Francisella tularensis, the causative agent of tularemia, is a small, aerobic non-motile, gram-negative coccobacillus. Tularemia (also known as rabbit fever and deer fly fever) is a zoonotic disease that humans typically acquire after skin or mucous membrane contact with tissues or body fluids of infected animals, or from bites of infected ticks, deerflies, or mosquitoes. Less commonly, inhalation of contaminated dusts or ingestion of contaminated foods or water may produce clinical disease. Respiratory exposure by aerosol would typically cause typhoidal or pneumonic tularemia. F. tularensis can remain viable for weeks in water, soil, carcasses, hides, and for years in frozen rabbit meat. It is resistant for months to temperatures of freezing and below. It is easily killed by heat and disinfectants.

Epidemiology

Reservoir: F. tularensis is capable of infecting hundreds of different vertebrates and invertebrates, but no more than a dozen mammalian species are important to its ecology in any geographic region. These include lagomorphs, particularly Sylvilagus and Lepus spp., and rodents such as voles, squirrels, muskrat, and beaver in North America; included in the former Soviet Union are voles, hamsters, mice, and hares.

Transmission: Transmission of F. tularensis to humans occurs most often through the bite of an insect or contact with contaminated animal products. Other routes of transmission include aerosol droplets, contact with contaminated water or mud, and animal bites. Illness may occur in families or friends because of shared activities and exposures. Nonetheless, human-to-human spread does not occur.

Bloodfeeding arthropods and flies are the most important vectors for tularemia in the United States.Ticks predominate in the central and Rocky Mountain states, whereas biting flies predominate in California, Nevada, and Utah. In contrast, mosquitoes are the most frequent insect vector in Sweden and Finland, and they also are important in the former Soviet Union. At least 13 species of ticks have been found to be naturally infected with F. tularensis, and transovarial passage may occur. The dog tick (Dermacentor variabilis), wood tick (D. andersoni), and Lone Star tick (Amblyomma americanum) are commonly involved in North America. The organism may be present in tick saliva or feces and may be inoculated either directly or indirectly into the bite wound. Several outbreaks of tickborne tularemia have involved F. tularensis biogroup palearctica (type B), although this organism is more often linked to water, rodents, and aquatic animals; tick transmission traditionally has been associated with biogroup tularensis (type A).
Tularemia in children in endemic areas of the United States is now most often associated with tick exposure in the summer.

Animal contact is another important mode of acquiring tularemia. Skinning, dressing, and eating infected animals, including rabbits, muskrats, beavers, squirrels, and birds, have transmitted tularemia, occasionally resulting in large outbreaks in hunters. For example, hamster hunting was responsible for an epidemic in Eastern Europe.

Airborne transmission has occurred during these activities, as well as from contact with water, contaminated dust, and hay. Carnivorous animals may transiently carry *F. tularensis* in the mouth or on claws after killing or feeding on infected prey, whether or not they become infected. This is thought to be the mechanism by which domestic cats occasionally transmit tularemia. *F. tularensis* may survive for prolonged periods in water, mud, and animal carcasses even if frozen; however, cooking game meats thoroughly to the proper temperatures should minimize risk from ingestion. Contaminated water continues to be an important environmental source of tularemia.

**Clinical Description**

Tularemia is an illness characterized by several distinct forms, including the following:

- **Ulceroglandular**: cutaneous ulcer with regional lymphadenopathy
- **Glandular**: regional lymphadenopathy with no ulcer
- **Oculoglandular**: conjunctivitis with preauricular lymphadenopathy
- **Oropharyngeal**: stomatitis or pharyngitis or tonsillitis and cervical lymphadenopathy
- **Intestinal**: intestinal pain, vomiting, and diarrhea
- **Pneumonic**: primary pleuropulmonary disease
- **Typhoidal**: febrile illness without early localizing signs and symptoms

Clinical diagnosis is supported by evidence or history of a tick or deerfly bite, exposure to tissues of a mammalian host of *Francisella tularensis*, or exposure to potentially contaminated water.

Signs and Symptoms: Ulceroglandular tularemia presents with a local ulcer and regional lymphadenopathy, fever, chills, headache and malaise. Typhoidal tularemia presents with fever, headache, malaise, substernal discomfort, prostration, weight loss and a non-productive cough.

After an incubation period varying from 1-21 days (average 3-5 days), presumptively dependent upon the dose of organisms, onset is usually acute. Tularemia typically appears in one of six forms in man depending upon the route of inoculation: typhoidal, ulceroglandular, glandular, oculoglandular, oropharyngeal, and pneumonic tularemia. In humans, as few as 10 to 50 organisms will cause disease if inhaled or injected intradermally, whereas approximately $10^8$ organisms are required with oral challenge.

