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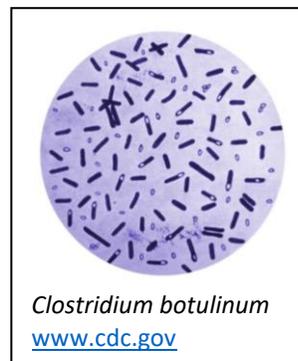
Botulism

Although botulism is rare, with only several dozen cases nationally each year, illness can be severe or fatal. Depending on the kind of botulism, public health interventions may be minimal or complex.

The Organism

Clostridium botulinum is in a bacterial genus with many pathogenic members. Other clostridial species include the agents causing tetanus (*C. tetani*) and gas gangrene (such as *C. perfringens*, *C. septicum*, and *C. tertium*).

These agents are all gram-positive spore-forming toxin-producing obligate anaerobes. Needing an oxygen-free environment may limit growth opportunities, but the highly resistant spores survive boiling and freezing as a strategy for long-term survival. Note that boiling temperatures do destroy botulinum toxin.



Kinds of Botulism

Foodborne botulism results with growth of *C. botulinum* and toxin production in a food or beverage item. The disease occurs primarily as a result of industrial developments. Early food preservation involved fermenting, drying, freezing, pickling, smoking, salting or sugaring foods to inhibit the growth of bacteria and mold. In the 18th century clusters of likely cases were associated with consuming bad sausages (Latin “botulus”) and likely represent the first description of the illness.

In the early 1800s an addition to food preservation was canning (“bottling”) – processing glass jars or bottles with heat and a vacuum seal. Canning prevented spoilage and at the time was thought to work by excluding air; the germ theory would not develop for another half century. Canning improved with products such as specialized glass jars and two-piece disposable canning lids. However, either commercial canning or more commonly home canning carry the risk of botulism if proper methods are not followed. Risk foods are typically vegetables sealed without being sterilized and without preservatives such as salt, sugar, acid, or chemicals (e.g., nitrites, sulfites).



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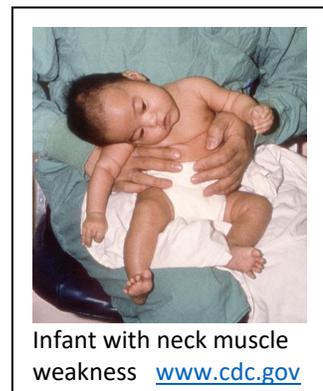
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Infant botulism occurs with germination of spores and toxin production in an infant's intestines. Patients are most often ages 1 to 6 months. No particular diet (e.g., formula, breast fed) is associated with infant botulism and exposure is assumed to be through environmental dust. Honey can contain spores and should not be given to infants, although it is rarely implicated in cases.

Wound botulism results from bacterial growth in damaged tissue with toxin production. Injecting drugs under the skin or into muscle is the most common cause in this country, mostly associated with the type of heroin used on the West Coast. Dirt in wounds due to trauma, such as motorcycle crashes or gardening injuries, has also been a means of exposure.

Less common forms of botulism are iatrogenic botulism, due to excessive injection of cosmetic botulinum toxin; and adult intestinal toxemia, which is similar to infant botulism and typically occurs in adults with surgical or other abnormalities of the intestine. Intentional release of toxin in food or through aerosolization could occur, so an unexplained cluster of cases should raise concern.

Signs and symptoms of botulism result from a symmetric descending paralysis first affecting facial muscles followed by involvement of respiratory muscles and extremities. Adults may present with blurred or double vision, drooping eyelids, non-reactive pupils, slurred speech, dry mouth, and difficulty swallowing. With foodborne botulism there may also be vomiting, diarrhea, and cramps. The patient is intact mentally, so the provider should explain all procedures and address mental health status. Infant botulism is characterized by non-reactive pupils, drooping eyelids, weak or altered cry, drooling, poor feeding that can result in weight loss, and constipation.



Prompt treatment on suspicion of botulism will prevent progression of symptoms. Treatment should not wait for results of testing, which takes days to complete.

