Infectious Diarrhea

Infectious Diarrheal Diseases

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Objectives

- Identify the most common causes of infectious diarrhea in adult patients
- Describe how the patient history and clinical presentation of diarrhea may favour viral versus bacterial causes that benefit from antibiotic therapy
- Compare clinical spectrum of disease in resource-rich vs. resource-poor countries

Background

- Diarrheal disease is one of the top ten leading causes of death worldwide
- Diarrheal disease is a particular concern for children younger than five years old in resource-limited settings
- Among adults in resource-rich settings, diarrhea is often a “nuisance disease” in the healthy individual

- Most cases of acute diarrhea in adults are of infectious etiology, and most cases resolve with symptomatic treatment alone
- When clinicians care for adults with diarrhea, two important decision points are:
  - When to perform stool testing
  - Whether to initiate empiric antimicrobial therapy

(Fang and Patel, 2017; GBD 2016 Diarrhoeal Disease Collaborators, 2018)

Definitions

- Diarrhea is defined as the passage of loose or watery stools, typically at least three times in a 24-hour period
- Reflects increased water content of the stool, whether due to impaired water absorption and/or active water secretion by the bowel
  - Acute – 14 days or fewer in duration
  - Persistent diarrhea – more than 14 but fewer than 30 days in duration
  - Chronic – more than 30 days in duration
- Invasive diarrhea, *dysentery*- diarrhea with visible blood or mucous
  - Dysentery is commonly associated with fever and abdominal pain

Etiology

- Most cases of acute diarrhea are due to infections and are self-limited.
- Most cases of acute infectious diarrhea are likely viral, as indicated by the observation that stool cultures are positive in only 1.5 to 5.6 percent of cases
- The major causes of acute infectious diarrhea include:
  - **Viruses** (norovirus, rotavirus, adenoviruses, astrovirus, and others)

  - **Bacteria** (Salmonella, Campylobacter, Shigella, enterotoxigenic Escherichia coli, Clostridioides difficile, and others)
  - **Protozoa** (Cryptosporidium, Giardia, Cyclospora, Entamoeba, and others
- Non-infectious etiologies become more common with longer duration of diarrhea

(Dryden et al., 1996)

Causes of acute infectious diarrhea in adults in resource-rich settings

	Likely pathogens	Mean incubation period	Classic/common food sources	Other epidemiologic clues
Watery diarrhea	Norovirus	24 to 48 hours	Shellfish, prepared foods, vegetables, fruit	Outbreaks in: - Restaurants - Health care facilities - Schools and childcare centers - Cruise ships - Military populations

	Likely pathogens	Mean incubation period	Classic/common food sources	Other epidemiologic clues
Clostridioides (formerly *Clostridium difficile*)	N/A	N/A	Antibiotic use-Hospitalization-Cancer chemotherapy-Gastric acid suppression- Inflammatory bowel disease	
Clostridium perfringens	8 to 16 hours	Meat, poultry, gravy, home-canned goods		
Enterotoxigenic *Escherichia coli*	1 to 3 days	Fecally contaminated food or water	Travel to resource-limited settings	
Other enteric viruses (rotavirus, enteric adenovirus, astrovirus, sapovirus)	10 to 72 hours	Fecally contaminated food or water	Daycare centers-Gastroenteritis in children-Immunocompromised adults	

	Likely pathogens	Mean incubation period	Classic/common food sources	Other epidemiologic clues
Giardia lamblia	7 to 14 days	Fecally contaminated food or water	Daycare centers- Swimming pools- Travel, hiking, camping (particularly when there is contact with water in which beavers reside)	
Cryptosporidium parvum	2 to 28 days	Vegetables, fruit, unpasteurized milk	Daycare centers- Swimming pools and recreational water sources- Animal exposure- Chronic diarrhea in advanced HIV infection	
Listeria monocytogenes	1 day (gastroenteritis)	Processed/deli meats, hot dogs, soft cheese, pâtés, and fruit	Pregnancy- Immunocompromising condition- Extremes of age	

	Likely pathogens	Mean incubation period	Classic/common food sources	Other epidemiologic clues
Cyclospora cayetanensis	1 to 11 days	Imported berries, herbs	Chronic diarrhea in advanced HIV infection	
Inflammatory diarrhea (fever, mucoid or bloody stools)¶	Nontyphoidal *Salmonella*	1 to 3 days	Poultry, eggs, and egg products, fresh produce, meat, fish, unpasteurized milk or juice, nut butters, spices	Animal contact (petting zoos, reptiles, live poultry, other pets)- Travel to resource-limited settings
Campylobacter spp	1 to 3 days	Poultry, meat, unpasteurized milk	Travel to resource-limited settings- Animal contact (young puppies or kittens, occupational contact)	

	Likely pathogens	Mean incubation period	Classic/common food sources	Other epidemiologic clues
Shigella spp	1 to 3 days	Raw vegetables	Daycare centers-Crowded living conditions-Men who have sex with men-Travel to resource-limited settings	
Enterohemorrhagic *E. coli*	1 to 8 days	Ground beef and other meat, fresh produce, unpasteurized milk and juice	Daycare centers-Nursing homes-Extremes of age	
Yersinia spp	4 to 6 days	Pork or pork products, untreated water	Abnormalities of iron-metabolism (eg, cirrhosis, hemochromatosis, thalassemia)-Blood transfusion	
Vibrio parahemolyticus	1 to 3 days	Raw seafood and shellfish	Cirrhosis	

	Likely pathogens	Mean incubation period	Classic/common food sources	Other epidemiologic clues
Entamoeba histolytica	1 to 3 weeks	Fecally contaminated food or water	Travel to resource-limited settings- Men who have sex with men	

References

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