Botulism Fact Sheet

1. **What is botulism?** - Botulism is a rare but serious paralytic illness caused by a nerve toxin (poison) produced by the bacterium *Clostridium botulinum*. There are three main kinds of botulism. (a) Foodborne botulism is caused by eating foods that contain the botulism toxin. (b) Wound botulism is caused by toxin produced from a wound infected with *Clostridium botulinum*. (c) Infant botulism is caused when *Clostridium botulinum* bacteria grow in the immature infant intestines and release toxin. All forms of botulism can be fatal and are considered medical emergencies. Foodborne botulism can be especially dangerous because widespread illness can occur from eating a contaminated food.

2. **What is *Clostridium botulinum*?** - *Clostridium botulinum* belongs to is a group of bacteria commonly found in soil. They grow best in low oxygen conditions. The bacteria form spores which allow them to survive in a dormant state in the soil until exposed to conditions that can support their growth. In low oxygen conditions, the growing bacteria release botulinum toxin. There are seven types of botulism toxin designated by the letters A through G; only types A, B, E and F cause illness in humans.

3. **How common is botulism**? - In the United States an average of 45 cases are reported each year. Of these, approximately 15% are foodborne, 65% are infant botulism, and the rest are wound botulism. Outbreaks of foodborne botulism involving two or more persons occur most years and usually are caused by eating improperly processed home-canned foods. The number of Foodborne and Infant botulism cases has changed little in recent years, but wound botulism has increased because of the use of black-tar heroin.

4. **What are the symptoms of botulism?** - The classic symptoms of botulism include double vision, blurred vision, drooping eyelids, slurred speech, difficulty swallowing, dry mouth, and muscle weakness. Infants with botulism appear lethargic, feed poorly, are constipated, and have a weak cry and poor muscle tone. These are all symptoms of the muscle paralysis caused by the bacterial toxin. If untreated, these symptoms may progress to cause paralysis of the arms, legs, trunk and respiratory muscles. In foodborne botulism, symptoms generally begin 18 to 36 hours after eating a contaminated food, but they can occur as early as 6 hours or as late as 10 days. The paralysis that occurs with botulism can progress very rapidly.

5. **How is botulism diagnosed**? - Physicians may consider the diagnosis if the patient's history and physical examination suggest botulism. However, these clues are usually not enough to allow a diagnosis of botulism. Other diseases such as *Guillain-Barré* syndrome, stroke, and *myasthenia gravis* can appear very similar to botulism, and special tests may be needed to exclude these other conditions. These tests may include a brain scan, spinal fluid examination, nerve conduction test (electromyography, or EMG), and a tensilon test for *myasthenia gravis*. The most direct way to confirm the diagnosis is to demonstrate the botulinum toxin in the patient's blood or stool. The bacteria can also be isolated from the stool of persons with foodborne and infant botulism. The disease can also be inferred if toxin is found in a food product consumed by a patient. These tests can be performed at many state health department laboratories.

6. **How can botulism be treated**? - The respiratory failure and paralysis that occur with severe botulism may require a patient to be on a breathing machine (ventilator) for weeks, plus intensive medical and nursing care. After several weeks, the paralysis slowly improves. If diagnosed early, foodborne and wound botulism can be treated with an antitoxin which blocks the action of toxin circulating in the blood. This can prevent patients from worsening, but recovery still takes many weeks. Physicians may try to remove contaminated food still in the gut by inducing vomiting or by using enemas. Wounds should be treated, usually surgically, to remove the source of the toxin-producing bacteria. Good supportive care in a hospital is the mainstay of therapy for all forms of botulism. Currently, antitoxin is not routinely given for treatment of infant botulism.

7. **Are there complications from botulism?** - Botulism can result in death due to respiratory failure. However, in the past 50 years the proportion of patients with botulism who die has fallen from about 50% to 3-5%. A patient with severe botulism may require a breathing machine as well as intensive medical and nursing care for weeks to months. Patients who survive an episode of botulism poisoning may have fatigue and shortness of breath for years and long-term therapy may be needed to aid recovery.

8. **How can botulism be prevented?** – Naturally occurring botulism cases can be prevented;

a. Foodborne botulism has often been from home-canned foods with low acid content, such as asparagus, green beans, beets, corn and salsa. However, outbreaks of botulism have occurred from more unusual sources such as chopped garlic in oil, Chile peppers, tomatoes, improperly handled baked potatoes wrapped in aluminum foil, and home-canned or fermented fish.

Persons who do home canning should follow strict hygienic procedures to reduce contamination of foods. Oils infused with garlic or herbs should be refrigerated. Potatoes which have been baked while wrapped in aluminum foil should be kept hot until served or refrigerated. Because the botulism toxin is destroyed by high temperatures, persons who eat home-canned foods should consider boiling the food for 10 minutes before eating it to ensure safety. Instructions on safe home canning can be obtained from your county extension services. Because honey can contain spores of *Clostridium botulinum* and this has been a source of infection for infants, children less than 12 months old should never be fed honey. Honey is considered safe for persons one year of age and older.

b. Wound botulism can be prevented by promptly seeking medical care for infected wounds and by not using injectable street drugs.

9. **Can botulinum toxin be used as a biological weapon by terrorists?** - *Clostridium botulinum* bacteria produce a lethal toxin. Terrorists have tried to weaponize botulinum toxin by refining it and putting it into an aerosol form. Refined or crude preparations of toxin could be used to poison food or beverages, and refined toxin, with a sophisticated delivery system, could be used to disseminate the toxin by air.

10. **How would a biological attack using botulinum toxin be identified**? - Because botulinum toxin is colorless, odorless, and tasteless, a foodborne, waterborne, or aerosol attack would probably go unnoticed until people exhibit symptoms. Existing public health surveillance is likely to rapidly identify a large-scale attack once victims began seeking medical care.

11. **For more information about Botulism:**
http://www.cdc.gov/nczved/divisions/dfbmd/diseases/botulism/

This fact sheet provides general information. Please contact your physician for specific clinical information related to you.