Washington State Department of HEALTH

Botulism, Adult

Signs and Symptoms	• Cranial nerve palsies (dysphagia, dysarthria, diplopia, ptosis) with symmetric descending flaccid paralysis of face, then respiratory muscles and limbs • Constipation or diarrhea if foodborne • Abscess can be subtle • Deep tendon reflexes often normal, EMG potentiated • Can follow serial vital capacity measures and maximum inspiratory and expiratory pressures for progression	
Incubation	Varies with dose and source, 2 hours to 8 days for neurologic symptoms	
Case classification	**Clinical criteria**: Common symptoms – double or blurred vision and difficulty swallowing or speaking. Descending symmetric paralysis may progress rapidly.	
	Confirmed: Clinical & lab positive or clinical & risk exposure	**Probable:** Clinical & epi link for food; Clinical & risk exposure for wound
Differential diagnosis	Myasthenia gravis (abnormal Tensilon test), atypical Guillain-Barré (elevated CSF protein), stroke (abnormal brain scan), PSP, Eaton-Lambert, tick paralysis.	
Treatment	CDC's heptavalent (A-G) antitoxin given if suspected case; antibiotics if abscess; rare post-treatment rebound – heptavalent antitoxin half-life short (<36 hours)	
Duration	Antitoxin stops progression, rehab for paralysis can take months; not communicable	
Exposure	Abscess (drug use or garden injury), ingested (improperly canned low acid or fermented food), inhaled (bioterrorism); boiling deactivates toxin but not spores	
Laboratory testing	LHJ and CDE arrange testing if patient is being treated – urgent • Takes 3-5 days to complete so treatment decision is made before results Contact hospital laboratory to clarify collection and shipment • Obtain any suspect leftover food the case actually ate (open container) • **Best specimens:** stool (foodborne); food (foodborne); serum (wound) **Stool:** 15+ g (volume of walnut; use plain sterile saline enema if needed), **Serum:** 10 cc serum [20 cc blood] before treatment plus 10 cc after **Food:** well-sealed container with food actually eaten or its empty jar Hospital can do anaerobic wound culture – PHL will accept a culture or swab *Specimen shipping (Section 4):* • Hospital to keep all specimens **cold, ship cold** according to PHL requirements https://doh.wa.gov/public-health-provider-resources/public-health-laboratories/lab-test-menu Specimen Collection and Submission Instructions: https://www.medialab.com/dv/dl.aspx?d=1975582&dh=1be94&u=69790&uh=0e2a1	
Public health actions **EMERGENCY**	LHJ immediately contacts CDE 877-539-4344 for diagnosis and treatment • Assess with provider consistent illness (above), risk factors (consider age, location, drug use or home canning), and incubation period if known risk • Identify any suspected commercial food source if suspected foodborne • Control any suspected food to prevent additional exposures • Consider issuing a wound bot alert to drug users and their healthcare providers • Provide CDE with case history (objective findings of facial paralysis or respiratory weakness), applicable exposures, and contact number for healthcare provider (neurologist) • CDE calls CDC, CDC and provider decide about antitoxin treatment *Infection Control:* none	

Botulism, Infant

Signs and symptoms	• Cranial nerve palsies (dysphagia, dysarthria, diplopia, ptosis) • Symmetric descending flaccid paralysis of face, then respiratory muscles, limbs • Often failure to thrive, constipation or diarrhea • Deep tendon reflexes often normal, EMG potentiated
Incubation	Unknown since exposure undefined
Case classification	**Clinical criteria**: Infant (<1 year) commonly with constipation, poor feeding, and "failure to thrive"; may be progressive weakness, impaired respiration, and death.
	Confirmed: clinically compatible case, laboratory-confirmed, in a child aged < 1 year
Differential diagnosis	Differential: neuromuscular and metabolic congenital conditions. For diagnosis see: https://www.cdc.gov/mmwr/volumes/70/rr/rr7002a1.htm?s_cid=rr7002a1_w
Treatment	California's hyperimmune globulin (BabyBIG®) given if suspected case; BabyBIG® persists 6 months but rare readmission if breathing and feeding still recovering
Duration	BabyBIG stops progression, rehab for paralysis can take months; infant may have extended excretion of *C. botulinum* spores
Exposure	Dust; need to rule out ingestion (improperly canned low acid food or fermented food)
Laboratory testing	LHJ and CDE arrange testing if patient is being treated – urgent • Takes 3-5 days to complete so treatment decision is made before results Contact hospital laboratory to clarify collection and shipment • **Best specimens:** Stool: 15+ g (volume of walnut; can use plain sterile saline enema) *Specimen shipping (Section 4):* • Hospital to keep all specimens **cold, ship cold** according to PHL requirements https://doh.wa.gov/public-health-provider-resources/public-health-laboratories/lab-test-menu • Specimen Collection and Submission Instructions https://www.medialab.com/dv/dl.aspx?d=1975582&dh=1be94&u=69790&uh=0e2a1

