Defense Health Agency ®
PUBLIC HEALTH

Communicable Disease Toolkit

for Armed Forces Reportable Medical Events

MAY 2024

Communicable Disease Toolkit

For Armed Forces Reportable Medical Events

Functional Proponent:
Defense Centers for Public Health
Defense Health Agency

May 2024

For further information, contact DRSi and Reportable Medical Event Help Desk:
DSN: 867-2377, COMM: 410-417-2377
Email: dha.apg.pub-health-a.mbx.disease-epidemiologyprogram13@health.mil

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Introduction

Communicable diseases pose a significant threat to both public health and military operations. Proper surveillance of illness and disease burden across the military population requires standardized data collection and entry of reportable medical events (RMEs) into the Disease Reporting Surveillance internet (DRSi).

All cases reported to the DRSi follow a case definition as defined in the 2022-Armed Forces Reportable Medical Events Guidelines and Case Definitions (AFRME) The AFRME includes information on the requirement to report, common terminology for RMEs, and what not to report and can be downloaded from https://health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines.

The Communicable Disease Toolkit (CDT) was developed to enhance the surveillance, reporting, and management of communicable diseases within the Department of Defense (DoD) population. It aims to standardize the approach to handling RMEs, ensuring timely and accurate data collection and reporting to protect public health and military readiness.

The purpose of the CDT is to serve as a standardized resource for public health professionals at military treatment facilities (MTFs), provide guidance with outbreak investigation, and aid in RME reporting and surveillance in line with DoD policy. For each RME, this toolkit includes: a standardized reference sheet with detailed information, including clinical and epidemiological data; a flowchart with information about the classification and reporting of cases in DRSi; and an investigation worksheet for the collection of detailed case information. The toolkit also has an Outbreak Investigation reference sheet and flowchart to guide case and contact investigations and ensure adherence to DoD policies.

The toolkit will be updated periodically and is available online to download from the DRSi Resources page at https://ph.health.mil/topics/healthsurv/de/Pages/DRSiResources.aspx and the Health Information Products e-Catalog at https://eph.health.mil/HIPECatalog/. If you choose to print this document, insert updates in the appropriate location and file the old version at the back of the book.

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A-C

PUBLIC HEALTH REFERENCE SHEET
Amebiasis

Name	*Entamoeba histolytica* (most common)
Reservoir & Transmission	Humans, usually a chronically ill or asymptomatic cyst passer Person-to-person or through ingestion of fecally-contaminated food or water containing cysts, which are relatively chlorine-resistant
Incubation Period	Variable, from a few days to several months or years; commonly 2–4 weeks
Symptoms	Most infections are asymptomatic and commensal, but some may be invasive and give rise to intestinal or extra-intestinal disease. Intestinal disease varies from acute or fulminating dysentery with fever, chills, and bloody or mucoid diarrhea (amebic dysentery), to mild abdominal discomfort with diarrhea containing blood or mucus, alternating with periods of constipation or remission.
Gold Standard Diagnostic Test	Microscopic demonstration of trophozoites or cysts in fresh or suitably preserved fecal specimens, smears of aspirates, scrapings obtained by proctoscopy, or aspirates of abscesses or sections of tissue Stool antigen-detection test for *E. histolytica* and *E. dispar*. Assays specific for *E. histolytica*, such as EIA and PCR, may require a reference laboratory. Serological tests, particularly immunodiffusion and ELISA in diagnosis of invasive disease in persons living in nonendemic areas
Geographic Significance	Present worldwide, particularly in parts of Africa, Asia, and Central and South America

What is amebiasis?
Amebiasis is an intestinal illness caused by a microscopic parasite called *Entamoeba histolytica*.

How is this amebiasis transmitted?
Most people get amebiasis by eating food or drinking water contaminated by *E. histolytica* or the feces of infected individuals and by consuming the parasite's eggs found on surfaces and fingers. Infected people are the only sources of the parasite. Fecal material from infected people may contaminate water or food, which may then cause spread to other people. Not all E. histolytica strains are equally virulent.

Who is at risk for amebiasis?
Anyone can get amebiasis, but it occurs more often in men who have sex with men as well as those immigrating from or inhabiting areas with poor sanitary conditions, especially tropical or subtropical regions and developmental disability institutions.

What are signs and symptoms of amebiasis?
People exposed to this parasite may experience mild or severe symptoms or no symptoms at all. Fortunately, most infected people do not become seriously ill. Only about 10% to 20% of people who are infected with *E. histolytica* become sick from the infection. The symptoms of amebiasis include diarrhea (that may be bloody), amebic dysentery (diarrhea with visible blood and mucus in stools), nausea, weight loss, abdominal tenderness, stomach cramps, and occasional fever. Rarely, the parasite will invade the body beyond the intestines and cause a more serious infection, such as a liver abscess. In a small number of instances, it has been shown to spread to other parts of the body, such as the lungs or brain, but this is very uncommon. The symptoms may appear from a few days to a few months after exposure but

usually within 2 to 4 weeks. Some people with amebiasis may carry the parasite for weeks to years, often without symptoms.

What are potential complications of amebiasis?
Amebic granuloma (ameboma), sometimes mistaken for carcinoma, may occur in the wall of the large intestine in patients with intermittent dysentery or colitis of long duration. Dissemination through the bloodstream may occur and produce abscesses of the liver and, less commonly, of the lung or brain. Painful ulceration of the skin is a rare manifestation that can occur anywhere, but most commonly in the perianal and genital regions, usually in association with amebic dysentery.

How is amebiasis diagnosed?
Examination of stool samples under a microscope is the most common way to diagnose amebiasis. Sometimes, several stool samples must be obtained because the number of amoeba found in the stool changes from day-to-day. If the infection may have spread to other organs, a blood test is recommended. Other diagnostic tests include stool antigen testing and stool PCR.

How is amebiasis treated?
The treatment regimen will depend on if the patient is symptomatic or asymptomatic, and if any complications have manifested. Symptomatic amebiasis should be treated with a systemically active compound, such as metronidazole, tinidazole, ornidazole, or secnidazole, followed by a luminal amebicide to eliminate any surviving organisms in the colon. A follow-up stool examination is recommended after completion of therapy to rule out cyst carriage.

How can amebiasis be prevented?
Household members and other suspected contacts should have adequate microscopic examination of feces and be treated if results are positive for *E. histolytica*. Adequate handwashing after defecation, sanitary disposal of feces, and treatment of drinking water will control the spread of infection. The use of condoms and avoidance of sexual practices that permit fecal-oral contact can control sexual transmission. Persons diagnosed with amebiasis should refrain from using recreational water venues until treatment with a luminal drug is completed and any diarrhea has resolved. Cysts are killed by desiccation, by temperatures above 50°C (122°F), and by irradiation. Water of undetermined quality can be made safe by boiling for 1 minute (at altitudes >6,562 ft or 2,000 m, water should be boiled for 3 minutes). Chlorination of water as generally practiced in municipal water treatment does not always kill cysts. The most effective treatment of small quantities of water is achieved using portable filters with an absolute pore size of 1.0 mm or less.

What are some public health considerations?
- Document the anatomical site of infection (intestines, liver, lung, brain, etc.).
- Document relevant travel and deployment history occurring within the incubation period.
- Microscopic test from stool reported as positive for *Entamoeba histolytica* and *Entamoeba dispar* should only be reported as probable if trophozoites with ingested red blood cells are seen.
- Generally, it is not necessary to exclude an infected person from work or school. Casual contact at such locations is unlikely to transmit the disease, provided that infected persons carefully wash their hands after using the toilet.

References:

PUBLIC HEALTH REFERENCE SHEET
Amebiasis

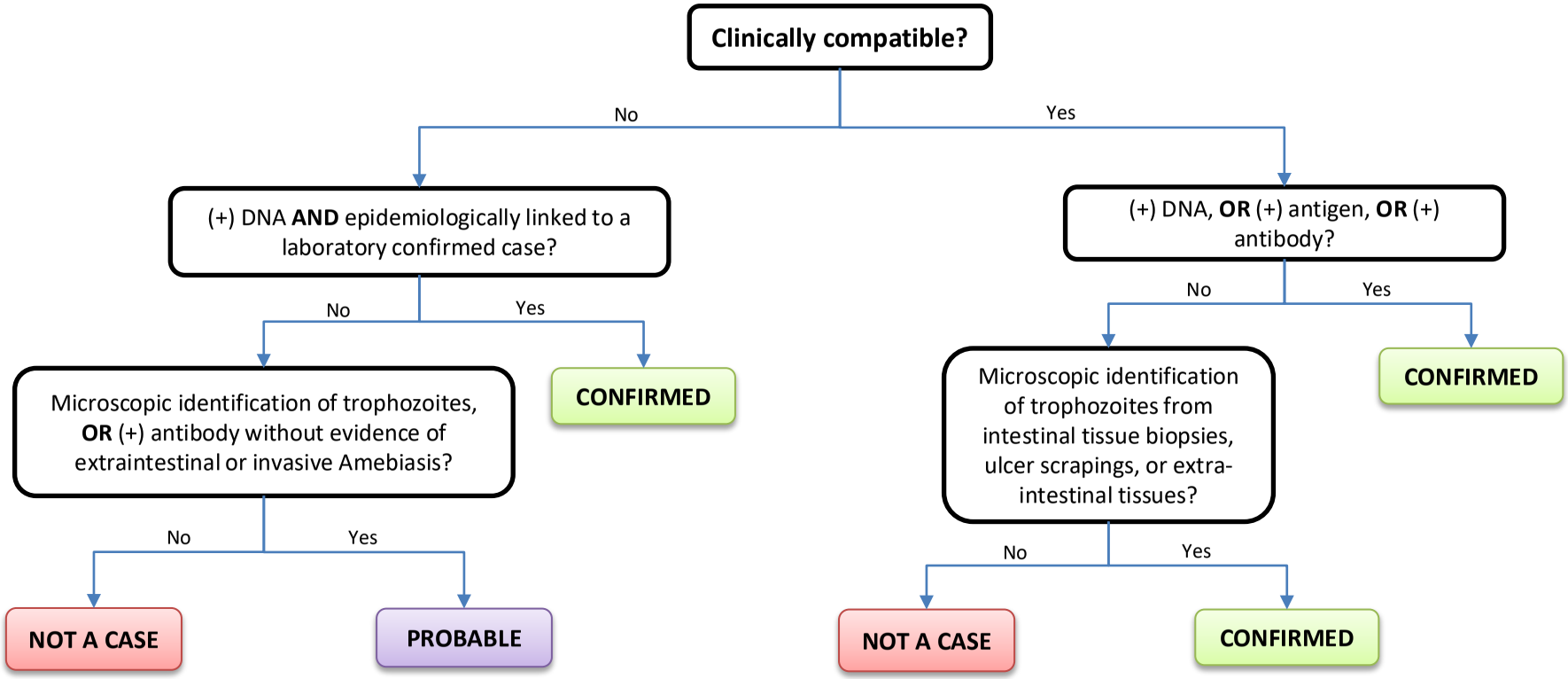
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Parasites – Amebiasis – *Entamoeba histolytica* Infection," Centers for Disease Control and Prevention (CDC), last reviewed December 3, 2021. https://www.cdc.gov/parasites/amebiasis/index.html.

