Botulism Facts for Health Care Providers

Agent
Toxin produced by *Clostridium botulinum*, an encapsulated, anaerobe, gram-positive, spore-forming, rod-shaped (bacillus) bacterium

Disease
Botulism is a neuroparalytic (muscle-paralyzing) disease. There are three forms of naturally occurring botulism:

- **Foodborne botulism**
  Caused by ingestion of pre-formed toxin

- **Infant botulism**
  Caused by ingestion of *C. botulinum* which produces toxin in the intestinal tract

- **Wound Botulism**
  Caused by wound infection with *C. botulinum* that secretes the toxin

Botulinum Toxin as a Biological Weapon

- Aerosolized botulinum toxin is a possible mechanism for a bioterrorism attack

- **Inhalational botulism does not occur naturally**

- Inhalational botulism cannot be clinically differentiated from the 3 naturally occurring forms

- Indications of intentional release of a biologic agent may include:
  - An unusual geographic clustering of illness (e.g., persons who attended the same public event or gathering)
  - A large number of cases of acute flaccid paralysis with prominent bulbar palsies, especially if occurring in otherwise healthy persons

Transmission
Botulism is not transmissible from person-to-person

Incubation
Symptoms begin within 6 hours to 2 weeks after exposure (often within 12-36 hours)

Symptoms/Signs

- Symmetrical cranial neuropathies
  - Difficulty swallowing or speaking, dry mouth
  - Diplopia (double vision), blurred vision, dilated or non-reactive pupils, ptosis (drooping eyelids)
- Symmetric descending weakness respiratory dysfunction (requiring mechanical ventilation)
- Descending flaccid paralysis
- Intact mental state
- No sensory dysfunction
- No fever

**Diagnosis/Lab/Reporting**

- Clinicians should contact their state health departments to report suspected cases
- Diagnosis: history and clinical exam
- Laboratory confirmation:
  - Demonstrating the presence of toxin in serum, stool, or food
  - Culturing *C. botulinum* from stool, wound or food

**Differential Diagnoses**

<table>
<thead>
<tr>
<th>Differential Diagnoses for Adults</th>
<th>Differential Diagnoses for Infants</th>
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<tbody>
<tr>
<td>- Guillain-Barre syndrome</td>
<td>- Sepsis</td>
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<tr>
<td>- Myasthenia gravis</td>
<td>- Meningitis</td>
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<tr>
<td>- Cerebrovascular accident (CVA)</td>
<td>- Electrolyte-mineral imbalance</td>
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<tr>
<td>- Bacterial and/or chemical food poisoning</td>
<td>- Reye’s syndrome</td>
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<td>- Tick paralysis</td>
<td>- Congenital myopathy</td>
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<tr>
<td>- Chemical intoxication (e.g., carbon monoxide)</td>
<td>- Werdnig-Hoffman disease</td>
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<tr>
<td>- Mushroom poisoning</td>
<td>- Leigh disease</td>
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<td>- Poliomyelitis</td>
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**Treatment**

- Prompt diagnosis is essential
- Antitoxin is effective in reducing the severity of symptoms, if administered early
- A supply of antitoxin against botulism is maintained by the CDC
- State health departments should contact CDC to arrange for a clinical consultation by phone, and (if indicated) the release of the antitoxin
- Supportive care as needed, including mechanical ventilation

**Prophylaxis**

- Botulism can be prevented by the administration of neutralizing antibody in the bloodstream
- Passive immunity can be provided by equine botulinum antitoxin or by specific human hyperimmune globulin, while endogenous immunity can be induced by immunization with botulinum toxoid

**Control Measures**

- Medical personnel caring for patients with suspected botulism should use standard precautions
- Patients with suspected botulism do not need to be isolated
- If meningitis is suspected in a patient with flaccid paralysis, medical personnel should use droplet precautions
- Heating to an internal temperature of 85°C for at least 5 minutes will detoxify contaminated food or drink
- When exposure is anticipated, some protection may be conferred by covering the mouth and nose with clothing such as an undershirt, shirt, scarf, or handkerchief
- In contrast with mucosal surfaces, intact skin is impermeable to botulinum toxin
- After exposure to botulinum toxin, clothing and skin should be washed with soap and water
- Contaminated objects or surfaces should be cleaned with 0.1% hypochlorite bleach solution if they cannot be avoided for the hours to days required for natural degradation

For more information
For more information, please visit the Botulism Emergency Preparedness and Response page at www.bt.cdc.gov/agent/botulism/. You may also contact 1-800-CDC-INFO, or e-mail coca@cdc.gov.

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