

***BOTOX***



***The Good, the Bad,  
And the Ugly***

Botulinum toxin (Botox) is probably the most poisonous substance known to man; it is a toxin produced by the bacteria clostridium botulinum. Interestingly, it has very GOOD uses, it has many BAD traits, and it is being used cosmetically for UGLY wrinkles. We will discuss each one of these characteristics.

## **The Bad**

Botulism is a very rare but life-threatening syndrome first investigated in the 1920's when hundreds of people in a German town became infected from bad sausage; the bacteria was later named after the Latin word for sausage, botulus. The toxin causes neuromuscular paralysis by binding to the presynaptic side of certain nerves at their neuromuscular junction. The mean lethal dose of the toxin is 0.0003 micrograms per kilogram; by comparison the mean lethal dose of cyanide is 10,000 micrograms per kilogram.

In the United States, about 110 cases of botulism are reported each year. These cases are broken down into five different forms:

1. Food borne botulism – Ingestion of food contaminated by the toxin. Usually found in home-canned foods such as vegetables, fruits, meats and fish; the highest rates occur in Alaska from fermented fish. Food borne botulism accounts for 25% of the reported cases.
2. Infant botulism – Bacteria growing in an infant's intestinal tract and producing the toxin. This is the most common form of botulism, accounting for at least 70% of the reported cases. The bacteria form spores, which survive in a dormant state, frequently in honey and in soil; the highest rates occur in California, Utah and Pennsylvania where the soil spore counts are the highest.
3. Wound botulism – Bacteria that gets into a wound causing infection that produces the toxin. This accounts for about 3% of the cases and is most common in people injecting or inhaling illegal drugs.
4. Adult Enteric botulism – Similar to infant botulism, the bacteria is ingested and produces the toxin in the intestine. This is rarely reported.
5. Inhalation botulism – Not reported, but a possible form of bioterrorism, one gram (about 0.04 ounces) of aerosolized toxin has been estimated to be able to kill 1.5 million people.

## *The Good*

In the early 1970's, it was discovered that extraordinarily small amounts of botulinum toxin (Botox) injected into a muscle immobilized the muscle's movement for sometimes as long as several months. Since that time, this discovery has been used to treat many medical conditions associated with muscle spasm or contracture.

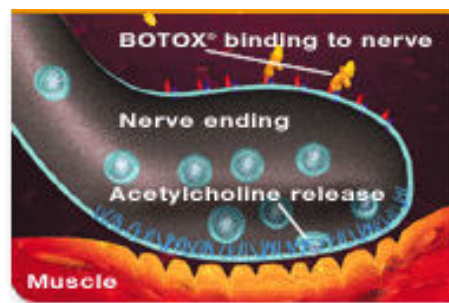
1. Blepharospasm – Eyelid twitching
2. Strabismus – Crossed eyes
3. Hyperhidrosis – Excessive sweating
4. Cervical dystonia – Spasm of the neck
5. Writers cramp – Hand pain
6. Headaches – Tension and migraine
7. Cerebral palsy – Spastic type
8. Achalasia – Spasm of the esophagus
9. Anal fissures – chronic tears
10. Spasmodic dysphoria – Laryngeal spasm
11. Torticollis – Neck spasm
12. Bell's Palsy – Facial nerve spasm

## The Ugly

Last but not least, many people (both men and women) have found that they develop “ugly” wrinkles as they get older.

Botox can be used, cosmetically, to temporarily erase these fine facial wrinkles.

The treatments work by relaxing the muscles that pull the skin and cause the wrinkles. They frequently last three to four months and can be expensive.



*References:*

Up to Date  
Mayo Clinic  
CDC  
Blue Shield  
Hayes