

# Microbiological Foodborne Illnesses

UMass Extension Nutrition Education Program

ILLNESSES/ MICROORGANISMS	SOURCE	ONSET/DURATION OF ILLNESS (without complications)	SYMPTOMS (other than nausea, vomiting, diarrhea & cramps)	COMMON FOODS INVOLVED	PREVENTION
<b>INFECTIONS</b>					
<b>SALMONELLOSIS</b> ( <i>Salmonella species</i> )	Intestinal tract of animals and humans	onset: 5-36 hours lasts: 2-7 days	"Flu," headache, fever, dehydration; may trigger arthritis	Raw and undercooked eggs, poultry, meat, fish, dressings, meat, pies, cream desserts, dairy products	<ul style="list-style-type: none"> <li>• Cook animal foods thoroughly</li> <li>• Prevent cross contamination</li> </ul>
<b>CAMPYLOBACTERIOSIS</b> ( <i>Campylobacter jejuni</i> )	Intestinal tract of animals, soil and water	onset: 2-5 days lasts: 2-7 days	"Flu," fever, bloody stools; complications: meningitis, arthritis	Undercooked meat, poultry, fish, raw dairy products	
<b>LISTERIOSIS</b> ( <i>Listeria monocytogenes</i> )	Soil, intestinal tract of animals	onset: 24 hours to 3 weeks lasts: 2-7 days	Headache, fever; in immunocompromised possible meningitis, blood poisoning, abortion, death	Raw milk, cheeses made from raw milk, cabbage, undercooked meat and poultry, hot dogs, cold smoked fish (grows @ 34°-113° F)	<ul style="list-style-type: none"> <li>• Good Sanitation</li> <li>• Use only pasteurized milk &amp; milk products,</li> <li>• Cook meat &amp; poultry thoroughly</li> <li>• Prevent cross-contamination</li> <li>• Limit refrigerator storage – watch "use-by" dates</li> </ul>
<b>YERSINIOSIS</b> ( <i>Yersinia enterocolitica</i> )	Intestinal tract of animals, esp. pork, raw milk, water	onset: 3-7 days lasts: 2-3 weeks	Fever; bloody stools, pseudoappendicitis Complications: blood poisoning, arthritis, meningitis, liver disease	Meat, esp. pork, poultry, shellfish, raw milk and vegetables (grows @ 32°-113° F)	
<b>VIBRIOSIS</b> ( <i>Vibrio species</i> )	Seawater (esp. warm months)	onset: 2-76 hours lasts: 3-8 days	Chills, fever; dehydration, weakness, blood poisoning	Undercooked seafood: oysters, shrimp, crabs and clams	<ul style="list-style-type: none"> <li>• Cook all seafood thoroughly</li> <li>• Prevent cross-contamination</li> <li>• Keep cold foods cold (below 40° F)</li> </ul>
<b>HEMORRHAGIC COLITIS</b> ( <i>E.coli O157-H7</i> )	Intestinal tract of animals and humans	onset: 3-8 days lasts: 2-10 days	Bloody stools, urinary infection & kidney failure, strokes, seizures, coma & death	Undercooked meats and poultry, ground beef, raw milk & cheeses, unpasteurized apple juice and cider	<ul style="list-style-type: none"> <li>• Cook meats thoroughly</li> <li>• Prevent cross-contamination</li> <li>• Keep cold foods cold (below 40° F)</li> </ul>
<b>SHIGELLOSIS</b> <i>Bacillary dysentery</i> ( <i>Shigella species</i> )	Intestinal tract of humans and primates	onset: 1-57 days lasts: 3-14 days to months	Fever, pus or blood in stools, asymptomatic carrier state in convalescence lasting days to months, secondary infection frequent	Salads, seafoods, milk, dairy products, poultry, potato salad, parsley	<ul style="list-style-type: none"> <li>• Good Sanitation</li> <li>• Minimize contact of hands with food</li> <li>• Keep cold foods cold (below 40° F)</li> </ul>

\* Toxin heat resistant



Adapted from S.A.F.E., Colorado State University Cooperative Extension, by UMass Extension, June, 1999.

