



Infectious Disease Epidemiology Section  
Office of Public Health, Louisiana Dept of Health & Hospitals  
(504) 219-4563 or 800-256-2748 (after-hours emergency)  
[www.infectiousdisease.dhh.louisiana.gov](http://www.infectiousdisease.dhh.louisiana.gov)

## BRUCELLOSIS

Revised 04/20/2005

### 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. Cyclines 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

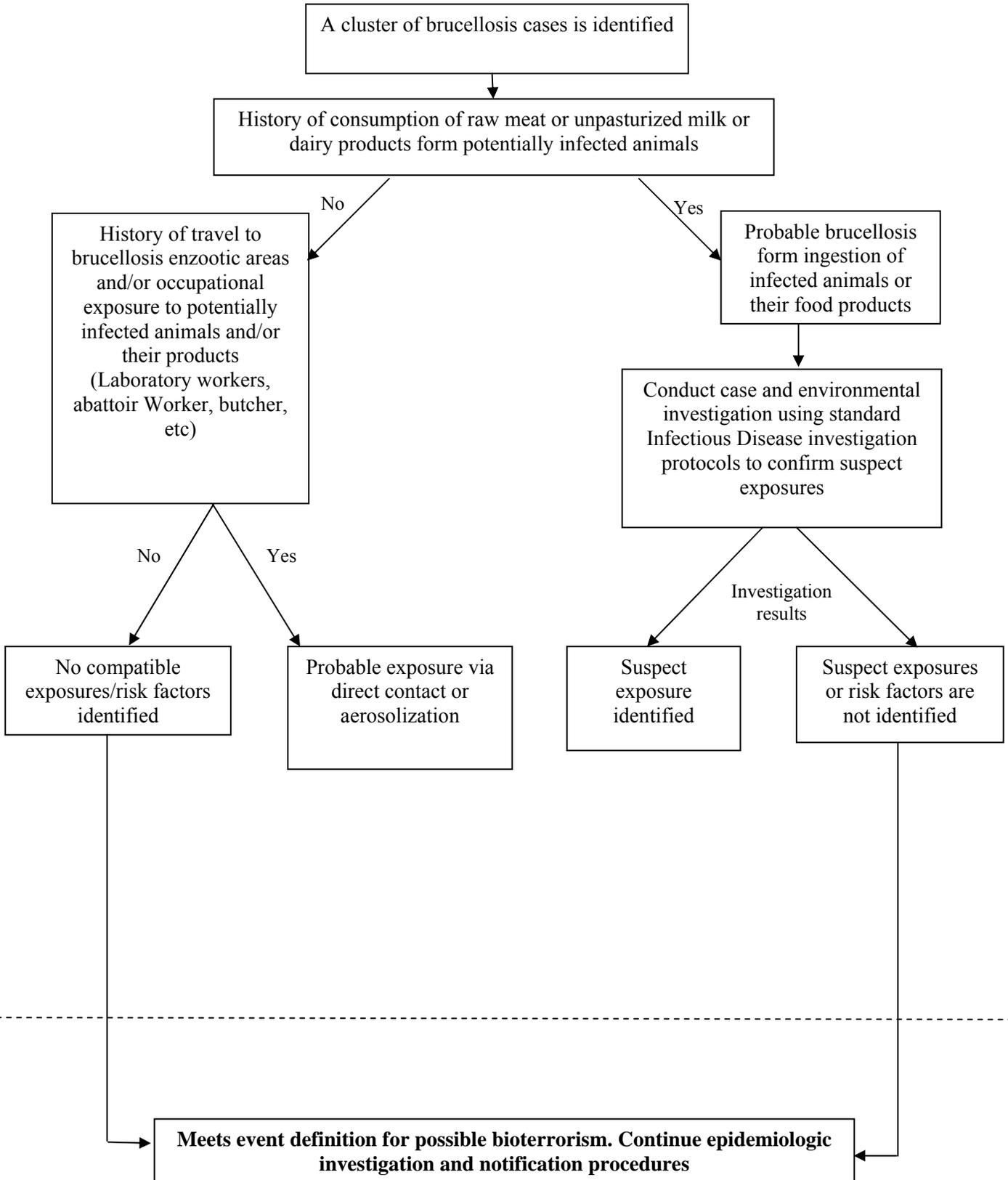
## **Laboratory**

- 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



**BRUCELLOSIS**

**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 PREPERATION:  Yes  No  Unknown

**HOBBY:**

- Do you work with fibers/wool/animal skin/or other animal product?  Yes  No  Unknown
- Have you been camping in past two months?  Yes  No  Unknown
- Have you stayed in cabins in the past two months?  Yes  No  Unknown
- Have you been hunting?  Yes  No  Unknown
- Have you skinned or dressed and animal?  Yes  No  Unknown
- Have you had an animal stuffed or mounted?  Yes  No  Unknown

**HOW MANY PEOPLE RESIDE IN THE SAME HOUSEHOLD?** \_\_\_\_\_

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

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

**HOUSEHOLD PETS:**

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

If so what type of pet: \_\_\_\_\_

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

If so describe: \_\_\_\_\_

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

**CHIEF COMPLAINT:** \_\_\_\_\_

**DATE OF ILLNESS ONSET:** \_\_\_\_/\_\_\_\_/\_\_\_\_

Briefly summarize History of Present Illness:

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**SIGNS AND SYMPTOMS**

- Cough  Yes  No  Unknown
