Sorting the Runs: Managing Diarrhea in Primary Care

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Disclosure

Consultant: AbbVie; Amgen

Speaker's Bureau: AbbVie; Pfizer; Takeda

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Overview

- What is “diarrhea”
- How to “flush out” history of presentation
- Evaluation/treatment
  - Acute diarrhea
  - Chronic diarrhea
- Cases

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Diarrhea- ?s to “Flush Out” (in No Particular Order)

- When did it start
- What does stool look like in the toilet
  - Consistency
  - Blood
  - Grease
  - Float
  - How many flushes to clear toilet
- Urgency to have BM
- How many BM per day
- Differentiate between BM vs passing gas
- Abdominal pain
- Associated symptoms (skin, joints, eyes, fever, etc)

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BM=bowel movement

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Diarrhea- Definition(s)

- "You know it when you see it"

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Diarrhea- Definition(s)

- ACG guideline:
  - "Acute diarrhea can be defined as the passage of a greater number of stools of decreased form from the normal lasting <14 days. Some definitions require an individual to present with an abrupt onset 3 or more loose or liquid stools above baseline in a 24-h period to meet the criteria of acute diarrhea."
- IDSA guideline (follows WHO):
  - "The WHO defines diarrhea as passage of 3 or more loose or liquid stools per 24 hours, or more frequently than is normal for an individual person. Frequent passing of formed stools is not diarrhea, nor is passing of loose, "pasty" stools by infants consuming human milk."

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Am J Gastroenterol 2016;111:602-622
Clin Infect Dis 2017;65:e45-e80

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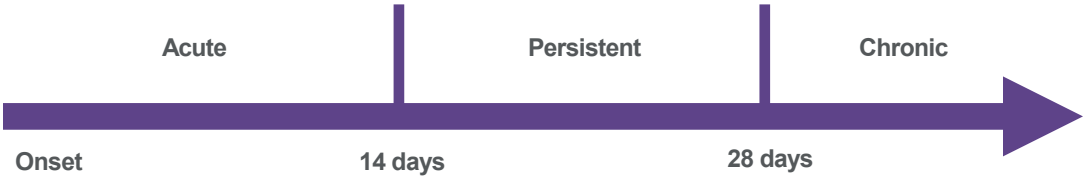
Diarrhea- Definition(s)



Infectious
Start of chronic etiologies

Functional
Inflammatory
Malabsorption
Ischemia
Infectious (parasites)
Malignancy

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Diarrhea

- Acute
- Persistent
- Chronic

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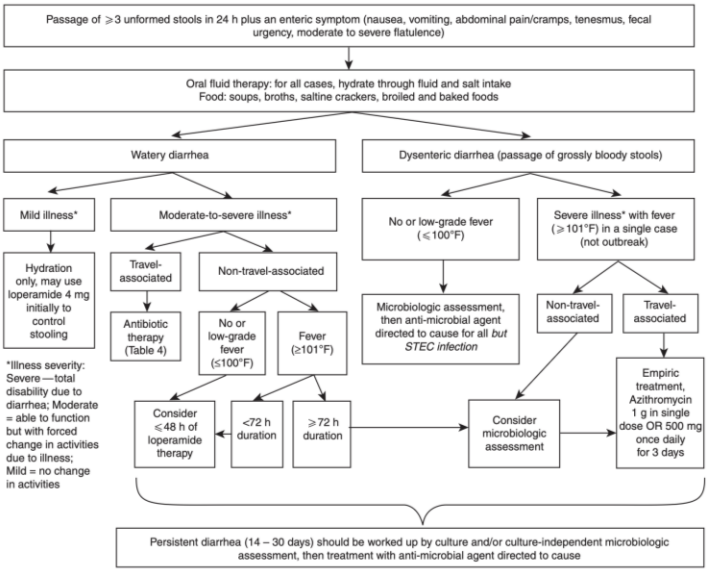
Diarrhea- Acute- Overview

- Acute
- Persistent
- Chronic



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Diarrhea- Acute- Differential

