BRUCELLOSIS

Epidemiology

Brucella species are small, nonmotile, gram-negative coccobacilli. The species that infect humans are Brucella abortus, B. melitensis, B. suis, and, rarely, B. canis.

Four Brucella spp. can cause infection in humans:

- Brucella melitensis, which is found in goats, sheep and camels, is the most widespread and is the most virulent;
- Brucella abortus, which is found in cattle and camels, is less virulent;
- Brucella suis, which is found in pigs, is also less virulent; and
- Brucella canis, which is found in dogs, is the least common.

Other animals, including wildlife, may provide a reservoir for brucellae.

Brucellosis is a zoonotic disease of wild and domestic animals. Humans are accidental hosts. Brucellosis is transmitted to humans by contact with tissues, blood, urine, vaginal discharges, aborted fetuses, and especially placentas of infected animals; and by ingestion of unpasteurized milk or milk products from infected animals.

The disease is predominantly an occupational illness in persons such as farm and livestock workers, veterinarians, slaughterhouse employees, meat inspectors, and lab personnel. Isolated cases of infection with Brucella canis also occur in animal handlers from contact with dogs, especially beagles.

B. canis is the species of Brucella species that can infect dogs. This species has occasionally been transmitted to humans, but the vast majority of dog infections do not result in human illness. Although veterinarians exposed to blood of infected animals are at risk, pet owners are not considered to be at risk for infection. This is partly because it is unlikely that they will come in contact with blood, semen, or placenta of the dog. The bacteria may be cleared from the animal within a few days of treatment; however re-infection is common and some animal body fluids may be infectious for weeks. Immunocompromised persons (cancer patients, HIV-infected individuals, or transplantation patients) should not handle dogs known to be infected with B. canis.

Infection is transmitted by inoculation through cuts and abrasions in the skin, by inhalation of contaminated aerosols, by contact with the conjunctival mucosa, or by oral ingestion.

There is no danger from eating cooked meat products because the disease-causing bacteria are not normally found in muscle tissue and they are killed by normal cooking temperatures. The disease...
may be transmitted to humans when slaughtering infected animals or when processing contaminated organs from freshly killed animals.

Human to human transmission has been rarely documented.

Brucella spp. have a high probability for use in biologic terrorism and are highly infectious via the aerosol route. It is estimated that inhalation of only 10-100 bacteria is sufficient to cause disease in man. The relatively long and variable incubation period (5-60 days) and the fact that many infections are asymptomatic under natural conditions has made it a less desirable agent for weaponization, although large aerosol dosage may shorten the incubation period and increase the clinical attack rate.

Most cases result from travel outside the United States or from ingestion of unpasteurized milk products.

The incubation period varies from less than 1 week to several months, but most patients become ill within 3 to 4 weeks of exposure.

**Clinical Description**

Brucellosis is a systemic infection that can involve any organ or organ system. Onset of illness can be acute or insidious. Manifestations are nonspecific and include fever, night sweats, weakness, malaise, anorexia, weight loss, arthralgia, myalgia, abdominal pain, and headache. The clinical picture in human brucellosis can be misleading, and cases in which gastrointestinal, respiratory, dermal, or neurologic manifestations predominate are not uncommon.

Physical findings include lymphadenopathy, hepatosplenomegaly, and, occasionally, arthritis. Serious complications include meningitis, endocarditis, and osteomyelitis.

Common complications are cardiovascular infections, endocarditis, cutaneous, gastrointestinal, genitourinary, orchitis, neurologic, osteoarticular, sacroiliitis, spondylitis, and pulmonary.

**Laboratory Tests**

- Culture from blood, bone marrow or other tissues, or from discharges of the patient are still the standard methods and are often effective during the acute phase. A variety of media will support the growth of Brucella species. Laboratory personnel should be alerted to incubate cultures for a minimum of 4 weeks and to use proper precautions for protection against laboratory-acquired infection. Lysis-centrifugation techniques may shorten the time necessary to isolate Brucella organisms. Reliance should not be placed on gallery type rapid identification systems as these have misidentified Brucella as *Moraxella phenylpyruvica*, with serious consequences for laboratory staff.

