

BOTULISM

Case definition

Foodborne botulism

CONFIRMED CASE

Laboratory confirmation of intoxication with clinical evidence:

- detection of botulinum toxin in serum, stool, gastric aspirate or food

OR

- isolation of *Clostridium botulinum* from stool or gastric aspirate

OR

Clinical evidence and indication that the case ate the same suspect food as an individual with laboratory-confirmed botulism.

PROBABLE CASE

A probable case requires clinical evidence and consumption of a suspect food item in the incubation period [12-48 hours].

Wound botulism

CONFIRMED CASE

Laboratory confirmation of infection:

- detection of botulinum toxin in serum

OR

- isolation of *C. botulinum* from a wound

AND

Presence of a freshly infected wound in the two-week period before symptoms and no evidence of consumption of food contaminated with *C. botulinum*.

Infant botulism

CONFIRMED CASE

Laboratory confirmation with symptoms compatible with botulism in a person less than one year of age:

- detection of botulinum toxin in stool or serum

OR

- isolation of *C. botulinum* from the patient's stool, or at autopsy.

Colonization botulism

CONFIRMED CASE

Laboratory confirmation with symptoms compatible with botulism in a patient aged 1 year or older with severely compromised gastrointestinal tract functioning (i.e. abnormal bowel) due to various diseases, such as colitis, or intestinal bypass procedures, or in association with other conditions that may create local or widespread disruption in the normal intestinal flora:

- detection of botulinum toxin in stool or serum

OR

- isolation of *C. botulinum* from the patient's stool, or at autopsy.

Iatrogenic botulism

Note: There is currently no case definition for iatrogenic botulism. Iatrogenic botulism can occur as a result of therapeutic and/or cosmetic procedures with the botulinum toxin. These situations should be reviewed by the Medical Officer of Health on a case-by-case basis.

Causative agent

Botulinum toxin is a neurotoxin produced primarily by the spore-forming *Clostridium botulinum*, but is also produced by some strains of *C. butyricum*, *C. baratii*, and *C. argentinense*. The most common serotypes associated with naturally occurring illness are types A, B, E, and F.

Source

Spores are present in soil and in agricultural products, such as vegetables and honey. They are also present in lake and marine sediment and in the intestinal tracts of animals, including fish.

Incubation

- **Foodborne botulism:** usually 12-72 hours after eating contaminated food, but onset can range from 2 hours to 8 days.
- **Wound botulism:** 4-14 days between time of injury and onset of symptoms.
- **Intestinal (infant) botulism:** estimated to be 3-30 days from the time of ingestion of spores.

Transmission

- **Foodborne botulism** occurs from the ingestion of preformed toxin present in contaminated food, usually due to home-canned vegetables and lightly preserved foods. Occasionally, commercially prepared or restaurant prepared foods are involved.
- **Wound botulism** occurs when a wound is contaminated with *C. botulinum* spores, which then produce toxin inside the wound. Often this results from contamination of the wound by soil or gravel. Most cases have been associated with self-injection of contaminated black tar heroin.
- **Intestinal (infant) botulism** occurs after ingestion of *C. botulinum* spores, which then produce toxins in the colon. Honey and dust have been sources for spores related to infant botulism.

Communicability

No person-to-person transmission has been documented.

Symptoms

- **Foodborne botulism** presents as bilateral cranial nerve palsies followed by descending symmetric paralysis which may progress rapidly, often requiring respiratory support. Other symptoms include ptosis, diplopia, blurred vision, dry mouth and difficulty swallowing and speaking. Gastrointestinal symptoms, such as nausea, vomiting and diarrhea, can also occur.
- **Wound botulism** presents as bilateral cranial nerve palsies followed by descending symmetric paralysis which may progress rapidly. Other symptoms include ptosis, diplopia, blurred vision, bulbar weakness, dry mouth and difficulty swallowing and speaking.
- **Intestinal (infant) botulism** typically presents initially with constipation and may include poor suck, loss of appetite, altered cry, weakness, hypotonia (“floppy infant”) and loss of head control. The illness may be associated with Sudden Infant Death Syndrome (SIDS); however, mortality from infant botulism is rare.

