

Fact Sheet

Information for Healthcare Professionals Botulism

October 4, 2006
Page 1 of 4

This information requires knowledgeable interpretation and is intended primarily for use by health care workers and facilities/organizations providing health care including pharmacies, hospitals, long-term care facilities, community-based health care service providers and pre-hospital emergency services.

Important Numbers

- Public Health Division: 416-327-7392
- Spills Action Centre: 416-325-3000 or 1-800-268-6060
- Botulism Reference Service office: 613-957-0902

After-hours: 613-296-1139

Botulism is a neuroparalytic disease caused by a nerve toxin that is produced by the bacterium *Clostridium botulinum*. The mortality rate is approximately 14 per cent. There are three main kinds of botulism: Food borne, Wound and Intestinal (infant and adult).

Symptoms

Food borne

Initially symptoms of food borne botulism may include vomiting and/or diarrhea followed by one or more of: ptosis (drooping of eyelids), visual disturbance, dilated and fixed pupils, dysphagia (difficulty in swallowing), dry mouth and dysphonia (difficulty speaking). These symptoms may extend to a descending symmetrical flaccid paralysis in an alert afebrile person. Constipation is a common symptom later in presentation.

Wound

Wound botulism symptoms are similar to food borne symptoms (except there is no vomiting and/or diarrhea). The presence of a wound is also useful to note.

Intestinal (infant and adult)

Intestinal botulism affects infants under one year of age almost exclusively, but can affect adults who have altered gastrointestinal anatomy and microflora. The earliest and most frequently observed symptom of infant botulism is constipation followed by lethargy, poor feeding, ptosis, difficulty swallowing, hypotonia, and generalized weakness (*floppy baby*) including a weak cry.

Mode of Transmission

Food borne botulism is a severe intoxication resulting from ingestion of preformed toxin present in contaminated food. Wound botulism cases may result from contamination of wounds by soil or gravel, or injection of illicit intravenous drugs. Intestinal botulism results from ingestion of botulinum spores that then germinate in the colon, rather than by ingestion of preformed toxin.

Botulinum toxins could be used in bioterrorism. Although the greatest threat may be via aerosol use, the more common threat may be via its use in food and drink.

Incubation Period

In food borne botulism, symptoms generally begin 12 to 36 hours after eating a contaminated food, but they can occur as early as six hours or as late as 10 days. The incubation period of intestinal botulism in infants is unknown. The incubation period of wound botulism is longer, averaging about 10 days.

What Should I Do If I Suspect a Botulism Case?

Diagnosis of food borne botulism is made by demonstration of botulinum toxin in serum, stool, gastric aspirate or incriminated food; or isolation of *C. botulinum* from stool or gastric aspirate. Identification of organisms in a suspected food is helpful but not diagnostic because botulism spores are ubiquitous; the presence of toxin in a suspected food is more significant. The diagnosis may be accepted in a person with the clinical syndrome who had consumed a food item incriminated in a laboratory confirmed case. Wound botulism is diagnosed by detection of toxin in serum or by positive wound culture. The diagnosis of intestinal botulism is established by identification of *C. botulinum organisms* and/or toxin in a patient's feces or autopsy specimens. Differential diagnoses include Guillain-Barré syndrome, stroke, and myasthenia gravis.

1. Obtain botulinum antitoxin from the Public Health Branch, Ministry of Health and Long-Term Care.

During Work Hours (8:30am - 4:30pm Monday to Friday):

Call the Public Health Division at 416-327-7392 and request staff from the *Enteric and Zoonotic Diseases Unit* or the *Food Safety Unit*.

After-Hours:

Call the Spills Action Centre at 416-325-3000 or 1-800-268-6060 and request the Public Health Division physician on-call.

Please provide the Public Health Division physician on-call:

- a) the name of the physician to which the antitoxin should be sent
- b) the address to which the antitoxin should be sent
- c) the physician's contact telephone number
- d) the name of the health unit in which the hospital is located

One vial of bivalent Type A&B and one vial of monovalent Type E botulinum antitoxin should be administered as soon as possible. Public Health Branch will arrange for the shipment of one vial of Type A&B and one vial of Type E.