Last Updated September 1, 2023

Amebiasis



Clinical Description:
An illness caused by infection of the large intestine that is characterized by symptoms ranging from mild, chronic diarrhea to severe and sudden onset diarrhea containing mucus, blood, or both. Extraintestinal or invasive infections can also occur and may present as an acute abscess in the liver, lung, brain, or other organs. A granulomatous lesion in the intestine may be discovered on rare occasion.

Critical Reporting Elements and Comments:
- Document the anatomical site of infection (intestines, liver, lung, brain, etc.).
- Document relevant travel and deployment history occurring within the incubation period (incubation period can vary from a few days to several months or years; commonly 2–4 weeks).
- Microscopic test from stool reported as positive for *Entamoeba histolytica* and *Entamoeba dispar* should only be reported as probable if trophozoites with ingested red blood cells are seen.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Amebiasis

Confirmed ○ Probable ○ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ Unk)
Diarrhea	☐	☐	
Loose stools	☐	☐	
Stomach pain	☐	☐	
Cramping	☐	☐	
Bloody stools	☐	☐	

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

Treated with anti-parasitics? Y ☐ N ☐

Type of anti-parasitics	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

(If yes) **Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation period: Variable, from a few days to several months or years; commonly 2–4 weeks.

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Anthrax

Name	*Bacillus anthracis*
Reservoir & Transmission	Soil, domestic and wild animals cutaneous, inhalation, ingestion, or injection of spores found infected animal parts, biting and non-biting flies
Incubation Period	Cutaneous: 2–6 days, range 1–12 days Inhalation: 1–43 days, up to 8 weeks after exposure Ingestion (Gastrointestinal or Oropharyngeal): 1–6 days Injection: 1–10 days Meningeal: unknown
Common Symptoms	Depends on type of disease (see below)
Gold Standard Diagnostic Test	Culturing *B. anthracis* from clinical specimens (including blood cultures), before starting antibiotic or antitoxin therapy
Risk Groups	Veterinarians, workers involved in industrial processing of hide, wool, or bone; agricultural and wildlife; emergency response
Geographic Significance	Most common in Central and South America, sub-Saharan Africa, Central and Southwestern Asia, and Southern and Eastern Europe

What is anthrax?
Anthrax is a serious disease caused by a spore-forming, gram-positive, rod-shaped bacteria, *Bacillus anthracis.* The bacterium exists in nature in two forms: as a dormant spore or an active growing cell (vegetative form). The spores are tolerant to extremes of temperature, humidity, and ultraviolet light, and survive for up to decades in the environment without nutrients or water. When a spore enters a mammal host, the internal environment of the host—rich in water, sugars, and amino acids—induces that spore to germinate into a vegetative cell that leads to disease. Anthrax is a Category A Bioterrorism agent/disease.

Clinical forms of anthrax include 1) Cutaneous (skin), 2) Inhalation (lung), 3) Ingestion (gastrointestinal or oropharyngeal), 4) Injection (i.e., heroin drug use), and 5) Meningeal.

What is the occurrence of anthrax?
Anthrax is rare in the United States where livestock are vaccinated but does occur in wild and domestic grazing animals like cattle or deer.

How is anthrax transmitted?
Anthrax is not contagious; it is not known to spread from one person to another. Humans can become infected with anthrax when spores enter the body. Spores that enter the body can be activated and become anthrax bacteria, which can multiply and spread in the body, produce toxins, and cause severe illness. For all clinical forms of anthrax, symptoms can appear within 7 days of contact with the spore. For inhalation anthrax, symptoms can appear up to 2 months later.

- Cutaneous Anthrax: spores enter a cut or scrape in the skin (handling contaminated animal products; could occur with an intentional aerosol attack with *B. anthracis*). Cutaneous Anthrax is the most common and considered least dangerous form of anthrax infection. With early antibiotic treatment, most cases are cured. Without treatment, case fatality rate is 5%–20%.

PUBLIC HEALTH REFERENCE SHEET
Anthrax

- Inhalation Anthrax: breathing in spores (during industrial processing of contaminated wool, animal hide or hair; of most concern following an intentional aerosol attack (bioterrorist release) with *B. anthracis*). Inhalation Anthrax is the deadliest form of anthrax infection. With appropriate treatment, about 50% of cases survive. Without treatment, case fatality rate greater than 85%.

- Ingestion Anthrax: eating food or drinking water that is contaminated with vegetative bacteria (raw or undercooked meat from infected animals) more so than aerosolized spores; with treatment, 60% of cases survive; case fatality rate is estimated at 40%. There are 2 subtypes:
    - Gastrointestinal (when anthrax spores germinate in the lower gastrointestinal tract)
    - Oropharyngeal (when anthrax spores germinate in the oropharynx)

- Injection Anthrax: injecting drugs (reported in heroin users). An Injection Anthrax infection may be deep under the skin or in the muscle and spread throughout the body faster and be harder to recognize and treat. Case fatality rate is 20–30%.

- Meningeal: may be a primary manifestation or may complicate any form of anthrax. Most patients with anthrax meningitis have cerebral spinal fluid (CSF) abnormalities consistent with bacterial meningitis, and the CSF is often described as hemorrhagic.

What are the signs and symptoms of anthrax?
Signs of systemic involvement from the dissemination of either the bacteria and/or its toxins can occur with all types of anthrax and include fever or hypothermia, tachycardia, tachypnea, hypotension, and leukocytosis. One or more of these signs are usually present in patients with inhalation anthrax, ingestion anthrax, and injection anthrax and may be present in up to a third of patients with cutaneous anthrax.

- Cutaneous Anthrax: a group of painless small blisters or bumps that may itch and develop into a painless ulcer with a depressed black center (eschar), swelling around the sore. Sores are most often on the face, neck, arms, or hand.

- Inhalation Anthrax: biphasic illness with initial fever, headache, muscle aches, fatigue, mild cough, or chest pain. If untreated, over 3–4 days, disease progresses to respiratory distress, shortness of breath, hypoxemia, cyanosis, diaphoresis, and shock. X-ray evidence of mediastinal widening is present in the majority of cases, and pulmonary infiltrates or pleural effusions are usually observed.

- Ingestion Anthrax: fewer specific symptoms such as fever, fatigue, and headache are common. Cervical lymphadenopathy, altered mental status, and ascites may be observed.
    - Gastrointestinal: initial symptoms nausea and vomiting. May progress rapidly to bloody diarrhea, abdominal pain, swelling of abdomen and shock.
    - Oropharyngeal: fever, ulcers in the back of the mouth and throat, severe sore throat, difficulty or painful swallowing, hoarseness, and swelling of neck or lymph nodes.

- Injection Anthrax: Inflammation or abscess at the injection site may progress to cellulitis or necrotizing fasciitis, or to sepsis without extensive local infection. Fever is not a prominent feature, and pain is less severe than with other serious soft tissue infections. Compartment syndrome may be present. Not all cases have localized injection-related lesions; some cases

presented with features more typical of systemic anthrax infection, including hemorrhagic meningitis and multiorgan failure and coagulopathy.

- Meningeal Anthrax: Primary symptoms include fever, headache (often severe), nausea, vomiting, fatigue. Meningeal signs include altered mental status and other neurological signs (e.g., seizures, focal signs).

How is anthrax diagnosed?
Cutaneous, inhalation, ingestion, and meningeal anthrax can be diagnosed using a combination of microbiology and pathology testing methods. Specimens should be collected for any patient with symptoms compatible with anthrax, with or without a confirmed epidemiological link to a known or high-risk exposure.

Prior to sending specimens, consult with the state health department and contact the Centers for Disease Control and Prevention (CDC) Emergency Operations Center: **call 1-770-488-7100** for an anthrax testing consultation.

How is anthrax treated?
Antibiotics and antitoxins can treat all clinical forms of anthrax. The antibiotics ciprofloxacin or doxycycline can prevent anthrax from developing in people who have been exposed but have not developed symptoms.

Emergency Use Instructions for antibiotic post-exposure prophylaxis of anthrax:
Ciprofloxacin: https://www.cdc.gov/anthrax/public-health/cipro-eui-hcp.html
Doxycycline: https://www.cdc.gov/anthrax/public-health/doxy-eui-hcp.html

Antitoxin may be used after anthrax toxins have been released in the body.

How can anthrax be prevented?
The licensed anthrax vaccine (Anthrax Vaccine Absorbed) helps protect people from anthrax and can help prevent anthrax from developing in people who have been exposed but have not developed symptoms. https://www.cdc.gov/vaccines/vpd/anthrax/hcp/recommendations.html

Pre-exposure anthrax vaccination: recommended for three groups of adults 18–65 years of age who may be at risk for occupational exposure to anthrax, which include laboratory workers who work with anthrax, individuals who handle infected animals, certain U.S. military personnel.

Post-exposure anthrax vaccination: recommended for previously unvaccinated people 18 years or older who have been exposed to aerosolized *Bacillus anthracis* spores.

Bioterrorism: Considerations for anthrax vaccine adsorbed (AVA) post-exposure prioritization final at https://www.cdc.gov/anthrax/pdf/ava-post-event-prioritization-guidance.pdf.

What are some public health considerations?
- Specify the clinical form(s) of the disease.
- Document the anatomical site of infection.
- Document the source of infection if known.
- Note the patient's anthrax immunization history.

PUBLIC HEALTH REFERENCE SHEET
Anthrax

Bioterrorism: Anthrax can be weaponized. In 2001, anthrax was deliberately spread through the U.S. postal system in letters containing anthrax powder. *Bacillus anthracis* is a Tier 1 agent that presents the greatest risk of deliberate misuse with significant potential for mass casualties or devastating effect to the economy, critical infrastructure, or public confidence and poses a severe threat to public health and safety.