Diagnostic testing

- Stool for culture/toxin assay
- Blood, isolate or serum
- Remains of meal for culture toxin assay

Treatment

- **Foodborne, wound and infant botulism:** Meticulous supportive care, including respiratory and nutritional support, is required. Botulinum antitoxin (BAT) is available; see product monograph for dosing. Sensitivity testing should be carried out prior to the administration of antitoxin. Antibiotics should only be used to treat secondary infections. Contact the Provincial Biological Depot for antitoxin.

PUBLIC HEALTH MANAGEMENT & CONTROL

Case management

- Initiate investigation **immediately** upon receipt of report. A single case of botulism should arouse suspicion of an outbreak.
- Contact the primary care provider to obtain clinical information about the case.
- Interview the case, review clinical information, determine food history, activities and potential source of exposure (including medical or cosmetic procedures containing the toxin) and identify any contacts who may require investigation, such as those who shared the potential food source.
- For foodborne and infant botulism, determining a food history is pertinent in the investigation. Take special note if the following foods have been ingested: home-canned, preserved or fermented foods, garlic in oil, canned cheese sauce, carrot juice, baked potatoes wrapped in foil or, in an infant botulism case, honey.
- Educate the case and/or family about botulism and prevention measures [see “Education” section].
- Determine if collection of food specimens is possible; consultation with the Medical Officer of Health (MOH) and Nova Scotia Environment or Canadian Food Inspection Agency may be necessary.
- If the case has reported a food source that has been produced for public consumption as a potential source of exposure, contact Nova Scotia Environment.
- Iatrogenic botulism situations should be reviewed by the MOH on a case-by-case basis.
- Document the information on the [Enteric Case Report Form](#) and the [Nova Scotia Notifiable Disease Surveillance Case Report Form](#) or designated electronic information system.

Exclusion

None.

Education

- Home canning of low-acid foods [vegetables [including tomatoes], meat and fish] is not recommended. Freezing is a preferred method of preserving these foods. However, if canning foods at home, all low-acid foods must be preserved using a pressure canner and following manufacturer's instructions. Information can be provided on proper canning procedures, e.g. [Canning and Botulinum – What you Need to Know](#) and Health Canada's [home canning safety](#) information. Advise case to contact Nova Scotia Environment if they require further information.
- Boil all home-canned low-acid foods for at least 10 minutes before eating.
- When home-prepared foods are stored in oil [herbs, vegetables, etc.], use only fresh ingredients and keep refrigerated. Discard if product is more than one week old.
- Do not eat food from cans that are leaking or bulging, or foods that have unusual odours, colour or texture. Remember: if in doubt, throw it out.
- All work surfaces, utensils and hands must be kept clean at all stages of the home-canning process.
- Do not feed honey to infants less than one year old.

Contact tracing

Definition of close contact/exposure criteria for foodborne botulism:

A contact is a person who has shared a suspected food with the case.

Initiate contact tracing

- During the interview with the case, identify contact[s].
- Advise contacts that they have shared a suspected food with a case and they should monitor for symptoms. Recommend that contacts see a health care provider if symptoms arise.
- Collect stool specimens from anyone suspected of sharing the same food as the case, even if asymptomatic.

Prophylaxis

May be used for asymptomatic individuals strongly suspected of having eaten food contaminated with the botulism toxin.

Surveillance forms

novascotia.ca/dhw/populationhealth/surveillanceguidelines/NS_Notifiable_Disease_Surveillance_Case_Report_Form.docx

novascotia.ca/dhw/populationhealth/surveillanceguidelines/Enteric_Case_Report_Form.pdf

General Information Sheet

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cdha.nshealth.ca/pathology-laboratory-medicine

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