- If yes, sputm 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 : \_\_\_\_\_

Other abnormal physical findings (describe): \_\_\_\_\_

\_\_\_\_\_

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**DIAGNOSTIC STUDIES:**

Test	Results of tests done on Admission ( __/__/__ )	Abnormal test result at any time (specify date mm/dd/yyyy)
Hemoglobin (Hb)		( __/__/__ )
Hematocrit (HCT)		( __/__/__ )
Platelet (plt)		( __/__/__ )
Total white blood cell (WBC)		( __/__/__ )
WBC differential:		( __/__/__ )
% granulocytes (PMNs)		( __/__/__ )
% bands		( __/__/__ )
% lymphocytes		( __/__/__ )
Renal function: BUN/Cr		( __/__/__ )
Liver enzymes: ALT/AST		( __/__/__ )
Blood cultures:	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done ( __/__/__ )	<input type="checkbox"/> positive (specify _____) <input type="checkbox"/> negative <input type="checkbox"/> pending <input type="checkbox"/> not done ( __/__/__ )

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

Test	Results of tests done on Admission ( __/__/__ )	Abnormal test result at any time (specify date mm/dd/yy)
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 sulbactam (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



**Risk Exposure Questions**

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

*Occupation (provide information for all jobs/ volunteer duties)*

1. Please briefly describe your job/ volunteer duties: \_\_\_\_\_

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

If "Yes", specify \_\_\_\_\_

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

Yes  No  Unknown

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

**Knowledge of Other Ill Persons**

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

(If Yes, please complete the following questions)

