

Common Gastrointestinal Infections

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KEYWORDS

• Gastrointestinal infections • Diarrhea • Food-borne illness • Traveler's diarrhea

KEY POINTS

- Viral infections, with norovirus being the most common, account for most cases of acute diarrhea in the United States.
- Nontyphoidal *Salmonella* species are the leading cause in the United States of hospitalization and death from gastrointestinal infections.
- The immunocompromised, children under the age of 5, and adults over 65 years of age are the most severely affected.
- For most patients in the United States presenting with diarrhea, no testing is necessary if the presentation is consistent with a viral cause and of mild to moderate severity.

INTRODUCTION

Gastrointestinal infections account for a large burden of acute and chronic disease worldwide. Diarrhea is defined as 3 or more stools in 24 hours and is the most common manifestation. It is defined as acute if lasting less than 7 days, prolonged if lasting 7 to 13 days, persistent if lasting 14 to 29 days, and chronic if lasting 30 days or longer.¹ Common bacterial, viral, and parasitic pathogens are spread via food, via contaminated water, or from person to person. According to the World Health Organization, diarrhea is the cause of 4% of deaths globally and kills approximately 2.2 million people each year.² Those in developing countries, and particularly children, are most affected. In the United States, not all cases are actively reported, but it is approximated that 179 million cases of acute diarrhea in adults occur each year, resulting in 500,000 hospitalizations and more than 5000 deaths.³ Nationally, children less than 5 years old account for the largest portion of infections, but those older than 65 years old account for greatest number of hospitalizations and deaths.⁴

Despite modern advances in food preparation and delivery, gastrointestinal infections in the United States are commonly caused by food-borne pathogens. In

Disclosure Statement: The authors have nothing to disclose.

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Prim Care Clin Office Pract ■ (2018) ■–■

<https://doi.org/10.1016/j.pop.2018.05.008>

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2011, it was found that norovirus (58%) caused the most food-borne infections followed by nontyphoidal *Salmonella* spp (11%), *Clostridium perfringens* (10%), and *Campylobacter* spp (9%). Nontyphoidal *Salmonella* spp (35%) was the leading cause of hospitalization followed by norovirus (26%), *Campylobacter* spp (15%), and *Toxoplasma gondii* (8%). Nontyphoidal *Salmonella* spp (28%) also caused the most deaths followed by *T gondii* (24%), *Listeria monocytogenes* (19%), and norovirus (11%).³

Diarrhea also accounts for the largest number of travel-related illness in the United States, with acute diarrhea accounting for 22% of travel-related diagnoses in US residents.⁵ Areas with the highest risk of acquiring traveler's diarrhea include Africa, South Asia, Latin America, and the Middle East. Risk is increased for those taking medications that lower gastric acid.⁶ Traveler's diarrhea (**Table 1**) is more likely bacterial in contrast to infectious diarrhea acquired in the United States, which is most commonly viral. Protozoa are less common causes of traveler's diarrhea but may result in longer duration or persistence of symptoms upon return to the United States.

CLINICAL MANIFESTATIONS

History

A comprehensive history is important to determine potential infectious causes of gastrointestinal diseases with a focus on sick contacts, food exposures, and travel history (**Table 2**). The onset, duration, severity, and frequency of diarrhea should be determined with attention to the stool volume and character. It is important to note if the stool has been watery or contains blood or mucus. Fever, tenesmus, and the presence of blood in stool may be more suggestive of invasive bacterial pathogens. Additional systemic symptoms, such as decreased urine output, weakness, dizziness, and confusion, may be signs of dehydration. Pathogens that primarily affect the small bowel are more likely to cause watery larger volume diarrhea with bloating, gas, and cramping. Those that affect the large bowel may cause more frequent, small volume, or painful bowel movements.

Environmental exposure or a history of immunocompromise may help identify specific pathogens. History of prior abdominal surgeries, radiation exposure, or recent antibiotic use should be obtained. A detailed sexual history may also be relevant because anal receptive sex, sharing of toys, or oral-anal contact may increase the risk of transmission of fecal pathogens, particularly *Shigella*, *Salmonella*, *Campylobacter*, *Escherichia coli*, *Entamoeba histolytica*, and *Giardia*.⁷

Physical Examination

A comprehensive physical examination in patients with suspected gastrointestinal infections should focus on a thorough abdominal examination with consideration

Table 1
Common causes of traveler's diarrhea

Bacterial	Viral	Parasitic
Shiga-toxin producing <i>E coli</i>	Rotavirus	<i>Giardia lamblia</i>
Other <i>E coli</i> types	Norovirus	<i>Cryptosporidium</i>
<i>Salmonella</i>		<i>Cyclospora</i>
<i>Campylobacter</i>		<i>E histolytica</i>
<i>Shigella</i>		
<i>Aeromonas</i>		
<i>Vibrio</i>		

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