Typhoidal tularemia (5-15 percent of naturally acquired cases) occurs mainly after inhalation of infectious aerosols, but can occur after intradermal or gastrointestinal challenge. *F. tularensis* would presumably be most likely delivered by aerosol in a BW attack and would primarily cause typhoidal tularemia. It manifests as fever, prostration, and weight loss, but unlike most other forms of the disease, presents without lymphadenopathy. Pneumonia may be severe and fulminating and can be associated with any form of tularemia (30% of ulceroglandular cases), but it is most common in typhoidal tularemia (80% of cases). Respiratory symptoms, substernal
discomfort, and a cough (productive and non-productive) may also be present. Case fatality rates following a BW attack may be greater than the 1-3 % seen with appropriately treated natural disease. Case fatality rates are about 35% in untreated naturally acquired typhoidal cases.

Ulceroglandular tularemia (75-85 percent of cases) is most often acquired through inoculation of the skin or mucous membranes with blood or tissue fluids of infected animals. It is characterized by fever, chills, headache, malaise, an ulcerated skin lesion, and painful regional lymphadenopathy. The skin lesion is usually located on the fingers or hand where contact occurs.

Glandular tularemia (5-10 percent of cases) results in fever and tender lymphadenopathy but no skin ulcer.

Oculoglandular tularemia (1-2 percent of cases) occurs after inoculation of the conjunctivae by contaminated hands, splattering of infected tissue fluids, or by aerosols. Patients have unilateral, painful, purulent conjunctivitis with preauricular or cervical lymphadenopathy. Chemosis, periorbital edema, and small nodular lesions or ulcerations of the palpebral conjunctiva are noted in some patients.

Oropharyngeal tularemia refers to primary ulceroglandular disease confined to the throat. It produces an acute exudative or membranous pharyngotonsillitis with cervical lymphadenopathy.

Pneumonic tularemia is a severe atypical pneumonia that may be fulminant and with a high case fatality rate if untreated. It can be primary following inhalation of organisms or secondary following hematogenous / septicemic spread. It is seen in 30-80 percent of the typhoidal cases and in 10-15 percent of the ulceroglandular cases.

The case fatality rate without treatment is approximately 5 percent for the ulceroglandular form and 35 percent for the typhoidal form. All ages are susceptible, and recovery is generally followed by permanent immunity.

Diagnosis: Clinical diagnosis. Physical findings are usually non-specific. Chest x-ray may reveal a pneumonic process, mediastinal lymphadenopathy or pleural effusion. Routine culture is possible but difficult. The diagnosis can be established retrospectively by serology.

A clue to the diagnosis of tularemia subsequent to a BW attack with F. tularensis might be a large number of temporally clustered patients presenting with similar systemic illnesses and a non-productive pneumonia.

The clinical presentation of tularemia may be severe, yet non-specific. Differential diagnoses include typhoidal syndromes (e.g., salmonella, rickettsia, malaria) or pneumonic processes (e.g., plague, mycoplasma, SEB).

Radiologic evidence of pneumonia or mediastinal lymphadenopathy is most common with typhoidal disease. In general, chest radiographs show that approximately 50% of patients have pneumonia, and fewer than 1% have hilar adenopathy without parenchymal involvement. Pleural effusions are seen in 15% of patients with pneumonia. Interstitial patterns, cavitary lesions, bronchopleural fistulae, and calcifications have been reported in patients with tularemia pneumonia.
Laboratory

Laboratory diagnosis. Initial laboratory evaluations are generally nonspecific. Peripheral white blood cell count usually ranges from 5,000 to 22,000 cells per microliter. Differential blood cell counts are normal, with occasional lymphocytosis late in the disease. Hematocrit, hemoglobin, and platelet levels are usually normal. Mild elevations in lactic dehydrogenase, serum transaminases, and alkaline phosphatase are common. Rhabdomyolysis may be associated with elevations in serum creatine kinase and urinary myoglobin levels. Cerebrospinal fluid is usually normal, although mild abnormalities in protein, glucose, and blood cell count have been reported.

Tularemia can be diagnosed by recovery of the organism in culture from blood, ulcers, conjunctival exudates, sputum, gastric washings, and pharyngeal exudates. Recovery may even be possible after the institution of appropriate antibiotic therapy. The organism grows poorly on standard media but produces small, smooth, opaque colonies after 24 to 48 hours on media containing cysteine or other sulfhydryl compounds (e.g., glucose cysteine blood agar, thioglycollate broth). Isolation represents a clear hazard to laboratory personnel and culture should only be attempted in BSL-3 containment.

