BRUCELLOSIS

(Undulant fever, Mediterranean fever, Malta fever)

I. BRUCELLOSIS: DESCRIPTION AND EPIDEMIOLOGY

A. Overview

Brucella are gram-negative, facultative intracellular bacteria for which animals serve as the principal reservoir. Humans are infected through contact with tissues or ingestion of food products (e.g., unpasteurized milk products) from infected animals. *Brucella* spp. have variable host preference, and species that are known to cause disease in humans (i.e., brucellosis) include *Brucella melitensis (*goats and sheep), *B. abortus* (cattle), *B. suis* (swine), and very rarely *B. canis* (dogs) and *B. pinnepedalis* and *B. ceti* (marine mammals). Accidental infections secondary to exposure to vaccine strains may also occur and cause disease indistinguishable from zoonotic exposure. Brucellosis is endemic to the Middle East, Mediterranean, parts of Africa and Asia, Mexico, Central and South America.

Brucellosis is a systemic illness characterized by fever, night sweats, myalgias, and arthralgias. Patients may also present with weight loss, anorexia, headache, back pain, abdominal pain, and depression. Onset may be acute or insidiously evolve after several months to present as generalized illness or symptoms localized to any organ system.

From 1993 to 2010, 79 to 139 cases were reported annually to the U.S. Centers for Disease Control and Prevention (CDC), with the highest number of cases reported from California, Texas, Arizona, and Florida.

Brucella species are classified as select agents (i.e., have the potential to be used in acts of bioterrorism) as they can be aerosolized and have a low infectious dose of 10 to 100 organisms.

B. Brucellosis in California

From 2013 to 2019, there were between 20 to 38 confirmed and probable cases of brucellosis reported in California each year. Approximately 77.5% of cases occurred in Hispanic patients, and 13% in non-Hispanic whites. Annual incidences were highest among adults aged 75 to 84 years (0.2 per 100,000; 18 cases) and adults aged 65 to 74 years (0.1 per 100,000; 30 cases), compared to other age groups. Current epidemiologic data from brucellosis surveillance in California are available in the California Department of Public Health (CDPH) Infectious Diseases Branch (IDB) Yearly Summaries of Selected Communicable Diseases in California.

C. Symptoms

Symptoms of brucellosis are non-specific and may include intermittent fever, chills, arthralgias, and myalgias and may be abrupt or insidious in onset. Brucellosis infects the reticuloendothelial system and from there may seed other organ systems. Osteoarticular infections occur in 20 to 60% of patients, genitourinary complications

including epididymitis and orchitis in 2 to 20%, and neurobrucellosis in up to 3% of patients. While most infections are acute, chronic infections and relapses may also occur. Pregnant women with brucellosis are at risk for spontaneous abortion. With appropriate antimicrobial therapy, less than 1% of cases are fatal.

D. Diagnosis

Brucella bacteria may be isolated in culture from blood, bone marrow, or other tissue. *Brucella* bacteria are slow-growing, and cultures need to incubate for several weeks before a negative result can be reported. Brucellae in culture present a risk to laboratory workers because of a low infectious dose and ease of being aerosolized when manipulated outside of a biosafety cabinet. Therefore, it is important that the clinician notify the laboratory that brucellosis is suspected to ensure that full safety measures are implemented (e.g., working in a biosafety cabinet).

Early in infection when the concentration of circulating bacteria in the blood is higher, semiautomatic blood culture systems have demonstrated high sensitivity and shortened time to detection compared to manual methods. Later in the course of infection, prolonged incubation of culture bottles and performance of terminal subcultures may still be needed to isolate *Brucella* bacteria. Culture vials detected as positive still need to be processed in biosafety cabinets, and appropriate tests are still needed to identify *Brucella* from positive isolates.

Other modalities used for laboratory diagnosis include serologic testing and polymerase chain reaction (PCR). Serum agglutination assays (SAT) are the “gold standard” for serologic testing of acute brucellosis, though enzyme-linked immunoassays (ELISA) are more commonly available at commercial laboratories. ELISAs have sensitivities equal or superior to SATs, but because of a high degree of cross reactivity with other pathogens, ELISAs are less specific.

Of note, there are currently no commercially available assays that can reliably detect serum antibodies to *B. canis* or *Brucella* vaccine strains (RB51) in human patients.

