

Bacterial Food-borne Illnesses

Etiology	Incubation Period	Signs and Symptoms	Duration of Illness	Associated Foods	Laboratory Testing	Treatment
Bacillus anthracis	2 days to weeks	Nausea, vomiting, malaise, bloody diarrhea, acute abdominal pain.	Weeks	Insufficiently cooked contaminated meat.	Blood	Penicillin is first choice for naturally acquired gastrointestinal anthrax. Ciprofloxacin is second option.
Bacillus cereus (diarrheal toxin)	10- 16 hrs	Abdominal cramps, watery diarrhea, nausea	24-48 hours	Meats, stews, gravies, vanilla sauce.	Testing not necessary, self-limiting (consider testing food and stool for toxin in outbreaks).	Supportive care, self-limiting
Bacillus cereus (preformed enterotoxin)	1-6 hrs	Sudden onset of severe nausea and vomiting. Diarrhea may be present.	24 hrs	Improperly refrigerated cooked and fried rice, meats.	Normally a clinical diagnosis. Clinical laboratories do not routinely identify this organism. If indicated, send stool and food specimens to reference laboratory for culture and toxin identification.	Supportive care.
Brucella abortus, B. melitensis, and B. suis	7-21 days	Fever, chills, sweating, weakness, headache, muscle and joint pain, diarrhea, bloody stools during acute phase.	Weeks	Raw milk, goat cheese made from unpasteurized milk, contaminated meats.	Blood culture and positive serology.	Acute: Rifampin and doxycycline daily for ≥ 6 weeks. Infections with complications require combination therapy with rifampin, tetracycline and an aminoglycoside.

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Campylobacter jejuni	2-5 days	Diarrhea, cramps, fever, and vomiting; diarrhea may be bloody.	2- 10 days	Raw and undercooked poultry, unpasteurized milk, contaminated water.	Routine stool culture; Campylobacter requires special media and incubation at 42° to grow.	Supportive care. For severe cases, antibiotics such as erythromycin and quinolones may be indicated early in the diarrheal disease. Guillain-Barre's syndrome can be a sequelae
Clostridium botulinum children and adults (pre-formed toxins)	12-72 hrs	Vomiting, diarrhea, blurred vision, diplopia, dysphagia, and descending muscle weakness.	Variable (from days to months). Can be complicated by respiratory failure and death.	Home-canned foods with a low acid content, improperly canned commercial foods, Home-canned or fermented fish, herb-infused oils, baked potatoes in aluminum foil, cheese sauce, bottled garlic, foods held warm for extended periods of time (e.g. in a warm oven).	Stool, serum, and food can be tested for toxin. Stool and food can also be cultured for the organism. These tests can be performed at some State Health Department laboratories and the CDC.	Supportive care. Botulinum antitoxin is helpful if given early in the course of the illness. Call 404-639-2206 or 404-639-2888 weekends and evenings.
Clostridium botulinum infants	3-30 days	In infants < 12 months, lethargy, weakness, poor feeding, constipation, hypotonia, poor head control, poor gag and suck	Variable	Honey, home-canned vegetables and fruits.	Stool, serum, and food can be tested for toxin. Stool and food can also be cultured for the organism. These tests can be performed at some State Health Department laboratories and the CDC.	Supportive care. Botulism immune globulin can be obtained from the Infant Botulism Prevention Program, Health and Human Services, California (501-540-2646). Botulinum antitoxin is generally not recommended

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Clostridium perfringens toxin	8-16 hrs	Watery diarrhea, nausea, abdominal cramps; fever is rare.	24-48 hrs	Meats, poultry, gravy, dried or precooked foods.	Stools can be tested for enterotoxin and cultured for organism. Because Clostridium perfringens can normally be found in stool, quantitative cultures must be done.	for infants. Supportive care. Antibiotics not indicated.
Enterohemorrhagic <i>E. coli</i> (EHEC) including <i>E. coli</i> 0157:H7 and other Shiga toxin producing <i>E. coli</i> (STEC)	1-8 days	Severe diarrhea that is often bloody, abdominal pain and vomiting. Usually, little or no fever is present. More common in children <4 years.	5-10 days	Undercooked beef, unpasteurized milk and juice, raw fruits and vegetables (e.g. sprouts), salami, salad dressing, and contaminated water.	Stool culture, <i>E. Coli</i> 0157:H7 requires special media to grow. If <i>E. coli</i> 0157:H7 is suspected, specific testing must be requested. Shiga toxin testing may be done using commercial kits; positive isolates should be forwarded to public health laboratories for confirmation and serotyping.	Supportive care, monitor renal function, hemoglobin, and platelets closely. Studies indicate that antibiotics may be harmful. <i>E. coli</i> 0157:H7 infection is also associated with hemolytic uremic syndrome, which can cause lifelong complications.