Public health actions
 	
EMERGENCY
	LHJ immediately refers provider to California Department of Health Services at **510-231-7600**, www.infantbotulism.org for consultation and BabyBIG®
	• Provider arranges transport and payment for BabyBIG®
	• LHJ immediately contacts CDE 877-539-4344 for diagnosis
	• LHJ and CDE arrange testing if patient is being treated – urgent
	• Takes 3-5 days to complete so treatment decision is made before results
	• Contact hospital laboratory to clarify collection and shipment
	• Note that immunizations should be delayed until recovery, live-virus vaccines delayed at least five months after BabyBIG®, and rotavirus vaccine not given
	
	Infection Control:
	• *C. botulinum* toxin and organism excreted in feces for weeks to months.
	  ▪ Wash hands thorough after each diaper change
	  ▪ Wear gloves for changing diapers if cuts or wounds on hands
	  ▪ Dispose of diapers to avoid contact with any person or animal (e.g., wrap and place in garbage can with a tight lid
	  ▪ Consider limiting close contact with other infants for several months

Botulism (Foodborne, Wound, Infant, Other)

1. DISEASE REPORTING

A. Purposes of Reporting and Surveillance

1. To assist in the diagnosis of potential cases and facilitate prompt administration of either botulism antitoxin or botulism immune globulin when indicated.
2. For foodborne botulism, to identify contaminated food(s) and prevent further exposures.
3. For foodborne botulism, to identify and assure the proper evaluation and care of other persons who may be at immediate risk because they already ate the implicated food.
4. For wound botulism, to alert others at risk regarding the importance of promptly identifying illness and obtaining medical care.

B. Legal Reporting Requirements (suspected or confirmed cases)

1. **Health care providers** and **Health care facilities:** *immediately* notifiable to **local health jurisdiction.**
2. **Laboratories:** *immediately* notifiable to **local health jurisdiction**; submission required – presumptive positive isolate or if no isolate available specimen associated with presumptive positive result, within 2 business days. On request of a public health agency, send diagnostic specimen(s): serum (food or wound botulism) or stool (food or infant botulism); also include as requested by DOH or LHJ any other specimens available (i.e., implicated foods, debrided tissue or wound swab).
3. **Local health jurisdictions**: **suspected and confirmed cases immediately notifiable** to the Washington State Department of Health (DOH) Office of Communicable Disease Epidemiology (CDE) (877-539-4344 or 206-418-5500).

C. Local Health Jurisdiction Investigation Responsibilities

1. Call CDE immediately to report suspect cases and discuss the need for antitoxin or for infant botulism immune globulin intravenous (human) (BIG-IV).
2. Determine the most likely source of the exposure and prevent others from being exposed.
3. Facilitate the transport of appropriate specimens to the Washington State Department of Health Public Health Laboratories (PHL).
4. Report all *probable* and *confirmed* cases to CDE through the Washington Disease Reporting System (WDRS) using the appropriate form:
    a. **Foodborne:**https://doh.wa.gov/sites/default/files/legacy/Documents/5100/210-016-ReportForm-BotFood.pdf
    b. **Wound:**https://doh.wa.gov/sites/default/files/legacy/Documents/5100/210-017-ReportForm-BotWound.pdf

c. **Infant:**https://doh.wa.gov/sites/default/files/legacy/Documents/5100/210-018-ReportForm-BotInfant.pdf

d. **Other adult:** Reporting Form For Other Botulism (wa.gov)

5. Report all other *confirmed* cases of botulism (adult colonization, inhalational, and unknown type) to CDE through WDRS as Botulism, Other http://www.doh.wa.gov/Portals/1/Documents/5100/420-215-ReportForm-BotOther.pdf

2. THE DISEASE AND ITS EPIDEMIOLOGY

Background

All types of botulism are rare but potentially fatal and demand rapid medical intervention. Foodborne and inhalational botulism are public health emergencies.

