

## **FOODBORNE ILLNESS**

### **Common Agents Causing Foodborne Illness, Grouped by Symptoms**

<b>Upper Gastrointestinal Tract Symptoms (Nausea, Vomiting) Occur First or Predominate (in order of incubation period)</b>				
<b>Etiologic Agent</b>	<b>Usual Incubation Period</b>	<b>Symptoms</b>	<b>Duration of Symptoms</b>	<b>Common Vehicles</b>
<b>Metallic salts</b>	<2 hours	Nausea, vomiting, unusual taste, burning of mouth	<1 day	Foods and beverages cooked in containers lined with offending metal.
<b><i>Staphylococcus aureus</i> (performed enterotoxin)</b>	1–6 hours	Sudden onset of severe nausea and vomiting. Abdominal cramps. Diarrhea and fever may be present.	24–48 hours	Unrefrigerated or improperly refrigerated meats, potato and egg salads, cream pastries.
<b><i>Bacillus cereus</i> (performed enterotoxin)</b>	1–6 hours	Sudden onset of severe nausea and vomiting. Diarrhea may be present.	24 hours	Improperly refrigerated cooked or fried rice, meats.
<b>Lower Gastrointestinal Tract Symptoms (Abdominal Cramps, Diarrhea) Occur First or Predominate (in order of incubation period)</b>				
<b>Etiologic Agent</b>	<b>Usual Incubation Period</b>	<b>Symptoms</b>	<b>Duration of Symptoms</b>	<b>Common Vehicles</b>
<b><i>Bacillus cereus</i> (diarrheal toxin)</b>	10–16 hours	Abdominal cramps, watery diarrhea, nausea.	24–48 hrs	Meats, stews, gravies, vanilla sauce.
<b><i>Clostridium perfringens</i> (toxin)</b>	8–16 hours	Watery diarrhea, nausea, abdominal cramps; fever is rare.	24–48 hrs	Meats, poultry, gravy, dried or precooked foods, time-and/or temperature abused food.
<b><i>Vibrio parahaemolyticus</i></b>	12–24 hours	Watery diarrhea, abdominal cramps, nausea, vomiting.	2–5 days	Raw or undercooked seafood such as fish or shellfish.
<b><i>Shigella</i></b>	1–4 days	Abdominal cramps, fever and diarrhea. Stools may contain blood and mucus.	4–7days	Food or water contaminated with human fecal material. Ready to eat foods touched by an infected food worker.
<b><i>Salmonella</i> (nontyphi)</b>	1–3 days	Diarrhea, fever, abdominal cramps, vomiting.	4–7days	Contaminated eggs, unpasteurized milk or juice, cheese, contaminated raw fruits and vegetables.
<b>Enterotoxigenic <i>E. coli</i> (ETEC)</b>	1–3 days	Watery diarrhea, abdominal cramps, some vomiting.	3 to >7 days	Food or water contaminated with human feces.
<b>Shiga toxin-producing <i>E. coli</i> (STEC) including <i>E. coli</i> O157:H7</b>	2–6 days	Severe diarrhea that is often bloody, abdominal pain and vomiting. Usually, little or no fever is present.	5–10 days	Undercooked beef especially hamburger, unpasteurized milk and juice, raw fruits and vegetables (e.g., sprouts), salami (rarely), and contaminated water.
<b><i>Campylobacter jejuni</i></b>	2–5 days	Diarrhea, cramps, fever, and vomiting; diarrhea may be bloody.	2–10 days	Raw and undercooked poultry, unpasteurized milk, contaminated water.
<b><i>Yersinia enterocolitica</i></b>	3–7 days	Appendicitis-like symptoms (diarrhea, and vomiting, fever, and abdominal pain).	1–3 weeks	Undercooked pork, unpasteurized milk, tofu, contaminated water. Infection has occurred in infants whose caregivers handled chitterlings.

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<b><i>Cryptosporidium</i></b> <sup>3</sup>	5–8 days	Diarrhea (usually watery), stomach cramps, upset stomach, slight fever.	May remit and relapse over weeks to months	Drinking water. Food contaminated with human fecal material.
<b><i>Cyclospora</i></b>	Ave. 7 days	Diarrhea (usually watery), loss of appetite, weight loss, stomach cramps, nausea, vomiting, fatigue.	May remit and relapse over weeks to months	Fresh herbs and produce (e.g., raspberries, basil, lettuce)
<b><i>Giardia</i></b>	7–10 days	Diarrhea, stomach cramps, gas.	Days to weeks	Drinking water. Food contaminated with human fecal material.

#### **Both Upper and Lower Gastrointestinal Tract Symptoms**

<b>Etiologic Agent</b>	<b>Usual Incubation Period</b>	<b>Symptoms</b>	<b>Duration of Symptoms</b>	<b>Common Vehicles</b>
<b>Norovirus (and other caliciviruses)</b>	12–48 hours	Nausea, vomiting, cramping, diarrhea, fever, myalgias and some headache. Diarrhea is more prevalent in adults. Vomiting is more prevalent in children.	12–60 hours	Food or water contaminated with human fecal material, including shellfish. Ready to eat foods touched by an infected food worker.

#### **Generalized Symptoms**

<b>Etiologic Agent</b>	<b>Usual Incubation Period</b>	<b>Symptoms</b>	<b>Duration of Symptoms</b>	<b>Common Vehicles</b>
<b><i>Listeria monocytogenes</i></b>	9–48 hours for gastrointestinal 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 and immunocompromised patients may have bacteremia or meningitis.	Variable	Fresh soft cheeses, unpasteurized milk, ready-to-eat deli meats, hot dogs.
<b>Hepatitis A</b>	Average 30 days (range 15–50 d)	Diarrhea, dark urine, jaundice, and flu-like symptoms (i.e., fever, headache, nausea, and abdominal pain)	Variable (2 weeks to 3 months)	Food or water contaminated with human fecal material, including shellfish. Ready to eat foods touched by an infected food worker.

#### **Neurologic Symptoms**

<b>Etiologic Agent</b>	<b>Usual Incubation Period</b>	<b>Symptoms</b>	<b>Duration of Symptoms</b>	<b>Common Vehicles</b>
<b>Paralytic Shellfish Poisoning (PSP)</b>	<3 hours	Diarrhea, nausea, vomiting, parasthesias of mouth, lip, weakness, dysphagia, dysphonia, respiratory paralysis.	Days	Scallops, mussels, clams, cockles.

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<b>Botulism (ingested toxin)</b>	12–36 hours	Vomiting, diarrhea, blurred vision, diplopia, dysphagia, and descending muscle weakness.	Days to months	Home-canned foods with a low acid content, improperly canned commercial foods, home-canned or fermented fish, herb infused oils.
<b>Allergic Symptoms Occur (Facial Flushing, Itching)</b>				
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<b>Monosodium Glutamate (MSG)</b>	<1 hour	Burning sensation, chest tightness, flushing, dizziness, headache, nausea.	<1 day	Chinese foods
<b>Scombroid (histamine)</b>	<3 hours	Flushing, rash, burning sensation of skin, mouth and throat, dizziness, urticaria, parasthesias.	3–6 hours	Fish: bluefin, tuna, skipjack, mackerel, marlin, escolar, and mahi mahi.

Adapted from: Centers for Disease Control and Prevention. Diagnosis and Management of Foodborne Illnesses A Primer for Physicians and Other Health Care Professionals. MMWR 2004;53(RR04):7–12.