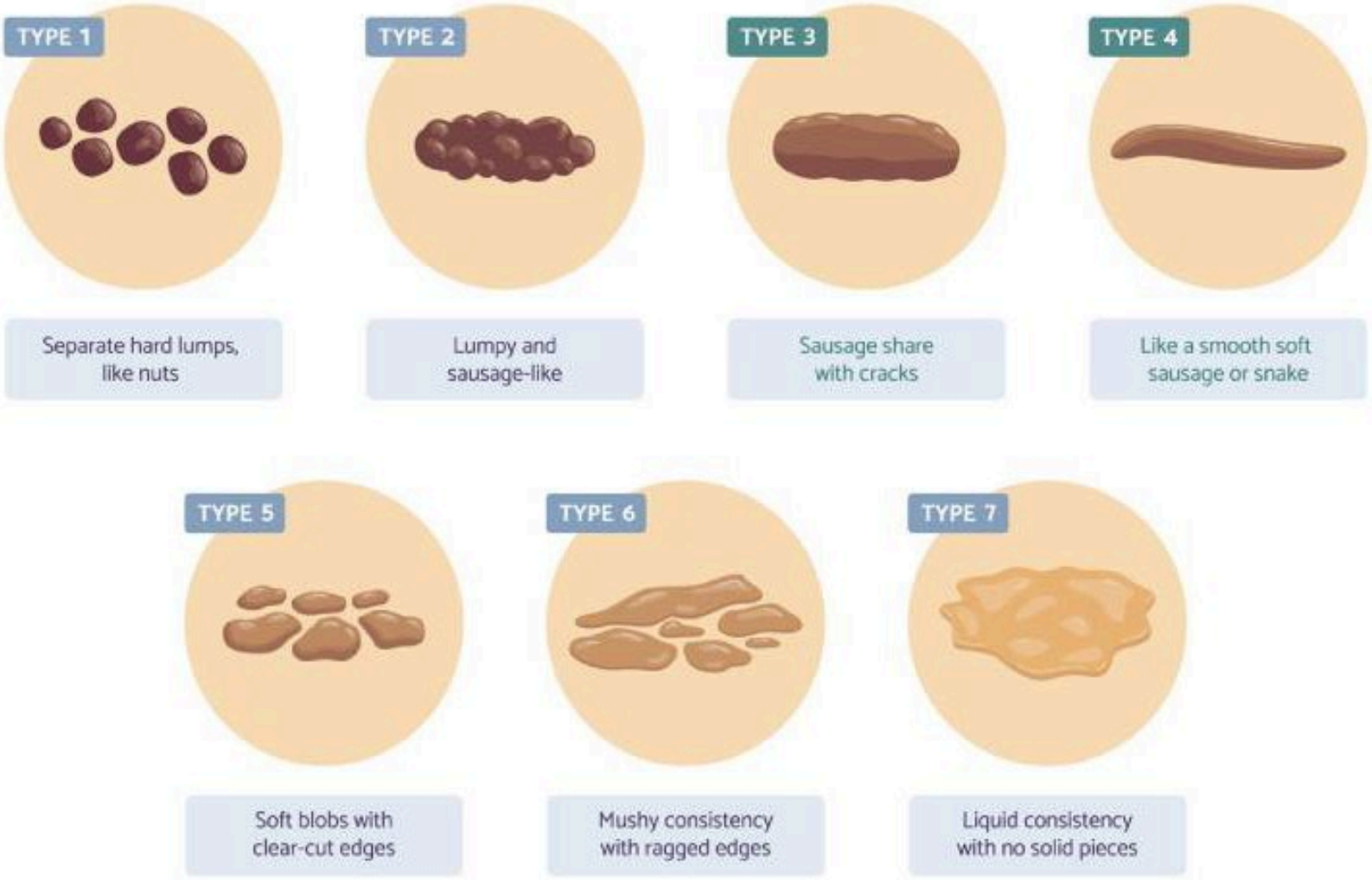
ANDREWS 2011

TYPICAL PHYSIOLOGY

HOW TO ASK PATIENTS ABOUT THEIR STOOL

- Frequency (how many times per day? How many times per week?)
- Texture (hard, soft, formed, liquid, mixed?)
- Straining? Do you need to push to get stool out?
- Has there been a change in bowel habits?
- Is there blood or anal/rectal pain?