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<b>INTOXICATIONS</b>					
<b>STAPHYLOCOCCAL INTOXICATION</b> ( <i>Staphylococcus aureus</i> )	Skin, nose, throat, hands (coughs & sneezes), hair, sores, pimples, raw milk; and sewage	onset: 1-6 hours lasts: 1-2 days	Usually no fever	Ham, processed meat, tuna, poultry, red meat, sandwich fillings, potato and meat salads, dairy products, imitation dairy products, raw milk	<ul style="list-style-type: none"> <li>Minimize hand contact with food</li> <li>Keep foods hot (&gt;140° F) or cold (&lt; 40° F)</li> <li>Cool leftovers quickly * Toxin heat resistant</li> </ul>
<b>BOTULISM</b> ( <i>Clostridium botulinum</i> )	Soil	onset: 12-72 hours to 14 days lasts: days to months/years 10% death rate	Headache, dizziness, tired, double vision, muscle weakness and difficulty speaking, swallowing and breathing, death without antitoxin	Smoked and home canned meat and vegetables, low-acid cooked foods held at room temperature in low-oxygen environment	<ul style="list-style-type: none"> <li>Can foods properly</li> <li>Prepare and store foods properly</li> <li>Boil home canned vegetables and meats 15-20 minutes before tasting</li> </ul>
<b>C. PERFRINGENS FOOD POISONING</b> ( <i>Clostridium perfringens</i> )	Intestinal tract of humans and animals, soil, dust, water	onset: 8-24 hours lasts: 1-2 days	Acute abdominal pain, fever	Improperly held, cooled and/or reheated meat and poultry, stews, meat pies, casseroles and gravies	<ul style="list-style-type: none"> <li>Keep foods hot (&gt;140° F) or cold (&lt; 40° F)</li> <li>Cool quickly in small portions</li> <li>Reheat to 165° F</li> </ul>
<b>B. CEREUS FOOD POISONING</b> ( <i>Bacillus cereus</i> )	Soil, dust, water	onset: 1-5 hours lasts: 1-2 days	<b>Two types of illness:</b> <b>Mild:</b> abdominal pain and diarrhea <b>Severe:</b> nausea and vomiting	Cereal and rice dishes, macaroni and cheese, spices, dairy products, puddings, soups, sauces, mashed potatoes, meat	<ul style="list-style-type: none"> <li>Good Sanitation</li> <li>Keep foods hot (&gt;140° F) or cold (&lt; 40° F)</li> <li>Cool leftovers quickly</li> <li>Reheat to 165° F * Spores very heat resistant</li> </ul>
<b>VIRAL INFECTIONS</b>					
<b>INFECTIOUS HEPATITIS</b> ( <i>Hepatitis A virus</i> )	Infected workers, contaminated water, shellfish from contaminated water	onset: 15-30 days lasts: weeks/months	Fever; loss of appetite, fatigue, jaundice, darkened urine, enlarged liver	Raw oysters and clams, foods handled and not cooked after handling such as bakery products, luncheon meats, salads, sandwiches, fruits, raw milk or water	<ul style="list-style-type: none"> <li>Good personal hygiene</li> <li>Minimize hand contact with food</li> <li>Separate infected persons from food preparation</li> <li>Cook all foods properly, esp. seafood</li> </ul>
<b>VIRAL GASTROENTERITIS</b> ( <i>norovirus</i> )	Infected workers, contaminated water, shellfish from contaminated water	onset: 1-2 days lasts: 1-2 days	Mild fever, headache, pains	Raw or undercooked shellfish, sandwiches, salads, etc.	<ul style="list-style-type: none"> <li>Good personal hygiene</li> <li>Minimize hand contact with food</li> <li>Cook shellfish well</li> </ul>
<b>PARASITIC INFECTIONS</b>					
<b>TRICHINOSIS</b> ( <i>Trichinella spiralis</i> )	Muscle of meat-eating animals, esp. pigs and bears	onset: 3-30 days lasts: weeks/months	<b>3 stages: Intestinal:</b> flu- like; <b>Muscle invasion:</b> fever, puffy eyes, sweat- ing, weakness, muscle pain; <b>Convalescence:</b> toxemia, myocarditis	Raw and undercooked pork, bear and game	<ul style="list-style-type: none"> <li>Cook all pork products to 160° F</li> <li>Prevent cross-contamination</li> </ul>