- A polymerase chain reaction test is available in OPH for environmental samples and confirmation of subcultures.

- IFAC: immunofluorescent antibody test on a pure isolate

- A fourfold or greater rise in *Brucella* agglutination titer between acute and convalescent serum
specimens obtained two (2) or more weeks apart. Serologic diagnosis is discouraged because too often an initial serum is sent without follow up serum.

- *Brucella* agglutination titer of 1:160 or greater in one or more serum specimens obtained after the onset of clinical symptoms that are consistent with those listed on the previous page under case definition.

The serum agglutination test (SAT), which is the most commonly used test, will detect antibodies against *B. abortus*, *B. suis*, and *B. melitensis*, but not *B. canis*. Detection of antibodies against *B. canis* requires use of *B. canis*–specific antigen. Although a single titer is not diagnostic, most patients with active infection have titers of 1:160 or greater. Lower titers may be found early in the course of infection. Elevated concentrations of immunoglobulin (Ig) G agglutinins are found in acute infection, chronic infection, and relapse. When interpreting SAT titers, the possibility of cross-reactions of Brucella antibodies with those against other gram-negative bacteria, such as *Yersinia enterocolitica* serotype 09, *Francisella tularensis*, and *Vibrio cholerae*, should be considered. False-negative reactions due to blocking antibodies are seen and therefore dilutions of 1:640 should be made to avoid the prozone phenomenon. A titer >1:160 is normally considered positive, as is a 4-fold or greater rise in titer. Enzyme immunoassay (EIA) is a sensitive method for determining IgG, IgA, and IgM anti-Brucella antibodies, but until better standardization is established, EIA should be used for suspected cases with negative SAT titers or for evaluation of patients with suspected relapse or reinfection.

Collect one red-topped tube of blood for each specimen when sending serum samples to the OPH Central Laboratory in New Orleans. The blood should either be spun down and the sera sent or the whole blood sent refrigerated. It is usually better to hold the acute sera until the convalescent sera has been collected and, forward both at the same time. If holding acute sera until collection of convalescent specimen, the acute sera must be spun down and sera saved.

**Surveillance**

Brucellosis is a condition reportable within 24 hours by phone. Furthermore, all of the syndromic surveillance systems currently deployed utilize sets of clinical signs and symptoms that have been crafted to capture cases of brucellosis prior to the availability of laboratory test results.

**Case Definition**

**Clinical description:** An illness characterized by acute or insidious onset of fever, night sweats, undue fatigue, anorexia, weight loss, headache, and arthralgia.

**Laboratory criteria for diagnosis**

- Isolation of *Brucella* spp. from a clinical specimen, or
- Fourfold or greater rise in *Brucella* agglutination titer between acute- and convalescent-phase serum specimens obtained greater than or equal to 2 weeks apart and studied at the same laboratory, or
- Demonstration by immunofluorescence of *Brucella* spp. in a clinical specimen.

**Case classification**

- **Probable:** a clinically compatible case that is epidemiologically linked to a confirmed case or that has supportive serology (i.e., *Brucella* agglutination titer of greater than or equal to 160 in one or more serum specimens obtained after onset of symptoms)
- **Confirmed:** a clinically compatible illness that is laboratory confirmed.
**Intervention**

The purpose of intervention is to identify cases, to trace source(s) of infection, to identify possible contacts of infection, and to assist the U.S. Department of Agriculture (by source identification) with the eradication of brucellosis in cattle, swine, and other animals.

- Upon receipt of a report of brucellosis, contact the physician and/or hospital to confirm the diagnosis.
- Identify the patient’s occupation and/or source of infection.
- Interview the patient and fill out the Brucellosis Case Investigation form. This will help determine the source of infection: foreign travel, occupation, or laboratory acquisition.

Human vaccines developed from killed and live attenuated bacteria have been available in many countries for years but the efficacy of these vaccines is unproven.