Public Health Actions

All kinds of botulism occur in Washington with fewer than ten cases total annually. Recently infant botulism has been the most common kind and food botulism the rarest. The local health jurisdiction (LHJ) role in patient treatment is to connect the healthcare provider with the appropriate consultation. Department of Health Office of Communicable Disease Epidemiology can link the provider to the Centers for Disease Control if the patient is an adult or older child, for treatment with antitoxin. With an infant, the provider can contact the Infant Botulism Treatment and Prevention Program directly for treatment with hyperimmune globulin (BabyBIG). Testing is arranged at Washington State Public Health Laboratories following treatment decisions.

Infant botulism involves a minimal public health follow-up, mainly confirming no home-canned or honey-containing products were consumed. Wound botulism due to heroin use only rarely results in clusters of cases. For even a single case of wound botulism the LHJ jurisdiction can offer informational posters or flyers to sites providing support for persons who inject drugs, such as syringe services, shelters, and low-cost or free healthcare facilities.

When foodborne botulism is associated with home-canned items the LHJ should warn the family not to consume any home-canned food and to hold any opened containers for testing. If a commercial product or a potentially widely used item is the suspected source, an extended investigation may be needed to prevent additional exposures and cases. In correctional settings there have been complicated outbreaks from pruno, illicitly fermented alcohol made in prisons.

A few noteworthy national outbreaks have been in restaurant settings. In the past five decades the largest such outbreak was in Michigan due to home-canned peppers inappropriately used in a restaurant. Other restaurant outbreaks (see below) were associated with fried onions held on a grill (with a presumed anaerobic center where bacteria could grow and produce toxin) and with a dip including potatoes that had been sealed in foil, baked, and held overnight at warm temperatures.

Year	State	# Cases	# Deaths	Implicated food	Home-canned item	Setting
1977	Michigan	58	0	Home-canned peppers	Yes	Restaurant
1978	New Mexico	34	1	Bean and potato salad	Unknown	Country club
1983	Illinois	28	0	Fried onions	No	Restaurant
1994	Texas	23	0	Baked potatoes (in foil) used in eggplant dip	No	Restaurant
2001	Texas	16	0	Mishandled frozen commercial chili	No	Church
2015	Ohio	29	1	Home-canned potatoes used in potato salad	Yes	Church
2017	Mississippi	31	0	Fermented "pruno"	Yes	Corrections

LHJs can also promote safe home canning by offering consumer food safety resources available from Washington State University. Providing directed education to local groups likely to home can food, such as rural populations or certain ethnic groups, may prevent a serious and potentially fatal disease.

Resources

Centers for Disease Control and Prevention:

<https://www.cdc.gov/botulism/infant-botulism.html>

<https://www.cdc.gov/botulism/pruno-a-recipe-for-botulism.html>

Infant Botulism Treatment and Prevention Program: <https://www.infantbotulism.org/>

Washington State University: <https://extension.wsu.edu/foodsafety/food-preservation-canning/>

Public Health
Seattle & King County

BOTULISM WARNING

BLACK TAR HEROIN MAY BE CONTAMINATED

- A suspected WOUND BOTULISM case has been reported in King County. Health officials believe the case is related to injecting black tar heroin.
- Injecting heroin that contains the bacteria that causes botulism can cause **serious infection and even death.**

UNDERSTAND YOUR RISK.

MUSCLING & SKIN-POPPING POSE THE GREATEST RISK.
But, shooting IV is risky too.

?

THERE IS NO WAY TO KNOW WHICH HEROIN HAS THE BACTERIA AND WHICH DOES NOT.

COOKING THE DOPE DOES NOT KILL IT.

SYMPTOMS TO WATCH:

Weakness and drooping eyelids

Blurred or double vision

Extreme dry mouth and sore throat

Trouble breathing, intense shortness of breath

These symptoms can start several days to several weeks after injecting contaminated drugs. You may or may not notice an abscess. If not treated quickly, botulism can cause paralysis, shut down your breathing and cause death. If it is caught early, it can be treated.

If you have any of the symptoms, go the nearest EMERGENCY ROOM immediately. Take this flyer so you will be seen quickly.

<https://kingcounty.gov/depts/health/communicable-diseases/disease-control/~media/depts/health/communicable-diseases/documents/hivstd/wound-botulism-warning.ashx>