BRISTOL STOOL SCALE



CONSTIPATION

Accounts for over 2.5 million doctor visits per year

DEFINITION OF CHRONIC CONSTIPATION (ROME IV CRITERIA)

- Two or more of the following:
  - Less than 3 spontaneous bowel movements per week
  - Straining
  - Incomplete evacuation
  - Lumpy or hard stool
  - Sensation of blockage or obstruction
  - Manual maneuvers to help pass stool (digital evacuation, support of pelvic floor)

ALARM FEATURES ASSOCIATED WITH CONSTIPATION

- Age > 45
- New onset constipation in elderly patient
- Rectal bleeding
- Weight loss
- Palpable rectal or abdominal mass
- History of: colon surgery, abdominal radiation, pelvic cancer, family history of colon cancer

PHYSICAL EXAM

- Abdominal Exam: feel for palpable mass, distension
- Rectal Exam:
  - Undress waist down and lay on left side
  - External exam: can have patient bear down (perineum should descend) or clench (perineum should elevate). Can assess for prolapse, hemorrhoids or anal fissures
  - Digital exam: feel for hard stool in the vault (impaction), mass or stricture. Can ask patient to squeeze
- Neuro exam : sensation in the anal area and lower extremities, gait disturbances

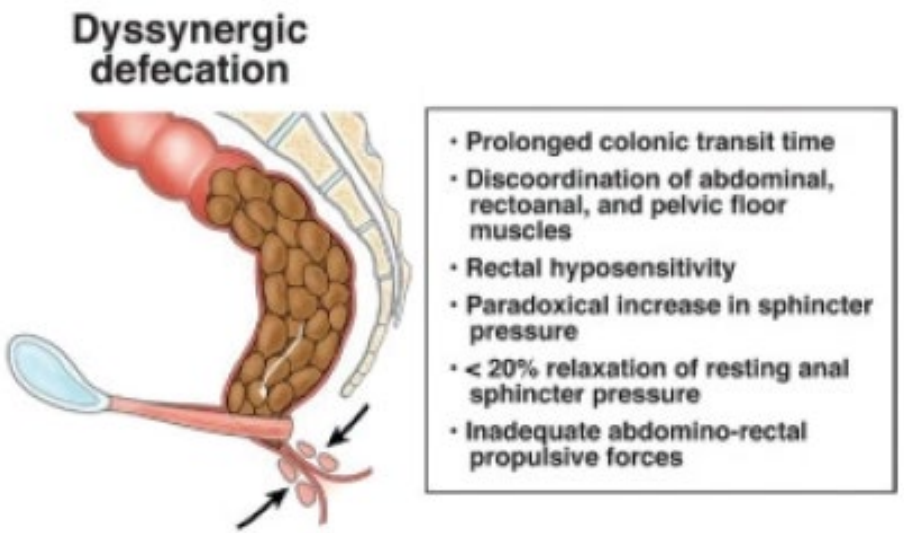
DIFFERENTIAL DIAGNOSIS FOR CONSTIPATION

- Functional constipation
  - Idiopathic constipation
  - Dyssynergic defection
- Constipation due to secondary causes

CHRONIC IDIOPATHIC CONSTIPATION

- Meet Rome IV criteria for constipation more than 25% of the time
- Loose stools rarely present
- Do not meet criteria for irritable bowel syndrome

DYSSYNERGIC DEFECATION



- Inability to coordinate the abdominal and pelvic floor muscles to evacuate stool

Andrews 2011

SECONDARY CAUSES OF CONSTIPATION

Mechanical Causes	Neuropathic Causes	Medications
Colorectal cancer	Parkinson's	Narcotics
Rectocele	Systemic Sclerosis	Iron supplements
Stenosis/ stricture	Spinal cord injury	Antihypertensives (CCB, B blockers)
Extrinsic compression from abdominal process	Multiple sclerosis	Antidiarrheal agents
Metabolic Causes	Amyloidosis	Anticholinergics (TCAs, antipsychotics, antihistamines, antiemetics)
Diabetes	Cerebrovascular accident	
Hypothyroidism	Chagas disease	Antacids (calcium and aluminum)
Hypercalcemia	Intestinal pseuo-obstruction	
Hypokalemia	Hirschsprung Disease	
Pregnancy		

DIAGNOSTIC WORKUP FOR CONSTIPATION

- Labs: check TSH, calcium level, blood count
- Diagnostic colonoscopy if alarm features presents
- Physiologic testing in select cases
  - Anorectal manometry
  - Balloon expulsion test
  - MR defecography
- Rarely is imaging indicated for chronic constipation- if acute and associated with nausea, vomiting, elevated white blood cell count consider abdominal X-ray or CT scan

TREATMENT

- Eliminate medications if possible
- Dietary interventions
  - Increase fiber
  - Increase hydration
- Squatty potty – increases anorecal angle about 20 degrees
- Pharmacologic therapy (typically for 4-8 weeks before performing more invasive workup)

PHARMACOLOGIC MANAGEMENT STEP 1: FIBER

- Goal is 20-30g / day
- Insoluble fiber – non fermentable- this is best for people with a lot of bloating- increases stool biomass which results in increased motility and accelerated transit
  - Example: Citrucel (methylcellulose)
- Soluble fiber – fermentable- accelerates transit via hydrophilic properties and osmotic effects of fermentable byproducts
  - Example: Benefiber (wheat dextran)
- Psyllium (Metamucil) is a mix of both