- Acute
- Persistent
- Chronic

- Infectious (most common)
  - Non-bloody (“watery”)
  - Bloody (“dysentery”)
- Non-infectious

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Diarrhea- Traveler's- Increased Risk of Bacteria / Protozoa

- "Particularly in locations where large numbers of people **lack plumbing** or latrine access, stool contamination in the environment will be greater and more accessible to disease-transmitting vectors (e.g., flies). **Inadequate electrical capacity** leading to frequent blackouts or poorly functioning refrigeration can result in unsafe food storage and an additional increased risk for disease. **Lack of safe, potable water** contributes to food and drink contamination, as do unhealthful shortcuts in cleaning hands, countertops, cutting boards, utensils, and foods (e.g., fruits and vegetables). In some places, **handwashing might not be a social norm** and could represent an extra expense; thus, adequately equipped handwashing stations might not be available in food-preparation areas."
  - *Bolded text as per presenter (ACS)*

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https://www.cdc.gov/yellow-book/hcp/preparing-international-travelers/travelers-diarrhea.html (accessed November 2, 2025)

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Diarrhea- Acute- Evaluation/Etiologies/Treatment

- Acute
- Persistent
- Chronic

- Infectious (most common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")
- Non-infectious

- Etiology usually viral (testing/antivirals not needed)
- Get a good history!!
- Stool testing if:
  - Symptoms lasting 7+ days
  - Severe illness (debated)
  - Confirmatory (known exposure, prior abx use)
  - History of underlying GI disorder
- Endoscopy/colonoscopy/imaging low yield
- Treatment:
  - Supportive care
  - Abx if travel

Abx=antibiotic

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Diarrhea- Supportive Care

- Hydration
  - Oral rehydration solution (ORS)
  - Non-ORS
    - Non-caffeinated
    - Balance salt sugar (drink fruit juice (sugar) with soup (salt))
- Nutrition
  - First few days: BRAT diet (Bananas, Rice, Applesauce, Toast)
  - After 2 days: add salty foods (unless contradicted), cereals (no milk), potatoes, skinless chicken (not fried)
- Symptomatic therapy
  - Bismuth subsalicylate
  - Loperamide

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Diarrhea- Acute- Evaluation/Etiologies/Treatment

- Acute
- Persistent
- Chronic

- Infectious (most common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")
- Non-infectious

- Stool-based testing:
  - Culture
  - Ova/parasite detection (lab specific)
  - Specific pathogen test (lab specific)
  - Evaluate for inflammation
    - Leukocytes
    - Calprotectin
- Therapy based on testing, resistance

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Fecal Calprotectin

- Neutrophil-specific marker (inflammation)
- Quantitative
- "Normal" value/range is not well identified (less than 150-200 "accepted")
- NOT diagnostic or disease-specific, can be elevated in:
  - Inflammatory bowel disease
  - Infection
  - Ischemia
  - Drug-induced damage
  - Cancer

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KoniKoff MR et al. Inflamm Bowel Dis. 2006;12:524-534
Bjarnason I. Gastroenterol Hepatol (NY). 2017;13:53-56
ACG guidelines 2025 (in press)

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Diarrhea- Acute- Infectious Agents