References:

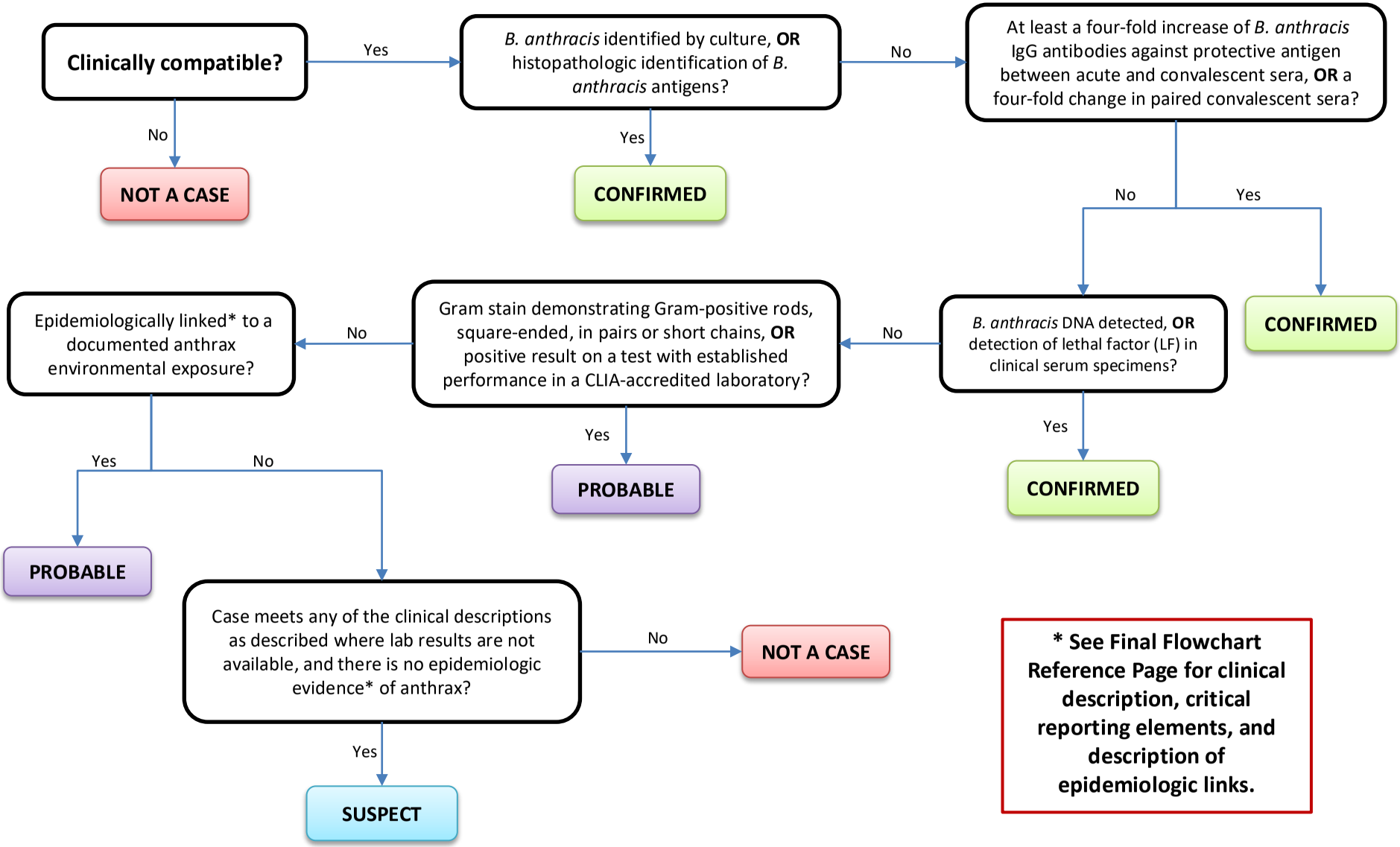
"Anthrax," Centers for Disease Control and Prevention. last reviewed November 20, 2020. https://www.cdc.gov/anthrax/

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

Last Updated September 1, 2023

Anthrax



*** See Final Flowchart Reference Page for clinical description, critical reporting elements, and description of epidemiologic links.**

Anthrax

Clinical Description, Epidemiologic Linkage, and Critical Reporting Elements

Clinical Description:

Anthrax presents with an acute onset illness with at least one of the following:

- An illness with at least one specific OR two non-specific symptoms and signs that are compatible with cutaneous, ingestion, inhalation, or injection anthrax; systemic involvement; or anthrax meningitis
- A death of unknown cause AND organ involvement consistent with anthrax

There are several distinct clinical forms including the following:

Cutaneous: A painless skin lesion evolving during a period of 2–6 days from a papule, through a vesicular stage, to a depressed black eschar surrounded by edema. Fever, malaise, and lymphadenopathy may also be present.

Inhalation: Symptoms resembling a viral respiratory illness, followed by hypoxia, dyspnea, or acute respiratory distress with resulting cyanosis and shock. Radiographic evidence of mediastinal widening or pleural effusion is common in later stages of illness.

Injection: Severe soft tissue infection that appears like a significant edema or bruising after an injection. No eschar or pain is associated. Symptoms may also include fever, shortness of breath, or nausea.

Ingestion: Presents as two subtypes -

Gastrointestinal: Severe abdominal pain and tenderness, nausea, vomiting or vomiting of blood, bloody diarrhea, fever, abdominal swelling, loss of appetite, and possibly septicemia.

Oropharyngeal: A painless mucosal lesion in the oral cavity or oropharynx with pharyngitis, swollen lymph nodes in the neck, edema, fever, and possibly septicemia.

Meningeal: May complicate any form of anthrax or may be a primary manifestation. Symptoms include fever, headache (often severe), nausea, vomiting, fatigue, meningeal signs, altered mental status, and other neurological signs such as seizures or focal signs are usually present. Most patients with anthrax meningitis have cerebral spinal fluid abnormalities consistent with bacterial meningitis.

Epidemiologic linkage:

- Exposure to environment, food, animal, materials, or objects that is suspect or confirmed to be contaminated with B. anthracis;
- Exposure to the same environment, food, animal, materials, or objects as another person who has laboratory-confirmed anthrax;
- Consumption of the same food as another person who has laboratory-confirmed anthrax.

Critical Reporting Elements and Comments:

- Specify the clinical form(s) of the disease.
- Document the anatomical site of infection.
- Document the source of infection, if known.
- Note the patient's anthrax immunization history.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Anthrax

Confirmed ○ Probable ○ Suspect ○ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N		
Hospitalized	☐	☐	**Admit date:** ____/_____/_____	**Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____	**Cause of death:** _____

	Y	N				
Symptomatic	☐	☐	**Onset date:** ____/_____/_____		**Clinic date:** _____/_____/_____	**Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)			
Chills	☐	☐	**Headache**	☐	☐	
Chest discomfort	☐	☐	**Sweats**	☐	☐	
Shortness of breath	☐	☐	**Fatigue**	☐	☐	
Confusion	☐	☐	**Body aches**	☐	☐	
Blisters	☐	☐	**Nausea**	☐	☐	
Painless skin sore	☐	☐	**Diarrhea**	☐	☐	
Cough	☐	☐	**Stomach pain**	☐	☐	
Swelling of abdomen	☐	☐	**Fainting**	☐	☐	

Anatomical site of infection: _____

Source of infection: _____

Anthrax immunization history

Please specify the clinical form of Anthrax:

- ☐ **Cutaneous**
- ☐ **Inhalation**
- ☐ **Injection**
- ☐ **Ingestion**
- ☐ **Gastrointestinal**
- ☐ **Oropharyngeal/ Meningeal**

TREATMENT

Treated with antibiotics? Y ☐ N ☐ **Treated with antitoxins?** Y ☐ N ☐

Type of antibiotic or antitoxin	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: cutaneous anthrax 5–7 days, with a range of 1–12 days, inhalation anthrax ranges 1–43 days, gastrointestinal anthrax ranges 1–6 days, injection anthrax ranges 1–10 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Arboviral Diseases

****Includes mosquito-borne and tick-borne diseases****

Name	INCLUDES: West Nile fever, West Nile encephalitis, Japanese encephalitis, and other mosquito-borne viruses (western equine encephalitis, eastern equine encephalitis, St. Louis encephalitis, California virus encephalitis), tick-borne viruses (Powassan virus, tick-born encephalitis, Colorado tick fever), and others EXCLUDES: chikungunya virus, dengue virus, Lyme disease, relapsing fever, Rift Valley fever, spotted fever rickettsiosis, yellow fever virus, and Zika virus. See respective case definitions
Reservoir & Transmission	The viruses are maintained through an enzoonotic cycle between mosquitos and amplifying vertebrate hosts, primarily birds. Several species of mosquito can transmit the viruses.
Incubation Periods	2–14 days for mosquito-borne viruses • West Nile: most often 2–6 days, ranges up to 2–14 days, and up to 21 days in immunocompromised people • JE: 5–15 days • WEE: 5–15 days • EEE: 4–10 days • SLE: 5–15 days • CE: 3–7 days
Common Symptoms	Depends on type
Gold Standard Diagnostic Test	May require specialized testing
Risk Groups	Depends on type
Geographic Significance	Some types in specific geographic regions, others present worldwide

Name	**Tick-borne diseases:** • Powassan virus (PV) • Tick-borne encephalitis (TBE) • Colorado tick fever virus
Reservoir & Transmission	Reservoir: Enzoonotic cycle between white-footed mice and *Ixodae* ticks Transmission: Through the bite of an infected tick, most commonly *Ixodes scapularis* or the black-legged tick. Humans are considered 'dead end hosts' and cannot spread the virus to other humans or to ticks. Transmission of TBE can occur following consumption of raw milk from infected goats, sheep, or cows. Infection of mother to fetus is possible.