STEP 2: OSMOTIC OR STIMULANT LAXATIVES

- Osmotic laxatives – polyethylene glycol (Miralax)
  - Not absorbed by the small intestine- draw water into the intestinal lumen, reduce stool viscosity and increase fecal biomass
  - Usually start 1 capful daily – continue once bowel movements become easier - "regularity breeds regularity"
  - Excellent cost and safety profile- can be used in children, pregnancy. No interactions
- Stimulant laxatives (bisacodyl, senna)
  - Decrease water absorption and stimulate intestinal motility
  - Body can become accustomed to these and they lose efficacy

STEP 3: SECRETOGOGUES

- Newer class of medications- generally work by increasing intestinal fluid secretion and stimulating transit
- Some work on guanylate cyclase- C – linacolotide , plecanatide
- Some work on chloride channel - lubiprostone
- Some work on 5HT4 – prucalopride

If not responding to medical therapy, consider physiologic testing to look into defecatory disorder

QUESTION 1

A 26 year old woman presents with constipation for 10 years duration. States she has a bowel movement 2-3 times a week. She endorses hard stools and straining. She has no significant abdominal pain, nausea, vomiting, or weight loss. On exam she appears well. Her BMI is normal. Rectal exam is notable for normal tone, no hemorrhoids or fissures and formed stool in the rectal vault. What is the next step?

- A) Colonoscopy
- B) Anorectal manometry
- C) Fiber supplementation
- D) Osmotic laxative

QUESTION 2

A 42 year woman presents with constipation of 3 years duration. She states that she has bowel movements about twice a week. The stool is Bristol Type 2. She has tried fiber supplement (psyllium husk) and laxatives in the past, including bisacodyl and polyethylene glycol without significant improvement. She endorses incomplete emptying with bowel movements. There is no blood in her stool, weight loss, nausea or vomiting. She has no family history of colon cancer. She has had no prior surgeries. She had a colonoscopy 2 years prior which was normal. Her rectal exam reveals no masses or stool in the rectal vault. What is the next step in her workup/ management?

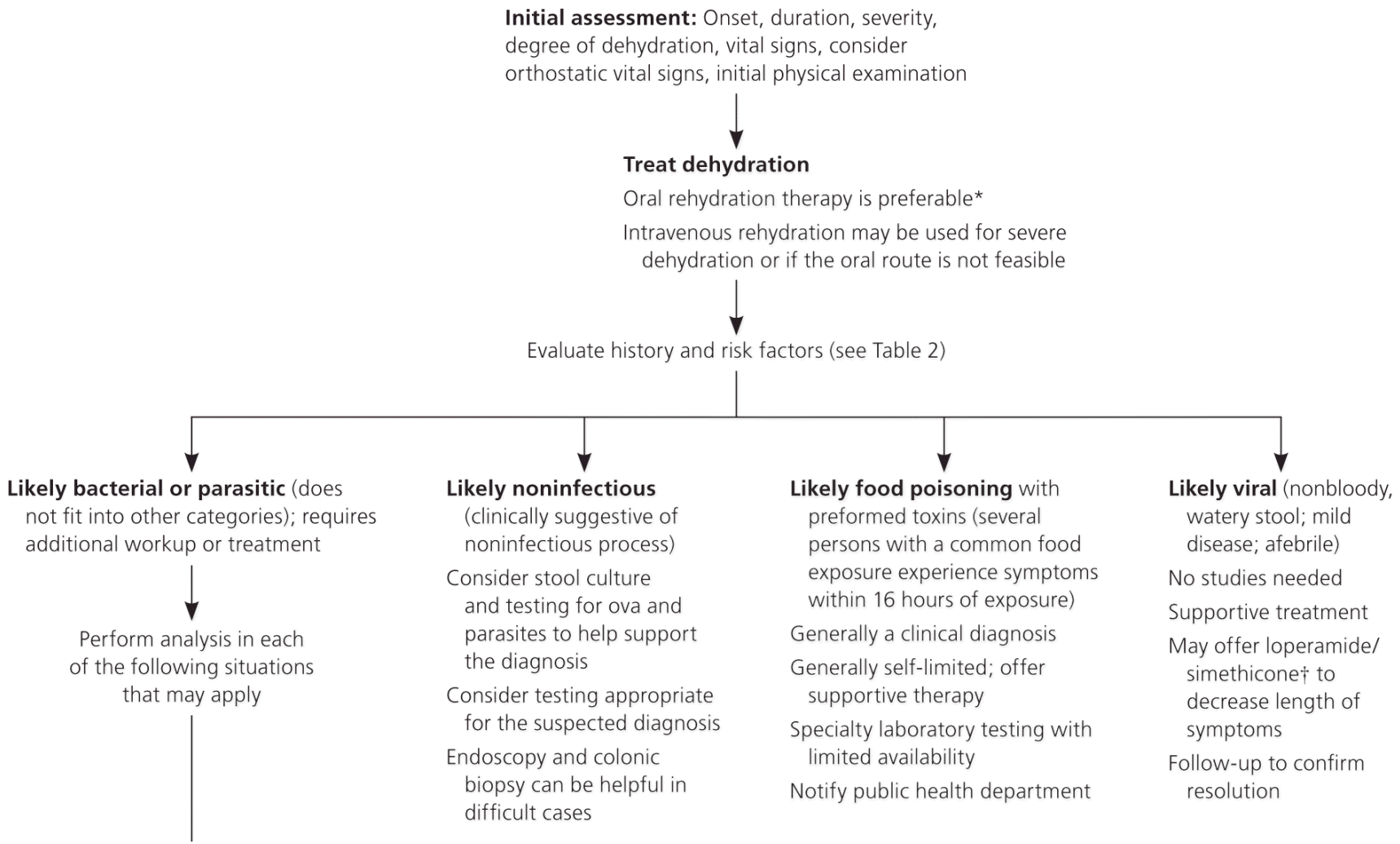
- A) Resume fiber
- B) Resume laxatives
- C) Repeat a colonoscopy
- D) Anorectal manometry with balloon expulsion test
- E) MRI Defecography