- **Foodborne botulism** occurs from ingesting pre-formed toxin in food. Outbreaks of foodborne botulism are a public health emergency if others ate the contaminated food.
- **Wound botulism** occurs when *Clostridium botulinum* infecting a wound secretes toxin.
- **Intestinal colonization botulism** occurs when ingested spores of *C. botulinum* produce toxin in the intestine, either as *infant botulism* or *adult colonization botulism*.
- **Iatrogenic botulism** results from injection of high-concentration botulinum toxin
- **Inhalational botulism** occurs from inhaling botulism toxin. The only known cases (3) were associated with laboratory exposure. Toxin could be intentionally released in the air.

A. Etiologic Agent

Botulism is caused by immunologically distinct toxins (types A-G, and potentially H) produced by the gram-positive bacillus *Clostridium botulinum,* or rarely *C. butyricum* (E) or *C. baratii* (F). The toxins irreversibly block acetylcholine transmission across the neuromuscular junction, causing a characteristic syndrome. Recovery reflects muscle fiber reinnervation over weeks or months. The toxin is a potential agent of bioterrorism.

C. botulinum spores survive a wide range of adverse conditions including boiling. Higher temperatures (>120.5°C/250.5°F) achieved under pressure (e.g., in an autoclave or *properly functioning* home pressure cooker) deactivate spores. Spore germination and bacterial growth occur only under anaerobic, low salt and sugar, and non-acidic to low-acid (generally pH>4) conditions with temperature 37º F–99º F. Toxins are heat-labile and can be inactivated by boiling for ten minutes.

B. Description of Illness

Botulism symptoms may include the "4 Ds" – dysphagia (difficulty swallowing), diplopia (double vision), dry mouth, and dysarthria (difficulty articulating or hoarseness) as well as blurred vision and ptosis (drooping eyelids). A descending, symmetrical (rarely asymmetric) flaccid paralysis starts with facial muscles. Pharyngeal collapse, pooling of secretions, or compromise of muscles (e.g., diaphragm) of breathing may cause respiratory failure. Proximal and then distal limb weakness follow (ending with the feet) although limbs may be uniformly affected. Constipation, diarrhea, or vomiting may occur early in illness. Fever is rare. Severity of symptoms and rate of progression vary greatly depending on the toxin type, dose, and other factors. Severe cases may require months on a ventilator. Residual fatigue and shortness of breath can persist for years.

Mental alertness, peripheral sensation and tendon reflexes (except gag reflex) are intact. In the hospital, consider putting a a poster over the bed asking staff to introduce themselves and to explain procedures before starting them. Use topical/local anesthetics as appropriate since the person is conscious.

Supportive tests include normal blood routine tests, normal CSF and normal brain scan. Later in the illness electrodiagnostic studies including repetitive nerve stimulation, electromyography, and nerve conduction studies demonstrate increment in the compound motor nerve action potential amplitude (RNS rates 30-50 Hz), fibrillation, decreased recruitment of muscle units, decreased duration of muscle unit potentials with EMG, and decreased motor-evoked amplitude on an NCS. Since the patient is alert, explain the tests before initiating.

Adult botulism is frequently misdiagnosed as polyradiculoneuropathy (Guillain-Barré or Miller-Fisher syndrome – with elevated CSF protein), myasthenia gravis (with abnormal Tensilon test), stroke (with abnormal brain scan) or other central nervous system disease, Eaton-Lambert syndrome (with reduced tendon reflexes and abnormal EMG), tick paralysis, intoxication with drugs or alcohol, or a mental health syndrome.

In infants with intestinal botulism the first sign is often constipation, followed by a weak or changed cry, lethargy, listlessness, ptosis, extraocular palsy or fatigability, weight loss from difficulty feeding (weak or absent sucking response), and generalized weakness ("floppy baby" syndrome). The infant may present with "failure to thrive" and diagnosis may be difficult. For diagnostic details see: https://www.cdc.gov/mmwr/volumes/70/rr/rr7002a1.htm?s_cid=rr7002a1_w

C. Botulism in Washington State

Over the last 10 years, DOH received 0–2 reports of foodborne, 0–6 reports of infant and 0–7 reports of wound botulism a year; clusters are rare. Nationally, infant botulism is most common. Foodborne cases are mainly due to home-canned vegetables. Wound botulism is linked with injection drug use (black tar heroin) or rare contaminated injuries.