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

**Travel\***

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

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

Dates of Travel: \_\_\_\_/\_\_\_\_/\_\_\_\_ to \_\_\_\_/\_\_\_\_/\_\_\_\_

Method of Transportation for Travel: \_\_\_\_\_

Where Did You Stay? \_\_\_\_\_

Purpose of Travel? \_\_\_\_\_

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

If yes, specify: \_\_\_\_\_

Did Anyone Travel With You? :  Yes  No

If yes, specify: \_\_\_\_\_

Are they ill with similar symptoms? :  Yes  No  Unknown

If yes, specify: \_\_\_\_\_

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

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

**Transportation**

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

31. Bus/Streetcar:  Yes  No  Unknown

Frequency of this type of transportation:  Daily  Weekly  Occasionally  Rarely

Bus Number: \_\_\_\_\_ Origin: \_\_\_\_\_

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

Company Providing Transportation: \_\_\_\_\_ Destination: \_\_\_\_\_

32. Train:  Yes  No  Unknown

Frequency of this type of transportation:  Daily  Weekly  Occasionally  Rarely

Route Number: \_\_\_\_\_ Origin: \_\_\_\_\_

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

Company Providing Transportation: \_\_\_\_\_ Destination: \_\_\_\_\_

33. Airplane:  Yes  No  Unknown

Frequency of this type of transportation:  Daily  Weekly  Occasionally  Rarely

Flight Number: \_\_\_\_\_ Origin: \_\_\_\_\_

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

Company Providing Transportation: \_\_\_\_\_ Destination: \_\_\_\_\_

34. Ship/Boat/Ferry:  Yes  No  Unknown

Frequency of this type of transportation:  Daily  Weekly  Occasionally  Rarely

Ferry Number: \_\_\_\_\_ Origin: \_\_\_\_\_

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

Company Providing Transportation: \_\_\_\_\_ Destination: \_\_\_\_\_

35. Van Pool/Shuttle:  Yes  No  Unknown

Frequency of this type of transportation:  Daily  Weekly  Occasionally  Rarely

Route Number: \_\_\_\_\_ Origin: \_\_\_\_\_

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

Company Providing Transportation: \_\_\_\_\_ Destination: \_\_\_\_\_

**Food & Beverage**

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

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

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

- Grocery store Yes No Unknown
- Race/competition Yes No Unknown
- Public gathering? Yes No Unknown
- Private gathering? Yes No Unknown

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

Date/Time: \_\_\_\_\_

Location (Name and Address): \_\_\_\_\_

Food/drink consumed: \_\_\_\_\_

Others also ill? Yes No Unknown

(Explain): \_\_\_\_\_

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

Vitamins  Yes .  No  Unknown

Specify (Include Brand Name): \_\_\_\_\_

Herbal remedies  Yes .  No  Unknown

Specify (Include Brand Name): \_\_\_\_\_

Diet Aids  Yes .  No  Unknown

Specify (Include Brand Name): \_\_\_\_\_

Nutritional Supplements  Yes .  No  Unknown

Specify (Include Brand Name): \_\_\_\_\_

Other Ingested non-food  Yes .  No  Unknown

Specify (Include Brand Name): \_\_\_\_\_

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

If yes, specify name of item: \_\_\_\_\_

Date/Time: \_\_\_\_\_

Location (Name and Address): \_\_\_\_\_

Others also ill?:  Yes .  No  Unknown

(explain): \_\_\_\_\_

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

Yes .  No  Unknown

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

Items purchased: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

Unknown

If yes, specify date/time of delivery: \_\_\_\_\_

Store purchased from: \_\_\_\_\_

Items purchased: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

Community or Municipal

Well (shared)

Well (private family)

Bottled water (Specify Brand: \_\_\_\_\_)

Other (Specify: \_\_\_\_\_)

***Aerosolized water***

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

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

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

Date/Time: \_\_\_\_\_  
Location (Name and Address): \_\_\_\_\_  
Type of water consumed: \_\_\_\_\_  
Others also ill?: Yes . No Unknown  
(Explain): \_\_\_\_\_

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

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

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

Date/Time: \_\_\_\_\_  
Location (Name and Address): \_\_\_\_\_  
Type of water consumed: \_\_\_\_\_  
Others also ill?: Yes . No Unknown  
(Explain): \_\_\_\_\_

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

- Air conditioning at public places
- Vaporizers
- Misters
- Hot tub
- Creeks and/or ponds
- Other (Explain) \_\_\_\_\_
- Respiratory devices
- Humidifiers
- Whirlpool spas
- Spa baths
- Decorative fountains

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: \_\_\_\_\_

