



Infectious Disease Epidemiology Section
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BOTULISM

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Botulism is a severe illness affecting primarily the nervous system (neuroparalytic disorder) caused by the botulism toxin produced by *Clostridium botulinum*. Botulism can be classified into the following categories: foodborne, infant, wound, and undetermined.

The botulinum toxins are a group of seven related neurotoxins produced by the bacillus *Clostridium botulinum*. Botulism and tetanus toxins are very similar in structure and function, but differ dramatically in their clinical effects because they target different cells in the nervous system. Toxins are differentiated according to their antigenic differences: types A to G. Human botulism is almost always caused by neurotoxins A, B, E, and F. Type A botulism is found most commonly in the west and type B is more common in the east. Type E is associated with fish. Types C and D are associated primarily with botulism in birds and mammals. Almost all cases of infant botulism are caused by types A and B.

These toxins could be delivered by aerosol. When inhaled, these toxins produce a clinical picture very similar to foodborne intoxication. However, the botulinum toxin is so inherently toxic that this characteristic does not limit its potential as a biological weapon.

Epidemiology

Food botulism is caused by the ingestion of a preformed toxin in contaminated food. The toxin is produced when the bacteria grow in food that has been improperly preserved or stored under anaerobic conditions. Most poisonings in the U.S. are due to home-canned vegetables and fruits. Botulinum spores are often present in the environment; therefore identification of the organism in food is not necessarily diagnostic.

Not all foodborne botulism results from ingestion of improperly prepared home-canned food as demonstrated by restaurant-associated outbreaks from foods such as patty-melts, potato salad, and aluminum foil-wrapped baked potatoes. The word “botulism” comes from the Latin word *botulus*, or sausage.

Infant botulism: In contrast to classical foodborne botulism, which is intoxication due to ingestion of preformed botulinum toxin, infant botulism occurs after infants eat spore contaminated food. The spores grow in the intestines and then release the toxin in the body. Possible sources of spores for infants are multiple, including foods and dust. In most cases the precise source is not identified. Honey has been identified as one vehicle and should not be given to children under one year of age.

Botulism is not transmitted from person to person. *C. botulinum* spores are found throughout the world in soil samples and marine sediment.

The usual incubation period is

- for foodborne botulism 12 to 36 hours (range, 6 hours to 8 days)
- for wound botulism, 4 to 14 days between the time of injury and the onset of symptoms
- for infant botulism, the incubation period is estimated at 3 to 30 days from the time of exposure to spore-containing honey or other food.
- for exposure to the toxin in a bioterrorism incident symptom onset occur in 1 to 12 hours following exposure.

Clinical Description

Botulinum neurotoxins predominantly affect the peripheral neuromuscular junction and autonomic synapses, and its effects are primarily manifested as weakness.

Except for infant botulism, onset of symptoms occurs abruptly within a few hours or evolves gradually over several days. Botulism is a symmetric, descending, flaccid paralysis. Symmetric paralysis may progress rapidly with generalized weakness and hypotonia. Signs and symptoms include diplopia, blurred vision, dry mouth, dysphagia, dysphonia, and dysarthria.

Infant botulism occurs in infants younger than 6 months of age. It is preceded by constipation and includes lethargy, poor feeding, weak cry, diminished gag reflex, subtle ocular palsies, and generalized weakness and hypotonia (eg, “floppy infant”). The spectrum of disease ranges from mild (eg, constipation, slow feeding) to rapidly progressive (eg, apnea, sudden infant death).

Wound botulism lacks the prodromal gastrointestinal disorder of the foodborne form, but it is otherwise similar in signs and symptoms.

Laboratory Tests

A toxin neutralization bioassay in mice is used to identify botulinum toxin in serum, stool, or suspect foods. To increase the likelihood of diagnosis, both serum and stool should be obtained from all persons with suspected botulism. In infant and wound botulism, the diagnosis is made by demonstrating *C.botulinum* organisms or toxin in feces or wound exudate or tissue samples. Toxin has been demonstrated in serum in approximately 1% of infants with botulism. In foodborne cases, serum specimens collected more than 3 days after ingestion of toxin usually are negative, at which time stool and gastric aspirates are the best diagnostic specimens for culture. Since obtaining a stool specimen may be difficult because of constipation, an enema using sterile nonbacteriostatic water can be given.

Enriched and selective media are used to culture *C.botulinum* from stool and foods. *C. botulinum* is a large, usually gram-positive, strictly anaerobic bacillus that forms a subterminal spore.

The most prominent electromyographic finding is an incremental increase of evoked muscle potentials at high-frequency nerve stimulation (20–50 Hz). In addition, a characteristic pattern of brief, small-amplitude, overly abundant motor action potentials can be seen.

The reporting source may request the assistance of the health department in sending specimens (stool and blood) to CDC for testing. Consult the Infectious Disease Epidemiology Section on guidelines/ requirements for accepting specimens and the appropriate handling of them.