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PUBLIC HEALTH REFERENCE SHEET
Arboviral Diseases

Incubation Period	3–4 days for tick-borne viruses • PV: 7–30 days • TBE: 7–14 days (shorter exposure in milk-borne exposure)
Common Symptoms	PV: Many are asymptomatic; symptoms may include: fever, headache, vomiting, weakness, confusion, loss of coordination, speech difficulties, and seizures. Approx. 50% of cases have permanent neurological symptoms; approx. 10% of virus encephalitis cases are fatal. TBE: fever, malaise, anorexia, muscle aches, headache, nausea, and/or vomiting; second phase may occur with symptoms involving central nervous system (e.g., fever, headache, stiff neck), encephalitis, or meningoencephalitis
Gold Standard Diagnostic Test	• PV: Serologic testing with virus-specific IgM antibody in serum or CSF combined with a consistent clinical presentation in an endemic area • TBE: ▪ Phase 1: Leukopenia, thrombocytopenia, elevated liver enzymes ▪ Phase 2: Increase in white blood cells and CSF; IgM from serum or CSF
Risk Groups	Anyone with exposure to ticks in endemic areas
Geographic Significance	Northeastern and Great Lakes regions of the U.S. during late spring, early summer, and mid-fall

What are arboviral diseases?
Arboviral disease (arthropod-borne viruses) is a general term used to describe infections caused by a group of viruses spread to people by the bite of infected arthropods (mosquitoes, ticks, sandflies, biting midges). The virus families responsible for most arboviral infections in humans are *Bunyaviridae, Flaviviridae, Reoviridae*, and *Togaviridae*. More than 100 arboviruses are known to cause human disease.

Arboviral diseases include West Nile fever, West Nile encephalitis, Japanese encephalitis, and other mosquito-borne viruses (western equine encephalitis, eastern equine encephalitis, St. Louis encephalitis, California virus encephalitis), tick-borne viruses (Powassan virus, tick-borne encephalitis, Colorado tick fever).

Other diseases spread by infected arthropods that are not arboviral diseases include chikungunya virus, dengue virus, Lyme disease, relapsing fever, Rift Valley fever, spotted fever rickettsiosis, yellow fever virus, and Zika virus.

What is the occurrence of arboviral infections?
West Nile virus (WNV), transmitted primarily through mosquitos, is the leading cause of arboviral disease in the continental United States, but other arboviruses cause sporadic cases of neuroinvasive disease (Fagre et al., 2023). From the 2021 surveillance data reported to Centers for Disease Control and Prevention (CDC) by U.S. jurisdictions for nationally notifiable arboviruses, 49 States and the District of Columbia reported 3,035 cases of domestic arboviral disease, including those caused by West Nile (2,911), La Crosse (40), Jamestown Canyon (32), Powassan (24), St. Louis encephalitis (17), unspecified California serogroup (6), and eastern

equine encephalitis (5) viruses. Among the WNV disease cases, 2,008 (69%) were classified as neuroinvasive disease, for a national incidence of 0.61 cases per 100,000 population (Fagre et al., 2023). Epidemiological and environmental surveillance for arboviruses is facilitated by ArboNET, the national arbovirus surveillance system.
https://www.cdc.gov/mosquitoes/mosquito-control/professionals/ArboNET.html

How are arboviral infections transmitted?
Arboviral infections are transmitted through the bite of infected arthropods (mosquitoes, ticks, sandflies, biting midges). Rare transmission may occur by blood transfusion, organ transplantation, sexual contact, and from mother to child during birth depending on the specific virus involved. In the laboratory setting, percutaneous and aerosol transmission can occur.

Who is at risk for arboviral infections?
Risk of infection is generally determined by exposure to infected vectors and is dependent on many factors including environmental conditions, seasons, and human activities. Illness occurs mainly in children, visitors, or people new to an endemic area.

What are the signs and symptoms of arboviral infections?
Most infections are subclinical. Symptomatic illness usually manifests as 1 of 4 primary clinical syndromes: systemic febrile illness; polyarthritis and rash; acute central nervous system disease; or hemorrhagic fever. Many arboviral infections can have more than one primary clinical syndrome. Symptoms range from mild febrile illness to severe encephalitis (see Table 1).

For disease reporting, arboviral infections are categorized into two clinical presentations:

Non-neuroinvasive disease

- Fever (chills) as reported by the patient or a healthcare provider, **AND**
- Absence of neuroinvasive disease, **AND**
- Absence of a more likely clinical explanation. Other clinically compatible symptoms of arbovirus disease include headache, myalgia, rash, arthralgia, vertigo, vomiting, paresis, and/or nuchal rigidity.

Neuroinvasive disease

- Meningitis, encephalitis, acute flaccid paralysis, or other acute signs of central or peripheral neurologic dysfunction, as documented by a physician, AND
- Absence of a more likely clinical explanation. Other clinically compatible symptoms of arbovirus disease include headache, myalgia, rash, arthralgia, vertigo, vomiting, paresis, and/or nuchal rigidity.

What are potential complications of arboviral infections?
Arboviruses can cause multiple neurological diseases, including myelitis, neuritis, myositis, meningitis, and encephalitis (Mangat and Louiew, 2023). Mortality rates related to these infections increase with the diagnosis of encephalitis (Mangat and Louie, 2023).

How are arboviral infections diagnosed?
Arboviral infections that cause a febrile syndrome are most often confirmed by measurement of virus-specific antibody in serum; neuroinvasive arboviral infections are confirmed in cerebrospinal fluid. Acute-phase specimens should be tested for virus-specific immunoglobulin

class M (IgM) antibody. Serum IgG antibody generally is detectable shortly after IgM and persists for years.

How are arboviral infections treated?
Symptomatic management includes treatment with analgesics and antipyretics. Avoid further mosquito or sandfly exposure for a few days after the onset of symptoms.

How can arboviral infections be prevented?
Infection with an arbovirus may provide immunity to that specific virus and perhaps to related viruses. In highly endemic areas, adults may acquire natural immunity following subclinical or mild infection in childhood.

Primary prevention of arboviral diseases involves both vector control and personal protective measures. For infection control, standard precautions are sufficient. To prevent transfusion associated transmission, defer blood donations for 6 months, especially from patients infected with Colorado tick fever virus. A vaccine for Japanese Encephalitis, JE-VC (IXIARO®), is the only FDA-approved vaccine for JE prevention available in the U.S. and may be required for Service members and other DoD beneficiaries stationed or traveling to endemic areas per Combatant Command (CCMD), USINDOPACOM, Force Health Protection requirements. A U.S. Food and Drug Administration approved tick-borne encephalitis (TBE) vaccine is available for use in the United States for travelers at risk for exposure in endemic areas; there is no specific CCMD recommendation or requirement for the TBE vaccine. However, according to the Health Affairs Memorandum, Tick-Borne Encephalitis Vaccination, dated 11 January 2023, TBE is endemic in several central, northern, and eastern European countries, with the highest incidence of disease historically found in the Baltic and central European countries. All DoD military medical treatment facilities (MTFs) will make the U.S. FDA-approved TBE vaccine available within the MTF for all eligible beneficiaries for whom vaccination is indicated based on official or non-official travel to affected areas and for any DoD Civilian employees who are engaging in official travel to such areas, according to current CDC guidelines.

How are some public health considerations?
- For DRSi:
  - **INCLUDES**: West Nile fever, West Nile encephalitis, Japanese encephalitis, Western Equine encephalitis, and other mosquito-borne viruses (western equine encephalitis, eastern equine encephalitis, St. Louis encephalitis, California virus encephalitis) and tick-borne viruses (Powassan virus, tick-borne encephalitis, Colorado tick fever) and others
  - **EXCLUDES**: chikungunya virus, dengue virus, Lyme disease, relapsing fever, Rift Valley fever, spotted fever rickettsiosis, yellow fever virus, and Zika virus (see respective case definitions)
- Specify the etiologic/causative agent.
- Document relevant travel and deployment history occurring within the incubation period.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Note the patient's disease specific immunization history.
- Check with the local civilian health department to know if they have implemented arboviral version 1, series HL7 case notifications to the National Notifiable Diseases Surveillance System (NNDSS). https://www.cdc.gov/nndss/trc/onboarding/arboviral.html

- The state health department may submit specimens to the CDC's Division of Vector-Borne Diseases (DVBD) Arbovirus Diagnostic Laboratory, which includes the Arboviral Diseases Branch (ADB) and the Arbovirus Reference Collection (ARC). They provide reagents to public health laboratories for arbovirus diagnostics for which no commercial assays are available. The collection also serves as an arbovirus repository for reference strains. https://www.cdc.gov/ncezid/dvbd/specimensub/arboviral-shipping.html; https://www.cdc.gov/ncezid/dvbd/specimensub/arc/

References

"Arbovirus," Centers for Disease Control and Prevention (CDC), last reviewed October 26, 2023. https://www.cdc.gov/ncezid/dvbd/specimensub/arc/

ArboNET National Arbovirus Surveillance System, last reviewed June 16, 2023. https://www.cdc.gov/mosquitoes/mosquito-control/professionals/ArboNET.html

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Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

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PUBLIC HEALTH REFERENCE SHEET
Arboviral Diseases

Table 1. Description of Arboviruses

Disease	Vector(s)	Common Symptoms	Incubation Period	Duration of Symptoms	Geographic Distribution	Does Infection Provide Lifelong Immunity?
California virus Encephalitis	Aedes species of mosquito, primarily *Aedes melanimon*	Fever, chills, nausea, vomiting, headache, lethargy, abdominal pain, may lead to encephalitis	3–7 days	10–14 days	USA and Canada. In U.S., primarily in midwest States	Unk
Eastern Equine Encephalitis	Mosquito; Culiseta melanura; some *Aedes* species*; Coquillettidia,* and *Culex* species	Asymptomatic for some; chills, fever, malaise, arthralgia, and myalgia. Death occurs in 1/3 of cases 2–10 days after onset.	4–10 days	7–14 days	North and South America. In U.S., mostly in States along Mississippi and along the east coast	Yes
Japanese Encephalitis	*Culex* mosquitoes*,* especially *Culex tritaeniorhynchus*	Asymptomatic in most cases; fever, headache, fatigue, nausea, and vomiting	5–15 days		Southeast and East Asia	Yes
Powassan Virus disease	Tick; *Ixodes* species*,* primarily *Ixodes cookei* and *Ixodes scapularis* in North America; *Ixodes persulcatus* and *Haemaphysalis longicornis* in Russia	Asymptomatic most cases; fever, headache, vomiting, weakness, confusion, loss of coordination, speech difficulties, and seizures	7–30 days	May lead to permanent neurological symptoms	Canada, USA, Russia. In U.S., mostly in Minnesota and Wisconsin and in northeastern States north of North Carolina	Unk

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PUBLIC HEALTH REFERENCE SHEET
Arboviral Diseases