Exposure or Condition	Pathogen(s)
Foodborne	
Foodborne outbreaks in hotels, cruise ships, resorts, restaurants, catered events	Norovirus, nontyphoidal *Salmonella*, *Clostridium perfringens*, *Bacillus cereus*, *Staphylococcus aureus*, *Campylobacter* spp, ETEC, STEC, *Listeria*, *Shigella*, *Cyclospora cayetanensis*, *Cryptosporidium* spp
Consumption of unpasteurized milk or dairy products	*Salmonella*, *Campylobacter*, *Yersinia enterocolitica*, *S. aureus* toxin, *Cryptosporidium*, and STEC. *Listeria* is infrequently associated with diarrhea, *Brucella* (goat milk cheese), *Mycobacterium bovis*, *Coxiella burnetii*
Consumption of raw or undercooked meat or poultry	STEC (beef), *C. perfringens* (beef, poultry), *Salmonella* (poultry), *Campylobacter* (poultry), *Yersinia* (pork, chitterlings), *S. aureus* (poultry), and *Trichinella* spp (pork, wild game meat)
Consumption of fruits or unpasteurized fruit juices, vegetables, leafy greens, and sprouts	STEC, nontyphoidal *Salmonella*, *Cyclospora*, *Cryptosporidium*, norovirus, hepatitis A, and *Listeria monocytogenes*
Consumption of undercooked eggs	*Salmonella*, *Shigella* (egg salad)
Consumption of raw shellfish	*Vibrio* species, norovirus, hepatitis A, *Plesiomonas*
Exposure or contact	
Swimming in or drinking untreated fresh water	*Campylobacter*, *Cryptosporidium*, *Giardia*, *Shigella*, *Salmonella*, STEC, *Plesiomonas shigelloides*
Swimming in recreational water facility with treated water	*Cryptosporidium* and other potentially waterborne pathogens when disinfectant concentrations are inadequately maintained
Healthcare, long-term care, prison exposure, or employment	Norovirus, *Clostridium difficile*, *Shigella*, *Cryptosporidium*, *Giardia*, STEC, rotavirus
Child care center attendance or employment	Rotavirus, *Cryptosporidium*, *Giardia*, *Shigella*, STEC
Recent antimicrobial therapy	*C. difficile*, multidrug-resistant *Salmonella*
Travel to resource-challenged countries	*Escherichia coli* (enteroaggregative, enterotoxigenic, enteroinvasive), *Shigella*, Typhi and nontyphoidal *Salmonella*, *Campylobacter*, *Vibrio cholerae*, *Entamoeba histolytica*, *Giardia*, *Blastocystis*, *Cyclospora*, *Cystoisospora*, *Cryptosporidium*
Exposure to house pets with diarrhea	*Campylobacter*, *Yersinia*
Exposure to pig feces in certain parts of the world	*Balantidium coli*
Contact with young poultry or reptiles	Nontyphoidal *Salmonella*
Visiting a farm or petting zoo	STEC, *Cryptosporidium*, *Campylobacter*
Exposure or condition	
Age group	Rotavirus (6–18 months of age), nontyphoidal *Salmonella* (infants from birth to 3 months of age and adults >50 years with a history of atherosclerosis), *Shigella* (1–7 years of age), *Campylobacter* (young adults)
Underlying immunocompromising condition	Nontyphoidal *Salmonella*, *Cryptosporidium*, *Campylobacter*, *Shigella*, *Yersinia*
Hemochromatosis or hemoglobinopathy	*Y. enterocolitica*, *Salmonella*
AIDS, immunosuppressive therapies	*Cryptosporidium*, *Cyclospora*, *Cystoisospora*, microsporidia, *Mycobacterium avium*–intercellulare complex, cytomegalovirus
Anal-genital, oral-anal, or digital-anal contact	*Shigella*, *Salmonella*, *Campylobacter*, *E. histolytica*, *Giardia lamblia*, *Cryptosporidium* as well as sexually transmitted infections

Abbreviations: ETEC, enterotoxigenic *Escherichia coli*; STEC, Shiga toxin–producing *Escherichia coli*.

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Diarrhea- Acute- Antibiotic Therapy

- Traveler's diarrhea
  - PREVENTION ("*boil it, cook it, peel it, or forget it*")
  - Antibiotics if high likelihood of bacterial pathogen (longer regimen if fever/dysentery)
    - Ciprofloxacin (750 mg x1 vs 500 mg twice a for 3 days)
    - Levofloxacin (500 mg x1 vs 500 mg daily for 3 days)
    - Rifaximin (200 mg three times daily for 3 days)
    - Azithromycin (1,000 mg x1 vs 500 mg daily for 3 days)
  - Immunocompromised patients- need extended duration vs IV antibiotics
  - If symptoms persist, evaluate for parasite/protozoa
- Non-traveler's diarrhea
  - No antibiotics indicated unless known exposure
- No role for probiotics

