

Facts

FOODBORNE BOTULISM

What is botulism?

Botulism is a serious and often deadly form of food poisoning. It is caused by a toxin (poison) produced by the bacteria *clostridium botulinum*. These bacteria are found everywhere: in soil, on raw fruits and vegetables, and on meat and fish. The organisms have the ability to form a spore, or casing around them that allows it to stay dormant until they are exposed to the right conditions to support their growth. These spores are widespread in the environment, but are harmless when oxygen is present. For botulism to occur there must be several conditions present. The spores must be present in a low-acid food, which means that the food is processed or stored in some way that removes the oxygen and not enough heat is applied to destroy the spores. Botulism poisoning often involves improperly processed home-canned low-acid foods, such as vegetables, sauces and soups, meats, fish, or poultry. Examples of low-acid vegetables include peas, peppers, corn, lima beans, green beans, asparagus, and mushrooms.

There have been several outbreaks associated with food prepared and/or mishandled in the food service industry as well. Botulism outbreaks have been associated with sautéed onions cooked in butter, chopped garlic in oil, chili peppers, tomatoes, improperly handled baked potatoes wrapped tightly in foil, potpies, and fresh mushrooms stored in air tight plastic packaging.

Infant intestinal botulism is a rare disease that can affect otherwise healthy children who are less than 1 year old. When an infant ingests the spores of *clostridium botulinum*, the spores grow and produce a toxin in the baby's intestine. Only honey has been associated as a food-borne source of infant botulism in Canada because bees may pick up the botulism spores from flowers or soil and the spores are not destroyed in the processing of honey. After the age of one, children's stomachs will have developed the levels of acid to properly deal with the spores.

What are the symptoms?

Symptoms usually start within 12-36 hours but sometimes several days after eating contaminated food; however, they can occur as early as 6 hours or as late as 10 days after eating the food. Vomiting and diarrhea or constipation may develop initially. The toxin affects the central nervous system and classic symptoms include blurred or double vision, droopy eyelids, slurred speech, difficulty swallowing, dry mouth, and muscle weakness. Nerve damage results in acute paralysis that affects the face, head, throat, chest, and extremities. The shorter the incubation period, the more severe the illness and the higher the rate of fatality is. Death is usually caused by paralysis of the respiratory muscles but the fatality rate is below 10%.

— *Health & Environment Facts* —

Infants with botulism are lethargic, feed poorly, constipated, have a weak cry, and have poor muscle tone. The only treatment for the illness is administration of the specific botulinum antitoxin. The illness can last for 1-10 days depending on the amount of toxin ingested.

How can food-borne botulism be prevented?

Improper home canning creates the perfect environment in which to grow botulism toxin because food contaminated by botulism may look and smell normal so there is often no warning. When the bacteria grows, it can produce a gas that causes canned items to bulge; therefore, never eat or even taste food from:

- leaking, bulging or damaged cans
- cracked jars or jars with loose or bulging lids
- containers that spurt liquid when opened
- containers that produce a foam when opened
- any canned food that has an abnormal odour or appearance
- food that develops a bad smell during cooking
- containers with a bulging lid or that is leaking
- a food that you are not sure was properly canned

How to avoid botulism?

- Proper canning methods must be used for preserving low-acid foods. Pressure processing is necessary to obtain the temperatures required to destroy the *clostridium botulinum* spore. By cooking under pressure you can bring the temperature of boiling water up too 116°C (240°F), which is the minimum temperature necessary to destroy botulism spores and the only way to guarantee safe canning for food items, such as vegetables, meats and seafood.
- All work surfaces should be kept clean during all stages of the canning process.
- It is important to sterilize jars and seals before use. To sterilize jars, boil them for 10 minutes. To sterilize the tops (seals with rubber gaskets) boil for 5 minutes.
- Home-canned foods should be reheated to boiling and stirred frequently before serving.
- Oils infused with garlic, chili peppers or herbs should be kept refrigerated.
- Potatoes that have been baked while wrapped in aluminum foil should be kept hot until served, or refrigerated.
- Identified sources of infant botulism, such as honey, should not be fed to children under 1 year.

CDC
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