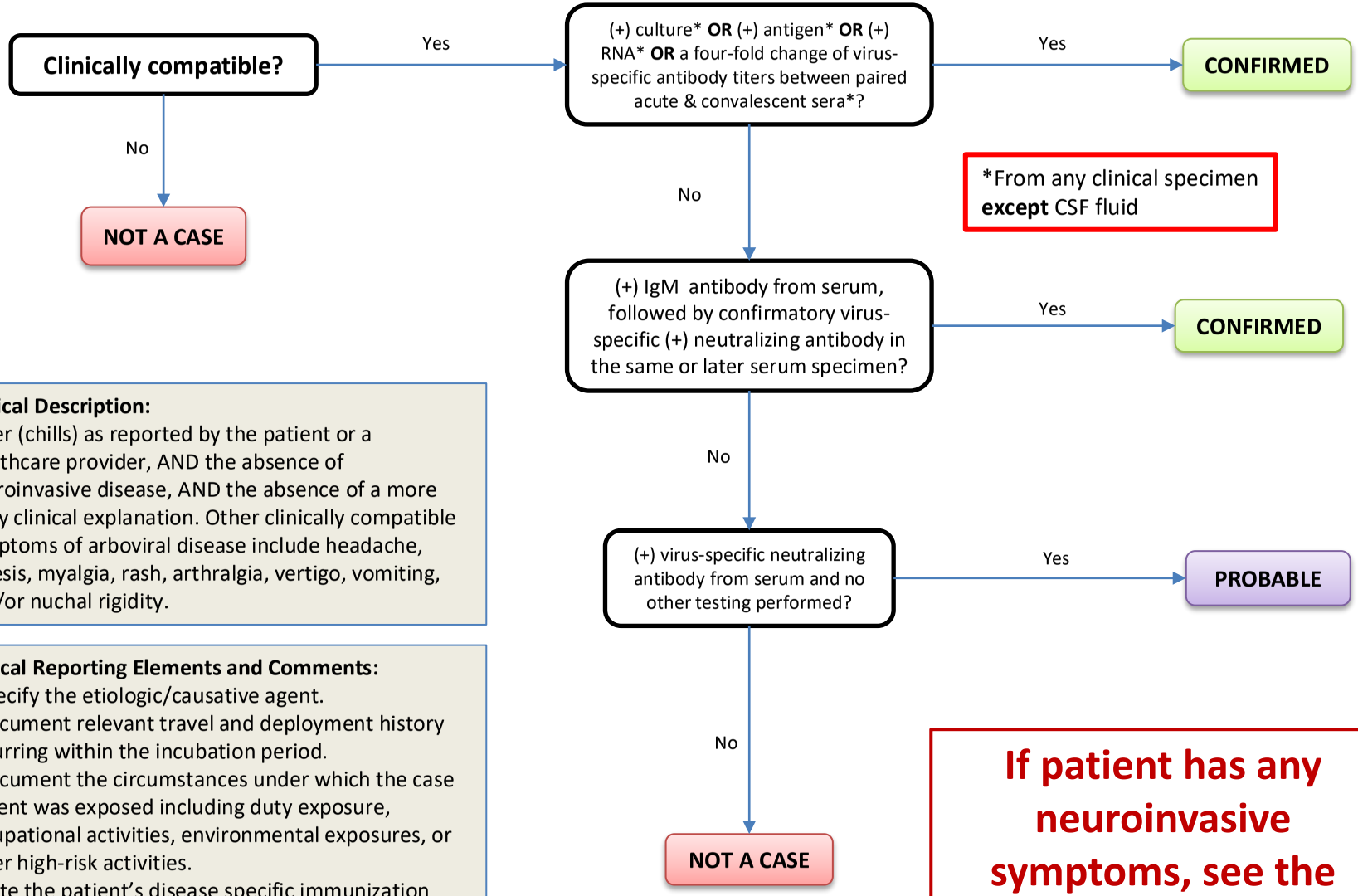
Table 1. Description of Arboviruses (continued)

Disease	Vector(s)	Common Symptoms	Incubation Period	Duration of Symptoms	Geographic Distribution	Does Infection Provide Lifelong Immunity?
St. Louis Encephalitis	Mosquito; *Culex* species	Asymptomatic or mild non-specific flu-like symptoms in most cases; fever, headache, stiff neck, disorientation, and altered level of consciousness	5–15 days		North and South America. Periodic outbreaks along the Mississippi Valley and along the Gulf Coast	Yes
Tick-borne Encephalitis	Ticks: *Ixodes scapularis*, Ixodes ricinus, and Ixodes persulcatus; also caused by unpasteurized dairy products from infected goats, sheep, or cows	Fever, headache, muscle pain, nausea, vomiting, meningitis, and encephalitis	7–14 days		Eastern Europe and Southern Russia	Yes
West Nile Encephalitis	*Culex* mosquitoes	Asymptomatic in most cases; fever, headache, fatigue, nausea, vomiting, rash	2–15 days	3–6 days	North America, Europe, West and Central Asia, Oceania, and Africa	Yes
Western Equine Encephalitis	Mosquito; *Culex tarsalis*	Asymptomatic or mild non-specific flu-like symptoms in most cases; fever, headache, stiff neck, vomiting, or weakness	5–15 days	About 50% of surviving infants have permanent brain damage. Fatal in 5–15% of cases.	North and South America. In U.S., occurs mostly in States bordering the Mississippi River and States along the east coast	Yes

For more information on vectors, please visit http://www.wrbu.org/index.html

Arboviral Disease: Non-Neuroinvasive

INCLUDES: West Nile fever, West Nile encephalitis, Japanese encephalitis, Western Equine encephalitis, and other mosquito-borne viruses (western equine encephalitis, eastern equine encephalitis, St. Louis encephalitis, California virus encephalitis) and tick-borne viruses (Powassan virus, tick-borne encephalitis, Colorado tick fever) and others.
EXCLUDES: chikungunya virus, dengue virus, Lyme disease, relapsing fever, Rift Valley fever, spotted fever rickettsiosis, yellow fever virus, and Zika virus. See respective case definitions.



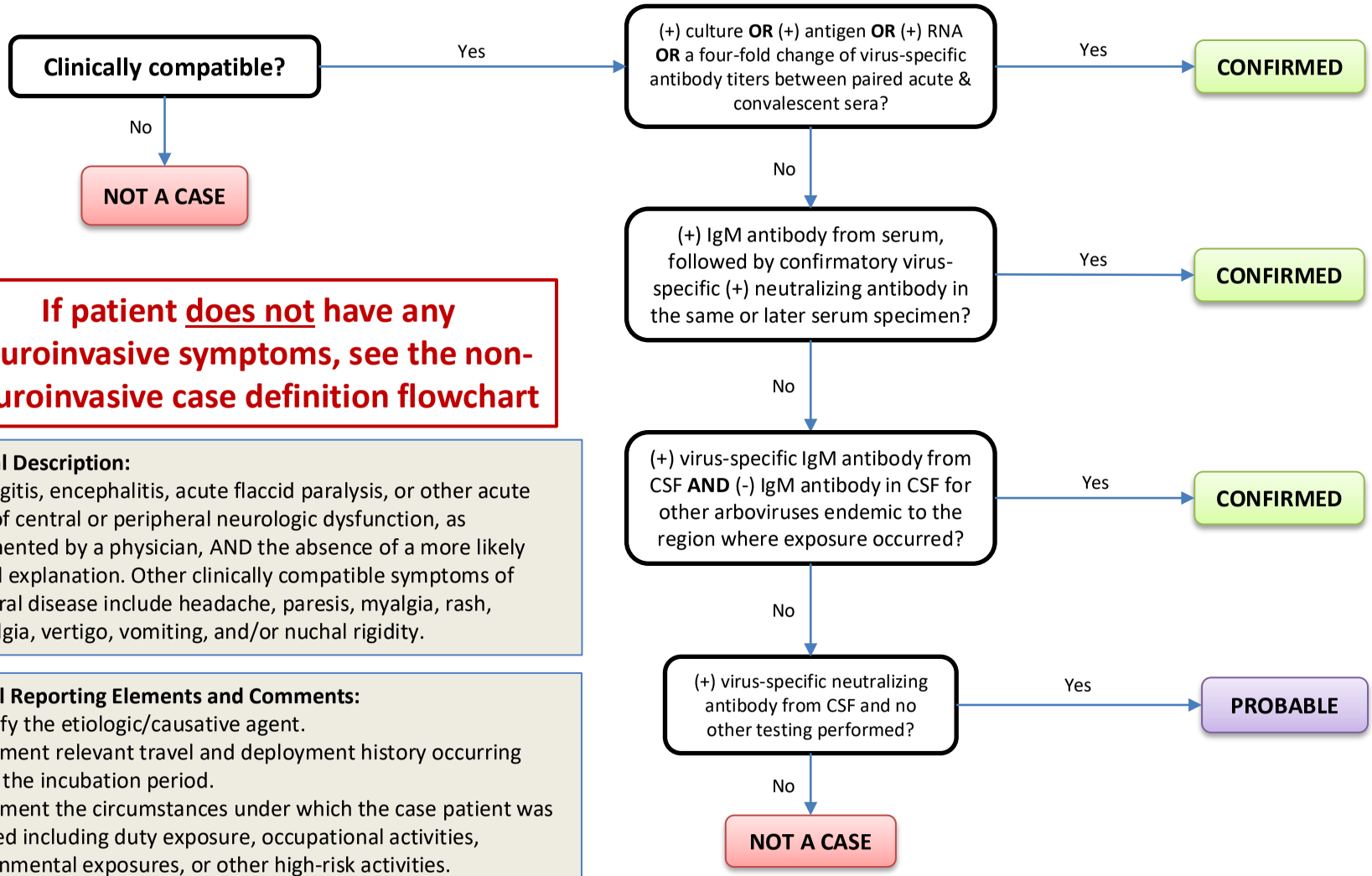
Clinical Description:
Fever (chills) as reported by the patient or a healthcare provider, AND the absence of neuroinvasive disease, AND the absence of a more likely clinical explanation. Other clinically compatible symptoms of arboviral disease include headache, paresis, myalgia, rash, arthralgia, vertigo, vomiting, and/or nuchal rigidity.

Critical Reporting Elements and Comments:
- Specify the etiologic/causative agent.
- Document relevant travel and deployment history occurring within the incubation period.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Note the patient's disease specific immunization history.