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CLINICAL PEARL

ALCOHOL-BASED SANITIZERS **INEFFECTIVE** FOR NOROVIRUS

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Diarrhea – Persistent - Evaluation/Etiologies/Treatment

- Acute
- Persistent
- Chronic

- Infectious
  - Non-bloody ("watery")
  - Bloody ("dysentery")
- Non-infectious

- Etiology variable
- Get a good history!!
- Stool tests for pathogens, inflammation if not already done
  - If already done, consider repeating if suspicion high
- Consider endoscopy/colonoscopy or imaging based on clinical picture

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Diarrhea - Chronic- Evaluation/Etiologies

- Acute
- Persistent
- Chronic

- Non-infectious
  - Functional
  - Inflammation
  - Malabsorption
  - Malignancy
- Infectious (less common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")

- Etiology variable
- Get a good history!!
  - Onset
  - Number of BM/day
    - Day-to-day variability?
    - Nocturnal?
    - Relationship to eating?
    - Blood?
    - Grease?
    - Mucus?
  - Abdominal pain?
  - Weight loss?
  - Other symptoms
  - Age of onset (50+ red flag)

- Test based on suspicion
  - Stool studies
    - Infection
    - Inflammation (calprotectin)
    - Blood
  - Imaging
    - Enterography (IV and "neutral" oral contrast)
    - Small bowel follow thru
  - Endoscopy
    - EGD, colonoscopy, video capsule

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Diarrhea- Chronic- Evaluation/Etiologies

- Acute
- Persistent
- Chronic

- Non-infectious
  - Functional
  - Inflammation
  - Malabsorption
  - Malignancy
- Infectious (less common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")

- Etiology variable
- Get a good history!!
  - Onset TYPICALLY UNCLEAR
  - Number of BM/day
    - Day-to-day variability? YES
    - Nocturnal? USUALLY NO
    - Relationship to eating? EITHER
    - Blood? NO
    - Grease? NO
    - Mucus? YES
  - Abdominal pain? VARIABLE (CRAMPS)
  - Weight loss? TYPICALLY NO
  - Other symptoms USUALLY NO

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BM=bowel movements
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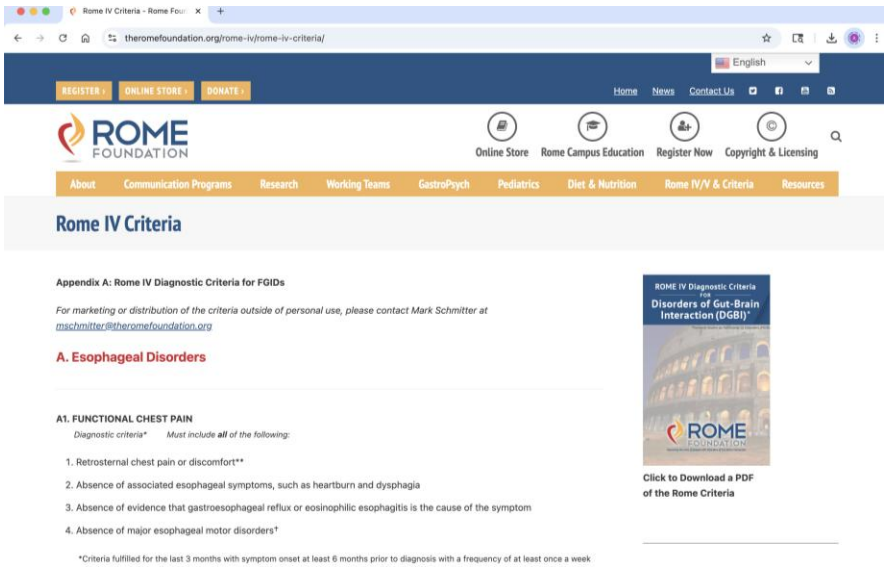
Functional Gastrointestinal Disorders – ROME Criteria



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https://theromefoundation.org/rome-iv/rome-iv-criteria/
Accessed November 2, 2025