Stool and blood specimens must be sent to the Central Laboratory in New Orleans will be forwarded to the Centers for Disease Control. Stool specimens (1-2 gms) are to be collected in a clean container (no preservatives) and kept refrigerated. Serum specimens (at least 1 cc) are to be collected in a red-topped tube and either spun down and sera sent or the whole blood sent refrigerated.

Surveillance

Botulism is a class A reportable condition (to be reported in 24 hours). Furthermore, all of the syndromic surveillance systems currently deployed utilize sets of clinical signs and symptoms that have been crafted to capture cases of botulinum intoxication prior to the availability of laboratory test results.

Case Definition

A case of food-borne botulism is defined as:

1. An illness characterized by clinical manifestations relating to the nervous system (ptosis, blurred or double vision, dry mouth and sore throat are usually the first symptoms followed by descending paralysis) that is laboratory confirmed;
2. or a clinically compatible illness that occurs in a person who ingested the same food as someone with laboratory confirmed botulism.

A case of infant botulism is defined as a syndrome compatible with botulism in a person less than one year of age and detection of botulinum toxin in serum or *C. botulinum* organisms in the patient's stool.

A case of botulism is confirmed:

1. by identifying the specific toxin in serum or stool, or
2. rarely, by culturing *C. botulinum* from a wound in a clinical case.

A case of infant botulism is confirmed by:

1. identification of *Clostridium botulinum* spores in stool specimens.
2. identification of botulinum toxin in serum or stool specimens.

Case investigation

The purpose of the investigation is

- to identify sources of contaminated food,
 - to identify other individuals who shared the suspected food,
 - to identify clusters related to a possible bioterrorism event.
-
- Because of the serious nature of this disease and the difficulty of diagnosing, the notification of the case would come from a major hospital or medical center.
 - Upon receipt of a report of botulism, contact the physician and/or hospital to confirm the diagnosis. (See Laboratory Tests).
 - An immediate concern would be to determine the source of the toxin. Check recent food history of ill individuals and recover all suspected foods for appropriate testing.

- Suspicion of a single case of botulism should immediately raise the question of a group outbreak involving a family or others who may have shared a common food or be associated with a cluster event.

Case Management - Treatment

1- Treatment with Botulism Immune Globulin (BIG) should be started as early in the illness as possible and **should not be delayed while awaiting laboratory confirmation**. Antitoxin therapy is usually carried out with a trivalent (types A, B, and E) equine serum. Equine botulinum antitoxin also is obtainable and can be administered to adults after testing for hypersensitivity to equine sera if BIG is not available. Approximately 9% of treated persons experience some degree of hypersensitivity reaction to equine sera.

To obtain antitoxin call directly CDC. A CDC staff member will ask questions to determine whether antitoxin therapy is indicated
404-639-2206 during workdays,
404-639-2888 other times

Prevention

When a food item has been identified by epidemiologic evidence or laboratory tests, immediate recall of the product is necessary. This will be done by the Infectious Disease Epidemiology Section working in conjunction with CDC and/or the FDA.

Education to improve home-canning methods should be promoted, but cases also may be restaurant-acquired. Use of a pressure cooker (at 116°C = 240.8°F) is necessary to kill spores of *C botulinum*. Boiling for 10 minutes will destroy the toxin. Time-temperature-pressure requirements vary with the product being heated. In addition, food containers that appear to bulge may contain gas produced by *C botulinum* and should be discarded. Other foods that appear to be spoiled should not be tasted.

Hospital precaution and isolation: Standard precautions.

Infectious Disease Epidemiology: Epidemiologic Response Checklist

Consultation/ Confirmation

- Discuss bioterrorism event definitions with key public health personnel (health officer, communicable disease control staff, laboratorians, etc.)

Laboratory Confirmation

- Identify point of contact (POC) at appropriate state public health laboratory in a potential bioterrorist event

Notification

- Establish local notification network to be activated in case of a possible bioterrorist event; disseminate contact information and notification protocol
- Establish relationships with local Office of Emergency Preparedness and FBI contacts to be notified in a suspected bioterrorist event and maintain up-to-date contact information

Coordination

- Establish Epidemiologic Response as a part of local Incident Command System
- Identify personnel available for epidemiologic investigation and perform inventory of skills and duties
- Establish contacts at regional and Parrish health units identify potential personnel resources available for epidemiologic “mutual aid”
- Establish contacts at the local FBI office for coordination with epidemiologic/ criminal Investigation

Communication

- Identify epidemiologic investigation spokesperson and Public Information Officer (PIO)
- Establish communication protocol to be implemented during an epidemiologic investigation between PIO and epidemiologic investigation spokesperson
- Establish a plan for rapid dissemination of information to key individuals: FAX, Email, website on the internet (if capability exists)