For prophylaxis against brucellosis the same antibiotic therapy as that used for treatment is recommended (see below) for 6 weeks. Prophylaxis is recommended for workers exposed to the bacteria. A significant exposure has to be determined.

**Case Management - Treatment**

- Oral doxycycline (2 to 4 mg/kg per day; maximum, 200 mg/d in 2 divided doses) or, alternatively, tetracycline (30 to 40 mg/kg per day; maximum, 2 g/d in 4 divided doses) po for 4 to 6 weeks. Cylines should be avoided in children younger than 8 years of age.
- Oral trimethoprim-sulfamethoxazole (trimethoprim, 10 mg/kg per day; maximum, 480 mg/d; and sulfamethoxazole, 50 mg/kg per day; maximum, 2.4 g/d) for 4 to 6 weeks for younger patients.
- To decrease the incidence of relapse, many experts recommend combination therapy with a tetracycline (or trimethoprim-sulfamethoxazole if tetracyclines are contraindicated) and rifampin (15 to 20 mg/kg per day in 1 or 2 divided doses; maximum, 600 to 900 mg/d). Because of the potential emergence of rifampin resistance, rifampin monotherapy is not recommended.
- The treatment recommended by the World Health Organization for acute brucellosis in adults is rifampicin 600 to 900 mg and doxycycline 200 mg daily for a minimum of 6 weeks.

Prolonged therapy is imperative for achieving a cure. Relapses generally are not caused by development of resistance but rather by premature discontinuation of antimicrobial therapy.

**Hospital precaution and isolation**

Standard precautions and in case of draining wounds contact precautions.

**Control Measures**

- Prevention of human brucellosis depends heavily on the control of brucellosis in animal populations.
- Eradication of Brucella species from cattle, goats, swine, and other animals.
- Pasteurization of milk and milk products for human consumption (particularly important to prevent disease in children).
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)
☑ Louisiana Department of Agriculture- Office of Animal Health
State Veterinarian Office: (225)935-2168 Mobile: (225)933-8121

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
Brucellosis Investigation Algorithm

A cluster of brucellosis cases is identified

History of consumption of raw meat or unpasturized milk or dairy products form potentially infected animals

No

History of travel to brucellosis enzootic areas and/or occupational exposure to potentially infected animals and/or their products (Laboratory workers, abattoir Worker, butcher, etc)

No

Probable brucellosis form ingestion of infected animals or their food products

Yes

Conduct case and environmental investigation using standard Infectious Disease investigation protocols to confirm suspect exposures

No compatible exposures/risk factors identified

No

Probable exposure via direct contact or aerosolization

Yes

Suspect exposure identified

Suspect exposures or risk factors are not identified

Meets event definition for possible bioterrorism. Continue epidemiologic investigation and notification procedures
BRUCELLOSIS

Case investigation form

ID NUMBER:_________                  JOB TITLE:__________________________
INTERVIEWER:_____________________ DATE OF INTERVIEW:_____/_____/____
PERSON INTERVIEWED: Patient      OTHER
IF OTHER, NAME OF PERSON ________________________________
TELEPHONE ______-_______
DESCRIBE RELATIONSHIP ______________________________________

DEMOGRAPHIC INFORMATION

LAST NAME: ________________________ FIRST NAME: ___________________________
DRIVER LICENCE 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 PREPARATION:  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):

<table>
<thead>
<tr>
<th>Name</th>
<th>PERSON 1</th>
<th>PERSON 2</th>
<th>PERSON 3</th>
<th>PERSON 4</th>
<th>PERSON 5</th>
<th>PERSON 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
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<tr>
<td>Relationship</td>
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</tbody>
</table>

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:

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
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SIGN S AND SYMPTOMS

Cough

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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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<tbody>
<tr>
<td>If yes, sputum production</td>
<td>Yes</td>
<td>No</td>
<td>Unknown</td>
</tr>
<tr>
<td>If yes, any blood</td>
<td>Yes</td>
<td>No</td>
<td>Unknown</td>
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Chest Pain