E. Transmission

Brucellosis is most commonly transmitted via ingestion of contaminated food (e.g., undercooked meats, unpasteurized dairy products). Inhalation of aerosolized organisms or mucous membrane contact with infected tissues from animals (e.g., urine, placenta, blood) has also been recorded. Transmission of *Brucella* bacteria person to person has been rarely reported via in utero, transmammary, and sexual routes, and rarely

nosocomial transmission to healthcare providers who tended to infected patients and neonates in the periparturient period.

F. Incubation Period

The incubation period ranges from 2 weeks to 6 months, but subclinical or chronic infection may elude recognition and delay diagnosis for many months.

G. Clinical Management

Treatment of brucellosis should be managed in consultation with an infectious disease specialist. Treatment requires combination antibiotic therapy of 6 weeks or longer. Surgical drainage of focal abscess may also be required. Relapse occurs in up to 15% of cases secondary to sequestration of the organism. Of note, clinical antimicrobial regimens and post-exposure prophylaxis guidance is available in the CDC Brucellosis Reference Guide. Importantly, rifampin is ineffective against RB51 vaccine strain and therefore should not be used in prophylaxis or treatment of persons exposed to or infected with this vaccine strain. Tetracyclines are contraindicated in pregnancy and should be avoided in children under age 8.

Please see **Additional Resources** for links to treatment guidance, especially regarding laboratory exposures.

II. COUNCIL OF STATE AND TERRITORIAL EPIDEMIOLOGISTS (CSTE) SURVEILLANCE CASE DEFINITION Brucellosis (*Brucella* spp.) 2010

The CSTE case definition can be found on the CDC Surveillance Case Definition for Brucellosis webpage (https://ndc.services.cdc.gov/case-definitions/brucellosis-2010/).

CSTE Position Statement

09-ID-14 (https://cdn.ymaws.com/www.cste.org/resource/resmgr/PS/09-ID-14.pdf)

Clinical Description

An illness characterized by acute or insidious onset of fever and one or more of the following: night sweats, arthralgia, headache, fatigue, anorexia, myalgia, weight loss, arthritis/spondylitis, meningitis, or focal organ involvement (endocarditis, orchitis/epididymitis, hepatomegaly, splenomegaly).

Laboratory Criteria for Diagnosis

Definitive

- Culture and identification of *Brucella* spp. from clinical specimens

- Evidence of a fourfold or greater rise in *Brucella* antibody titer between acute- and convalescent-phase serum specimens obtained greater than or equal to 2 weeks apart

Presumptive

- *Brucella* total antibody titer of greater than or equal to 160 by standard tube agglutination test (SAT) or *Brucella* microagglutination test (BMAT) in one or more serum specimens obtained after onset of symptoms
- Detection of *Brucella* DNA in a clinical specimen by PCR assay

Case Classification

Probable

A clinically compatible illness with at least one of the following:

a. Epidemiologically linked to a confirmed human or animal brucellosis case
b. Presumptive laboratory evidence, but without definitive laboratory evidence of *Brucella* infection

Confirmed

A clinically compatible illness with definitive laboratory evidence of *Brucella* infection.

III. CASE SURVEILLANCE, INVESTIGATION, AND REPORTING

A. Purpose of Surveillance, and Investigation, and Reporting

- To assist in the identification and treatment of cases
- To identify persons exposed in clinical or laboratory settings and to provide assistance in determining post-exposure prophylaxis and monitoring
- To identify brucellosis outbreaks, including those resulting from intentional release (bioterrorism)
- To interrupt potential sources of ongoing transmission
- To detect and monitor epidemiologic trends
- To better understand the epidemiology of brucellosis in California and to use this information to refine interventions to decrease incidence in populations at elevated risk
- To educate people about how to reduce their risk of brucellosis

B. Local Health Department (LHD) General Case Investigation Recommendations

<u>General Brucellosis Investigation and Management</u>

- Clinical laboratories are required to report suspected positive brucellosis detection or isolation immediately to the appropriate Laboratory Response Network laboratory (LRN B). Healthcare providers are required to immediately report *Brucella* infections by telephone to their local health department. Begin investigation as soon as *Brucella* is reported from a clinical laboratory or healthcare provider.
- Please see **Section VII Summary of Action Steps** for more details.
- From each case-patient identified, complete the following actions:
    - Complete the case report form within CalREDIE and from the CalREDIE document repository (CDPH 8607), which collects food, travel, and activity information to identify possible sources and circumstances of exposure.
    - Ask about ill contacts or household members to identify possible cluster or outbreak.
    - Consider bioterrorism
        - *Brucella* spp. are potential bioterrorism agents; if multiple cases are identified who lack an epidemiologic link (shared food item, history of exposure to animals), consider the potential for a bioterrorism act, and follow appropriate local and state procedures.