Epidemiologic Investigation

A. Case Finding

- Establish plans/ capacity to receive a large number of incoming telephone calls
- Develop telephone intake form
- Identify individuals available to perform telephone intake duties
- Identify potential reporting sources (persons/ facilities) to receive case definition

- Establish a plan for rapid dissemination of case definition to potential reporting sources

B. Case Interviews

- Obtain appropriate case investigation questionnaires
- Identify personnel available to conduct case interviews
- Establish a protocol for training case interviewers
- Obtain template outbreak disease-specific investigation questionnaires

C. Data Analysis

- Obtain template database for data entry
- Assure Epi Info software is installed on data entry computers
- Identify personnel available for data entry
- Identify personnel with skills to perform descriptive and analytic epidemiologic analysis
- Develop/ obtain data analysis plan
- Develop/ obtain outbreak investigation monitoring tool

Contact Tracing

- Establish a system for locating contacts and familiarize personnel with contact tracing protocol(s)
- Obtain Contact Tracing Forms
- Obtain contact management algorithms for diseases that are communicable from person-to-person
- Obtain treatment/ prophylaxis guidelines
- Develop local drug and vaccine distribution plan
- Establish a system for daily monitoring of all contacts under surveillance

Public Health Recommendations

- Obtain treatment and prophylaxis recommendations for bioterrorist threat agents
- Develop or obtain bioterrorist disease-specific fact sheets
- Establish contact with key health care providers/ facilities and establish protocol for rapid dissemination of recommendations regarding treatment, prophylaxis, personal protective equipment, infection control, and isolation/ quarantine

Consultation / Confirmation

- Disease scenario meets the bioterrorist event definition

Laboratory Confirmation

- Lab specimens are en route to the local public health laboratory/ Laboratory Response Network

Notification

- Department of Health and Human Services
- State Medical Officer
- (225)342-3417 (regular business hours)
- (800)990-5366 pin 6710 (pager for evenings, weekends, holidays)
- State Epidemiologist (504)458-5428 Mobile
- Public Health Lab (504)568-5371
- Public Health Lab Pager (800)538-5388
- OPH Regional Offices (Internal Notification Network)
- Louisiana EOC (225)-925-7500
- Louisiana State Police (800)469-4828 (Crisis Management Center)

Coordination

- Epidemiology personnel identified for investigation
- Additional epidemiology personnel support requested (From other regions) Investigation activities coordinated with FBI

Communication

- Epidemiology investigation spokesperson identified
- Communication protocol established between epidemiologic investigation spokesperson and Public Information Officer (PIO)

Epidemiologic Investigation

- Hypothesis-generating interviews conducted
- Preliminary epidemiologic curve generated
- Case definition established

A. Case finding

- Telephone hotline established
- Telephone intake form distributed
- Case definition disseminated to potential reporting sources
 - Hospitals
 - Physicians

- Laboratories
- EMS
- Coroner
- Media

B. Case interviews

- Interviewers trained
- Uniform multi-jurisdictional outbreak investigation form(s) obtained

C. Data Analysis

- Uniform multi-jurisdictional database template for data entry obtained
- Epidemiologic curve generated
- Cases line-listed
- Case descriptive epidemiology completed
 - Age
 - Gender
 - Illness onset
 - Clinical profile
 - % Laboratory confirmed
 - Hospitalization rate
 - Case fatality rate
 - Case geographic distribution mapped (GIS mapping if available)
 - Analytic epidemiology completed
 - Disease risk factors identified
 - Mode of transmission identified
 - Source of transmission identified
 - Population at continued risk identified

Contact Tracing

- Contact tracing forms distributed
- Health education materials available
- Contact management triage algorithm reviewed with staff
- Treatment/ prophylaxis guidelines available
- Treatment/ prophylaxis distribution plan in place
- System in place for locating contacts
- Tracking system in place to monitor contacts' trends/ gaps

