

## Virginia Department of Health

### Botulism: Overview for Healthcare Providers

<b>Organism</b>	<ul style="list-style-type: none"> <li>• Toxin from <i>Clostridium botulinum</i>, an anaerobic, spore-forming bacterium. Strains of <i>C. botulinum</i>, <i>C. butyricum</i>, and <i>C. argentinense</i> can also produce botulinum toxin.</li> <li>• 7 types of toxins (A–G) and several mosaic toxins (C/D, D/C, and A/F) have been recognized. Human disease is caused primarily by toxin types A, B, E, and, rarely, F.</li> </ul>
<b>Reporting to Public Health</b>	Suspected or confirmed cases require <u>immediate</u> notification to the local health department (LHD). See <a href="http://www.vdh.virginia.gov/local-health-districts/">http://www.vdh.virginia.gov/local-health-districts/</a>
<b>Infectious Dose</b>	A few nanograms of toxin
<b>Occurrence</b>	<ul style="list-style-type: none"> <li>• Botulism occurs worldwide, but the incidence is low.</li> <li>• In the United States, ~100–200 cases are reported annually; in Virginia, ~3 cases are reported annually. Most reported cases are infant botulism.</li> </ul>
<b>Natural Reservoir</b>	<i>C. botulinum</i> spores are ubiquitous in the environment. Spores can be found in soil, dust, marine sediments, and the intestinal tracts of animals, including fish.
<b>Route of Infection</b>	<ul style="list-style-type: none"> <li>• There are multiple types of botulism based on the transmission route: foodborne, infant, wound, adult intestinal toxemia (also known as adult intestinal colonization), iatrogenic, and inhalational.</li> <li>• Unintentional exposure can occur by ingesting pre-formed toxin (foodborne), ingesting spores (infant; adult intestinal toxemia), having a wound contaminated with spores (wound), receiving excess injectable toxin during cosmetic or medical procedure (iatrogenic), inhaling toxin released in aerosols (inhalational)</li> <li>• If botulinum toxin was used during a bioterrorism event, it would most likely be released in toxin-contaminated food or via aerosols.</li> </ul>
<b>Communicability</b>	Botulism is not transmissible from person to person.
<b>Risk Factors</b>	<ul style="list-style-type: none"> <li>• All persons are susceptible.</li> <li>• Foodborne: consuming homemade foods that are improperly canned, preserved, or fermented or consuming certain kinds of homemade alcohol (e.g., prison wine also known as “pruno” or “hooch”)</li> <li>• Infant (&lt;12 months of age): consuming honey or products made with honey</li> <li>• Wound: injecting certain drugs (e.g., black tar heroin) or having contamination of a wound or open fracture with soil or gravel</li> <li>• Adult intestinal toxemia: risk is higher among those with a weakened immune system, altered GI anatomy or altered microflora because of antimicrobial use</li> <li>• Iatrogenic: receiving excess injectable botulinum toxin during cosmetic or medical procedures</li> <li>• Inhalational: exposure to toxins in aerosols (e.g., bioterrorism event or laboratory exposure)</li> </ul>
<b>Case-fatality Rate</b>	Case-fatality rate among those with appropriate treatment is approximately 5%.
<b>Incubation Period</b>	Depends on type of botulism: <ul style="list-style-type: none"> <li>• Foodborne: 12–36 hours (range 6 hours–10 days)</li> <li>• Infant and adult intestinal toxemia: unknown</li> <li>• Wound: approximately 7 days (range 4–21 days)</li> <li>• Inhalational: approximately 1–3 days</li> </ul>
<b>Clinical Description</b>	<ul style="list-style-type: none"> <li>• Symmetrical cranial neuropathies resulting in visual disturbances and difficulty speaking or swallowing</li> </ul>

	<ul style="list-style-type: none"> <li>Neurological findings: ptosis, diplopia, blurred vision, dilated or nonreactive pupils, dysarthria, dysphonia, and dysphagia. Descending, flaccid paralysis occurs, beginning in ocular and other cranial nerve functions, extending to trunk and limb muscles and leading to respiratory failure</li> <li>Infants with botulism appear lethargic, feed poorly, are constipated, and have a weak cry and poor muscle tone; infants might resemble “failure to thrive” or “floppy baby.”</li> </ul>
<b>Differential Diagnosis</b>	<ul style="list-style-type: none"> <li>For adults: Guillain-Barré syndrome, myasthenia gravis, cerebrovascular accident, bacterial or chemical food poisoning, tick paralysis, chemical intoxication (e.g., carbon monoxide), mushroom poisoning, poliomyelitis, and psychiatric illness</li> <li>For infants: sepsis, meningitis, acute flaccid myelitis, electrolyte-mineral imbalance, Reye’s syndrome, congenital myopathy, Werdnig-Hoffman disease, and Leigh disease</li> </ul>
<b>Radiography</b>	Infant botulism might reveal dilated colonic loops by radiography.
<b>Specimen Collection and Laboratory Testing</b>	<ul style="list-style-type: none"> <li>Acceptable specimens include: stool (5–10 g) or sterile enema (10–20 mL), serum (2–4mL), serum or 5–10mL whole blood), gastric aspirate or vomitus (10–20 mL), tissue or exudate (1 g), suspected food samples (if available). Stool (or sterile enema) and serum are typically the specimens of choice. For infant cases, DCLS will accept 1mL of serum to perform limited testing if appropriate volume cannot be collected.</li> <li>If botulism is suspected, notify the <a href="#">LHD</a> immediately to discuss the case and laboratory testing. Specimens may be sent to the Division of Consolidated Laboratory Services (DCLS) <u>after</u> VDH has approved testing.</li> <li>For questions about specimen collection, contact the DCLS Emergency Duty Officer available 24/7 at 804-335-4617.</li> </ul>
<b>Treatment</b>	<ul style="list-style-type: none"> <li>Antitoxin and meticulous supportive care, including respiratory and nutritional support.</li> <li>Treatment with antitoxin should be based on the clinical presentation and findings, and should not be delayed by waiting for confirmatory test results.</li> <li>Infant botulism is treated as soon as possible after clinical diagnosis with intravenous, human-derived botulism immune globulin (BabyBIG®). BabyBIG® is available only from California Department of Public Health’s Infant Botulism Treatment and Prevention Program (available 24/7 at 510-231-7600) <u>after</u> consultation. In a bioterrorism attack, BabyBIG® is not recommended.</li> <li>For non-infant forms of botulism, Heptavalent Botulinum Antitoxin (HBAT) should be administered as soon as possible after clinical diagnosis. Antitoxin is available only from CDC <u>after</u> consultation with LHD and CDC (available 24/7 at 770-488-7100).</li> <li>For additional information on dosing, please consult the package inserts.</li> </ul>
<b>Postexposure Prophylaxis</b>	None. Antitoxins are not useful for preventive purposes.
<b>Vaccine</b>	Currently, there is no licensed vaccine for commercial use.
<b>Infection Control</b>	<ul style="list-style-type: none"> <li>Use Standard Precautions; patients do not need to be isolated.</li> <li>Those known to have eaten incriminated food should be kept under close medical observation.</li> <li>Infants with botulism can shed <i>C. botulinum</i> and toxin in the stool for weeks to months after onset. Hand hygiene among care givers is critical. Diapers should be disposed of so that other people or animals cannot come into contact with them. People with open cuts or wounds on their hands should wear gloves when handling soiled diapers. Close contact with other infants (e.g., sharing crib and toys) should be avoided while excretion might be continuing.</li> </ul>