

**A Quick Reference to Bacterial, Viral and Parasitic Foodborne Illnesses**

Illness and Organism That Causes It	Source of Organism	Onset (Duration) of Illness	Characteristics of Illness	Common Foods Involved	Prevention
<b>Bacterial Foodborne Illnesses</b>					
<i>Intoxications</i>					
Staphylococcal Intoxication  <i>Staphylococcus aureus</i>	Hands, throats, nasal passages and sores of humans	1-6 hours  (1-2 days)	Heat resistant toxin causes nausea, vomiting, diarrhea, and abdominal cramps.	Reheated foods, ham and other meats. Meat, vegetable and egg salads, cream-filled pastries and other protein foods.	Practice good personal hygiene and sanitary habits; avoid touching food with bare hands; heat, cool and refrigerate foods properly.
Botulism  <i>Clostridium botulinum</i>	Soil, water sediment and intestinal tracts of animals and fish	12-48, up to 72 hours  (Depends on speed of diagnosis; can last several days to a year)	Neurotoxin causes dizziness; blurred vision; difficulty speaking, swallowing and breathing. Can be fatal without antitoxin	Low-acid canned food, especially home-canned products. Meats, fish, smoked and fermented fish, vegetables	Do not use home-canned foods in commercial establishments; avoid using foods from severely dented or bulging cans
<i>Bacillus cereus</i> gastroenteritis  <i>Bacillus cereus</i>	Soil, dust, water and a variety of foods such as cereals, rice, dried foods, spices, milk and dairy products, meats and vegetables.	Two types of illness:  (1) diarrhea type 6-16 hours (1 day) (2) vomiting type 30 minutes - 6 hours (1 day)	(1) Watery diarrhea; abdominal cramps; no fever or vomiting (2) Nausea and vomiting; abdominal cramps and diarrhea occasionally occur	(1) Meat and vegetable dishes; casseroles, puddings, sauces and soups (2) Fried, boiled or cooked rice and other starchy foods such as macaroni and cheese	Good sanitation. Keep foods hot >140°F (60°C); cool leftovers quickly; reheat foods to 165°F (73.9°C).
<i>Infections</i>					
Salmonellosis  <i>Salmonella</i> species	Intestinal tracts of animals, especially poultry and pigs; birds and insects; also human carriers	12-48 hours  (2-6 days)	Nausea, vomiting, abdominal cramps, diarrhea, fever, and headache	Poultry and poultry products, shell eggs and egg products, milk and dairy products, meat salads, shellfish, and other protein foods.	Cook animal foods thoroughly; prevent cross contamination; cool food quickly; practice good personal hygiene.
Shigellosis (Bacillary dysentery)  <i>Shigella</i> species	Intestinal tracts of humans and polluted water.	1-7 days (Up to 14 days or longer; recovery is slow)	Diarrhea with bloody stools; abdominal cramps, and fever. There may be complications in severe cases.	Foods that receive much handling including meat, vegetable and pasta salads, and raw vegetables.	Good sanitation and personal hygiene; minimize hand contact with food; prevent cross contamination.
Listeriosis  <i>Listeria monocytogenes</i>	Soil, silage, decaying plant matter, water, other environmental sources; intestinal tracts of animals	1 day - 3 weeks (Depends on treatment, but has a high fatality rate in immuno-compromised individuals)	Mild flu-like symptoms in healthy individuals; in immuno-compromised individuals, meningitis and blood poisoning occur; abortion in pregnant women	Raw milk and cheese made from raw milk, meat and poultry, raw vegetables	Good sanitation; use only pasteurized milk and dairy products; cook food thoroughly; keep foods below 40°F (4.4°C); prevent cross contamination.
Yersiniosis  <i>Yersinia enterocolitica</i>	Soil, untreated water, intestinal tracts of animals especially pigs.	24-28 hours (2-3 days; some longer)	Fever, abdominal pain, diarrhea, nausea and vomiting; pseudo-appendicitis; complications can occur in severe cases	Meat and meat products, especially pork; milk and dairy products; seafoods and fresh vegetables	Good sanitation; use only pasteurized dairy products; cook foods thoroughly; keep foods below 40°F (4.4°C); prevent cross contamination