If patient has any neuroinvasive symptoms, see the neuroinvasive case definition flowchart!

Arboviral Disease: Neuroinvasive

INCLUDES: West Nile fever, West Nile encephalitis, Japanese encephalitis, Western Equine encephalitis, and other mosquito-borne viruses (western equine encephalitis, eastern equine encephalitis, St. Louis encephalitis, California virus encephalitis) and tick-borne viruses (Powassan virus, tick-borne encephalitis, Colorado tick fever) and others.
EXCLUDES: chikungunya virus, dengue virus, Lyme disease, relapsing fever, Rift Valley fever, spotted fever rickettsiosis, yellow fever virus, and Zika virus. See respective case definitions.



If patient does not have any neuroinvasive symptoms, see the non-neuroinvasive case definition flowchart

Clinical Description:
Meningitis, encephalitis, acute flaccid paralysis, or other acute signs of central or peripheral neurologic dysfunction, as documented by a physician, AND the absence of a more likely clinical explanation. Other clinically compatible symptoms of arboviral disease include headache, paresis, myalgia, rash, arthralgia, vertigo, vomiting, and/or nuchal rigidity.

Critical Reporting Elements and Comments:
- Specify the etiologic/causative agent.
- Document relevant travel and deployment history occurring within the incubation period.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Note the patient's disease specific immunization history.

MOSQUITO-BORNE INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

☐ Arboviral Disease:_____ *Please specify*	◯ Confirmed	◯ Probable	◯ Not a case
☐ Chikungunya Virus	◯ Confirmed	◯ Probable	◯ Not a case
☐ Dengue Virus	◯ Confirmed	◯ Probable	◯ Not a case
☐ Malaria	◯ Confirmed	◯ Suspect	◯ Not a case
☐ Zika Virus	◯ Confirmed	◯ Probable	◯ Not a case

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.
Outbreak investigations must be reported immediately to DRSi through the outbreak module at https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ PARENT/GUARDIAN: _____

DOB: _____/_____/_____ AGE: _____ FMP: _____ SEX: ☐ M ☐ F ☐ Unk RACE: _____

UNIT: _____ SERVICE:_____ RANK: _____ DUTY STATUS:_____

ADDRESS: *(Street)*_____ DoD ID:_____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ Clinic/Hospital:_____

Hospitalized Y ☐ N ☐ Admit Date: _____/_____/_____ Discharge date: _____/_____/_____

Deceased Y ☐ N ☐ Date of death: _____/_____/_____ Cause of death:_____

Symptomatic	Y ☐	N ☐	Onset Date: _____/_____/_____ Clinic Date: _____/_____/_____ Diagnosis Date: _____/_____/_____
Fever	Y ☐	N ☐	Max Temp: _____°F/°C (☐ unk)
Rash	Y ☐	N ☐	
Chills/sweats	Y ☐	N ☐	
Arthralgia	Y ☐	N ☐	
Myalgia	Y ☐	N ☐	
Nausea/vomiting	Y ☐	N ☐	
Headache	Y ☐	N ☐	
Fatigue	Y ☐	N ☐	
Conjunctivitis	Y ☐	N ☐	
Joint swelling	Y ☐	N ☐	
Neurological symptoms	Y ☐	N ☐	
Complications*	Y ☐	N ☐	

MEDICAL HISTORY

(Provide dates and all known details for each question)

History of mosquito-borne illness? Y ☐ N ☐ Describe:_____

Immune suppression? Y ☐ N ☐ Describe:_____

Underlying illness? Y ☐ N ☐ Describe:_____

Transfusion or transplant <30 days before onset? Y ☐ N ☐ Describe:_____

Describe any other pertinent medical information:

CHEMOPROPHYLAXIS

Was chemoprophylaxis taken? Y ☐ N ☐

If yes, please indicate:

Chloroquine ☐ Doxycycline ☐

Mefloquine ☐ Malarone ☐

Started: ____/____/____ Ended: ____/____/____

IF PREGNANT:

Is case pregnant? Y ☐ N ☐

Trimester: _____

Pregnancy complications? Y ☐ N ☐

Describe:_____

Evidence of microcephaly or Guillain-Barre syndrome?*(Zika)* Y ☐ N ☐

*IF COMPLICATIONS:

(check all that apply and describe below)

☐ Encephalitis/meningitis
☐ Acute flaccid paralysis
☐ Lymphopenia
☐ Leukopenia
☐ Severe plasma leakage
☐ Severe organ involvement
☐ Severe bleeding
☐ Coma

DIAGNOSIS

Did provider diagnose this current illness as a mosquito-borne disease?

☐ Yes (mark all that apply)

☐ Chikungunya V. ☐ Dengue V.

☐ Malaria ☐ Zika V.

☐ "mosquito-borne illness"

☐ Other: _____

☐ No, NOT a mosquito-borne illness

Describe: _____

MALARIA ONLY

Specify malaria species:

☐ Falciparum ☐ Vivax

☐ Malariae ☐ Ovale

☐ Unspecified ☐ Other:_____

Arboviral Disease incubation periods for mosquito-borne diseases are:

- **West Nile fever - most often 2–6 days, ranges up to 2–14 days, up to 21 days for immunocompromised**
- **West Nile encephalitis - most often 2–6 days, ranges up to 2–14 days,**
- **Japanese encephalitis (JE) - 5–15 days**
- **Western Equine encephalitis (WEE) - 5–15 days**
- **Eastern Equine encephalitis (EEE) - 4–10 days**
- **St. Louis encephalitis (SLE) - 5–15 days**
- **California encephalitis (CE) - 3–7 days**

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test	Pathogen	Collection Date	Source	Result
	(type of test performed)	*(Specify if Dengue, CHIK, etc)*		*(CSF, Serum, etc)*	*(Ex: IgM positive, IgG negative)*
☐ **Antibody** *Acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

Additional labs (if case has co-infection)

☐ **Antibody** *Acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

TRAVEL HISTORY

In the 3 months before illness onset (when symptoms started), did the case....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Babesiosis

Name	*Babesia* protozoan parasites
Reservoir & Transmission	White-footed mice and other small mammals (e.g., voles) for *Babesia (B). microti* and *B. duncani* in the United States Cattle for *B. divergens* in Europe Tickborne: *Ixodes scapulari* for *B. microti* in the U.S.; *Ixodes Ricinus* for *B. divergens*; the EU 1 agent (*B. venatorum)* in Europe
Incubation Period	Variable; 1–3 weeks or longer for tickborne transmission, weeks to months for transfusion-associated transmission, more than 1 year in context of immunosuppression
Common Symptoms	Asymptomatic to life-threatening. Fever, chills, sweats, myalgia, fatigue, hemolytic anemia, thrombocytopenia
Gold Standard Diagnostic Test	Light-microscopic on Wright- or Giemsa-stained blood smears
Risk Groups	Asplenic, immunocompromised, elderly, born prematurely
Geographic Significance	U.S.: New England states including offshore islands, New York, New Jersey, Minnesota, Wisconsin

What is babesiosis?
Babesiosis is a disease caused by microscopic parasites that are spread by certain ticks and infect red blood cells. Many different species of *Babesia* parasites have been found in animals, only a few of which have been found in people. *Babesia microti*, which usually infects white-footed mice and other small mammals, is the main species found in people in the United States. Occasional cases caused by other *Babesia* species have been detected.

What is the occurrence of babesiosis?
In 2019, babesiosis was a reportable disease in 40 States and the District of Columbia. At that time, 25 (63%) of the 40 States notified the CDC of at least 1 case, and a total of 2,418 cases of babesiosis were reported in the U.S., which was an 11% increase from the 2,161 cases in 2018. In 2019, most of the reported cases (88%) were in residents of 7 States where tickborne transmission of *Babesia* parasites is well established (Connecticut, Massachusetts, Minnesota, New Jersey, New York, Rhode Island, and Wisconsin). Maine and Vermont reported case rates (10.3 and 5.4/100,000 population, respectively), similar to or higher than those reported by endemic states.

How is babesiosis transmitted?
Babesia microti is spread by *Ixodes scapularis* ticks, which are commonly called blacklegged ticks or deer ticks. Although white-tailed deer are the most important food source for the adult stage of the tick, deer are not infected with *B. microti*. The parasite is typically spread by the young nymph stage of the tick, which are mostly found during warm months in areas with woods, brush, or grass. Usually, the tick must stay attached to a person for 36–48 hours to transmit the parasite, yet individuals may not see *I. scapularis* nymphs, which are about the size of a poppy seed.

Other possible ways of becoming infected with *Babesia* include:
- Receipt of a contaminated blood transfusion (no tests yet available for donor screening)
- Transmission from an infected mother to her baby during pregnancy or delivery

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Babesiosis

Who is at risk for babesiosis?
Babesiosis can be a severe, life-threatening disease, particularly in people who have—

- Asplenia;
- Impaired immune function (e.g., HIV, malignancy, corticosteroid therapy);
- Chronic health conditions (e.g., liver or kidney disease); or
- Advanced age.

What are the signs and symptoms of babesiosis?
Many people who are infected with *Babesia microti* do not have any symptoms. Clinically manifest *Babesia* infection is characterized by the presence of hemolytic anemia and nonspecific flu-like symptoms, such as fever, chills, sweats, headache, body aches, loss of appetite, nausea, or fatigue. Because *Babesia* parasites infect red blood cells, babesiosis can cause hemolytic anemia, splenomegaly, hepatomegaly, or jaundice.

What are potential complications of babesiosis?
Severe cases can be associated with marked thrombocytopenia, disseminated intravascular coagulation, hemodynamic instability, acute respiratory distress, myocardial infarction, renal failure, hepatic compromise, altered mental status, and death.

How is babesiosis diagnosed?
In symptomatic patients with acute infection, *Babesia* parasites typically can be detected by light-microscopic examination of blood smears, although multiple smears may need to be examined. Species *B. microti* and *B. duncani* are morphologically indistinguishable. Sometimes it can be difficult to distinguish between *Babesia* and *Plasmodium* (especially *P. falciparum*) parasites and even between parasites and artifacts (such as stain or platelet debris). A reference laboratory should confirm the diagnosis by blood-smear examination and, if indicated, by molecular and/or serologic methods tailored to the setting and species.

How is babesiosis treated?
Most asymptomatic persons do not require treatment.