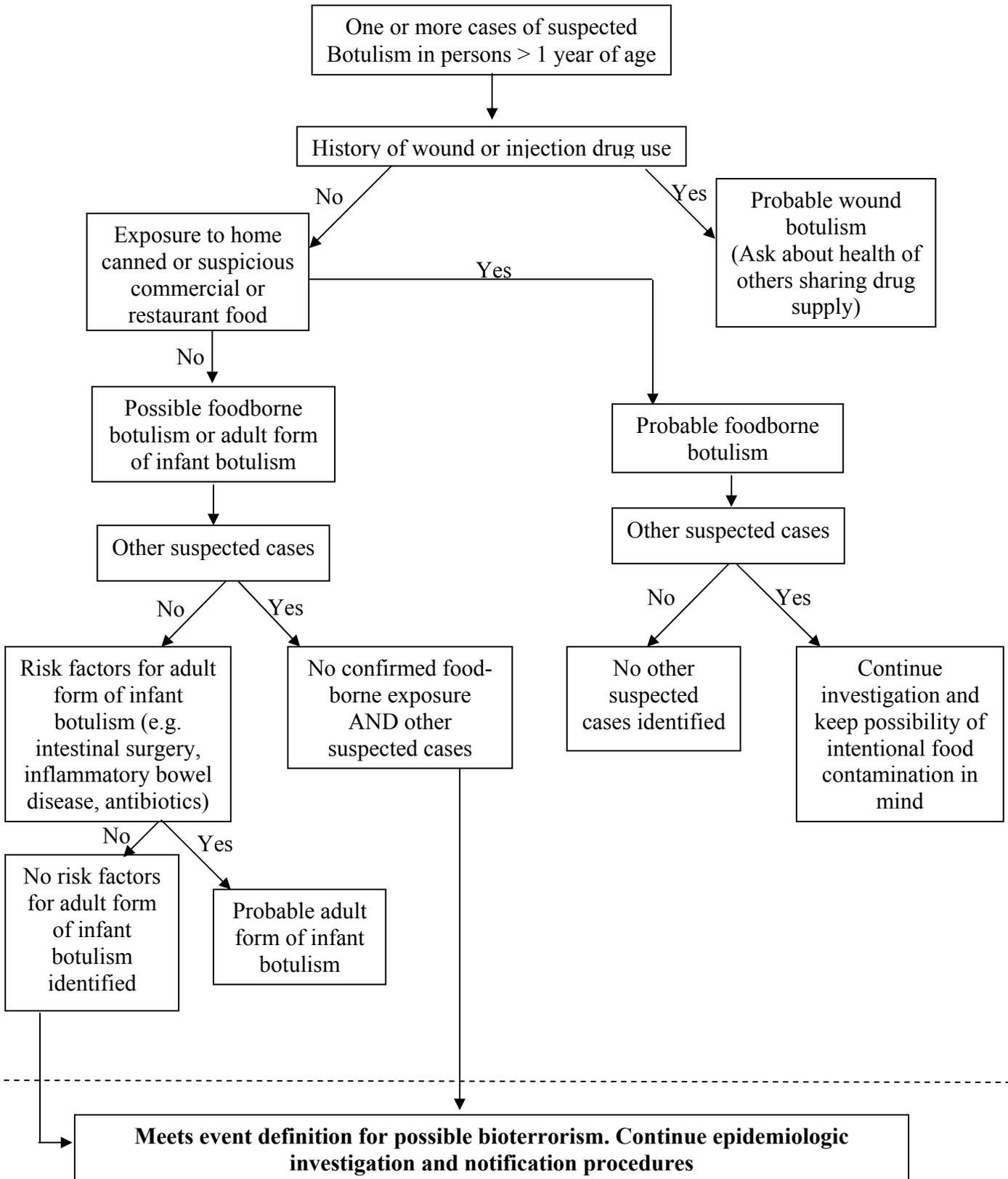
Laboratory

- Establish point of contact (POC) at appropriate Level A and/ or Level B public health laboratory to refer queries regarding specimen packaging, storage and shipping guidelines in a potential bioterrorist event [See Laboratory Section's Bioterrorism Plan]

Public Health Recommendations

- See Medical Response Section Bioterrorism Plan

Botulism Investigation Algorithm



BOTULISM INTOXICATION

CASE INVESTIGATION FORM

ID NUMBER: _____
INTERVIEWER: _____ JOB TITLE: _____
DATE OF INTERVIEW: ____/____/____
PERSON INTERVIEWED: Patient Other
IF OTHER, NAME OF PERSON _____
TELEPHONE _____ - _____ - _____
DESCRIBE RELATIONSHIP _____

DEMOGRAPHIC INFORMATION

LAST NAME: _____ FIRST NAME: _____

DRIVER LICENSE OR SOCIAL SECURITY NUMBER (Circle one): _____

SEX: Male Female DATE OF BIRTH: ____/____/____ AGE ____

RACE: White Black Asian Other, specify _____ Unknown

ETHNICITY: Hispanic Non-Hispanic Unknown

HOME PHONE: () _____ - _____ WORK/OTHER PHONE: () _____ - _____

HOME ADDRESS STREET: _____

CITY: _____ STATE: _____ ZIP: _____

EMPLOYED: Yes No Unknown

BRIEF DESCRIPTION OF
JOB: _____

SCHOOL/PLACE OF

EMPLOYMENT: _____
DEPARTMENT _____ FLOOR: _____ ROOM: _____
WORK/SCHOOL ADDRESS: STREET: _____ CITY: _____
STATE: _____ ZIP: _____

ARE YOU A:

LAB WORKER/TECHNICIAN: Yes No Unknown

TAXIDERMIST: Yes No Unknown

VETERINARIAN: Yes No Unknown

FARMER: Yes No Unknown

ABATTOIR: Yes No Unknown

BUTCHER: Yes No Unknown

OTHER FOOD PREPERATION: Yes No Unknown

HOBBY:

Do you work with fibers/wool/animal skin/or other animal product? Yes No Unknown

Have you been camping in past two months? Yes No Unknown

Have you stayed in cabins in the past two months? Yes No Unknown

Have you been hunting? Yes No Unknown

Have you skinned or dressed and animal? Yes No Unknown

Have you had an animal stuffed or mounted? Yes No Unknown

HOW MANY PEOPLE RESIDE IN THE SAME HOUSEHOLD? _____

LIST NAME(S), AGE(S), AND RELATIONSHIPS (use additional pages if necessary):

	PERSON 1	PERSON 2	PERSON 3	PERSON 4	PERSON 5	PERSON 6
Name						
Age						
Relationship						

HOUSEHOLD PETS:

Does your household have any pets (indoor or outdoor)? Yes No Unknown

If so what type of pet: _____

Have any of the pets been ill or died recently? Yes No Unknown

If so describe: _____

CLINICAL INFORMATION (as documented in admission history of medical record or from case/proxy interview)

CHIEF COMPLAINT: _____

DATE OF ILLNESS ONSET: ____/____/____

Briefly summarize History of Present Illness:

SIGNS AND SYMPTOMS

Fever Yes No Unknown

If yes, Maximum temperature _____ °F
Antipyretics taken Yes No Unknown

- Headache Yes No Unknown
- Stiff neck Yes No Unknown
- Photophobia Yes No Unknown
- Fatigue Yes No Unknown
- Altered mental status Yes No Unknown
- Unconscious/unresponsive Yes No Unknown
- Seizures Yes No Unknown
- Sensory changes Yes No Unknown
- Muscle weakness Yes No Unknown

If yes, specify: Upper Extremities Lower Extremities Both
 Unilateral Bilateral
Pattern of progression: Ascending Descending Unknown

- Blurred or double vision Yes No Unknown
- Difficulty swallowing Yes No Unknown
- Difficulty speaking Yes No Unknown
- Dry mouth Yes No Unknown
- Excess salivation Yes No Unknown
- Sore throat Yes No Unknown
- Muscle pains Yes No Unknown
- Nausea Yes No Unknown
- Diarrhea Yes No Unknown
- Vomiting Yes No Unknown
- Shortness of breath Yes No Unknown
- Cough Yes No Unknown
- Rash Yes No Unknown

If yes, describe: _____

Other abnormality: _____

PAST MEDICAL HISTORY:

Do you have a regular physician? Yes No Unknown
If yes, Name: _____ Phone Number: (____) _____ - _____

Are you allergic to any medications? Yes No Unknown
If yes, list: _____

Are you currently taking any medication: Yes No Unknown
If yes, list: _____

Have you had any wound or lesion in the past several months?
 Yes No Unknown
If yes, where: _____ Appearance: _____

Hypertension	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
Pulmonary Disease	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
Diabetes	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
Cardiac disease	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown
Seizures	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> Unknown

Other neurologic condition Yes No Unknown
If yes, describe: _____

Malignancy Yes No Unknown
If yes, specify type: _____

Currently on treatment: Yes No Unknown

HIV infection Yes No Unknown

Currently pregnant Yes No Unknown

Other immunocompromising condition (e.g., renal failure, cirrhosis, chronic steroid use)
 Yes No Unknown
If yes, specify disease or drug therapy: _____

Other underlying condition(s):

Prescription medications:

PHYSICAL EXAM:

Admission Vital Signs:

Temp:____ (Oral / Rectal F / C) Heart Rate:_____ Resp. Rate:_____ B/P:___/___

Neurologic examination:

Meningismus (neck stiffness): Present Absent Not Noted

Mental Status: Normal Abnormal Not Noted

If abnormal, level of consciousness:

- Lethargic
- Unconscious
- Other_____

Agitation: Present Absent Not Noted

Cranial nerve function: Normal Abnormal Not Noted

If abnormal, specify:_____

Motor Exam: Normal Abnormal Not Noted

Left Arm: Absent Decreased Normal increased

Right Arm: Absent Decreased Normal increased

Left Leg: Absent Decreased Normal increased

Right Leg: Absent Decreased Normal increased

Sensory exam: Normal Abnormal Not Noted

Respiratory status: Normal Abnormal Not Noted

If abnormal, describe:_____

Skin: Normal Abnormal Not Noted

If rash present, describe type and location:_____

DIAGNOSTIC STUDIES:

Test	Results of tests done on Admission (___ / ___ / ___)	Abnormal test result at any time (specify date mm/dd/yyyy)
Hemoglobin (Hb)		(___ / ___ / ___)
Hematocrit (HCT)		(___ / ___ / ___)
Platelet (plt)		(___ / ___ / ___)