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Functional Gastrointestinal Disorders – ROME Criteria – IBS

C1. IRRITABLE BOWEL SYNDROME

*Diagnostic criteria**

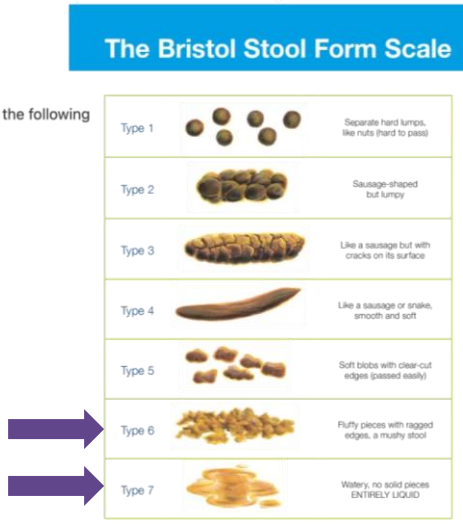
Recurrent abdominal pain on average at least 1 day/week in the last 3 months, associated with **two or more** of the following criteria:

1. Related to defecation
2. Associated with a change in frequency of stool
3. Associated with a change in form (appearance) of stool

* Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis

IBS with predominant diarrhea (IBS-D): > ¼ (25%) of bowel movements with Bristol stool types 6 or 7 and < ¼ (25%) of bowel movements with Bristol stool types 1 or 2. *Alternative for epidemiology or clinical practice: Patient reports that abnormal bowel movements are usually diarrhea (like Type 6 or 7 in the picture of BSF, see Figure 2A).*

IBS with mixed bowel habits (IBS-M): > ¼ (25%) of bowel movements with Bristol stool types 1 or 2 and > ¼ (25%) of bowel movements with Bristol stool types 6 or 7. *Alternative for epidemiology or clinical practice: Patient reports that abnormal bowel movements are usually both constipation and diarrhea (more than 1/4 of all the abnormal bowel movements were constipation and more than 1/4 were diarrhea, using picture of BSF, see Figure 2A).*



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https://theromefoundation.org/rome-iv/rome-iv-criteria/
Accessed November 2, 2025

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Functional Gastrointestinal Disorders – ROME Criteria – Non-Ibs

C3. FUNCTIONAL DIARRHEA

*Diagnostic criterion**

Loose or watery stools, without predominant abdominal pain or bothersome bloating, occurring in more than 25% of stools.**

*Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis

**Patients meeting criteria for IBS-D (diarrhea-predominant IBS) should be excluded.

C4. FUNCTIONAL ABDOMINAL BLOATING/DISTENSION

Diagnostic criteria Must include **both** of the following:*

1. Recurrent bloating and/or distension occurring on average at least 1 day/week; abdominal bloating and/or distension predominates over other symptoms.**
2. There are insufficient criteria for a diagnosis of irritable bowel syndrome, functional constipation, functional diarrhea, or post-prandial distress syndrome.

*Criteria fulfilled for the last 3 months with symptom onset at least 6 months prior to diagnosis

**Mild pain related to bloating may be present as well as minor bowel movement abnormalities

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https://theromefoundation.org/rome-iv/rome-iv-criteria/
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Diarrhea- Chronic- Evaluation/Etiologies/Treatment

- Acute
- Persistent
- Chronic

- Non-infectious
  - Functional
  - Inflammation
  - Malabsorption
  - Malignancy
- Infectious (less common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")

- Develop a trusting relationship
  - Be sympathetic, set expectations
  - Frequent interactions
- Many, many ways to approach therapy
  - Pharmacologic
    - (next slide)
  - Behavioral
    - Brain-gut directed therapy
  - Dietary
    - Keep a food/symptom/stress diary, evaluate patterns
    - Prioritize "safe" foods
    - Keep to a schedule
    - Avoid dairy
    - Avoid gas-forming liquids/foods (see low FODMAP diet)

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Diarrhea- Chronic- Evaluation/Etiologies/Treatment