DIARRHEA

- Defined as loose stools at least three times per day

ACUTE DIARRHEA

- Duration of less than 4 weeks
- Causes:
  - Infectious-typically resolve on its own
- Alarm features
  - Bloody diarrhea
  - Fever
  - Pregnancy, elderly, immunocompromised states
  - Recent antibiotics or hospitalization



AAFP "Acute Diarrhea in Adults"

APPROACH TO INFECTIOUS CAUSES OF DIARRHEA

PATHOGENS

Bacterial

Campylobacter

C difficile

Salmonella

Shiga-Toxin producing E. Coli

Shigella

Vibrio

Yersinia

Parasitic

Cryptosporidium

Cyclospora

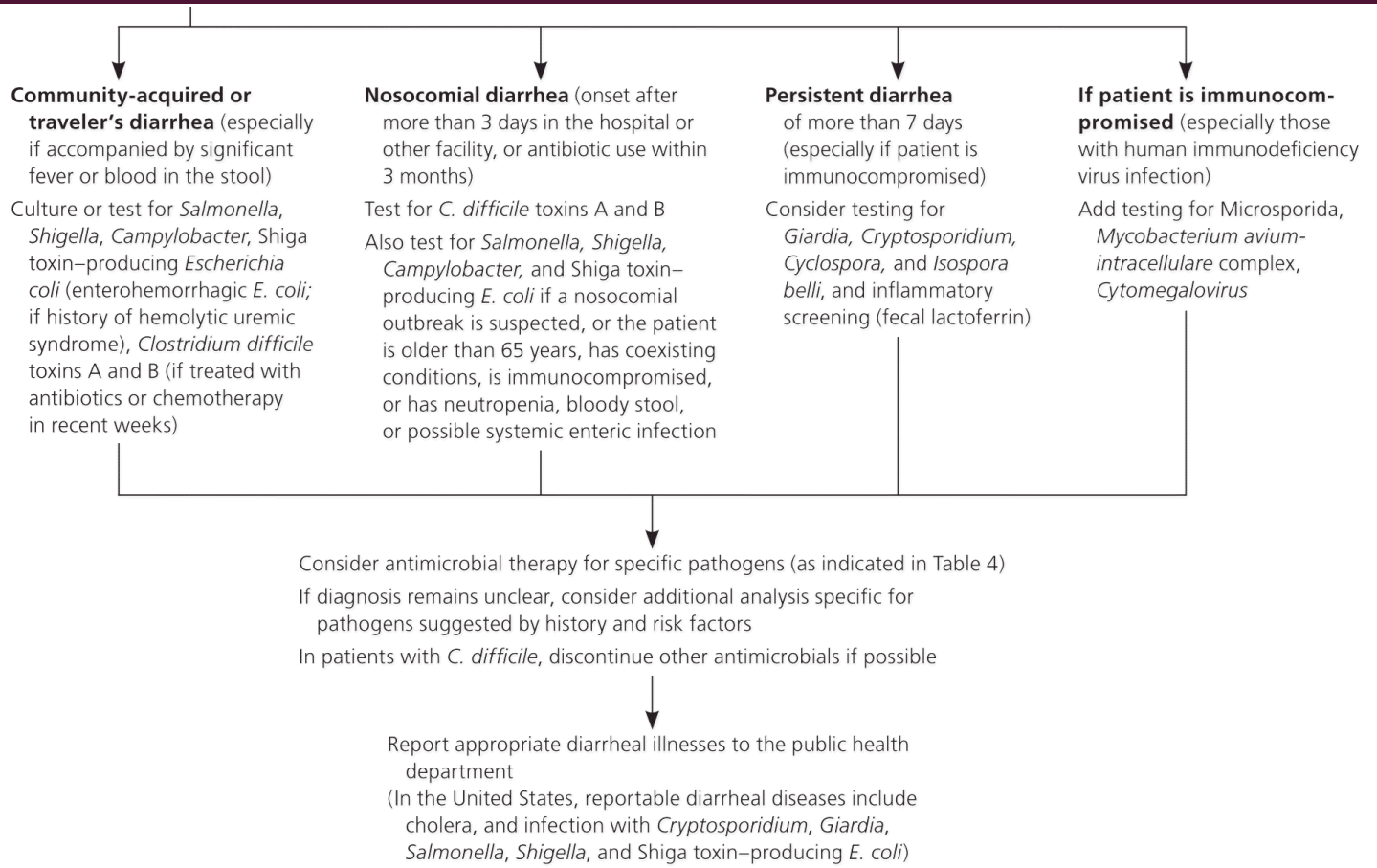
Entamoeba histolytica

Giardia

Viral

Norovirus

Rotavirus



**—Use the new World Health Organization reduced-osmolarity oral rehydration solution or a substitute. It can be roughly duplicated by mixing 1/2 teaspoon of salt, 6 teaspoons of sugar, and 1 liter of water.*