The Public Health Division physician will advise the Ontario Government Pharmaceutical and Medical Supply Services (OGPMSS) in York Region of the authorization. The physician's information (i.e., name, address, and phone number) will be provided to OGPMSS. OGPMSS will prepare for the delivery of the Type A&B and Type E botulinum antitoxin.

2. Notify the Botulism Reference Service for Canada.

Call Botulism Reference Service office during working hours at 613-957-0902 or the after-hours cell phone at 613-296-1139.

Among many responsibilities, the Botulism Reference Service for Canada will assist physicians and provincial health departments when botulism is suspected and alert appropriate agencies when commercial foods are involved.

3. Obtain the appropriate laboratory specimens and forward the specimens to the Botulism Reference Service for Canada in Ottawa.

A good case history should be obtained to support the diagnosis. Suspect food and clinical specimens should be sent to the Botulism Reference Service in Ottawa.

Prior to sending the specimens, physicians must call the Botulism Reference Service office at 613-957-0902. After-hours call the Botulism Reference Service cell phone at 613-296-1139 to make plans for transporting clinical specimens for laboratory analysis.

Specimens may include leftovers or unopened containers of food. When commercial foods are involved, it is important to retrieve the label, the manufacturer's lot number, and codes embossed on the can or package. Suitable clinical specimens for analyses include fecal samples (approximately 10 g) or enema fluid, gastric contents (adjusted to approximately a pH of 6.0 with 1N NaOH, if possible) and serum (from 20 ml of blood collected before administration of antitoxin). When infant botulism is suspected, the essential material for analysis is the infant's feces. If necessary, soiled parts of diapers may be submitted.

Specimens should be handled according to routine practices and additional precautions, and packaged for transport to the Botulism Reference Service. For safe shipment, the specimens must be in a watertight primary receptacle, in a watertight secondary container, with sufficient absorbent material between the two containers to absorb the entire contents of the primary receptacle. The preferred method of preserving the material during shipment is by cooling rather than freezing, i.e., by including commercial cooling packs in the parcel. In urgent cases, the parcels are picked up immediately upon arrival.

Samples should be sent by courier (not Canada Post) to:

**Dr. John W. Austin or Mr. Greg Sanders
Room 456, Sir Frederick G. Banting Building
Building 22, Tunney's Pasture, PL2204A2
Sir Frederick Banting Driveway
Ottawa, ON
K1A 0L2**

**Telephone: 613-957-0902
Fax: 613-941-0280**

Treatment

Serum should be collected to identify the specific toxin before antitoxin is administered, but antitoxin should not be withheld pending test results. One vial of bivalent Type A&B and one vial of monovalent Type E botulinum antitoxin should be administered as soon as possible. (Note that the liquid volume per vial may vary, however, the number of units of antitoxin is constant). Attempts may be made to remove contaminated food still in the gut by inducing vomiting or by using enemas.

For all types of botulism, accessibility to respiratory support is essential. For wound botulism, in addition to antitoxin, the wound should be debrided and/or drainage established, and appropriate antibiotics (e.g., penicillin) administered.

Once flaccid paralysis occurs, it is not reversed by administration of antitoxin. Antitoxin neutralizes circulating toxin (i.e., neurotoxin that is not already bound to neurons). Currently, antitoxin and antibiotics are of no proven benefit in the treatment of intestinal botulism. Advice on the most up-to-date treatment should be sought from a clinical expert.

4. Call your local health unit immediately.

Botulism is a Reportable Disease in Ontario under the *Health Protection and Promotion Act* and must be reported immediately to the local medical officer of health by telephone. The disease should be reported even if it is only suspected and has not yet been confirmed.

5. Complete the *Botulism Special Access Program (SAP) Request Form*.

After treatment, complete and fax the *Botulism SAP Form* that is enclosed with the antitoxin to Health Canada at 613-941-3194.

References

The information provided is subject to change. The information was collated from the following three sources:

1. Heymann, D. "Control of Communicable Diseases Manual". 18th Edition. 2004. American Public Health Association: Washington D.C.
2. Health Canada, Canada Communicable Disease Report Volume 22-21, 1 November 1996 available at <http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/ccdr-rmtc/96vol22/dr2221ed.html>
3. Health Canada website: <http://www.hc-sc.gc.ca/english/protection/biotech/bioterrorism.htm>
4. Centers for Disease Control and Prevention website: <http://www.cdc.gov/>