

Table II. Infectious causes of diarrhea

Organism	Epidemiology and risk factors	Clinical features
Small intestinal, noninvasive pathogens (mild to moderate symptoms)		
Typical viral gastroenteritis		
Rotavirus	Day care centers, contact with young children	Onset within 2 days of ingestion and resolution within 3 days of onset, usually self-limited. Occasionally associated with nausea, vomiting, and fever
) Norovirus (Norwalk agent)	Nursing homes, cruise ships, hospitals, schools, camps; fresh water and food-borne, raw shellfish	Onset within 2 days of ingestion and resolution within 3 days of onset, usually self-limited. Occasionally associated with nausea, vomiting, and fever
Adenovirus (enteric)		Onset within 2 days of ingestion and resolution within 3 days of onset, usually self-limited. Occasionally associated with nausea, vomiting, and fever
Toxin-mediated food poisoning		
<i>Clostridium perfringens</i> type A	Associated with meat, poultry, gravy, home canned vegetables	Watery diarrhea with incubation period 8-48 hr, not usually associated with vomiting
<i>Bacillus cereus</i>	Associated with rice	Two syndromes: (1) acute onset of emesis within 6 hrs of ingestions, similar to <i>Staph aureus</i> , usually associated with fried rice; (2) watery diarrhea with 8-48 hr incubation period, similar to <i>C. perfringens</i>
<i>Staphylococcus aureus</i>	Associated with custards and cream-based foods, poultry, eggs, mayonnaise. Mediated by preformed toxin	Acute onset emesis within 6 hr of ingestion of toxin
Bacteria		
Traveler's diarrhea (caused by toxigenic <i>E. coli</i> : ETEC,	Travel to endemic areas (Africa, SE Asia, parts of Central and	Onset within 2 days of ingestion and resolution within 3 days of onset, usually

EPEC, EAEC, or DAEC)	South America)	self-limited. Occasionally associated with nausea, vomiting, and fever
<i>Vibrio cholera</i>	Associated with epidemics, pandemics. Raw seafood, contaminated shellfish (especially from Gulf of Mexico); uncommon in US but epidemic in Haiti currently	Abrupt onset. Large volume diarrhea that resembles rice water
<i>Listeria monocytogenes</i>	Unpasteurized cheeses, milk, lunch meats, hot dogs. Major risk factors: pregnancy, immunocompromised state	Can present without diarrhea. Serious infection of meningitis and/or septicemia. Pregnant women are at higher risk, and may present with mild flu-like symptoms and headache. Can cross placenta and lead to spontaneous abortion, still birth
Parasites		
<i>Giardia lamblia</i>	Stream water or other untreated fresh water ingestion, travel, anal intercourse, day care centers	Chronic nausea, bloating, diarrhea with malabsorptive features
<i>Cryptosporidium</i>	Water, day care centers, immunocompromised host	Large volume, watery diarrhea
<i>Microsporidia</i>	Immunocompromised host	Watery diarrhea
<i>Cyclospora</i>	Day care centers, fresh basil, raspberries, travel	Prolonged watery diarrhea (4-6+ weeks)
<i>Isospora belli</i>	Immunocompromised host, traveler's diarrhea	Watery diarrhea
Colonic, invasive pathogens (severe symptoms)		
Viruses		
Cytomegalovirus	Immunocompromised host	Bloody or watery diarrhea

Bacteria		
<i>Salmonella</i> sp. (non-typhi)	Food-borne: raw eggs, poultry, milk, livestock, fresh vegetables; pet turtles and reptiles	Also affects small bowel and colon
<i>Shigella</i> sp.	Primarily day care centers and person-to-person; can be food-borne	Affects colon, bloody diarrhea and tenesmus common
<i>Campylobacter</i> sp.	Poultry, milk, eggs, water	Infection can be complicated with post-infectious IBS, reactive arthritis, or GBS
Shiga-toxin producing <i>E. coli</i> (STEC or EHEC), including O157:H7 and non-O157:H7 strains	Undercooked ground beef, day care centers, petting zoos, unpasteurized apple cider, raw vegetables, lettuce, contaminated water, or other vegetables.	Nonbloody or bloody diarrhea. Abdominal pain may be more pronounced than with other enteric pathogens. Most common cause of TTP/HUS' Increasing recognition of non O157 strains
<i>Yersinia</i> sp.	Undercooked pork, chitterlings (pig intestine), milk	Presents with RLQ abdominal pain due to ileocolitis or mesenteric adenitis that can mimic appendicitis or Crohn's disease
<i>Clostridium difficile</i>	Recent or current antibiotics (within last 2 months), hospitalization, chemotherapy. PPIs may increase risk.	Epidemic strain with B1/NAP1/027 has increased morbidity and mortality
Noncholera vibrios	Raw or undercooked shellfish. Cirrhosis and immunocompromised (IC) are at increased risk.	Watery diarrhea, usually self limited but severe in IC pts and those with cirrhosis
<i>Plesiomonas shigelloides</i>	Raw seafood, travel, biliary tract disease	Case reports of chronic colitis
<i>Aeromonas hydrophila</i>	Water, food-borne, day care centers; primarily affects children	case reports of chronic colitis
<i>Klebsiella oxytoca</i>	Recent penicillin or cephalosporin treatment (lasts 2-	Right-sided hemorrhagic colitis typical. Usually seen

	7 days), leading to acute antibiotic hemorrhagic colitis	following short course of penicillins or, less likely, cephalosporins
Tuberculosis	HIV, immigrants from high-risk regions	Abdominal pain more common than diarrhea ; right colon more commonly involved
Parasites		
<i>Entamoeba histolytica</i>	Water, food-borne, travel to endemic areas, oral-anal intercourse	Often causes ileal and right colonic lesions. May cause liver abscess
Trichuriasis (whipworm)	Southern USA, poor sanitation	Often asymptomatic; Associated with rectal prolapse

Abbreviations: ETEC, enterotoxigenic *E. coli*; EPEC, enteropathogenic *E. coli*; EAEC, enteroaggregative *E. coli*; DAEC, diffusely adherent *E. coli*; EHEC, enterohemorrhagic *E. coli*; EIEC, enteroinvasive *E. coli*; AAC, antibiotic-associated colitis; HIV, human immunodeficiency virus; IBS, irritable bowel syndrome; GBS, Guillain-Barré syndrome; TTP/HUS, thrombotic thrombocytopenic purpura/hemolytic uremic syndrome; RLQ, right lower quadrant.