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<i>Infections (continued)</i>					
Campylobacteriosis <i>Campylobacter jejuni</i>	Soil, sewage, untreated water, intestinal tracts of chickens, turkeys, cattle, pigs, rodents, and some wild birds	2-5 days (5-10) days; relapses are common)	Fever, headache, nausea, muscle pain and diarrhea (sometimes bloody)	Undercooked meat and poultry, and raw milk	Cook animal food thoroughly; cool foods quickly; prevent cross contamination
Hemorrhagic colitis <i>E. coli 0157:H7</i>	Intestinal tracts of animals, particularly cattle, chickens, pigs and sheep	3-9 days (2-9 days)	Severe abdominal pain, watery diarrhea which becomes bloody and vomiting may occur; dehydration; severe complications can result.	Raw or rare meats especially ground beef; raw milk and dairy products	Cook meats thoroughly; prevent cross contamination; keep food below 40°F (4.4°C)
<i>Vibrio parahnemolyticus</i> gastroenteritis <i>Vibrio parahaemolyticus</i>	Estuaries and salt water	2-48 hours (2-3 days; can be longer)	Diarrhea, abdominal cramps, nausea, vomiting, headache, fever, and chills	Raw fish or inadequately cooked seafood; clams, oysters, crabs, shrimp and lobster	Cook all seafood thoroughly; prevent cross contamination; keep foods below 40°F (4.4°C)
<b>Toxin-mediated Infection (Toxicoinfection)</b>					
<i>Clostridium perfringens</i> gastroenteritis <i>Clostridium perfringens</i>	Intestinal tracts of humans and animals, soil, dust water	8-24 hours (12-24 hours)	Diarrhea, intense abdominal pain; occasional vomiting	Improperly prepared, held, cooled, or reheated meat and poultry, stews, gravies, soups, sauces and casseroles.	Cook foods thoroughly; cool foods quickly; hold hot foods above 140°F (60°C); reheat leftovers to 165°F (73.9°C)
<b>Viral Foodborne Illnesses</b>					
Infectious Hepatitis <i>Hepatitis A virus</i>	Infected workers, contaminated water, shellfish from contaminated water	15-50 days (weeks/months) 1-2 weeks to several months in severe cases	Fever, nausea, vomiting and abdominal discomfort, appetite loss, fatigue, followed by jaundice	Foods not cooked after handling such as bakery products, luncheon meats, salads, sandwiches, fruits; raw oysters and clams; water	Good personal hygiene; hand contact with food; cook all foods properly, especially seafood; separate infected persons from food preparation
<b>Parasitic Foodborne Illnesses</b>					
Giardiasis <i>Giardia Lamblia</i>	Contaminated water or food, intestinal tract of animals and humans	7-10 days 2-6 weeks (if untreated recurs in several months)	Diarrhea, abdominal cramps, nausea, fatigue, bloating, flatulence and weight loss	Foods handled frequently during preparation; contaminated water	Good personal hygiene; good sanitation; heat untreated water to a rolling boil for at least 3 minutes
Trichinosis <i>Trichinella spiralis</i>	Muscle of meat-eating animals, especially pigs and bears	onset: 3-30 days Symptoms can last 5-8 weeks; excepted larvae may persist for years in muscle	Nausea, vomiting, diarrhea and abdominal pain followed by fever, puffy eyes, sweating, weakness and muscle pain; myocarditis and other complications can result	Raw and undercooked pork and other animals such as bear and walrus	Cook all pork products thoroughly to 160°F-170°F; freeze suspect meat products at -10°F for 10-20 days before cooking; prevent cross contamination

Source: Robert B. Gravani, PhD, Department of Food Science, Cornell University. Adapted from R.B. Gravani, *Dairy and Food Sanitation* 7(2):77-82, 1987. National Restaurant Association, *Applied Food Service Sanitation*, 4th Ed., John Wiley and Sons, Inc., NY, 1992. M.P. Doyle, *Foodborne Bacterial Pathogens*, Marcel Dekker, Inc., NY, 1989