Most diagnoses of tularemia are made serologically using bacterial agglutination or enzyme-linked immunosorbent assay (ELISA). Antibodies to F. tularensis appear within the first week of infection but levels adequate to allow confidence in the specificity of the serologic diagnosis (titer > 1:160) do not appear until more than 2 weeks after infection. Because cross-reactions can occur with Brucella spp., Proteus OX19, and Yersinia organisms and because antibodies may persist for years after infection, diagnosis should be made only if a 4-fold or greater increase in the tularemia tube agglutination or microagglutination titer is seen during the course of the illness. Titers are usually negative the first week of infection, positive the second week in 50-70 percent of cases and reach a maximum in 4-8 weeks.

Treatment

Treatment: Administration of antibiotics (streptomycin or gentamicin) with early treatment is very effective.

Since there is no known human-to-human transmission, neither isolation nor quarantine are required, since Standard Precautions are appropriate for care of patients with draining lesions or pneumonia. Strict adherence to the drainage/secretion recommendations of Standard Precautions is required, especially for draining lesions, and for the disinfection of soiled clothing, bedding, equipment, etc. Heat and disinfectants easily inactivate the organism.

Appropriate therapy includes one of the following antibiotics:

- Gentamicin 3 - 5 mg/kg IV daily for 10 to 14 days
- Ciprofloxacin 400 mg IV every 12 hours, switch to oral ciprofloxacin (500 mg every 12 hours) after the patient is clinically improved; continue for completion of a 10- to 14-day course of therapy
- Ciprofloxacin 750 mg orally every 12 hours for 10 to 14 days
- Streptomycin 7.5 - 10 mg/kg IM every 12 hours for 10 to 14 days

Streptomycin has historically been the drug of choice for tularemia; however, since it may not be readily available immediately after a large-scale BW attack, gentamicin and other alternative
drugs should be considered first. Requests for streptomycin should be directed to the Roerig Streptomycin Program at Pfizer Pharmaceuticals in New York (800-254-4445). Another concern is that a fully virulent streptomycin-resistant strain of F. tularensis was developed during the 1950s and it is presumed that other countries have obtained it. The strain was sensitive to gentamicin. Gentamicin offers the advantage of providing broader coverage for gram-negative bacteria and may be useful when the diagnosis of tularemia is considered but in doubt.

In a recent study of treatment in 12 children with ulceroglandular tularemia, ciprofloxacin was satisfactory for outpatient treatment (Pediatric Infectious Disease Journal, 2000; 19:449-453). Tetracycline and chloramphenicol are also effective antibiotics, however, they are associated with significant relapse rates.

Case Definition

**Probable:** a clinically compatible case with laboratory results indicative of presumptive infection

**Confirmed:** a clinically compatible case with confirmatory laboratory results

Prophylaxis

Prophylaxis: A live, attenuated vaccine is available as an investigational new drug. It is administered once by scarification. A two week course of tetracycline is effective as prophylaxis when given after exposure.

Vaccine: An investigational live-attenuated vaccine (Live Vaccine Strain - LVS), which is administered by scarification, has been given to >5,000 persons without significant adverse reactions and prevents typhoidal and ameliorates ulceroglandular forms of laboratory-acquired tularemia. Aerosol challenge tests in laboratory animals and human volunteers have demonstrated significant protection. As with all vaccines, the degree of protection depends upon the magnitude of the challenge dose. Vaccine-induced protection could be overwhelmed by extremely high doses of the tularemia bacteria.

Immunoprophylaxis. There is no passive immunoprophylaxis (i.e., immune globulin) available for pre- or post-exposure management of tularemia.

Pre-exposure prophylaxis: Chemoprophylaxis given for anthrax or plague (ciprofloxacin, doxycycline) may confer protection against tularemia, based on in vitro susceptibilities.

Post-exposure prophylaxis. A 2-week course of antibiotics is effective as post-exposure prophylaxis when given within 24 hours of aerosol exposure from a BW attack, using one of the following regimens:

- **Ciprofloxacin** 500 mg orally every 12 hours for 2 weeks
- **Doxycycline** 100 mg orally every 12 hours for 2 weeks
- **Tetracycline** 500 mg orally every 6 hours for 2 weeks

Isolation and Decontamination: Standard Precautions for healthcare workers. Organisms are relatively easy to render harmless by mild heat (55 degrees Celsius for 10 minutes) and standard disinfectants.
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, race
  - 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
Tularemia Investigation Algorithm

One or more cases of confirmed or strongly suspected pneumonic Tularemia

Ulceroglandular and/or oculoglandular lesion present?