- Acute
- Persistent
- Chronic

- Non-infectious
  - Functional
  - Inflammation
  - Malabsorption
  - Malignancy
- Infectious (less common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")

- Pharmacologic therapies
  - Antidiarrheals
    - Loperamide (first-line)
    - Bile salt binder (first-line if prior cholecystectomy)
    - Alosetron (need a gallbladder to use)
    - Eluxadoline
  - Tricyclic antidepressants (pain + diarrhea)
    - Amitriptyline
    - Nortriptyline
  - Antibiotics
    - Rifaximin
  - Antispasmodics
    - Hyoscyamine
    - Enteric coated peppermint oil
  - LIMITED/NO EVIDENCE FOR:
    - Probiotics
    - Fecal microbial transplant

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Diarrhea- Chronic- Evaluation/Etiologies/Treatment

- Acute
- Persistent
- Chronic

- Non-infectious
  - Functional
  - Inflammation
  - Malabsorption
  - Malignancy
- Infectious (less common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")

- Suspect when:
  - Elevated fecal calprotectin/leukocytes
  - Imaging with bowel inflammation
  - "Red flag" symptoms
- Gastroenterology referral
  - Will drive evaluation and treatment
- Inflammatory Bowel Disease (IBD)
  - Ulcerative colitis
  - Crohn's disease
- Microscopic colitis
- Celiac disease / small bowel inflammation
- Radiation

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Diarrhea- Chronic- Evaluation/Etiologies

- Acute
- Persistent
- Chronic

- Non-infectious
  - Functional
  - Inflammation
  - Malabsorption
  - Malignancy
- Infectious (less common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")

- Suspect when:
  - Diarrhea after eating/drinking (timing variable)
  - Bloating, excess flatulence
  - Weight loss, weakness, muscle loss
  - Unexplained signs/symptoms (ie night blindness)
- Etiology/evaluation:
  - Protein (muscle loss, edema, low albumin, diarrhea)
    - Evaluate with alpha 1 antitrypsin clearance (24 hour), small bowel visualization (video capsule endoscopy), biopsies
  - Fat (steatorrhea- greasy/oily stools that float, difficult to clear toilet after flushing, stick to side of toilet bowl)
    - Evaluate with fecal elastase (pancreatic exocrine insufficiency), 24 hour fecal fat collection (must be on fat-containing diet)
  - Carbohydrates (bloating, flatulence, diarrhea)
    - Breath testing with specific carbohydrate
  - Variety of micronutrients
    - Micronutrient specific

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Diarrhea- Chronic- Evaluation/Etiologies/Treatment

- Acute
- Persistent
- Chronic

- Non-infectious
  - Functional
  - Inflammation
  - Malabsorption
  - Malignancy
- Infectious (less common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")

- Protein
  - Determine etiology and treat (if possible)
  - Very high protein, low fat diet
- Fat
  - Pancreatic exocrine replacement therapy
- Carbohydrates
  - Determine type of carbohydrate (via specific breath testing- this is often difficult to do)
  - Lactose: avoid dairy, can use lactase replacement therapy
  - Sucrase/isomaltose deficiency- dietary avoidance, sarcoidosis replacement therapy
- Variety of micronutrients
  - Micronutrient specific

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Diarrhea – Chronic – Evaluation/Etiologies

- Acute
- Persistent
- Chronic

- Non-infectious
  - Functional
  - Inflammation
  - Malabsorption
  - Malignancy
- Infectious (less common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")

- Suspect when:
  - Weight loss
  - Lab abnormalities (microcytic anemia, iron deficiency)
  - Blood in stool / unexplained diarrhea
  - Family history of colon polyps/cancer
- Etiology/evaluation:
  - Colorectal cancer
    - Stool-based testing
    - Imaging
    - Colonoscopy
  - Neuroendocrine tumor
    - Imaging (enterography protocol, PET with dotatate)
- Treatment: oncology referral

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Diarrhea – Chronic – Evaluation/Etiologies/Treatment