Laboratory Follow-up and Management of Laboratory Exposures

- Following presumptive identification of *Brucella* spp. at the clinical laboratory, facilitate transport of the specimen to the appropriate LRN reference public health laboratory for confirmatory testing.
- *Brucella* spp. are easily aerosolized and only a small inoculum is needed to cause secondary infections.
- Therefore, public health follow-up with the facility where the case-patient was seen and treated, as well as with all clinical laboratories that handled the patient specimen, is necessary.
- Work with the facility infection preventionist or employee health to interview, identify, and advise potentially exposed persons, including laboratory personnel, on the need to monitor for signs and symptoms, potential serologic monitoring, and post-exposure prophylaxis (Please see **Appendix A Post-Exposure Prophylaxis and Monitoring**, adapted from the CDC Brucellosis Reference Guide).
- Persons who manipulate *Brucella* spp. in culture must wear appropriate personal protective equipment (PPE) and perform all activities within the biosafety cabinet.
- Determine what activities were performed that led to exposure and document and identify:
    - Persons in laboratory at time of exposures(s)
    - Where these persons were located within the lab and how and where the isolate was handled and stored
- Depending upon level of exposure (minimal but not zero risk, low risk, high risk), laboratory workers may require, respectively:
    - No follow up
    - Symptom watch

    - Symptom watch plus post-exposure prophylaxis and serologic monitoring
- For persons who require serologic monitoring following exposure, the LHD should ensure that specimens are routed to CDC and have the CDPH Microbial Diseases Laboratory (MDL) listed on the submission form (DASH form).
- If several workers are exposed at one laboratory, consider consulting with the laboratory regarding improved safety methods; MDL is available to assist/consult.

Please see **Appendix A** for details on post-exposure monitoring and **Appendix B Brucellosis Symptom Monitoring** adapted from the CDC Brucellosis Guide as a sample tool that may be used by occupational health during follow up monitoring appointments. Please note that should persons develop symptoms, they should be evaluated by a provider to determine next steps.

Management of Clinical Exposures

While clinical exposure is very rare, in some settings it may be appropriate to ask an infection preventionist at the hospital if any high-risk exposures might have occurred. In general, the risks to clinicians and direct care staff are low if standard precautions are followed. There may be increased risk to clinicians in performing higher risk activities that include handling of tissues with potentially high concentrations of *Brucella* organisms (e.g., placental tissues), or exposure to aerosolized organisms without appropriate personal protective equipment during aerosol-generating procedures such as high-pressure irrigation of a wound. If a concerning clinical exposure is identified, the facility should consult with their infection control program and consult with the LHD as necessary.

For veterinarians, animal shelter workers, or pet owners who may be in contact with dogs infected with *B. canis*, care should be taken to avoid unprotected contact with urine, feces, and reproductive fluids. If the dog requires hospitalization, veterinary staff should place the animal in isolation, wear gloves and a mask when handling the dog and excretions, and clean the exam room and other areas the dog had contact with appropriate disinfectants (e.g., 10% bleach). Please consult the CDPH IDB Guidance for *B. canis*.

Please see **Additional Resources** and the CDC Brucellosis Reference Guide for more information including how to characterize exposures (laboratory, clinical including surgical, and veterinary), how to monitor workers, and options for post-exposure prophylaxis. Additionally, this guide offers advice on prevention and monitoring for pregnant women, hunters, and persons at increased risk for foodborne brucellosis.

C. Local Health Department Reporting

Brucellosis is reportable in California by clinicians, laboratories, and local health officers by Title 17 California Code of Regulations (CCR) Sections 2500, 2502, and 2505.

- Enter the patient information into CalREDIE upon notification of the case by the clinical laboratory or healthcare provider; select “Brucellosis” as “Disease Being Reported”.