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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Shortness of breath

<table>
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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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Stridor or wheezing

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<tr>
<th></th>
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<th>Unknown</th>
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Cyanosis

<table>
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<tr>
<th></th>
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<th>No</th>
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 Conjunctivitis

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<tr>
<th></th>
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Tender or enlarged lymph nodes

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<tr>
<th></th>
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<th>No</th>
<th>Unknown</th>
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Fever

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<th></th>
<th>Yes</th>
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<th>Unknown</th>
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<tbody>
<tr>
<td>If yes, Maximum temperature ______ ^oF</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Antipyretics taken</td>
<td>Yes</td>
<td>No</td>
<td>Unknown</td>
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Headache

<table>
<thead>
<tr>
<th></th>
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<th>No</th>
<th>Unknown</th>
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Stiff neck

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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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Muscle aches

<table>
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<tr>
<th></th>
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<th>No</th>
<th>Unknown</th>
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Fatigue

<table>
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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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Joint pains

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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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Altered mental status

<table>
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<tr>
<th></th>
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<th>No</th>
<th>Unknown</th>
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Unconscious/unresponsive

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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Sore throat

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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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</table>

Nausea

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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Diarrhea

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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</table>

Vomiting

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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Rash

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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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<tbody>
<tr>
<td>If yes, describe: ____________________________________________</td>
<td></td>
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<td></td>
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<tr>
<td>Other Symptom or abnormality: _________________________________</td>
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PAST MEDICAL HISTORY:

Do you have a regular physician?

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<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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If yes, Name: ___________________________ Phone Number: (____) ______-__________ |

Are you allergic to any medications?

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<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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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?

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<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Unknown</th>
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If yes, where: __________________________________ Appearance: __________________ |
<table>
<thead>
<tr>
<th>Condition</th>
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<tbody>
<tr>
<td>Hypertension</td>
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<tr>
<td>Neurologic condition</td>
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<tr>
<td>Diabetes</td>
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<tr>
<td>Cardiac disease</td>
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<tr>
<td>Seizures</td>
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<tr>
<td>Other Pulmonary Disease</td>
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</tr>
<tr>
<td>Malignancy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currently on treatment</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>HIV infection</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Currently pregnant</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other immunocompromising condition</td>
<td></td>
<td></td>
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<tr>
<td>Other underlying condition(s)</td>
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<tr>
<td>Prescription medications</td>
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**SOCIAL HISTORY:**

<table>
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<th>Behavior</th>
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<tbody>
<tr>
<td>Current alcohol abuse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past alcohol abuse</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Current injection drug use</td>
<td></td>
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<tr>
<td>Past injection drug use</td>
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<tr>
<td>Current smoker</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Former smoker</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other illicit drug use</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If yes, specify:
HOSPITAL INFORMATION:

HOSPITALIZED:  Yes  No
NAME OF HOSPITAL: _________________________________________________
DATE OF ADMISSION: ___/___/____  DATE OF DISCHARGE ___/___/____
ATTENDING PHYSICIAN:
LAST NAME: _______________________  FIRST NAME: _______________________
Office Telephone: (       )____- ______  Pager: (      ) ____-______  Fax: (      ) ____-____________

MEDICAL RECORD ABSTRACTION:

MEDICAL RECORD NUMBER: ____________________________
WARD/ROOM NUMBER: _________________________________
ADMISSION DIAGNOSIS(ES):
1) ______________________________________
2) ______________________________________
3) ______________________________________

PHYSICAL EXAM:

Admission Vital Signs:

Temp:____ ( Oral / Rectal  F / C ) Heart Rate:______ Resp. Rate:_____ B/P:___/___
Mental Status: , Normal , Abnormal , Not Noted
If abnormal, describe:
Respiratory status: , Normal spontaneous , Respiratory distress , Ventilatory support
If abnormal, check all that apply:
  Rales  , Stridor/wheeze  , Decreased or absent
Other (specify:____________________________________________________)
Skin: , Normal , Abnormal , Not Noted
If abnormal, check all that apply:
  Edema  , Chest wall edema  , Cyanosis  , Erythema  
  Petechiae  , Sloughing/necrosis  , Purpura  , Rash
If rash present, describe type and location on body :__________________________
Other abnormal physical findings (describe): __________________________________
________________________________________________________________________
________________________________________________________________________
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________________________________________________________________________
### DIAGNOSTIC STUDIES:

<table>
<thead>
<tr>
<th>Test</th>
<th>Results of tests done on Admission (<em><strong>/</strong></em>/___)</th>
<th>Abnormal test result at any time (specify date mm/dd/yyyy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin (Hb)</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>Hematocrit (HCT)</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>Platelet (plt)</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>Total white blood cell (WBC)</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>WBC differential:</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>% granulocytes (PMNs)</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>% bands</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>% lymphocytes</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>Renal function: BUN/Cr</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>Liver enzymes: ALT/AST</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>Blood cultures:</td>
<td>positive (specify __________________________)</td>
<td>positive (specify __________________________)</td>
</tr>
<tr>
<td></td>
<td>negative pending</td>
<td>negative pending</td>
</tr>
<tr>
<td></td>
<td>not done</td>
<td>not done</td>
</tr>
<tr>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
</tbody>
</table>

CONTINUE ON PAGE 7
<table>
<thead>
<tr>
<th>Test</th>
<th>Results of tests done on Admission (<em><strong>/</strong></em>/___)</th>
<th>Abnormal test result at any time (specify date mm/dd/yy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory secretions: Specimen Type:</td>
<td>expectorated sputum induced sputum bronchial alveolar lavage (BAL) tracheal aspirate</td>
<td>expectorated sputum induced sputum bronchial alveolar lavage (BAL) tracheal aspirate</td>
</tr>
<tr>
<td>Respiratory secretions: Gram Stain (Check all that apply)</td>
<td>PMNs epithelial cells gram positive cocci gram negative cocci gram positive rods gram negative cocci gram positive rods with bipolar staining (safety pins) other _______________</td>
<td>PMNs epithelial cells gram positive cocci gram negative cocci gram positive rods gram negative cocci gram positive rods with bipolar staining (safety pins) other _______________</td>
</tr>
<tr>
<td>Respiratory secretions: Analysis: Bacterial culture</td>
<td>positive (specify _______________) negative pending not done</td>
<td>positive (specify _______________) negative pending not done</td>
</tr>
<tr>
<td>Respiratory secretions: Analysis: Viral culture</td>
<td>positive (specify _______________) negative pending not done</td>
<td>positive (specify _______________) negative pending not done</td>
</tr>
<tr>
<td>Respiratory secretions: Analysis: Influenza antigen</td>
<td>positive negative pending not done</td>
<td>positive negative pending not done</td>
</tr>
<tr>
<td>Respiratory secretions: Other test (e.g., DFA, PCR, etc)</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>Chest radiograph</td>
<td>normal unilateral, lobar/consolidation bilateral, lobar/consolidation interstitial infiltrates widened mediastinum pleural effusion other _______________</td>
<td>normal unilateral, lobar/consolidation bilateral, lobar/consolidation interstitial infiltrates widened mediastinum pleural effusion other _______________</td>
</tr>
<tr>
<td>Legionella urine antigen</td>
<td>positive negative pending not done</td>
<td>positive negative pending not done</td>
</tr>
</tbody>
</table>

Chest radiograph:
- normal
- unilateral, lobar/consolidation
- bilateral, lobar/consolidation
- interstitial infiltrates
- widened mediastinum
- pleural effusion
- other _______________
<table>
<thead>
<tr>
<th>Test</th>
<th>Results of tests done on Admission (<em><strong>/</strong></em>/___)</th>
<th>Abnormal test result at any time (specify date mm/dd/yy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other pertinent study results (e.g., chest CT, pleural fluid)</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>Other pertinent study results (e.g., toxin assays)</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
</tbody>
</table>