- Acute
- Persistent
- Chronic

- Non-infectious
  - Functional
  - Inflammation
  - Ischemia
  - Malabsorption
  - Malignancy
- Infectious (less common)
  - Non-bloody ("watery")
  - Bloody ("dysentery")

- Etiology variable
- Get a good history!!
- Stool tests for pathogens, inflammation if not already done
  - If already done, consider repeating if suspicion high
- Consider endoscopy/colonoscopy or imaging based on clinical picture

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Patient 1

24yoM Healthy Presents with 1 Month of Diarrhea and Cramps.
No Recent Travel, No New Medications, No Sick Contacts.
Now with Blood Which Prompted Urgent Appointment.

What Is the Next Step?

A. Stool studies for infection/inflammation
B. Imaging
C. Empiric antibiotics
D. Empiric steroids
E. I need more information (history of presentation)

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Patient 2

19yoF Healthy Presents with 2 Days of Diarrhea and Cramps. Recent Travel to Florida (Cruise), Otherwise No New Medications, No Sick Contacts. Roommate on Cruise Also with Similar Symptoms

What Is the Next Step?

A. Supportive care (oral rehydration, BRAT diet)
B. Stool studies for infection/inflammation
C. Empiric antibiotics
D. Empiric steroids
E. I need more information (history of presentation)

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Norovirus

- Most common cause of viral gastroenteritis
- Transmission person-to-person, environmental
- Low amount of virus needed to cause illness
- Symptoms: nausea/vomiting, abdominal pain, watery non-bloody diarrhea
- No need to test stool if high suspicion
  - Test if: etiology unclear; immunocompromised
- Treatment is supportive care

- **Alcohol-based sanitizer **ineffective** to kill virus (wash hands, bleach for surfaces**

Lancet 2024;403:862-876

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Patient 3

24yom Healthy Presents with Progressively Worsening Diarrhea over 15 Days with Associated Abdominal Pain and Now Blood. no Recent Travel, No New Medications, No Sick Contacts. what Is the Next Step?

A. Supportive care (oral rehydration, BRAT diet)
B. Stool studies for infection/inflammation
C. Empiric antibiotics
D. Empiric steroids
E. I need more information (history of presentation)

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Patient 4

18yoM Healthy Presents with Progressively Worsening Diarrhea Over 3 Months with Associated Abdominal Pain and Now Blood. He Is Home for Winter Break, and His Parents Are Concerned.

What Is the Next Step?

A. Supportive care (oral rehydration, BRAT diet)
B. Stool studies for infection/inflammation
C. Empiric antibiotics
D. Empiric steroids
E. I need more information (history of presentation)

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Patient 5

32yoF healthy presents with daily non-bloody diarrhea for past 6 months. She was without any gastrointestinal related issues for most of her life, then developed symptomatic gallstones and had a cholecystectomy 7 months ago. She takes loperamide daily which helps somewhat, otherwise takes no medications and has no family history of any gastrointestinal issues.

Patient 5

What Is the Next Step?

A. Referral to GI for colonoscopy
B. Stool studies for infection/inflammation
C. Empiric antibiotics
D. Empiric steroids
E. Empiric bile salt binder

Bile Salt Diarrhea

- Secretory diarrhea caused by excess bile in the colon due to:
  - Inadequate reabsorption in the ileum (inflammation, resection)
  - Excessive bile acid synthesis
  - S/p cholecystectomy
  - Idiopathic
- Evaluation:
  - History, history, history
  - Quantitative fecal bile acids (sensitivity/specificity in the 40-60% range)
  - Selenium HomotauroCholic Acid Test (^{75}SeHCAT) (sensitivity/specificity in the 90-100% range)
  - Fasting Serum 7α-hydroxy-4-cholesten-3-one (C4) (sensitivity/specificity 80-95% range)
  - Fasting serum fibroblast growth factor 19 (FGF19) (sensitivity/specificity depends on cutoff, typically both less than 90%)
- Treatment is bile salt sequestration with medication

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European Journal Internal Medicine 2024;128:10-19

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