Clinically ill patients can be treated for 7–10 days with a combination of either:

- Atovaquone and azithromycin, or
- Clindamycin and quinine (the standard of care for severely ill patients). https://www.cdc.gov/parasites/babesiosis/health_professionals/index.html

Supportive care may include antipyretics, vasopressors, blood transfusions, mechanical ventilation, or dialysis.

How can babesiosis be prevented?
A vaccine is not available. Avoid areas infested with ticks. Use protective measures. Conduct tick checks.

MilTICK is a free tick testing and identification service available for ticks removed from Department of Defense personnel and their dependents. For more information about services provided, including identifying tick species, assessing for how long the tick has been attached, and testing the tick for human pathogens, and contact information, go to: https://ph.health.mil/topics/envirohealth/epm/Pages/HumanTickTestKitProgram.aspx

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Babesiosis

What are some public health considerations?

- Document potential occupational/high risk exposure during the incubation period (1-3 weeks for tick-borne disease transmission and >1 year for transfusion-associated transmission cases). High exposure activities include but are not limited to outdoor activity, camping, hunting, field exercise, mission/duty related, etc.
- Document if the source is tick-borne or transfusion-associated.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

For information about babesiosis surveillance or assistance in completing the form, call the Parasitic Diseases Branch at 404-718-4745 or email parasites@cdc.gov.
CDC - Parasites - Features - Babesiosis Case Report Form
https://www.cdc.gov/parasites/features/babesia_form_11-1-11.html

References:

"Babesiosis," Centers for Disease Control and Prevention (CDC), last reviewed March 31, 2021. https://www.cdc.gov/parasites/babesiosis/

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

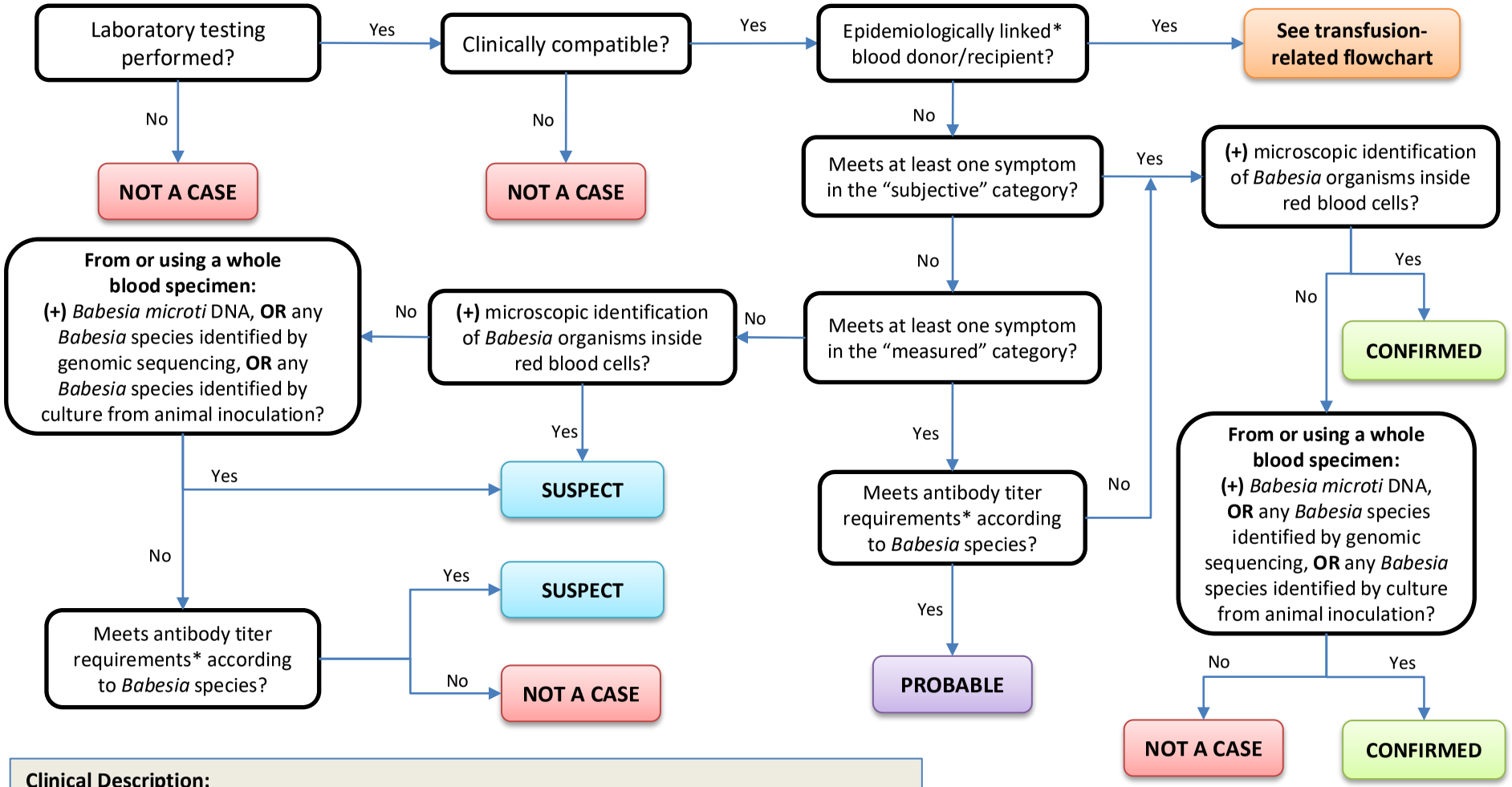
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Last Updated September 1, 2023

Babesiosis (*Babesia* species)

Non-transfusion related

INCLUDES: Babesia species (i.e., *Babesia microti, B. duncani, B. venatorum, B. divergens*-like parasites, and others)



Clinical Description:
A parasitic disease transmitted through the bites of infected ticks or through contaminated blood components from asymptomatic parasitemic donors or, more rarely, transplacentally. Babesia has two clinical criteria categories:

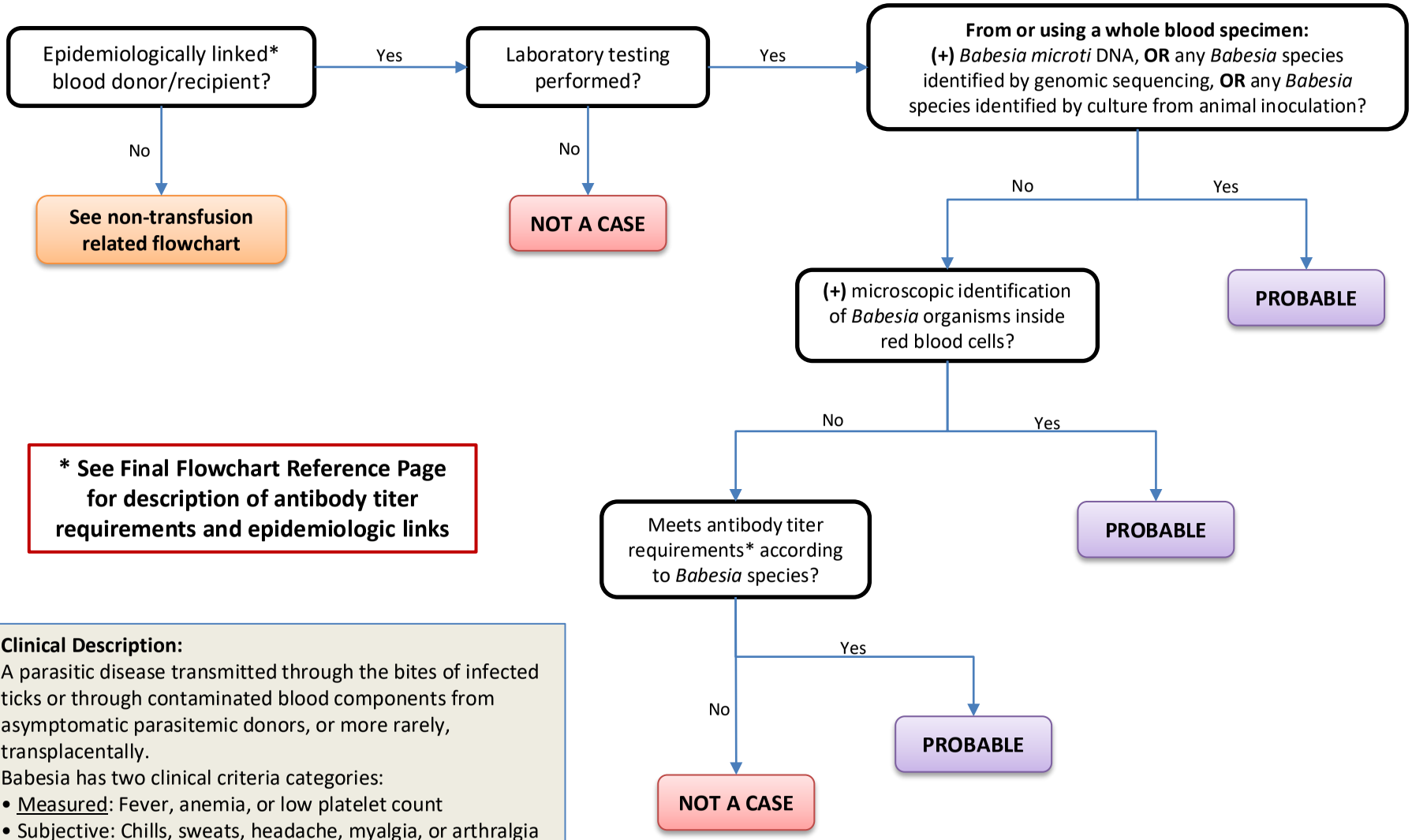
- Measured: Fever, anemia, or low platelet count
- Subjective: Chills, sweats, headache, myalgia, or arthralgia

*** See Final Flowchart Reference Page for description of antibody titer requirements and epidemiologic links**

Babesiosis (*Babesia* species)

Transfusion related

INCLUDES: Babesia species (i.e., *Babesia microti, B. duncani, B. venatorum, B. divergens*-like parasites, and others)



*** See Final Flowchart Reference Page for description of antibody titer requirements and epidemiologic links**

Clinical Description:
A parasitic disease transmitted through the bites of infected ticks or through contaminated blood components from asymptomatic parasitemic donors, or more rarely, transplacentally.
Babesia has two clinical criteria categories:

- Measured: Fever, anemia, or low platelet count
- Subjective: Chills, sweats, headache, myalgia, or arthralgia

Babesia species: Epidemiologic Linkage, Species Titer Requirements, Critical Reporting Elements, and Comments

INCLUDES: Babesia species (i.e., *Babesia microti, B. duncani, B. venatorum, B. divergens*-like parasites, and others)

Antibody titer testing requirement depends on the species of *Babesia*.