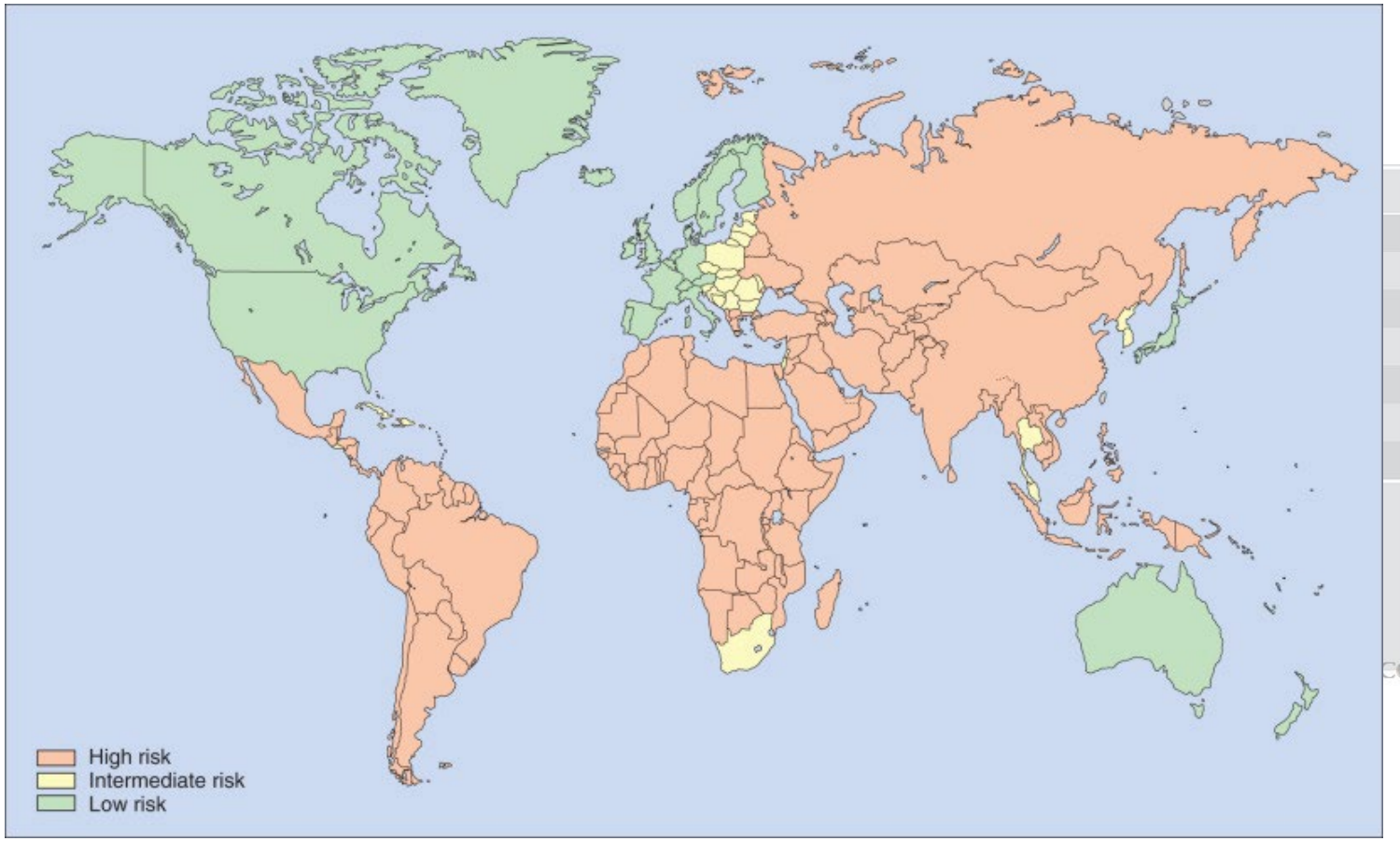
†—Dosing for loperamide/simethicone: 2 tablets (2 mg of loperamide/125 mg of simethicone per tablet) followed by 1 additional tablet after each unformed stool, up to 4 tablets in 24 hours (3 doses).