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Enterotoxi- genic <i>E. coli</i> (ETEC)	1-3 days	Watery diarrhea, abdominal cramps, some vomiting.	3->7 days	Water or food contami- nated with human feces.	Stool culture, ETEC requires special laboratory techniques for identification. If suspected, must request specific testing.	Supportive care. Antibiotics are rarely needed except in severe cases. Recom- mended antibiotics include TNT-SMX and quinolones.
Listeria monocyto- genes	9-48 hrs for gastro- intestinal symptoms, 2-6 weeks for invasive disease	Fever, muscle aches, and nausea or diarrhea, Pregnant women may have mild flu-like illness, and infection can lead to premature delivery or stillbirth. Elderly or immunocompromised patients may have bacteremia or meningitis.	Variable	Fresh soft cheeses, unpasteurized milk, inadequately pasteur- ized milk, ready-to-eat deli meats, hot dogs.	Blood or cerebro- spinal fluid cul- tures. Asympto- matic fecal car- riage occurs; therefore, stool culture usually not helpful. Antibody to listerolysin O may be helpful to identify outbreak retrospectively.	Supportive care and antibiotics; Intravenous ampi- cillin, penicillin, or TMP-SMX are recommended for invasive disease.
At birth and infancy	Infants infected from mother at risk for sepsis or meningitis.					
Salmonella ssp.	1-3 days	Diarrhea, fever, abdominal cramps, vomiting, <i>S. typhi</i> and <i>S. paratyphi</i> produce typhoid with insidious onset characterized by fever, headache, constipation, malaise, chills, and myalgia; diarrhea is uncommon, and vomiting is usually not severe.	4-7 days	Contaminated eggs, poultry, unpasteurized milk or juice, cheese, contaminated raw fruits and vegetables (alfalfa sprouts, melons). <i>S. typhi</i> epidemics are often related to fecal contami- nation of water supplies or street-vended foods.	Routine stool cultures.	Supportive care. Other than for <i>S.</i> <i>typhi</i> , antibiotics are not indicated unless there is extra-intestinal spread, or the risk of extra-intestinal spread, of the infection. Consider ampicillin, genta- micin, TMP-SMX, or quinolones if indi- cated. A vaccine exists

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Shigella ssp.	24-48 hrs	Abdominal cramps, fever, and diarrhea. Stools may contain blood and mucus.	4-7 days	Food or water contaminated with fecal material. Usually person-to-person spread, fecal-oral transmission. Ready-to-eat foods touched by infected food workers, raw vegetables, egg salads.	Routine stool cultures.	for <i>S. typhi</i> . Supportive care. TMP/SMX recommended in the US if organism is susceptible; nalidixic acid or other quinolones may be indicated if organism is resistant, especially in developing countries.
Staphylococcus aureus (preformed enterotoxin)	1-6 hrs	Sudden onset of severe nausea and vomiting. Abdominal cramps. Diarrhea and fever may be present.	24-48 hrs	Unrefrigerated or improperly refrigerated meats, potato and egg salads, cream pastries.	Normally a clinical diagnosis. Stool, vomitus, and food can be tested for toxin and cultured if indicated.	Supportive care
Vibrio cholerae (toxin)	24-72 hrs	Profuse watery diarrhea and vomiting, which can lead to severe dehydration and death within hours.	3-7 days. Causes life-threatening dehydration.	Contaminated water, fish, shellfish, street-vended food.	Stool culture; <i>Vibrio cholerae</i> requires special media to grow. If <i>V. cholerae</i> is suspected, must request specific testing.	Supportive care with aggressive oral and intravenous rehydration. In cases of concerned cholera, tetracycline or doxycycline is recommended for adults and TMP-SMX for children (<8 years)

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<i>Vibrio parahaemolyticus</i>	2-48 hrs	Watery diarrhea, abdominal cramps, nausea, vomiting	2-5 days	Undercooked or raw seafood, such as fish, shellfish.	Stool cultures. <i>Vibrio parahaemolyticus</i> requires special media to grow. If <i>V. parahaemolyticus</i> is suspected, must request specific testing.	Supportive care. Antibiotics are recommended in severe cases: tetracycline, doxycycline, gentamicin, and cefotaxime.
<i>Vibrio vulnificus</i>	1-7 days	Vomiting, diarrhea, abdominal pain, bacteremia, and wound infections. More common in the immunocompromised, or in patients with chronic liver disease (presenting with bullous skin lesions).	2-8 days; can be fatal in patients with liver disease and the immunocompromised	Undercooked or raw shellfish, especially oysters; other contaminated seafood, and open wounds exposed to sea water.	Stool, wound, or blood cultures. <i>Vibrio vulnificus</i> requires special media to grow. If <i>V. vulnificus</i> is suspected, must request specific testing.	Supportive care and antibiotics; tetracycline, doxycycline, and ceftazidime are recommended.
Yersinia enterocolytica and Y. pseudotuberculosis	24-48 hrs	Appendicitis-like symptoms (diarrhea and vomiting, fever, and abdominal pain) occur primarily in older children and young adults. May have a scarlatiniform rash with Y. pseudotuberculosis.	1-3 weeks	Undercooked pork, unpasteurized milk, contaminated water. Infection has occurred in infants whose caregivers handled chitterlings, tofu.	Stool, vomitus or blood culture. Yersinia requires special media to grow, If suspected, must request specific testing. Serology is available in research and reference laboratories.	Supportive care, usually self-limiting. If septicemia or other invasive disease occurs, antibiotic therapy with gentamicin or cefotaxime (doxycycline and ciprofloxacin also effective).