
Botulism

Frequently Asked Questions

1. What is botulism?

Botulism is a disease of humans and animals characterised by muscle paralysis, and is potentially fatal. It is caused by extremely potent neurotoxins produced by the environmental spore-forming bacterium *Clostridium botulinum* and rarely, by botulinum toxin-producing strains of some other *Clostridium* species. There are five different types of botulism characterised by the mode of acquisition, namely: foodborne botulism, infant botulism, wound botulism, adult enteric botulism and inhalational botulism.

2. Who can get botulism?

Individuals who consume food products that are contaminated with *C. botulinum* spores may develop botulism. Home-prepared foods, such as bottled vegetables or cured meats that are not heated before being eaten are often implicated as heat inactivates botulinum toxin). Contaminated honey has been implicated in cases of infant botulism. Commercially-produced foods are rarely involved, but they may get contaminated after manufacture if containers are damaged. Persons with untreated penetrating wound infections are potentially at risk. Drug addicts that inject themselves subcutaneously with contaminated substances (particularly black tar heroin) are a known risk group. Botulinum toxin is used in very small doses for cosmetic reasons ('botox' injections) and for medical purposes to relieve muscle spasms in persons with cerebral palsy or spinal injuries.

3. Where does botulism occur in South Africa?

In South Africa the true burden of human disease is unknown. The disease is rare and many cases may go unnoticed. However, a number of cases have been reported in South Africa. Botulism in farm animals ('lamsiekte') and in wild waterbirds is well known in South Africa.

4. How is botulism transmitted?

Transmission varies with the type of botulism. It can be transmitted by ingesting preformed toxin from contaminated foods or following ingestion of *C. botulinum* spores that grow in the intestines and produce toxin, or through a wound infection if conditions allow the organism to grow and produce toxin. Bioterrorism incidents where botulinum toxin is released intentionally into water, food or air, is theoretical possibilities. Person-to-person transmission of botulism does not occur.

5. How does botulism affect animals?

As the organism *C. botulinum* is an environmental contaminant, animals may contract botulism through similar transmission routes as humans. Affected animals develop progressive muscle

weakness resulting in difficulty walking, drooling, and difficulty in swallowing. In severe disease, heart and respiratory muscles may become paralysed, leading to death.

6. **What are the signs and symptoms of botulism?**

Botulism can present with a wide range of symptoms which may vary from person to person. The onset of disease may be sudden or gradual and may range from mild illness to rapidly progressive disease with a fatal outcome within 24 hours of symptom onset. The typical symptoms amongst others include nausea and vomiting, slurred speech, blurred or double vision, difficulty in swallowing followed by descending muscle paralysis, and breathing impairment. Infants with botulism may have poor muscle tone, are constipated, have an altered cry and may seem drowsy. Incubation period depends on the type of botulism. In foodborne botulism, the onset of symptoms usually appears 12 to 36 hours after ingesting a contaminated food. However, onset can range from four hours to eight days. For wound botulism the incubation period can take up to several days.

7. **How is botulism diagnosed?**

The detection of botulinum neurotoxin or *C. botulinum* in the clinical sample (serum, stool, vomitus/gastric content) or suspected food confirms the diagnosis. Various laboratory tests including culture, PCR and toxin assay are done. The NICD conducts a toxin assay on blood or vomitus.

8. **How is botulism treated?**

Intensive care support and use of mechanical ventilation may be required for respiratory paralysis. Specific treatment involves administration of equine antitoxin as soon as the clinical diagnosis of botulism is highly suspected, and should not be delayed pending the outcome of laboratory testing. However, antitoxin is not readily available in South Africa, but may be sourced from international supplies if necessary. For wound botulism, wound cleaning including debridement and antibiotic treatment is appropriate.

9. **How can botulism be prevented?**

Always inspect canned and bottled foodstuffs before opening (look for cracks, any abnormal appearance, etc.). Avoid eating foods from bulging containers or from containers that are leaking. Do not taste or swallow foods with a bad smell or flavour, but these are not always present in botulinum toxin-contaminated foods. Individuals who do home canning and bottling should follow proper heating procedures to minimise food contamination. It is advisable to seek immediate medical care for infected wounds. Avoid giving honey to children aged 1 year or younger.

10. **Where can I find more information?**

Guidelines and other useful resources are available on the NICD website: www.nicd.ac.za

For more information contact:

- **Medical/clinical-related queries:** NICD Hotline +27 82 883 9920 (healthcare professionals only)
- **Laboratory-related queries:** Centre for Emerging and Zoonotic Diseases: Dr Jenny Rossouw 011-555-0331 (jennyr@nicd.ac.za) or Prof John Frean 011-555-0308 (johnf@nicd.ac.za)