MANAGEMENT OF ACUTE DIARRHEA

- Hydration
  - Generally water, sports drinks, soups, broths sufficient for healthy adults
  - Rehydration solutions (Pedialyte etc) in elderly patients with severe diarrhea or dysentery type symptoms
- Medications
  - Motility agents: loperamide – slows intraluminal movement of fluids
  - Antisecretory: bismuth (pepto bismol)
  - Antibiotics

TRAVELERS DIARRHEA

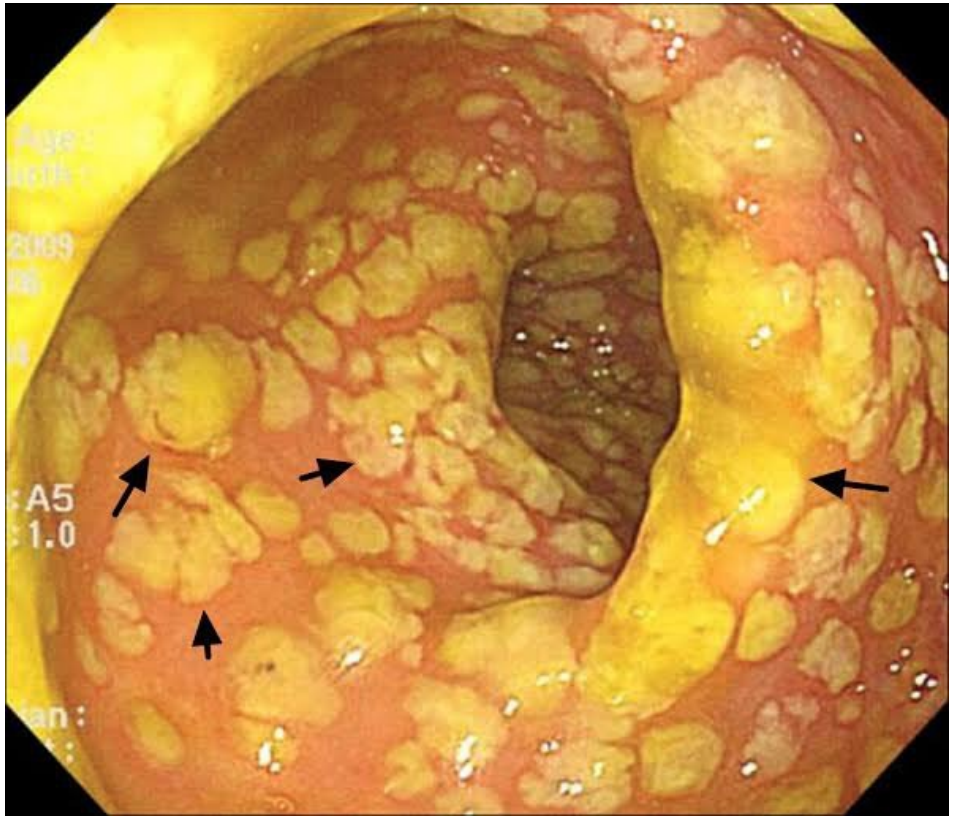
- In traveler's diarrhea, bacterial causes (enterotoxigenic e. coli) more likely – antibiotics recommended and likely to reduce symptom duration by 1-3 days



Sanders, John W., et al. "Epidemiology of travelers' diarrhea." *Travel medicine*. Elsevier, 2019. 187-198.

Riddle, Mark S; DuPont, Herbert L; Connor, Bradley A. Official journal of the American College of Gastroenterology | ACG111(5):602-622, May 2016.

CLOSTRIDIOIDES DIFFICILE



- Causes half a million infections in the US per year
- Risk factors
  - Antibiotic use
  - Age > 65
  - Recent hospitalization or stay in a nursing home
- First line treatment is 14 day course of oral vancomycin
- 1/6 patients recur within 2 months
- 30 day mortality may be up to 10%

CDC "C. diff"

QUESTION 3

A 50-year-old man returns from a trip to Costa Rica. 48 hours later, he comes to the physician because of diarrhea, abdominal cramps, and nausea. His temperature is 37 °C (98.6 °F). His stools do not contain mucus or blood. Microscopic examination of a stool sample reveals no leukocytes.

- Which of the following is the most likely pathogen?
- **A)** *Clostridium perfringens*.
- ***B)*** *Bacillus cereus*.
- **C)** *Escherichia coli*
- **D)** *Staphylococcus aureus*.
- **E)** Rotavirus.