PULMONOLOGY 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:
   - Amoxicillin
   - Ampicillin
   - Ampicillin and sulbactum (Unasyn)
   - Augmentin (amoxicillin and clavulanate)
   - Azithromycin (Zithromax)
   - Cefazolin (Ancef, Kefzol)
   - Cefepime (Maxipime)
   - Cefixime (Suprax)
   - Cefotetan (Cefotan)
   - Cefotaxime (Claforan)
   - Cefoxitin (Mefoxin)
   - Ceftazidime (Fortaz, Tazicef, Tazidime)
   - Ceftizoxime (Cefizox)
   - Ceftriaxone (Rocephin)
   - Cefuroxime (Ceftin)
   - Cefalexin (Keflex, Keftab)
   - Ciprofloxacin (Cipro)
   - Clarithromycin (Biaxin)
   - Doxycycline (Doryx, Vibramycin)
   - Erythromycin (E-Mycin, Ery-Tab, Eryc)
   - Gentamicin (Garamycin)
   - Levofloxacin (Levaquin)
   - Nafcillin
   - Ofloxacin (Floxin)
   - Streptomycin
   - Ticarcillin and clavulanate (timentin)
   - Trimethaprim-sulfamethoxazole (Bactrim, Cotrim, TMP/SMX)
   - Vancomycin (Vancocin)
   - other _______________________________________________________

B. antivirals: Yes No Unknown
   If yes, check all that apply:
   - Acyclovir (Zovirax)
   - Amantadine (Symmetrel)
   - Oseltamivir (Tamiflu)
   - Rimantidine (Flumadine)
   - Zanamivir (Relenza)
   - other _______________________________________________________

C. 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:
____________________________________________________________________
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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)

<table>
<thead>
<tr>
<th>Name of ill Person</th>
<th>AGE</th>
<th>Sex</th>
<th>Address</th>
<th>Phone</th>
<th>Date of Onset</th>
<th>Relation To you</th>
<th>Did they seek Medical care?</th>
<th>Where</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

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: _______________________

State of Louisiana Office of Public Health- Infectious Disease Epidemiology Section  Bioterrorism Manual
### Public Functions/Venues (during 2 weeks prior to symptom onset)

<table>
<thead>
<tr>
<th>Category</th>
<th>Y/N/U</th>
<th>Description of Activity</th>
<th>Location of Activity</th>
<th>Date of Activity</th>
<th>Time of Activity (start, end)</th>
<th>Others ill? (Y/N/U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Airports</td>
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<tr>
<td>10. Beaches</td>
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<td>11. Bars/Clubs</td>
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<tr>
<td>12. Campgrounds</td>
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<tr>
<td>13. Carnivals/Circus</td>
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<tr>
<td>14. Casinos</td>
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<tr>
<td>15. Family Planning Clinics</td>
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<tr>
<td>16. Government Office Building</td>
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<tr>
<td>17. Gym/Workout Facilities</td>
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<td>18. Meetings or Conferences</td>
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<tr>
<td>19. Movie Theater</td>
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<tr>
<td>20. Museums</td>
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<tr>
<td>21. Parks</td>
<td></td>
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<tr>
<td>22. Parties (including Raves, Prom, etc)</td>
<td></td>
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<tr>
<td>23. Performing Arts (ie Concert, Theater, Opera)</td>
<td></td>
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<tr>
<td>24. Picnics</td>
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<tr>
<td>25. Political Events (including Marches and Rallies)</td>
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<tr>
<td>26. Religious Gatherings</td>
<td></td>
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<tr>
<td>27. Shopping Malls</td>
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<tr>
<td>28. Sporting Event</td>
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<tr>
<td>29. Street Festivals, Flea Markets, Parades</td>
<td></td>
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<tr>
<td>30. Tourist Attractions (ie French Quarter, Aquarium)</td>
<td></td>
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</tr>
</tbody>
</table>
**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*?

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

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
- Respiratory devices
- Vaporizers
- Humidifiers
- Misters
- Whirlpool spas
- Hot tub
- Spa baths
- Creeks and/or 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: ____________________________________________