- For jurisdictions that do not submit via CalREDIE, i.e., extended data exchange jurisdictions (EDEJ), confidential morbidity report (CMR) and case report data must still be provided, including information requested in the CDPH brucellosis case report form (CDPH 8607); please report within one working day.
    - EDEJs may contact IDB for the brucellosis case report form (CDPH 8607) if needed.
- For CDPH Subject Matter Experts to adequately review and classify a brucellosis case, data for the following fields are required to be entered into the case record: the presence of clinically compatible symptoms, epidemiologic links to other confirmed or suspected cases, laboratory results including culture and PCR if available. For patients without acute and convalescent titers, case classification may be challenging. Efforts should be made to obtain reflex agglutination testing if an ELISA IgM is positive.
- If laboratory or other clinical exposures are identified, please report to CDPH the number of persons exposed, type of exposure, and type of monitoring/prophylaxis required.

D. Laboratory Considerations

Cultures presumptively identified as *Brucella* species should be referred to a LRN public health laboratory for confirmatory testing. The CDPH MDL High Risk Pathogens Section performs confirmatory LRN testing (culture and PCR).

In the event of laboratory or clinical exposure to *Brucella* spp., the CDC will perform *Brucella* serologic testing. CDPH MDL will provide guidance for submission of samples to CDC for *Brucella* serologic testing. Other laboratories including Los Angeles County Department of Public Health Laboratory and some commercial laboratories also perform *Brucella* serologic testing.

IV. CASE MANAGEMENT AND PUBLIC HEALTH CONTROL MEASURES

A. Management of Cases

There are no specific applicable sections within the CCR Title 17 guiding the management of cases of brucellosis. Standard infection prevention and contact precautions should be adopted when managing patients with draining wounds. Patients should be counseled on need to avoid and dispose of any extant unpasteurized products such as milk and cheese and to be mindful of the health risks posed by unpasteurized foods when traveling to endemic areas.

B. Management of Contacts

Given that person-to-person transmission is rare, most familial and social contacts of cases will not require follow up unless a foodborne source is suspected (e.g., imported

unpasteurized cheese) and was also potentially consumed by contacts. Please see **Section III** for more information on laboratory and clinical exposures.

C. Infection Control Measures

- Stress appropriate biosafety and personal protective equipment use in laboratory and clinical settings
- If common source identified, remove contaminated product or infected animal as applicable
- The patient does not need to be isolated

D. Special Situations

- Bioterrorism: Brucellosis is classified as a potential bioterrorism agent. The organism could be deliberately disseminated via contaminated food or aerosolized. CDPH should be immediately notified should bioterrorism be suspected via the emergency operations response plan approved pathways i.e., the California Office of Emergency Services Warning Center, the CDPH Duty Officer, or the Division of Communicable Disease Duty Officer.

V. APPLICABLE STATE STATUTES AND REGULATIONS

California Code of Regulations, Title 17, Public Health, Section 2500, 2502, 2505

- All outbreaks and individual cases of brucellosis are reportable in California immediately by phone.
- 2500: Healthcare providers are required to report suspected brucellosis cases immediately by phone.
- 2502: The Local Health Officer is required to report suspected brucellosis cases by telephone immediately by phone to CDPH.
- 2505: The laboratory is required to report to CDPH or to MDL suspected brucellosis cases within one working day.

VI. ADDITIONAL RESOURCES

General information and educational materials on brucellosis include:

- U.S. Centers for Disease Control and Prevention Brucellosis website
- California Department of Public Health Brucellosis webpage

- California Department of Public Health. Epidemiologic Summary of Brucellosis in California, 2013-2019. Updated January 2021. https://www.cdph.ca.gov/Programs/CID/DCDC/CDPH%20Document%20Library/BrucellosisEpiSummary2013-2019.pdf
- American Public Health Association. [Brucellosis]. In: Heymann, David L., ed. Control of Communicable Diseases Manual. 20th Ed. Washington, DC. American Public Health Association; 2015:78-81.
- Nicholas J. Bennett. Brucellosis. Medscape. April 22, 2021. Accessed October 19, 2021. Brucellosis: Background, Pathophysiology, Etiology (medscape.com)
- Detailed exposure and monitoring reference guide: Centers for Disease Control and Prevention. Brucellosis Reference Guide: Exposures, Testing and Prevention