CHRONIC DIARRHEA

- Symptoms lasting > 4 weeks
- History
  - Pain to suggest IBS?
  - Medications
  - Diet related
    - Not absorbable sugars (sorbitol)
    - Lactose or fructose
    - Excess fiber
- Alarm features
  - Weight loss, hematochezia, nocturnal awakenings, family history of GI conditions like inflammatory bowel disease or celiac disease

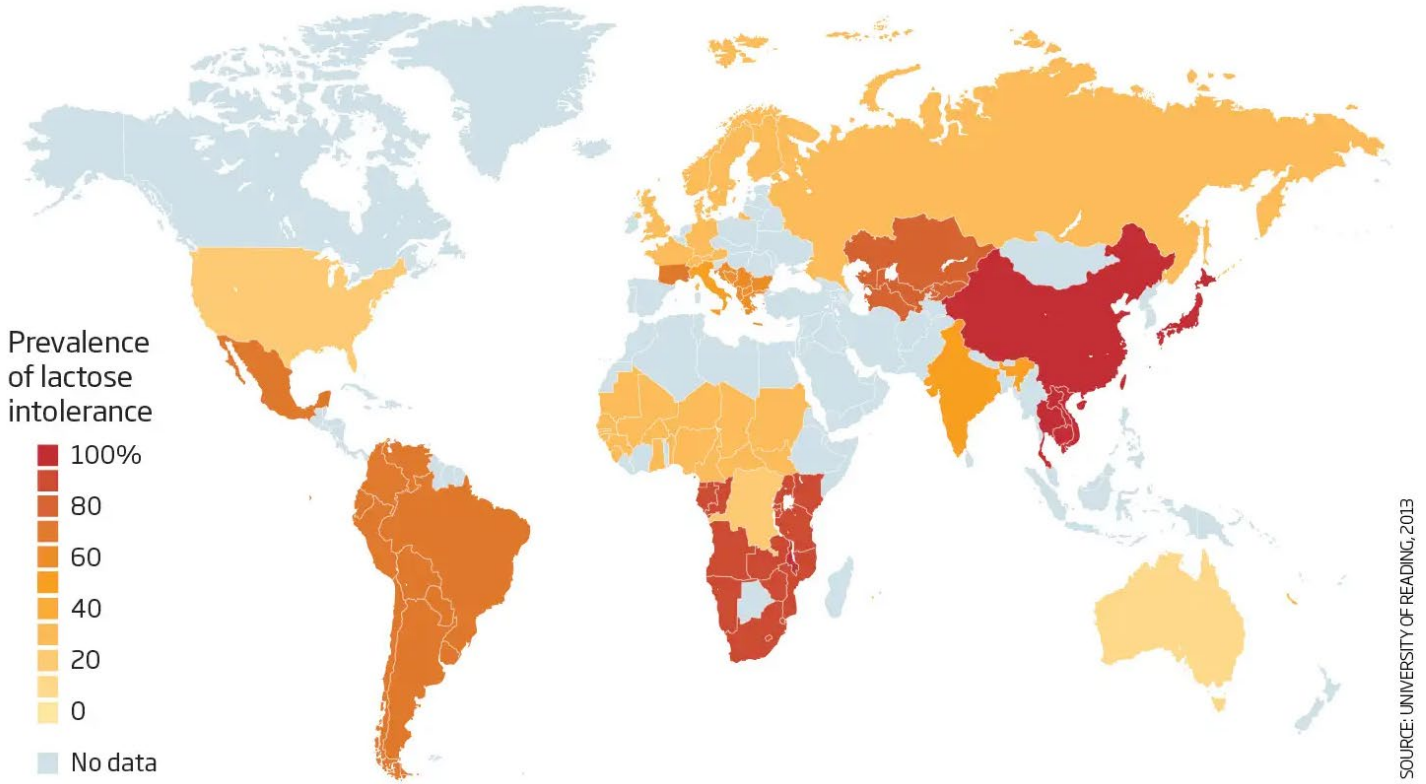
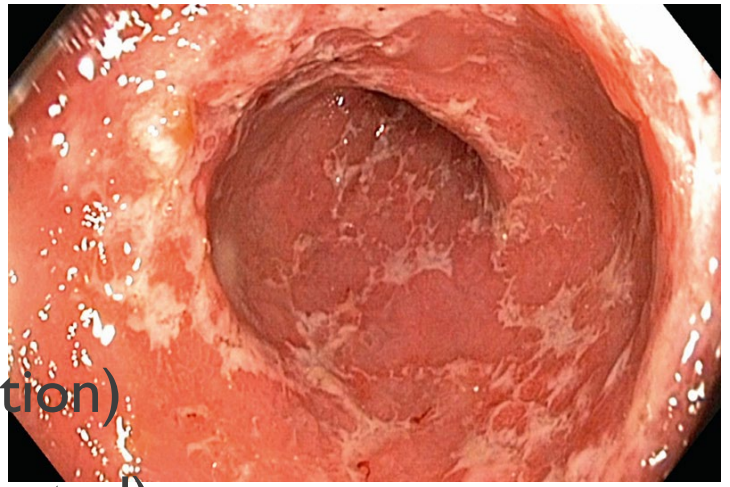