Test	Results of tests done on Admission (___ / ___ / ___)	Abnormal test result at any time (specify date mm/dd/yyyy)
Total white blood cell (WBC)		(___ / ___ / ___)
WBC differential:		(___ / ___ / ___)
% granulocytes (PMNs)		(___ / ___ / ___)
% bands		(___ / ___ / ___)
% lymphocytes		(___ / ___ / ___)
Blood cultures:	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)
Botulinum toxin testing—serum:	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)
Botulinum toxin testing—stool:	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (___ / ___ / ___)

Test	Results of tests done on Admission (__ / __ / __)	Abnormal test result at any time (specify date mm/dd/yy)
Lumbar puncture—cerebrospinal fluid (CSF) analysis: Gram stain (check all that apply)	<input type="checkbox"/> no organisms <input type="checkbox"/> gram positive cocci <input type="checkbox"/> gram negative cocci <input type="checkbox"/> gram positive rods <input type="checkbox"/> gram negative coccobacilli <input type="checkbox"/> gram negative rods <input type="checkbox"/> acid-fast bacilli <input type="checkbox"/> fungal forms <input type="checkbox"/> other _____	<input type="checkbox"/> no organisms <input type="checkbox"/> gram positive cocci <input type="checkbox"/> gram negative cocci <input type="checkbox"/> gram positive rods <input type="checkbox"/> gram negative coccobacilli <input type="checkbox"/> gram negative rods <input type="checkbox"/> acid-fast bacilli <input type="checkbox"/> fungal forms <input type="checkbox"/> other _____ (__ / __ / __)
Lumbar puncture—CSF analysis: Bacterial culture	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (__ / __ / __)
Lumbar puncture—CSF analysis: Viral culture	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (__ / __ / __)
Lumbar puncture—CSF analysis: Other culture	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done (__ / __ / __)
Lumbar puncture—CSF analysis: Other test (e.g., herpes PCR)		(__ / __ / __)
Chest radiograph	<input type="checkbox"/> normal <input type="checkbox"/> unilateral, lobar/consolidation <input type="checkbox"/> bilateral, lobar/consolidation <input type="checkbox"/> interstitial infiltrates <input type="checkbox"/> widened mediastinum <input type="checkbox"/> pleural effusion <input type="checkbox"/> other _____	<input type="checkbox"/> normal <input type="checkbox"/> unilateral, lobar/consolidation <input type="checkbox"/> bilateral, lobar/consolidation <input type="checkbox"/> interstitial infiltrates <input type="checkbox"/> widened mediastinum <input type="checkbox"/> pleural effusion <input type="checkbox"/> other _____ (__ / __ / __)
CT Scan of brain	<input type="checkbox"/> normal <input type="checkbox"/> abnormal (describe: _____) ? <input type="checkbox"/> not done	<input type="checkbox"/> normal <input type="checkbox"/> abnormal (describe: _____) ? <input type="checkbox"/> not done (__ / __ / __)
MRI Scan of brain	<input type="checkbox"/> normal <input type="checkbox"/> abnormal (describe: _____) ? <input type="checkbox"/> not done	<input type="checkbox"/> normal <input type="checkbox"/> abnormal (describe: _____) ? <input type="checkbox"/> not done (__ / __ / __)

Test	Results of tests done on Admission (___ / ___ / ___)	Abnormal test result at any time (specify date mm/dd/yy)
Tensilon test	<input type="checkbox"/> normal <input type="checkbox"/> abnormal (describe: _____) ? <input type="checkbox"/> not done	<input type="checkbox"/> normal <input type="checkbox"/> abnormal (describe: _____) ? <input type="checkbox"/> not done (___ / ___ / ___)
Electromyelogram (EMG)	<input type="checkbox"/> normal <input type="checkbox"/> abnormal (describe: _____) ? <input type="checkbox"/> not done	<input type="checkbox"/> normal <input type="checkbox"/> abnormal (describe: _____) ? <input type="checkbox"/> not done (___ / ___ / ___)
Other pertinent study results (e.g., toxin assays)		(___ / ___ / ___)
Other pertinent study results (e.g., toxin assays)		(___ / ___ / ___)

NEUROLOGY CONSULTED: Yes No Unknown

Date of Exam: ___ / ___ / ___

Name of neurologist: Last Name _____ First Name _____

Telephone or beeper number () _____ - _____

INFECTIOUS DISEASE CONSULT: Yes No Unknown

Date of Exam: ___ / ___ / ___

Name of ID physician: Last Name _____ First Name _____

Telephone or beeper number () _____ - _____

HOSPITAL COURSE:

A. antibiotics: Yes No Unknown

If yes, check all that apply:

- Ampicillin
- Cefepime (Maxipime)
- Cefotaxime (Claforan)
- Ceftazidime (Fortaz, Tazicef, Tazidime)
- Ceftizoxime (Cefizox)
- Ceftriaxone (Rocephin)
- Chloramphenicol
- Gentamicin (Garamycin)
- Penicillin G
- Trimethaprim-sulfamethoxazole (Bactrim, Cotrim, TMP/SMX)
- Vancomycin (Vancocin)
- other _____

B. antivirals : Yes No Unknown

If yes, check all that apply:

- Acyclovir (Zovirax)
- other _____

C. botulinum anti-toxin: Yes No Unknown

D. Did patient require intensive care: Yes No Unknown

If patient was admitted to Intensive Care Unit:

- a. Length of stay in ICU, in days: _____
- b. Was patient on mechanical ventilation: Yes No Unknown

WORKING OR DISCHARGE DIAGNOSIS(ES) :

- 1) _____
- 2) _____
- 3) _____

OUTCOME:

- Recovered/discharged
- Died
- Still in hospital: improving ? worsening ?

ADDITIONAL COMMENTS:

Risk Exposure Questions

The following questions pertain to the 2 week period prior to the onset of your illness/symptoms:

Occupation (provide information for all jobs/ volunteer duties)

1. Please briefly describe your job/ volunteer duties: _____

2. Does your job involve contact with the public? : Yes No

If "Yes", specify _____

3. Does anyone else at your workplace have similar symptoms?

Yes No Unknown

If "Yes", name and approximate date on onset (if known) _____

Knowledge of Other Ill Persons

4. Do you know of other people with similar symptoms? : Yes No Unknown

(If Yes, please complete the following questions)

Name of ill Person	AGE	Sex	Address	Phone	Date of Onset	Relation To you	Did they seek Medical care? Where	Diagnosis

Travel*

*Travel is defined as staying overnight (or longer) at somewhere other than the usual residence

8. Have you traveled anywhere in the last two weeks? : Yes No Unknown

Dates of Travel: ___ / ___ / ___ to ___ / ___ / ___

Method of Transportation for Travel: _____

Where Did You Stay? _____

Purpose of Travel? _____

Did You Do Any Sightseeing on your trip? : Yes No

If yes, specify: _____

Did Anyone Travel With You? : Yes No

If yes, specify: _____

Are they ill with similar symptoms? : Yes No Unknown

If yes, specify: _____

Public Functions/Venues (during 2 weeks prior to symptom onset)

Category	Y/ N/ U	Description of Activity	Location of Activity	Date of Activity	Time of Activity (start, end)	Others ill? (Y/N/U)
9. Airports						
10. Beaches						
11. Bars/Clubs						
12. Campgrounds						
13. Carnivals/Circus						
14. Casinos						
15. Family Planning Clinics						
16. Government Office Building						
17. Gym/Workout Facilities						
18. Meetings or Conferences						
19. Movie Theater						
20. Museums						
21. Parks						
22. Parties (including Raves, Prom, etc)						
23. Performing Arts (ie Concert, Theater, Opera)						
24. Picnics						
25. Political Events						
26. Religious Gatherings						
27. Shopping Malls						
28. Sporting Event						
29. Street Festivals, Flea Markets, Parades						

30. Tourist Attractions (ie French Quarter, Aquarium)						
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Transportation

Have you used the following types of transportation in the 2 weeks prior to onset?

31. Bus/Streetcar: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Bus Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Bus# _____)

Company Providing Transportation: _____ Destination: _____

32. Train: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Route Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Route # _____)

Company Providing Transportation: _____ Destination: _____

33. Airplane: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Flight Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Flight # _____)

Company Providing Transportation: _____ Destination: _____

34. Ship/Boat/Ferry: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Ferry Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Ferry # _____)

Company Providing Transportation: _____ Destination: _____

35. Van Pool/Shuttle: Yes No Unknown

Frequency of this type of transportation: Daily Weekly Occasionally Rarely

Route Number: _____ Origin: _____

Any connections? Yes No (Specify: Location _____ Route # _____)

Company Providing Transportation: _____ Destination: _____

Food & Beverage

36. During the 2 weeks before your illness, did you eat at any of the following *food establishments or private gatherings with food or beverages*?

Food Establishment	Y/ N/ U	Name of Establishment	Location of Meal	Date of Meal	Time of Meal (start, end)	Food and Drink items consumed	Others ill? (Y/N/U)
Cafeteria at School, hospital, or other							
Casino or mall food court							
Grocery Store or Corner Store							
Concert, movie, or other entertainment							
Dinner party, birthday party or other celebration							
Gas station or convenience store							
Plane, boat, train, or other							
Picnic, Barbecue, Crawfish boil, or potluck							
Outdoor farmers market, festival, or swap meet							
Restaurant, fast-food, or deli							
Sporting event or snack bar							
Street vended food							
Other food establishment							
Other Private Gathering							