VII. Summary of Actions Steps: Brucellosis

Action	Specific Steps
☐ Begin investigation as soon as *Brucella* spp. is reported from a clinical laboratory or healthcare provider.	• Review information in CDPH IDB Guidance and other resources as needed. • Coordinate routing of isolate to LRN laboratory for confirmatory testing. • Obtain and review clinical documentation and lab reports as applicable. • Contact patient for interview.
☐ Begin investigation into potential laboratory exposure immediately after a clinical or LRN laboratory reports a possible positive culture or PCR.	• If *Brucella* is identified in culture or via preliminary PCR, work with laboratory manager to determine if any workers were exposed. Please see **Appendix A**. • If persons exposed, ensure appropriate follow up with employee health for monitoring and post-exposure prophylaxis if needed. • Report those exposed to CDPH.
☐ Confirm case definition.	• **Confirmed case** must have the following laboratory confirmation: Positive culture or

Action	Specific Steps
	positive serology with a four-fold increase taken four weeks apart. • **Probable case** is only PCR positive or a positive brucella micgroagglutination titer >1:160.
☐ Attempt to identify source of exposure.	• Use the Brucellosis form in CalREDIE or the Brucellosis CRF (CDPH 8607) to guide your interview, or use the protocol set by your local health jurisdiction. • Include as many details that may trigger memory, such as travel out of country, and inform patients that they may be contacted again. • If patient appears to be part of a foodborne outbreak, follow your protocol for foodborne outbreak investigations; this should include notifying CDPH about the outbreak. • If no common food source identified, consider potential for BT event. CDPH should be notified immediately should a BT event be suspected.
☐ Report to CDPH; both confirmed and probable brucellosis cases must be reported.	• Create CalREDIE incident for Brucellosis. • Extended data exchange jurisdictions (EDEJ) must also complete the corresponding forms.

Appendix A. Post-Exposure Prophylaxis and Monitoring

(Adapted from CDC Brucellosis Reference Guide)

Classification: Minimal (not zero) risk

Specimen Handling	Exposure Scenario	PEP	Follow Up/ Monitoring
Routine clinical specimen (e.g., blood, serum, cerebrospinal fluid)	Person who manipulates a routine clinical specimen (e.g., blood, serum, cerebrospinal fluid) in a certified Class II biosafety cabinet, with appropriate personal protective equipment (i.e., gloves, gown, eye protection).	None	N/A ***
	Person present in the lab while someone manipulates a routine clinical specimen (e.g., blood, serum, cerebrospinal fluid) in a certified Class II biosafety cabinet, or on an open bench where manipulation did not involve occurrence of aerosol generating events (e.g., centrifuging without sealed carriers, vortexing, sonicating, spillage/splashes).		
Enriched material (e.g., a *Brucella* isolate, positive blood bottle) or reproductive clinical specimen (e.g., amniotic fluid, placental products)	Person who manipulates enriched material (e.g., a *Brucella* isolate, positive blood bottle) or reproductive clinical specimen (e.g., amniotic fluid, placental products) in a certified Class II biosafety cabinet, with appropriate personal protective equipment (i.e.,	None	N/A ***

Specimen Handling	Exposure Scenario	PEP	Follow Up/ Monitoring
	gloves, gown, eye protection).		
	Person present in the lab while someone manipulates enriched material (e.g., a *Brucella* isolate, positive blood bottle) or reproductive clinical specimen (e.g., amniotic fluid, placental products) in a certified Class II biosafety cabinet.		

*** May consider symptom watch for following scenarios:

- Person who manipulates a routine clinical specimen (e.g., blood, serum, cerebrospinal fluid) on an open bench with or **without appropriate personal protective equipment** (i.e., gloves, gown, eye protection), or in a certified Class II biosafety cabinet without appropriate personal protective equipment.
- Person present in the lab while someone manipulates a routine clinical specimen (e.g., blood, serum, cerebrospinal fluid) on an open bench, **resulting in occurrence** of aerosol-generating events (e.g., centrifuging without sealed carriers, vortexing, sonicating, spillage/splashes).