D. Reservoirs

C. botulinum spores are common in soil. Toxin types A, B, and E are most common. Type A is common on the West Coast and type B is common on the East Coast; type E is highly associated with marine products (fish, seafood, or marine mammal meat). Type F is very rare in humans, and types C, D and G cause illness in other animals.

E. Modes of Transmission

1. Foodborne botulism

Foodborne botulism occurs with ingesting pre-formed toxin. Most implicated foods are low acid, improperly home-canned items not heated before eating. Prison-brewed alcohol can cause outbreaks. Commercial products are implicated rarely, usually after a breakdown in procedures. Identified exposures include:

- home-canned asparagus, beans, and other vegetables (including low-acid tomatoes and salsa), usually processed inadequately by the water-bath method;
- fish that has been improperly canned, dried, or stored;
- sausage or other prepared meats that are improperly preserved or stored;

- chopped garlic or eggplant bottled in oil;
- among Alaska Natives, traditionally preserved foods including fermented (putrefied) whale blubber, salmon heads, salmon eggs, and other marine products;
- rare commercial canned products (e.g., commercially canned chili in 2007).

2. **Wound botulism**

   Wound botulism results from C. *botulinum* infection and toxin production in devitalized tissue in a wound resulting from a dirt-contaminated injury or from intramuscular ("muscling") or subcutaneous ("skin popping") injection of black-tar heroin. Clusters are quite rare. See: Notes from the Field: Wound Botulism Outbreak Among a Group of Persons Who Inject Drugs — Dallas, Texas, 2020 | MMWR (cdc.gov)

3. **Infant botulism (Intestinal colonization botulism)**

   Intestinal botulism occurs with ingesting *C. botulinum* spores from food or soil that germinate and produce toxin. A past link with honey is not supported by recent data. Most infant cases occur at age under 3 months (almost always under 6 months) among both breast-feeding and formula-feeding babies, and no specific risk factors are known (https://www.sciencedirect.com/science/article/pii/S002234762030857X).

4. **Adult colonization botulism (Intestinal colonization botulism)**

   Occurs in a person older than one year of age. Cases are extremely rare and most had prior gastrointestinal surgery or illness, such as inflammatory bowel disease.

5. **Other**

   A few other cases of botulism without identifiable risk factors have occurred. If causes above have been ruled out, such as case is entered as Other.

F. Incubation Period

1. **Foodborne botulism:** The incubation period varies from 12 hours to several days, but is usually 12–36 hours. A shorter incubation is associated with more severe disease.
2. **Wound botulism:** The incubation period can be up to two weeks or longer.
3. **Infant botulism:** The incubation period is unknown.

G. Period of Communicability

Botulism is not communicable from person to person.

H. Treatment

Treat on suspicion of botulism – **never delay pending laboratory confirmation**. Patients need close monitoring of ventilatory status and may require aggressive supportive therapy. Additional therapies vary by type of botulism and are given below.

1. **Botulism in Older Children and Adults (food, wound, adult intestinal)**

   Adults are treated with botulinum antitoxin. If testing or antitoxin use is being considered, **IMMEDIATELY** consult with CDE (877-539-4344 or 206-418-5500).

   Antitoxin cannot reverse existing symptoms but halts progression by removing free toxin. Equine-derived heptavalent (toxins A-G) botulinum antitoxin (HBAT) is the only available product in the United States for treating non-infant botulism; no skin test for

sensitivity is needed before treatment. HBAT is given intravenously at controlled rates to minimize allergic reactions. The half-life of HBAT is shorter than for previous antitoxins so monitor patients after HBAT treatment for possible symptom rebound, particularly if potential ongoing toxin production such as for wound or intestinal colonization botulism. Retreatment should be considered only after consultation with experts. Excluding infant botulism, botulism is rare in children. For cases 1-17 years of age antitoxin should be dosed and infused by the child's weight. Also see: https://academic.oup.com/cid/article/66/suppl_1/S17/4780421