No

History of:
- Travel and/or outdoor activity in a known tularemia enzootic area;
- Exposure to rabbits, ticks, or deer flies;
- Consumption of undercooked meat from potential animal reservoirs (rabbits, hares, etc)
  And/or
- Consumption of water possibly contaminated by a potential animal reservoir.
  Approximately 1 week prior to the onset of symptoms?

No

Laboratory and/or occupational exposure to F. tularensis

No

No compatible exposure/risk factors identified and has pneumonic tularemia

Yes

Probable secondary pneumonic tularemia from ulceroglandular tularemia

Yes

Probable secondary pneumonic tularemia from typhoidal tularemia

Conduct case and environmental investigation using usual protocols (looking for exposure to rabbits, ticks, deer flies, etc).

Compatible exposure/risk factors identified

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

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 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></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>Name</td>
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<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:

__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
__________________________________________________________________________
SIGNS AND SYMPTOMS

Cough

Yes | No | Unknown
If yes, sputum production
Yes | No | Unknown
If yes, any blood
Yes | No | Unknown

Chest Pain

Yes | No | Unknown

Shortness of breath

Yes | No | Unknown

Stridor or wheezing

Yes | No | Unknown

Cyanosis

Yes | No | Unknown

Conjunctivitis

Yes | No | Unknown

Tender or enlarged lymph nodes

Yes | No | Unknown

Fever

Yes | No | Unknown

If yes, Maximum temperature ______ of
Antipyretics taken

Yes | No | Unknown

Headache

Yes | No | Unknown

Stiff neck

Yes | No | Unknown

Muscle aches

Yes | No | Unknown

Fatigue

Yes | No | Unknown

Joint pains

Yes | No | Unknown

Altered mental status

Yes | No | Unknown

Unconscious/unresponsive

Yes | No | Unknown

Sore throat

Yes | No | Unknown

Nausea

Yes | No | Unknown

Diarrhea

Yes | No | Unknown

Vomiting

Yes | No | Unknown

Rash

Yes | No | Unknown

If yes, describe:________________________________________________________

Other Symptom or 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       Yes  No  Unknown
Neurologic Condition Yes  No  Unknown
Diabetes           Yes  No  Unknown
Cardiac disease    Yes  No  Unknown
Seizures           Yes  No  Unknown

Other Pulmonary Disease       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:
___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

SOCIAL HISTORY:

Current alcohol abuse:       Yes  No  Unknown
Past alcohol abuse:          Yes  No  Unknown
Current injection drug use:  Yes  No  Unknown
Past injection drug use:     Yes  No  Unknown
Current smoker:              Yes  No  Unknown
Former smoker:               Yes  No  Unknown
Other illicit drug use:      Yes  No  Unknown
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/wheezin  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: ___________________________
__________________________________________

State of Louisiana Office of Public Health- Infectious Disease Epidemiology Section
Bioterrorism Manual
### 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:</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>ALT/AST</td>
<td></td>
<td>(<em><strong>/</strong></em>/___)</td>
</tr>
<tr>
<td>Blood cultures:</td>
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<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>
### Test Results of tests done on Admission (___/___/___)

