

Botulism

Use

This test is intended for detection of *Clostridium botulinum* in patient samples and as an aid for infection control.

*Physician consultation with OSDH Infectious Disease Services is **required prior to submission of specimens** from patients with suspected botulism infection to verify the patient meets clinical case criteria. Call 24/7/365 for telephone consultation at 405-426-8710. Once approval for submission has been obtained, please contact the OSDH PHL at 405-564-7750 before shipping.*

Clinical Significance

Clostridium botulinum is the etiologic agent of botulism, a rare but potentially fatal neuroparalytic illness characterized by acute, symmetric flaccid paralysis. Botulism occurs in several distinct clinical forms.

Foodborne botulism results from ingestion of preformed botulinum toxin in contaminated food. **Wound botulism** occurs when *C. botulinum* proliferates in a contaminated wound and produces toxin in vivo. **Infant botulism** develops following intestinal colonization by *C. botulinum*, with subsequent toxin production in the gastrointestinal tract. Additional rare forms include **adult intestinal toxemia**, which resembles infant botulism in pathogenesis, **iatrogenic botulism** associated with excessive therapeutic or cosmetic botulinum toxin exposure, and cases in which the route of transmission cannot be determined. Infant botulism is the most commonly recognized form of botulism in the United States and typically affects infants between 3 weeks and 6 months of age. Initial symptoms often include constipation, which may be overlooked, followed by progressive lethargy, hypotonia, poor feeding, pooled oral secretions, diminished facial expression, dysphagia, generalized muscle weakness, and, in severe cases, respiratory insufficiency and impaired swallowing. Early recognition and laboratory confirmation are critical for appropriate clinical management and public health response.

Methodology

Conventional biochemical methods, PCR, Mass Spectrometry

Specimen Type

- Infants: stool or enema; no serum on infants
- Adults: stool or enema, and serum collected in red-top or serum separator tube
- Wounds: synthetic-tipped (e.g., Dacron or Rayon) in anaerobic transport medium; do not use cotton or calcium alginate swabs

Minimum Volume/Size

- **Stool:** 5-10 g (infants); 10-50 g (adults); 5 mL enema (infant/adult)
- **Serum:** 1 mL (minimum) to 5 mL (preferred)
- **Wound swab:** 1 (minimum) to 2 (preferred)

Collection Instructions

- **Stool:** Collect raw stool in a sterile container. If enema is needed, use sterile non-bacteriostatic water. Ensure container is tightly sealed before shipping.
- **Serum:** Must be collected before antitoxin treatment. Use tubes with no-additive and no anti-coagulant for serum collection (red-top or similar). About 10-12 mL of blood will yield 5 mL of serum.
- **Wound swab:** Collect 2 swabs (preferred), 1 swab minimum, in. Using a sterile, dry synthetic-tipped swab, swab the surface of the wound. Put the swab into a sterile plastic container containing anaerobic transport media. Repeat this process with another swab (preferable) and place in same container. Break shaft of

swab(s) and tightly seal the tube. Note: Do not use cotton or calcium alginate swabs. Any type of shaft is acceptable (plastic or thin aluminum) as long as it can be broken or cut.

Common Causes for Rejection

- Insufficient quantity
- Unacceptable specimen type or source
- Whole blood specimens
- Improper shipping conditions
- Expired media or collection container
- Discrepancies between specimen label and submission form
- Incomplete or missing submission form

Shipping and Storage

- Refrigerate stool and serum specimens promptly after collection. Keep specimen refrigerated (2-8°C) until shipment. Ship refrigerated.
- Swabs for anaerobic culture are shipped at ambient temperature.

Turn-around Time

7-14 days

Reference Range

Not Detected

Reportable Results

- *Clostridium botulinum* detected
- No *Clostridium botulinum* detected

Interpretation

A positive result should be interpreted in the context of the clinical presentation of the patient and other established laboratory tests. A negative result indicates only the absence of detectable material in the sample tested and does not exclude the diagnosis.

Limitations/Interferences

Improper storage or shipping temperatures may limit organism recovery.