Image: https://wonderingmaps.com/lactose-intolerance/

TYPES OF CHRONIC DIARRHEA

Category	Clinical Features	Examples
Secretory	Large-volume, watery stools	Medications (e.g., colchicine, NSAIDs)
	Does not stop with fasting	SIBO
		Hormone-producing tumors (e.g., gastrinoma, VIPoma, carcinoid, somatostatinoma)
		Bile acid malabsorption
		Noninvasive infections (e.g., cholera)
Osmotic	Diarrhea stops with fasting	Medications (e.g., magnesium sulfate laxative)
	Bloating, gas	Carbohydrate malabsorption
Steatorrhea	Bulky, greasy, oily, malodorous stools	Pancreatic insufficiency
	Weight loss	Small-bowel mucosal disease (e.g., celiac disease)
		SIBO
		Bile acid deficiency
		Lymphatic obstruction
Impaired motility	Bloating, nausea	Diabetes mellitus
	Features of underlying disorder	Postsurgery
		Hyperthyroidism
		Scleroderma
Inflammatory	Abdominal pain +/– fever, bleeding, weight loss	Inflammatory bowel disease
		Invasive/inflammatory infections (e.g., *Clostridium difficile*)
		Ischemia

WORKUP FOR CHRONIC DIARRHEA



- Labs: CBC, chem, TSH, celiac panel & total IgA
- Stool studies :
  - Ova and parasites x 3 (increases sensitivity)
  - Fecal calprotectin if IBD suspected (looks for inflammation)
  - Fecal elastase (if exocrine pancreatic insufficiency suspected)
- If alarm symptoms
  - Colonoscopy with random biopsies- will rule out IBD, microscopic colitis
  - Hydrogen breath testing for small intestinal bacterial overgrowth

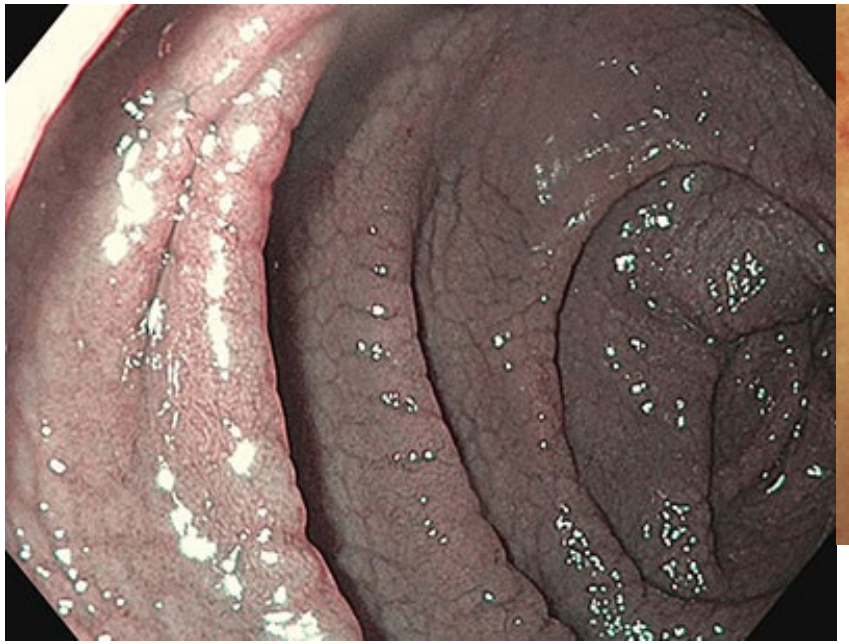
TREATMENT

- Microscopic colitis – treated with short course (4-8 weeks) of topical steroid
- IBD- multiple medications
- Pancreatic insufficiency- pancreatic enzymes- like creon etc
- No etiology found- presume "functional"
  - Loperamide- 2 mg TID prior to meals – can be uptitrated to 16 mg per day
  - Cholestyramine 4 g twice a day
- If underlying IBS (association with abdominal pain)- treat that

QUESTION 4

A 33-year-old presents to the clinic with complaints of diarrhea. He reports he has been having 3-4 loose stools per day for the last 12 months and improves when he fasts. There is no blood in his stool. He denies hematochezia, melena, weight loss, or family history of colon cancer. A physical examination demonstrates blister-like skin lesions at the extensor surfaces of the elbow bilaterally. What is the next best test for diagnosis?

- A) Stool c. diff PCR
- B) Upper endoscopy
- C) Colonoscopy
- D) Celiac serologies
- E) Hydrogen breath test



Images from "Medbullets"

REFERENCES

Andrews CN, Storr M. The pathophysiology of chronic constipation. Can J Gastroenterol. 2011 Oct;25 Suppl B(Suppl B):16B-21B. PMID: 22114753; PMCID: PMC3206564.

Bharucha AE, Pemberton JK, Locke GR 3rd. American Gastroenterological Associated technical review on constipation. Gastroenterology. 2013 Jan; 144(1):218-38.

Centers for Disease Control and Prevention, National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Healthcare Quality Promotion (DHQP)

Masters, Philip A. "MKSAP 17: medical knowledge self-assessment program." (2015).

Riddle, Mark S; DuPont, Herbert L; Connor, Bradley A. Official journal of the American College of Gastroenterology | ACG111(5):602-622, May 2016.

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Thielman, Nathan M., and Richard L. Guerrant. "Acute infectious diarrhea." New England Journal of Medicine 350.1 (2004): 38-47.