37. During the 2 weeks before your illness, did you consume any free *food samples* from:

Grocery store Yes No Unknown

Race/competition Yes No Unknown

Public gathering? Yes No Unknown

Private gathering? Yes . No Unknown

If "YES" for any in question #37, provide date, time, location and list of food items consumed:

Date/Time: _____

Location (Name and Address): _____

Food/drink consumed: _____

Others also ill? Yes No Unknown

(Explain): _____

38. During the 2 weeks before your illness, did you consume any of the following **products**?

Vitamins Yes . No Unknown

Specify (Include Brand Name): _____

Herbal remedies Yes . No Unknown

Specify (Include Brand Name): _____

Diet Aids Yes . No Unknown

Specify (Include Brand Name): _____

Nutritional Supplements Yes . No Unknown

Specify (Include Brand Name): _____

Other Ingested non-food Yes . No Unknown

Specify (Include Brand Name): _____

39. During the 2 weeks before your illness, did you consume any unpasteurized products (ie milk, cheese, fruit juices)? Yes . No Unknown

If yes, specify name of item: _____

Date/Time: _____

Location (Name and Address): _____

Others also ill?: Yes . No Unknown

(Explain): _____

40. During the 2 weeks before your illness, did you purchase food from any internet grocers?

Yes . No Unknown

If yes, specify date / time of delivery: _____ Store/Site: _____

Items purchased: _____

41. During the 2 weeks before your illness, did you purchase any mail order food? Yes . No

Unknown

If yes, specify date/time of delivery: _____

Store purchased from: _____ Items

purchased: _____

42. Please check the routine sources for drinking water (check all that apply):

- Community or Municipal
- Well (shared)
- Well (private family)
- Bottled water (Specify Brand: _____)
- Other (Specify: _____)

Aerosolized water

43. During the 2 weeks prior to illness, did you consume water from any of the following sources (check all that apply):

- Wells
- Lakes
- Streams
- Springs
- Ponds
- Creeks
- Rivers
- Sewage-contaminated water
- Street-vended beverages (Made with water or ice and sold by street vendors)
- Ice prepared w/ unfiltered water (Made with water that is not from a municipal water supply or that is not bottled or boiled)
- Unpasteurized milk
- Other
(Specify: _____)

If “YES” for any in question #43, provide date, time, location and type of water consumed:

Date/Time: _____

Location (Name and Address): _____

Type of water consumed: _____

Others also ill?: Yes No Unknown

(Explain): _____

44. During the 2 weeks prior to illness, did you engage in any of the following recreational activities (check all that apply):

- Swimming in public pools (e.g., community, municipal, hotel, motel, club, etc)
- Swimming in kiddie/wading pools
- Swimming in sewage-contaminated water
- Swimming in fresh water, lakes, ponds, creeks, rivers, springs, sea, ocean, bay (please circle)
- Wave pools? Water parks? Waterslides? Surfing?
- Rafting? Boating? Hot tubs (non-private)? Whirlpools (non-private)?
- Jacuzzis (non-private)? Other (Specify: _____)

If “YES” for any in question #44, provide date, time, location and type of activity:

Date/Time: _____

Location (Name and Address): _____

Type of water consumed: _____

Others also ill?: Yes No Unknown

(Explain): _____

45. During the 2 weeks prior to illness, were you exposed to aerosolized water from any of the following non-private (i.e., used in hospitals, malls, etc) sources (check all that apply):

- Air conditioning at public places
- Vaporizers
- Misters
- Respiratory devices
- Humidifiers
- Whirlpool spas

- Hot tub
- Spa baths
- Creek and ponds
- Decorative fountains
- Other (Explain) _____

If "YES" for any in question #45, provide date, time, and location of exposure to aerosolized water:

Date/Time: _____
 Location (Name and Address): _____
 Explanation of aerosolized water: _____
 Others also ill: Yes No Unknown
 (Explain): _____

Recreation (Activities that are not related to work)

46. In the past two weeks, did you participate in any outdoor activities?

- Yes No Unknown

(If "yes", list all activities and provide locations)

47. Did you participate in other indoor recreational activities (i.e. clubs, crafts, etc that did not occur in a private home)?

- Yes No Unknown

(List all activities and provide location)

Vectors

48. Do you recall any insect or tick bites in the last 2 weeks?

- Yes No Unknown

Date(s) of bite(s): _____

Bitten by: Mosquito Tick Flea Fly Other:

Where were you when you were bitten? _____

49. Have you had any contact with wild or domestic animals, including pets?

- Yes No Unknown

Type of Animal: _____

Explain nature of contact: _____

Is / was the animal ill recently: Yes No Unknown

If yes please describe the animal's symptoms:

Date / Time of contact: _____

Location of contact: _____

50. To your knowledge, have you been exposed to rodents/rodent droppings in the last 2 weeks?

Yes No Unknown

If yes, explain type of exposure: _____

Date/Time of exposure: _____

Location where exposure occurred: _____

