

Facts

BOTULISM

What is botulism?

Botulism is a rare disease caused by a toxin produced by the spore-forming bacterium *clostridium botulinum*. Botulism occurs naturally and can be found in soil, water, the intestinal tract of animals (including fish), contaminated food, or agricultural products. The bacteria grow best in conditions where there is very little or no oxygen. Botulinum toxin is the single most poisonous substance known to man because the toxin can be easily manufactured, transported and misused and because it poses a major threat as a biological weapon.

The three kinds of botulism that occur naturally are food-borne, wound and infant botulism. All forms of botulism can be fatal and are considered medical emergencies. One form of man-made botulism is contracted through inhalation. Botulism cannot be transmitted from person to person.

- **Food-borne** botulism is caused by eating foods that contain the botulinum toxin. Food-borne botulism has often been associated with home-canned foods that have a low acid content, such as asparagus, green beans, beets, and corn, due to inadequate heating during processing. However, outbreaks of botulism have occurred from more unusual sources, such as chopped garlic in oil, chili peppers, tomatoes, improperly handled foiled-wrapped baked potatoes, and home-canned or fermented fish. Foods contaminated with botulism may not look or smell spoiled.
- **Wound** botulism is very rare and it occurs when an open wound becomes contaminated with the bacteria. The botulinum toxin is then released into the bloodstream. Outbreaks have occurred among chronic drug users where the bacteria have been injected.
- **Infant botulism** is a rare disease that can affect otherwise healthy children who are under 1 year old. It is easy for infants to come into contact with this bacterium because it's quite common in soil and dust. When an infant swallows spores of *clostridium botulinum*, the spores grow and produce a toxin in the baby's intestine. Honey has been the only identified food source of these spores causing infant botulism in Canada.
- **Inhalation** botulism is the only known man-made form. It has been known to be transmitted from monkeys to veterinarians and lab workers.

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What are the symptoms?

The symptoms vary according to the type of botulism and the degree of exposure to the toxin. Symptoms generally appear anywhere from 6-36 hours for food-borne, up to 72 hours for inhalational, and from 4-8 days for wound. Early symptoms for all forms include double or blurred vision, difficulty speaking and swallowing, dry mouth, and fatigue. Nerve damage results in acute paralysis that affects the face, head, throat, chest, and extremities. Botulism can result in death due to respiratory failure; however, the death rate has fallen from 50% to 8% in the last 50 years.

The earliest and most common symptom of infant botulism is constipation. Other symptoms include general weakness, a weak cry, a poor sucking reflex, irritability, lack of facial expression, and loss of head control. In some cases the child may have trouble breathing due to paralysis of the diaphragm.

How is it diagnosed and prevented?

The most direct way to confirm the diagnosis is to inject the patient's serum or stool into mice and then look for signs and symptoms of botulism. The bacteria can also be isolated from the stool of persons with food-borne and infant botulism. The respiratory failure and paralysis that occur with severe botulism may require a patient to be on a breathing machine (ventilator) for weeks as well as intensive medical and nursing care. If diagnosed early, food-borne and wound botulism can be treated with an antitoxin that blocks the action of the toxin circulating in the blood.

Botulism can be prevented. Strict hygienic practices should be followed to reduce the contamination of food. Oils infused with garlic or herbs should be kept refrigerated and discarded after one week. Since the toxin can be destroyed at very high temperatures, home-canned foods should be boiled for 10 minutes before eating. Because honey can contain spores of *clostridium botulinum*, children under 12 months should not be fed honey. Wound botulism can be prevented by promptly seeking medical care for infected wounds and by not using injectable street drugs.

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