

# **Food Pathogens Index**

# Bloody Diarrhea

<b>Etiologic agent:</b>	<i>Escherichia coli</i> ; a Gram (-) bacterial rod
<b>Transmission:</b>	Contact with infected animals ( cows, chicken) or humans. Contaminated food ( ground beef or water).
<b>Incubation period:</b>	3-6 days
<b>Pathology:</b>	Enterotoxigenic <i>E.coli</i> produces toxins that induce hypersecretion of water and limit sodium absorption.
<b>Symptoms:</b>	Severe bloody diarrhea in children and elderly lasting for several days (Can lead to kidney failure). Abdominal cramps. Some cases can have none bloody diarrhea.
<b>Diagnosis:</b>	Symptoms; isolation and identification of bacteria from stool.
<b>Treatment:</b>	Symptomatic; fluid replacement; various antibiotics.
<b>Epidemiology:</b>	Occurs in pediatric hospitals; contaminated swimming pools. Lives in intestine of healthy animals. Eating undercooked contaminated hamburger meat.

# Botulism

- Etiologic agent:** Clostridium botulinum: a Gram (+) anaerobic, spore forming bacterial rod.
- Transmission:** Contaminated food.
- Incubation period:** Several hours.
- Pathology:** Soil borne spores revert to vegetative cells in vacuum-sealed cans/jars of food: vegetative cells produce highly-potent exotoxin: exotoxin consumed in food and absorbed to bloodstream through intestine: at the motor nerve endings, exotoxin inhibits the release of acetylcholine.
- Symptoms:** Facial paralysis: blurred vision: slurred speech: numbing in extremities: vomiting: difficult breathing: respiratory paralysis (i.e. diaphragm and muscle paralysis): possible death.
- Diagnosis:** Leftover food injections to lab animals: isolation and identification of bacterium from leftover food.
- Treatment:** Aggressive antitoxin therapy.
- Epidemiology:** Most cases related to improperly sterilized, home-canned food: boiling toxin: approximately 50 cases per year in U.S: wound botulism, animal botulism (lincobacterium) possible.

# Salmonellosis

**Alternate name:** Salmonella food poisoning (incorrect name since toxin is not involved).

**Etiologic agent:** Thousands of serological types of Salmonella (e.g. S. enteritidis, S. Newport): all Gram (-) motile, rod-shaped bacteria, acid resistant.

**Transmission:** Contaminated food (e.g. poultry and eggs) and drink: contact with animals (chicken, pet turtles, iguanas)

**Incubation period:** 1 to 2 days

**Pathology:** Infection of mucous epithelium of small intestine.

**Symptoms:** Nausea, vomiting, abdominal cramps: diarrhea persisting for several days: low fever.

**Diagnosis:** Isolation from stools and identification in laboratory culture.

**Treatment:** Symptomatic ampicillin for severe cases (drug resistance observed)

**Epidemiology:** Thorough cooking of poultry and egg products: avoid baby chicks, pet turtles, and other specified animals: about 50,000 cases in U.S annually: most common food borne "infection" (vs. staphylococcal food borne "poisoning").

# Listeriosis

**Etiologic agent:** *Listeria monocytogenes*: a Gram (+), small, motile rod.

**Transmission:** Contaminated food, especially dairy products (e.g. cheese) and soil-contaminated raw vegetables.

**Incubation period:** Unspecified.

**Pathology:** Bacteria invade and multiply in epithelial cells of gastrointestinal tract; also multiply in macrophages and monocytes (hence, *monocytogenes*).

**Symptoms:** Bacteremia and meningoencephalitis in immunocompromised patient's bacteremia fetus and possible abortion and death.

**Diagnosis:** Laboratory cultivation from blood and spinal fluid samples.

**Treatment:** Multiple antimicrobial drugs, usually in combinations.

**Epidemiology:** Dangerous in pregnant women: occurs in large and small animals.