Centers for Disease Control and Prevention (CDC) stock botulinum antitoxin at United States Public Health Service Quarantine Stations including at SeaTac Airport. If antitoxin treatment is being considered, DOH immediately consults with CDC which will arrange antitoxin transport to the hospital where the patient is being treated. CDC does not charge for the antitoxin and its shipment. CDC has a provider video for antitoxin administration: https://www.youtube.com/watch?app=desktop&v=v-h6L2d7Hk0&feature=youtu.be&ACSTrackingID=USCDC_1052-DM47986&ACSTrackingLabel=COCA+Now%3A+New+Botulism+Treatment+Resources+for+Healthcare+Professionals&deliveryName=USCDC_1052-DM47986

Due to the potential for neuromuscular blocking, there is theoretical reason to avoid administering magnesium or calcium as well as aminoglycosides, clindamycin and tetracycline. If use is indicated after careful consideration, maintain close monitoring. Comprehensive supportive care is essential. Healthcare staff should remember that the patient is cognitively intact. Care should address avoiding bladder, bowel, or skin infections, as well as identifying mental health issues. Physical and occupational therapy should be initiated as appropriate. Families may benefit from psychosocial support.

With wound botulism, debridement removes devascularized tissue that can support the growth of *C. botulinum*. There is a theoretical reason to delay wound debridement until after antitoxin administration to avoid further toxin release. Also consider antimicrobial therapy for wound botulism cases. Antibiotics to avoid include aminoglycosides, clindamycin, and tetracycline due to potential for neuromuscular blocking.

2. Infant Botulism

FDA-approved human-derived botulism hyper-immune globulin (BIG-IV or BabyBIG) treats infants. The cost for BIG-IV is substantial, but its use may be cost-effective in reducing the mean length of hospital stay and hospital charges. CDC has a provider website for infant botulism information: https://www.cdc.gov/botulism/hcp/clinical-overview/infant-botulism.html?CDC_AAref_Val=https://www.cdc.gov/botulism/infant-botulism.html?ACSTrackingID=USCDC_1052-DM47986&ACSTrackingLabel=COCA%2520Now%253A%2520New%2520Botulism%2520Treatment%2520Resources%2520for%2520Healthcare%2520Professionals&deliveryName=USCDC_1052-DM47986.

Consultation or BIG-IV (purchased by the healthcare provider) are available from the California Department of Health Services by **IMMEDIATELY** calling the 24-hour number at 510-231-7600 (http://www.infantbotulism.org/). Also contact CDE (206-418-5433 or 877-539-4344) to arrange testing. Retreatment should be considered only after consultation with experts. For treatment details see: https://www.cdc.gov/mmwr/volumes/70/rr/rr7002a1.htm?s_cid=rr7002a1_w

3. CASE DEFINITIONS

A. Case Definition for Foodborne Botulism (2011)

1. Clinical Criteria for Diagnosis: Ingestion of botulinum toxin results in an illness of variable severity. Common symptoms are double or blurred vision, and difficulty swallowing or speaking. Descending symmetric paralysis may progress rapidly.
2. Laboratory Criteria for Diagnosis: Detection of botulinum toxin in serum, stool, or patient's food, or isolation of neurotoxin-producing species of *Clostridium* from stool or wound.
3. Case Definition
    a. *Probable*: A clinically compatible case with an epidemiologic link (e.g., ingestion of a home-canned food within the previous 48 hours).
    b. *Confirmed*: A clinically compatible case that is laboratory confirmed or that occurs among persons who ate the same food as persons with laboratory-confirmed botulism.

B. Case Definition for Wound Botulism (2011)

1. Clinical Criteria for Diagnosis: Toxin produced by *C. botulinum* that has infected a wound results in an illness of variable severity. Common symptoms are double or blurred vision, and difficulty swallowing or speaking. Descending symmetric paralysis may progress rapidly.
2. Laboratory Criteria for Diagnosis: Detection of botulinum toxin in serum or isolation of *C. botulinum* from wound.
3. Case Definition
    a. *Confirmed*: a clinically compatible case that is laboratory confirmed in a patient who has no suspected exposure to contaminated food and who has a history of a fresh, contaminated wound during the 2 weeks before onset of symptoms, or a history of injection drug use within the 2 weeks before onset of symptoms.
    b. *Probable*: a clinically compatible case in a patient who has no suspected exposure to contaminated food and who has either a history of a fresh, contaminated wound during the 2 weeks before onset of symptoms, or a history of injection drug use within the 2 weeks before onset of symptoms.