Classification: Low Risk

Specimen Handling	Exposure Scenario	PEP	Follow Up/ Monitoring
Enriched material (e.g., a *Brucella* isolate, positive blood bottle) or reproductive clinical specimen (e.g., amniotic fluid,	Person present in the lab at a distance of greater than 5 feet from someone manipulating enriched material (e.g., a *Brucella* isolate, positive blood bottle) or reproductive clinical specimen (e.g., amniotic fluid, placental products), on an open	May consider if immunocompromised or pregnant. Discuss with health care provider (HCP). Note: RB51 is resistant to rifampin in vitro, and therefore this drug should not	Regular symptom watch (e.g., weekly) and daily self-fever checks through 24 weeks postexposure, after last known exposure. Sequential serological monitoring at 0 (baseline), 6, 12, 18, and 24 weeks

Specimen Handling	Exposure Scenario	PEP	Follow Up/ Monitoring
placental products)	bench, with no occurrence of aerosol-generating events (e.g., centrifuging without sealed carriers, vortexing, sonicating, spillage/splashes)	be used for PEP or treatment courses.	post-exposure, after last known exposure. Note: no serological monitoring currently available for RB51 and *B. canis* exposures in humans

Classification: High Risk

Specimen Handling	Exposure Scenario	PEP	Follow Up/ Monitoring
Routine clinical specimen (e.g., blood, serum, cerebrospinal fluid)	Person who manipulates a routine clinical specimen (e.g., blood, serum, cerebrospinal fluid), resulting in contact with broken skin or mucous membranes, regardless of working in a certified Class II biosafety cabinet, with or without appropriate personal protective equipment (i.e., gloves, gown, eye protection).	Doxycycline 100mg twice daily, and rifampin 600 mg once daily, for three weeks. For patients with contraindications to doxycycline or rifampin: TMP-SMZ, in addition to another appropriate antimicrobial, should be considered. Two antimicrobials effective against *Brucella* should be given. Pregnant women should consult their obstetrician. Note: RB51 is resistant to rifampin in vitro, and therefore this drug should not	Regular symptom watch (e.g., weekly) and daily self-fever checks through 24 weeks post-exposure, after last known exposure. Sequential serological monitoring at 0 (baseline), 6, 12, 18, and 24 weeks post-exposure, after last known exposure. Note: no serological monitoring currently available for RB51 and *B. canis* exposures in humans.

Specimen Handling	Exposure Scenario	PEP	Follow Up/ Monitoring
		be used for PEP or treatment courses	
Enriched material (e.g., a *Brucella* isolate, positive blood bottle) or reproductive clinical specimen (e.g., amniotic fluid, placental products	Person who manipulates (or is ≤ 5 feet from someone manipulating) enriched material (e.g., a *Brucella* isolate, positive blood bottle) or reproductive clinical specimen (e.g., amniotic fluid, placental products), outside of a certified Class II biosafety cabinet		
	Person who manipulates enriched material (e.g., a *Brucella* isolate, positive blood bottle) or reproductive clinical specimen (e.g., amniotic fluid, placental products), within a certified Class II biosafety cabinet, without appropriate personal protective equipment (i.e., gloves, gown, eye protection)		
	All persons present during the occurrence of aerosol-generating events (e.g., centrifuging without sealed carriers, vortexing, sonicating,		

Specimen Handling	Exposure Scenario	PEP	Follow Up/ Monitoring
	spillage/splashes) with manipulation of enriched material (e.g., a *Brucella* isolate, positive blood bottle) or reproductive clinical specimen (e.g., amniotic fluid, placental products) on an open bench		

Appendix B. Brucellosis Symptom Monitoring (from CDC Brucellosis Reference Guide)

Date should indicate when employee is seen at Occupational Clinic/Employee Health. Place a check mark in a symptom box if an employee has experienced a specific symptom since the last time they were seen by Occupational Health.

Symptoms	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	Sympt Onset: **No**	Sympt Onset: **Unk**	Sympt Onset: **Date**
Fever (>100.4 F)																											
Sweats																											
Chills																											
More Fatigue/ tiredness than usual																											
Severe or persistent headache																											
Muscle aches																											
Joint pains																											
Unintended weight loss																											
Loss of appetite																											

Symptoms	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	**Date**	Sympt Onset: **No**	Sympt Onset: **Unk**	Sympt Onset: **Date**
Vomiting																											
Diarrhea																											
Other ___																											