

# Understanding and Preventing: Botulism



## What is botulism?

Botulism is a rare but serious paralytic illness caused by a nerve toxin that is produced by the bacterium *Clostridium botulinum* and sometimes by strains of *Clostridium butyricum* and *Clostridium baratii*.

There are five main kinds of botulism:

- Foodborne botulism
- Wound botulism
- Infant botulism
- Adult intestinal toxemia (adult intestinal colonization) botulism
- Iatrogenic botulism

All forms of botulism can be fatal and are considered medical emergencies. Foodborne botulism is a public health emergency because many people can be poisoned by eating a contaminated food.

## How common is botulism?

In the United States, an average of 145 cases are reported each year. Of these, approximately 15 percent are foodborne, 65 percent are infant botulism, and 20 percent are wound. Adult intestinal colonization and iatrogenic botulism also occur, but rarely. Outbreaks of foodborne botulism involving two or more persons occur most years and are usually caused by home-canned foods.

## What are the symptoms of botulism?

The classic symptoms of botulism include:

- blurred vision
- difficulty swallowing
- double vision
- drooping eyelids
- dry mouth
- muscle weakness
- slurred speech

These are all symptoms of the muscle paralysis caused by the bacterial toxin. If untreated, these symptoms may progress to cause paralysis of the respiratory muscles, arms, legs and trunk. In foodborne botulism, symptoms generally begin 18 to 36 hours after eating a contaminated food, but they can occur as early as 6 hours or as late as 10 days.

## How is botulism diagnosed?

Physicians may consider the diagnosis if the patient's history and physical examination suggest botulism. However, these clues are usually not enough to allow a diagnosis of botulism. Other diseases such as Guillain–Barré syndrome, stroke and myasthenia gravis can appear similar to botulism, and special tests may be needed to exclude these other conditions. These tests may include a brain scan, spinal fluid examination, nerve conduction test (electromyography, or EMG), and a tensilon test for myasthenia gravis. Tests for botulinum toxin and for bacteria that cause botulism can be performed at some state health department laboratories and at CDC.

## How can botulism be treated?

The respiratory failure and paralysis that occur with severe botulism may require a patient to be on a breathing machine (ventilator) for weeks or months, plus intensive medical and nursing care. The paralysis slowly improves. Botulism can be treated with an antitoxin which blocks the action of toxin circulating in the blood. Antitoxin for infants is available from the California Department of Public Health, and antitoxin for older children and adults is available through CDC. If given before paralysis is complete, antitoxin can prevent worsening and shorten recovery time. Physicians may try to remove contaminated food still in the gut by inducing vomiting or by using enemas. Good supportive care in a hospital is the mainstay of therapy for all forms of botulism.

## Are there complications from botulism?

Botulism can result in death due to respiratory failure. However, in the past 50 years the proportion of patients with botulism who die has fallen from about 50 percent to 3–5 percent. A patient with severe botulism may require a breathing machine as well as intensive medical and nursing care for several months, and some patients die from infections or other problems related to remaining paralyzed for weeks or months. Patients who survive an episode of botulism poisoning may have fatigue and shortness of breath for years and long-term therapy may be needed to aid recovery.

## How can botulism be prevented?

Many cases of botulism are preventable. Foodborne botulism has often been from home-canned foods with low acid content, such as asparagus, green beans, beets and corn and is caused by failure to follow proper canning methods. However, seemingly unlikely or unusual sources are found every decade, with the common problem of improper handling during manufacture, at retail, or by consumers; some examples are chopped garlic in oil, canned cheese sauce, chile peppers, tomatoes, carrot juice and baked potatoes wrapped in foil.

Persons who do home canning should follow strict hygienic procedures to reduce contamination of foods, and carefully follow instructions on safe home canning including the use of pressure canners/cookers as recommended through county extension services or from the US Department of Agriculture.

Oils infused with garlic or herbs should be refrigerated. Potatoes which have been baked while wrapped in aluminum foil should be kept hot until served or refrigerated. Because the botulinum toxin is destroyed by high temperatures, persons who eat home-canned foods should consider boiling the food for 10 minutes before eating it to ensure safety.



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