C. Case Definition for Infant Botulism (2011)

1. Clinical Criteria for Diagnosis: An illness of infants (<1 year) resulting from intestinal growth of *C. botulinum*, characterized by constipation, poor feeding, and "failure to thrive" that may be followed by progressive weakness, impaired respiration, and death.
2. Laboratory Criteria for Diagnosis: Detection of botulinum toxin in serum or stool, or isolation of *C. botulinum* from stool.
3. Case Definition

    Confirmed: a clinically compatible case that is laboratory-confirmed, occurring in a child aged < 1 year.

D. Case Definition for Botulism, Other (2011)

1. Clinical description: See Foodborne Botulism.

2. Laboratory criteria for diagnosis: Detection of botulinum toxin in clinical specimen or isolation of *C. botulinum* from clinical specimen.
3. Case classification

   Confirmed: a clinically compatible case that is laboratory confirmed in a patient aged ≥ 1 year who has no history of ingestion of suspect food and has no wounds.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Diagnosis

Presumptive tests for botulism toxin may be complete in one day but confirmatory work takes several days. Botulism treatment should never be delayed pending laboratory confirmation. Office of Communicable Disease Epidemiology will arrange laboratory testing (206-418-5433 or 877-529-4344). **Collect serum before treatment.**

1. **Foodborne botulism:** Diagnosis is made by detecting botulism toxin in serum, stool, or implicated food or by culturing *C. botulinum* from stool. Vomitus or gastric aspirate can be tested for toxin if obtained within a few hours of food ingestion.
2. **Wound botulism:** Diagnosis is made by detecting botulism toxin in serum or by culturing *C. botulinum* from an infected wound. **Collect serum before treatment.** If patient history implicates risk foods also send stool to rule out foodborne botulism
3. **Infant botulism:** Diagnosis is by finding stool toxin or by stool culture for *C. botulinum*. Toxin is rarely detected in serum so serum testing is not recommended for infants.

B. Tests Available at Washington State Public Health Laboratories (PHL)

PHL perform presumptive (ELISA) and confirmatory botulism toxin assays, and *C. botulinum* cultures from clinical specimens (e.g., stool, wound swab) or environmental specimens (e.g., implicated food). Consult with CDE to arrange testing.

Note that PHL require all clinical specimens have two patient identifiers, a name **and** a second identifier (e.g., date of birth) both on the specimen label and on the submission form. Due to laboratory accreditation standards, specimens will be rejected for testing if not properly identified. Also include specimen source and collection date.

C. Specimen Collection

Collect serum before administration of antitoxin or botulism immune globulin. With treatment, free toxin in the blood is bound so will not be detected by assay. CDC may also request a second serum specimen collected 24 hours after antitoxin is given. Obtain all other clinical specimens as soon possible but stool or wound specimens are acceptable after treatment is initiated. Collect all specimens in sterile leak-proof containers and keep refrigerated but not frozen. CDC may request 10 ml serum collected after treatment.

For **stool** testing, submit at least 15 grams of stool, if possible 50 grams (ping-pong ball sized). If the patient is constipated, as is common with botulism, a small amount (5-30 cc) of sterile, nonbacteriostatic sterile (not tap) enema water and non-glycerin-containing suppositories may be used. For post-mortem testing, collect multiple 15-gram stool specimens from different parts of the small and large intestine.

1. For **serum** testing in an adult, submit at least 8 ml of serum (not blood), 10 ml preferred. Extra serum from other tests may be used if collected before treatment. For children other than for infant botulism (stool testing), minimum is 4 ml of serum.

2. For **food** testing, send as much implicated food as available in the original containers. Typically only open containers are tested, not others from a batch. Rinsed jars have tested positive. Pack each item individually in sterile unbreakable securely sealed containers.
3. For **wound** testing, send wound swab or tissue for culture in anaerobic transport medium. Anaerobic cultures from another laboratory can also be submitted for identification.
4. For **gastric aspirate** or **vomitus** (rarely tested), send at least 20 ml.

   All specimens should be kept refrigerated (*not frozen*) during storage and transport. Use cold packs to maintain a shipping temperature of 4° C (39° F). Specimens must be properly packaged using guidelines for shipping and packaging of diagnostic specimens. Be sure to use absorbent material around the primary container, particularly food specimens, which could have high levels of toxin and present a danger if there is leakage. Submit specimens according to PHL requirements: https://doh.wa.gov/public-health-provider-resources/public-health-laboratories/lab-test-menu.
5. Additional tests such as PCR detect the toxin-producing gene but not the presence of toxin. Mass spectrometry detects botulinum neurotoxin serotypes A, B, E, and F but is not widely available.