<table>
<thead>
<tr>
<th>Test</th>
<th>Specimen Type:</th>
<th>Abnormal test result at any time (specify date mm/dd/yy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory secretions:</td>
<td>expectorated sputum</td>
<td>expectorated sputum</td>
</tr>
<tr>
<td>Specimen Type:</td>
<td>induced sputum</td>
<td>induced sputum</td>
</tr>
<tr>
<td></td>
<td>bronchial alveolar lavage (BAL)</td>
<td>bronchial alveolar lavage (BAL)</td>
</tr>
<tr>
<td></td>
<td>tracheal aspirate</td>
<td>tracheal aspirate</td>
</tr>
<tr>
<td>Respiratory secretions:</td>
<td>PMNs</td>
<td>PMNs</td>
</tr>
<tr>
<td>Gram Stain (Check all that apply)</td>
<td>epithelial cells</td>
<td>epithelial cells</td>
</tr>
<tr>
<td></td>
<td>gram positive cocci</td>
<td>gram positive cocci</td>
</tr>
<tr>
<td></td>
<td>gram negative cocci</td>
<td>gram negative cocci</td>
</tr>
<tr>
<td></td>
<td>gram positive rods</td>
<td>gram positive rods</td>
</tr>
<tr>
<td></td>
<td>gram negative coccobacilli</td>
<td>gram negative coccobacilli</td>
</tr>
<tr>
<td></td>
<td>gram negative rods</td>
<td>gram negative rods</td>
</tr>
<tr>
<td></td>
<td>other (specify date mm/dd/yy)</td>
<td>other (specify date mm/dd/yy)</td>
</tr>
<tr>
<td>Respiratory secretions:</td>
<td>positive (specify date mm/dd/yy)</td>
<td>positive (specify date mm/dd/yy)</td>
</tr>
<tr>
<td>analysis: Bacterial culture</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>pending</td>
<td>pending</td>
</tr>
<tr>
<td></td>
<td>not done</td>
<td>not done</td>
</tr>
<tr>
<td>Respiratory secretions:</td>
<td>positive (specify date mm/dd/yy)</td>
<td>positive (specify date mm/dd/yy)</td>
</tr>
<tr>
<td>analysis: Viral culture</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>pending</td>
<td>pending</td>
</tr>
<tr>
<td></td>
<td>not done</td>
<td>not done</td>
</tr>
<tr>
<td>Respiratory secretions:</td>
<td>positive</td>
<td>positive</td>
</tr>
<tr>
<td>analysis: Influenza antigen</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>pending</td>
<td>pending</td>
</tr>
<tr>
<td></td>
<td>not done</td>
<td>not done</td>
</tr>
<tr>
<td>Respiratory secretions:</td>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>Other test (e.g., DFA, PCR, etc)</td>
<td>unilateral, lobar/consolidation</td>
<td>unilateral, lobar/consolidation</td>
</tr>
<tr>
<td>Chest radiograph</td>
<td>bilateral, lobar/consolidation</td>
<td>bilateral, lobar/consolidation</td>
</tr>
<tr>
<td></td>
<td>interstitial infiltrates</td>
<td>interstitial infiltrates</td>
</tr>
<tr>
<td></td>
<td>widened mediastinum</td>
<td>widened mediastinum</td>
</tr>
<tr>
<td></td>
<td>pleural effusion</td>
<td>pleural effusion</td>
</tr>
<tr>
<td></td>
<td>other (specify date mm/dd/yy)</td>
<td>other (specify date mm/dd/yy)</td>
</tr>
<tr>
<td>Legionella urine antigen</td>
<td>positive</td>
<td>positive</td>
</tr>
<tr>
<td></td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td></td>
<td>pending</td>
<td>pending</td>
</tr>
<tr>
<td></td>
<td>not done</td>
<td>not done</td>
</tr>
</tbody>
</table>

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

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)
- other_____________________________

- Cefuroxime (Ceftin)
- Cefalexin (Keflex, Keftab)
- Ciprofloxacin (Cipro)
- Clarithromycin (Biaxin)
- Doxycycline (Doryx, Vibramycin)
- Erythromycin (E-Mycin, Ery-Tab, Eryc)
- Gentamicin (Garamycin)
- Levofoxacin (Levaquin)
- Naficillin
- Ofloxacin (Floxin)
- Streptomycin
- Ticarcillin and clavulanate (timentin)
- Trimethaprim-sulfamethoxazole (Bactrim, Cotrim, TMP/SMX)
- Vancomycin (Vancocin)
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?

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>
</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: ________________________________
### 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>
<td></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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<tr>
<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>
<td></td>
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<tr>
<td>21. Parks</td>
<td></td>
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<td></td>
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<tr>
<td>22. Parties (including Raves, Prom, etc)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>23. Performing Arts (i.e., Concert, Theater, Opera)</td>
<td></td>
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<tr>
<td>24. Picnics</td>
<td></td>
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<td></td>
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<tr>
<td>25. Political Events (including Rallies)</td>
<td></td>
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<tr>
<td>26. Religious Gatherings</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>27. Shopping Malls</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>28. Sporting Event</td>
<td></td>
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</tr>
<tr>
<td>29. Street Festivals, Flea Markets, Parades</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>30. Tourist Attractions (i.e., French Quarter, Aquarium)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</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>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Casino or mall food court</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grocery Store or Corner Store</td>
<td></td>
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<tr>
<td>Concert, movie, or other entertainment</td>
<td></td>
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<tr>
<td>Dinner party, birthday party or other celebration</td>
<td></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>
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<td></td>
</tr>
<tr>
<td>Street vended food</td>
<td></td>
<td></td>
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<tr>
<td>Other food establishment</td>
<td></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
   Creek and ponds
   Decorative fountains
   Other (please 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. Do you recall any insect or tick bites during these outdoor activities?
   Yes    No    Unknown

   (If “yes”, list all activities and provide locations of activities)
______________________________________________________________________
______________________________________________________________________
______________________________________________________________________

48. 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

49. 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? ______________________________

50. 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:__________________________________________

51. 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:____________________________________