

# Botulism toxin

(*Clostridium botulinum*)

## Transmission:

- Aerosol
- Food contamination
- Wound contamination

## Incubation:

- 24 - 36 hrs (up to 72 hrs for wound botulism)

## Symptoms:

- Bulbar palsies (hind brain paralysis)
- Skeletal muscle weakness-paralysis (flaccid paralysis)
- Symmetrical, descending, progressive weakness

## Source of Illness:

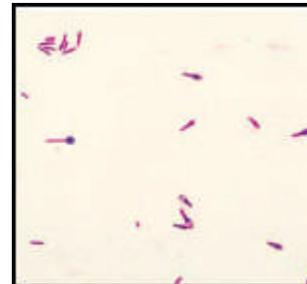
- Toxin produced by a large, gram-positive, spore forming anaerobic bacillus
- Organism or toxin can contaminate food or wound to cause disease
- In a bioterrorist event the purified toxin may be used for aerosol or food contamination

## Pathogenesis:

- Toxin binds to presynaptic nerve terminals preventing release of acetylcholine, blocking neurotransmission

## Toxicity: (Group of 7 neurotoxins A-G)

- Order of toxicity, F most toxic >C>A>D>B least toxic
- Groups A, B and E (rarely F) cause illness in humans
- Groups C and D cause illness in mammals and birds



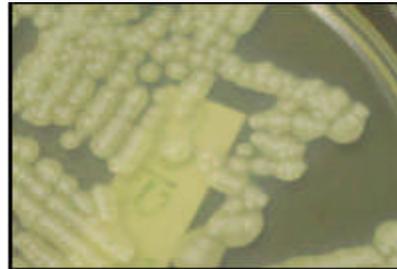
### **Laboratory Testing:**

- Culture performed using anaerobic enrichment, selective and nonselective media
  - Gram stain exhibits subterminal spores in “tennis racket” appearance
  - Culture may be negative in a bioterrorist event
- Digoxigen-labeled IgG ELISA performed to detect toxin types A, B, E & F (not used on serum samples)
- Mouse Bioassay performed for all toxin types and confirmation of DIG ELISA



### **Sample Collection:** (store all samples at 4°C and ship with ice packs)

- Feces: 25 - 50 grams in plastic container
- Gastric aspirate or vomitus: 20-mL in plastic container
- Serum: 10-mL in a SST (20-mL whole blood separated)
- Autopsy: Gastric contents and serum samples
  - 10 grams of contents from small and large intestines in a plastic container
- Swab samples:
  - Clinical - Place swabs in anaerobic transport media
  - Environmental - Place swabs in dry plastic containers
- Food Samples: Submit in original container or plastic containers
- Environmental Samples:
  - Water - collect > 100-mL in plastic container
  - Soil - collect 50 to 100 grams in plastic container



**Refer to State Laboratory  
610-280-3464**