5. ROUTINE CASE INVESTIGATION

If you identify more than one case of botulism without an obvious source of infection, consider the possibility of an outbreak associated with a commercial product or an act of bioterrorism and call Office of Communicable Disease Epidemiology (CDE) *IMMEDIATELY* at 877-539-4344 (see Section 6).

A. Evaluate the Diagnosis and Arrange for Treatment

Obtain information from the provider and others about the patient's history and physical exam findings, particularly neurologic exam findings (e.g., cranial nerve function). Call CDE **IMMEDIATELY** (877-539-4344). For an adult case, CDE will discuss botulinum antitoxin with CDC. For suspected infant botulism, the provider should immediately call California Department of Health Services (510-231-7600; see: www.infantbotulism.org). Treatment should never be delayed pending laboratory confirmation.

If antitoxin or botulism immune globulin (BIG-IV) is being given, arrange for appropriate diagnostic specimens to be sent to Washington State Public Health Laboratories (Section 4 above).

B. Manage the Case

Hospitalized patients should be treated with standard precautions. The patient is generally mentally alert and should be alerted before any procedure. After treatment an infant may excrete the toxin and bacteria for weeks to months. Limit close contact with other infants and children during this time and have an adult supervise any such contacts.

No contact follow-up is needed unless there is shared exposure. See: https://www.cdc.gov/mmwr/volumes/70/rr/rr7002a1.htm?s_cid=rr7002a1_w

C. Identify Potential Sources of Exposure

1. **Foodborne Botulism:** Interview the case and others with pertinent information about foods eaten. A site visit is strongly recommended if home-canned foods are implicated or no source is identified. Determine pertinent exposures in the week before symptom onset:
   a. Home-canned, home vacuum-packed, or traditionally preserved foods. Most suspect are foods eaten within two days of onset, those that are low in acid (fish, meat, and vegetables), and those that were not eaten by other persons who remain well. (Note that incubation periods can vary greatly.) Identify and collect all remaining jars of the home-canned foods. Almost all foodborne cases are due to home processed foods.
   b. Commercially canned or vacuum-packed foods or mishandled commercial products (e.g., refrigerated item not kept cold after purchase). For implicated foods, determine the brand, manufacturer, package size, lot number, and place and date of purchase.
   c. Preserved or traditionally prepared fish and marine products.
   d. Items stored in oil (e.g. onions, garlic) or foil (e.g. baked potatoes.)
   e. Sausage, preserved or traditionally preserved meat, or meat inadequately refrigerated.
2. **Wound Botulism:** Ask about illicit injection drug use, specifically, the type of drugs and how they are used (e.g., injected into veins or tissues, snorted, etc.). It is difficult to specifically identify sources of heroin. Testing of heroin or drug paraphernalia is not offered. In addition to illicit drug use, interview regarding potential foodborne exposures.
3. **Infant Botulism:** No specific exposures are well described. Although honey was associated with intestinal botulism in the past, it is rarely implicated in cases.
4. **Botulism, Other:** For botulism cases without likely exposure sources consider the possibility of intentionally contaminated food or airborne release (Section 6A).

D. Identify Other Potentially Exposed Persons

1. Obtain the name, address, and telephone number of every person who may have eaten the suspected food item or shared an environmental exposure.
2. Ask the group's name, contact telephone number, and attendance lists (particularly e-mail or telephone lists) for a suspected gathering, public event, or other shared exposure.
3. Obtain the name, address, and telephone number of every person who may have the suspect home-processed food in his or her possession (e.g., food gifts given to relatives).

E. Manage Other Potentially Exposed Persons

1. **Foodborne botulism:** If reachable within six hours of exposure, other persons who ate implicated food should be purged and given gastric lavage to remove any unabsorbed toxin. Persons who ate the implicated food should self-monitor for signs of botulism at least twice daily for three days and seek medical care immediately if symptoms develop.
2. **Wound botulism:** When possible, provide education to risk groups and to health care providers serving them regarding typical symptoms of botulism and the importance of rapid diagnosis and treatment. Potential routes for education include needle exchange programs, urban hospital emergency departments, and free clinics.

F. Environmental Evaluation

1. Restaurant is implicated: conduct an immediate inspection to identify home canned or mishandled product in the facility.
2. Commercial product is implicated: **IMMEDIATELY** notify CDE for assistance and coordination with Food Program and outside agencies (FDA, USDA, CDC).
3. Home-canned food is implicated: Send samples of implicated home-canned food (item eaten) to Public Health Laboratories for testing and destroy any remaining containers. To avoid risk to trash haulers or others, have the remainder autoclaved before discarding; as an alternative, boil contents and empty containers for at least ten minutes. The person who did the home canning should be thoroughly instructed in proper techniques.

6. MANAGING SPECIAL SITUATIONS

A. Outbreak

For more than one case of botulism without an obvious source of exposure, consider the possibility of a contaminated commercial food product or intentional exposure. **In such situations IMMEDIATELY call Office of Communicable Disease Epidemiology (CDE): 877-539-4344.** The cases will need to be extensively interviewed about possible exposures at gatherings and public events.

B. Counterfeit or mishandled botulinum toxin

Report complaints related to medical or cosmetic injections of botulinum toxin to the FDA: https://www.cdc.gov/botulism/outbreaks/harmful-reactions-botox-injections/index.html

C. Bioterrorism

D. botulinum toxin has been classified as a potential agent of bioterrorism. The toxin is also easy to produce and dissemination through aerosol or food, and affected individuals often need extensive and prolonged intensive care. Inhalational botulism as an act of bioterrorism should be considered for two or more botulism cases linked temporally and geographically but without a likely common foodborne or drug exposure. **Call CDE IMMEDIATELY: 877-539-4344.** The cases will need extensive interviews about possible exposures such as gatherings, public events, specific geographic locations, large buildings, shopping areas, and public transportation.

7. ROUTINE PREVENTION

A. Vaccine Recommendations: Currently no vaccine is available.

B. Prevention Recommendations

1. Foodborne botulism
   - Persons doing home canning should use proper sterilization. Pickling, sugar syrup, or sufficient brining (salting) prevent the growth of *C. botulinum*. County extension services or the United States Department of Agriculture have instructions on safe home canning.
   - Oils infused with garlic, fresh herbs, eggplant, mushrooms, whole chilies, pesto or similar moist material should be refrigerated and used within four days.
   - Potatoes baked wrapped in aluminum foil should be kept hot until served or chilled.

- Persons who eat risky home-canned foods (i.e., low acidic, non-pickled foods) should consider boiling the food for ten minutes before eating it to ensure safety.

2. Wound botulism
   - Wound botulism can be prevented by promptly seeking medical care for infected wounds and by not using injectable street drugs.
   - Injection drug users and sites serving them (e.g., syringe service programs, urban emergency departments, or free clinics) should be educated regarding typical symptoms of botulism and the importance of rapid diagnosis and treatment.
3. Infant botulism
   - Honey (raw or processed) can contain spores of *Clostridium botulinum* and should not be fed to children less than 12 months old. However, very few have honey exposure or any other identified risk factor (https://www.sciencedirect.com/science/article/pii/S002234762030857X).

ACKNOWLEDGEMENTS

This document is a revision of the Washington State Guidelines for Notifiable Condition Reporting and Surveillance published in 2002 which were originally based on the Control of Communicable Diseases Manual (CCDM), 17th Edition; James Chin, Ed. APHA 2000. We would like to acknowledge the Oregon Department of Human Services for developing the format and select content of this document.

UPDATES

Section 2F: The incubation period for wound botulism can be up to two weeks or longer.

March 2010: New heptavalent antitoxin replaced existing AB and ABF antitoxin treatment.

January 2011: Legal Reporting Requirements were revised to reflect the 2011 Notifiable Conditions Rule revision.

June 2012: Minor clarifications in Section 4, Diagnosis and Laboratory Services. Prior Section 5 and 6 combined.

July 2014: Section 4 was updated to indicate that serum is not tested in cases of infant botulism.

July 2015: Reorganized

April 2016: Front pages added

March 2018: Standard review

May 2021: Updated with CDC Clinical Guidelines (May 7, 2021 MMWR Vol 70, No 2) including treatment details (Section 2H); links added in Section 2H for CDC antitoxin video and infant botulism resources

October 2022: Added link for pediatric treatment (Section 2H1)

December 2022: For 2023 WAC revision combined provider and facility reporting requirement (Section 1B2), updated laboratory submission (Section 1B3)

December 2023: For 2024 WAC revision updated laboratory submission

June 2024: Standard review; CDC links updated