Babesia microti

- Positive total antibody or positive IgG antibody titer greater than or equal to 1:256 by IFA, or
- In an epidemiologically linked blood donor/recipient, a positive total antibody or positive IgG antibody titer greater than or equal to 1:64 by IFA, or
- *Babesia microti* positive IgG antibody by immunoblot (e.g., Western Blot)

Babesia divergens

- Positive total antibody or positive IgG antibody titer greater than or equal to 1:256 by IFA

Babesia duncani

- Positive total antibody or positive IgG antibody titer greater than or equal to 1:512 by IFA

Epidemiologic linkage between a blood transfusion recipient and donor is demonstrated if all the below criteria are met:

In the transfusion recipient, all the following:

- Received one or more red blood cell (RBC) or platelet transfusions within 1 year before the collection date of a specimen with laboratory evidence of Babesia infection, and
- At least one of these transfused blood components was donated by the donor described below, and
- Transfusion-associated infection is considered at least as plausible as tick-borne transmission.

In the blood donor, all the following:

- Donated at least one of the RBC or platelet components that was transfused into the above recipient, and
- The plausibility that this blood component was the source of infection in the recipient is considered equal to or greater than that of blood from other involved donors (more than one plausible donor may be linked to the same recipient).

Critical Reporting Elements and Comments:

- Document potential occupational/high-risk exposure during the incubation period (1–3 weeks for tick-borne disease transmission and >1 year for transfusion-associated transmission cases). High exposure activities include but are not limited to outdoor activity, camping, hunting, field exercise, mission/duty related, etc.
- Document if the source is tick-borne or transfusion-associated.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

INVESTIGATION WORKSHEET

Defense Health Agency ®

Babesiosis

Confirmed ○ Probable ○ Suspect ○ Not a Case

☐ Entered in DRSi?

☐ Reported to health dept?

https://drsi.health.mil/ADRSi

POC: _____

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

(_____) - _____ - _____

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ Unk)
Chills	☐	☐	
Headache	☐	☐	
Body aches	☐	☐	
Nausea	☐	☐	
Fatigue	☐	☐	

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

Treated with anti-parasitics? Y ☐ N ☐

Type of anti-parasitics	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: Variable, 1–3 weeks or longer for tickborne transmission, weeks to months for transfusion-associated transmission, more than 1 year in context of immunosuppression

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Botulism

Name	*Clostridium botulinum,* some strains of *Clostridium butyricum, Clostridium baratii,* and *Clostridium argentinense*
Reservoir & Transmission	Ubiquitous in soil; found in intestinal tracts of animals, including fish Foodborne, intestinal (infant and adult), wound, iatrogenic, inhalational
Incubation Period	Foodborne: 12–72 hours of ingestion, range 2 hours to 8 days Intestinal: infant up to 30 days; adult is unclear Wound botulism: 4–14 days Iatrogenic: unclear Inhalational: similar to foodborne
Symptoms	Dysphagia (difficulty swallowing), dysarthria (slurred speech), blurred vision, diplopia (double vision), ptosis (drooping upper eyelid), and ophthalmoplegia (paralysis of internal eye muscles that control pupil size and focusing). Constipation is common, as well as GI symptoms such as nausea, vomiting, diarrhea can occur in foodborne botulism. Infants <1 year old: constipation, poor feeding, diminished suck and gag reflexes, weak and altered cry, ptosis, sluggish pupils, flattened facial expression, respiratory distress or failure
Gold Standard Diagnostic Test	Toxin detected in serum, stool, or gastric aspirate; culture of stool, gastric aspirate, or wound
Geographic Significance	Worldwide incidence is unknown, but cases were reported from the Americas, Africa, Asia, Australia, Europe, and the Middle East.

What is botulism?

Botulism is a rare but serious neuroparalytic illness caused by a toxin (a potent neurotoxin) produced by the bacterium *Clostridium botulinum* and some strains of *Clostridium butyricum, Clostridium baratii,* and *Clostridium argentinense.* These gram-positive bacteria are in the environment but can make spores which grow and produce toxin under specific conditions in food products, the intestines of infants and adults with structurally or functionally compromised intestinal tracts (e.g., surgery, antibiotic use), or contaminated wounds. All forms of botulism can be fatal and are medical emergencies. Botulism (*Clostridium botulinum* toxin) is a Centers for Disease Control and Prevention (CDC) Category A bioterrorism agent/disease. There are seven recognized serotypes: A, B, C, D, E, F, G. Serotypes A, B, E, and F are most commonly associated with naturally occurring human illness. The diagnosis categories for disease reporting are 1) foodborne, 2) infant (intestinal), 3) wound, and 4) other.

What is the occurrence of botulism?

In the United States, 145 cases of botulism are reported on average each year. Of these, approximately 15% are foodborne, 65% are infant botulism, and the rest are wound botulism. The number of cases of foodborne and infant botulism has changed little in recent years, but wound botulism has increased because of the use of black-tar heroin, especially in California.

How is botulism transmitted?

- Foodborne botulism: caused by eating foods that contain the botulism toxin. Foodborne botulism is a public health emergency because many people can be poisoned by eating a contaminated food. Common sources are homemade foods that have been improperly canned, preserved, or fermented. Foods with low acid content are the most common sources of home-canning related botulism cases (e.g., asparagus, green beans, beets, corn, potatoes). Food

contamination can happen when made or stored improperly, or used by consumers (e.g., chopped garlic in oil, canned cheese sauce, canned tomatoes, carrot juice, baked potatoes wrapped in aluminum foil, fermented fish).

- Infant botulism: caused when infants consume the *C. botulinum* spores, found in raw honey.

- Wound botulism: caused by toxin produced from *Clostridium botulinum* and can occur in people who inject drugs, after a traumatic injury, or surgery. The presence of *Clostridium perfringens* in a wound can result in gas gangrene.

- Other:
  - Adult intestinal toxemia (adult intestinal colonization) botulism: very rare but can happen if the spores of the bacteria get into an adult's intestines and grow, which produces the toxin (similar to infant botulism).
  - Iatrogenic botulism: Botulism toxin is a neurotoxin that can be used for cosmetic purposes but also has several clinically beneficial indications (BOTOX®: onabotulinumtoxinA). Iatrogenic botulism can be caused by improper use or injection of high doses of an unapproved botulinum toxin for cosmetic or medical reasons.
  - Inhalational botulism: aerosolized botulinum neurotoxin could hypothetically be used for intentional exposure, bioterrorism.

Who is at risk for botulism?
Persons who eat improperly home-preserved foods; infants <1 year old that eat honey or dust; users of injection drug - particularly black-tar heroin, adults with altered intestinal flora due to antimicrobial use or anatomical or functional bowel abnormalities.

What are the signs and symptoms of botulism?
Clinical features of botulism are characterized by symmetric, descending flaccid paralysis of motor and autonomic nerves, beginning with the cranial nerves. If untreated, illness from any type of botulism can progress to descending paralysis of respiratory muscles, arms, and legs.

Signs and symptoms usually start with weakness of the muscles that control the eyes, face, mouth, and throat, and spread to the neck, arms, torso, and legs. Symptoms may include difficulty swallowing (dysphagia), muscle weakness, blurred or double vision (diplopia), drooping upper eyelid (ptosis), ocular palsy, slurred speech, and respiratory distress or failure.

- Foodborne botulism: symptoms generally begin 18 to 36 hours after eating contaminated food but can occur as early as 6 hours or as late as 10 days; these symptoms may include vomiting, nausea, abdominal pain, and diarrhea.

- Infant botulism: symptoms include constipation, poor feeding, ptosis, sluggish pupils, flattened facial expression, diminished suck and gag reflexes, weak and altered cry, respiratory distress or failure.

What are potential complications of botulism?
All forms of botulism can be fatal due to respiratory failure or the consequences of extended paralysis. Recovery follows the regeneration of new neuromuscular connections and may

require weeks or months of care. With antitoxin and medical care, fewer than 5% of people with botulism die.

How is botulism diagnosed?
Initial diagnosis is based on clinical symptoms, then laboratory confirmed.
If botulism is suspected, immediately call:

* CDC: phone **770-488-7100**; available 24/7

* Infant Botulism Treatment and Prevention Program (IBTPP) at the California Department of Public Health: phone: **510-231-7600**; available 24/7; www.infantbotulism.org
Botulism differs from other flaccid paralyses in that it typically manifests initially with prominent cranial nerve palsies. It also differs in its invariable descending progression, in its symmetry, and in its absence of sensory nerve dysfunction.

Botulism is frequently misdiagnosed, most often as polyradiculoneuropathy (Guillain-Barré or Miller-Fisher syndrome), myasthenia gravis, or other diseases of the central nervous system. A normal Tensilon test helps to differentiate botulism from myasthenia gravis; borderline positive tests can occur in botulism. A normal CT or MRI scan helps to rule out cerebrovascular accident.

Laboratory confirmation is done by demonstrating the presence of botulinum toxin in serum, stool, food, or by culturing botulinum neurotoxin-producing species of Clostridium (*C. botulinum, C. butyricum,* or *C. baratii*) from stool or a wound.

Do not wait for laboratory confirmation to begin treatment. Diagnostic testing is done through the state public health department's laboratory, and this specialized testing often takes days to complete.

How is botulism treated?
Antitoxin can prevent progression and shorten the duration of illness if administered early in the course of illness.

Botulism Antitoxin Heptavalent (A, B, C, D, E, F, G) - (Equine) is for the treatment of symptomatic botulism following documented or suspected exposure to botulinum neurotoxin serotypes A, B, C, D, E, F, or G in adults and pediatric patients.

- Infant botulism: BabyBIG®, Botulism Immune Globulin Intravenous (Human) (BIG-IV), is an orphan drug that consists of human-derived anti-botulism-toxin antibodies that is approved by the U.S. Food and Drug Administration for the treatment of infant botulism types A and B. To obtain BabyBIG for a patient with suspected infant botulism, the treating physician must first contact the Infant Botulism Treatment and Prevention Program on-call physicians for a clinical consultation.

- Wound botulism: treatment may include wound debridement or drainage to remove the source of toxin-producing bacteria, and antibiotic therapy can be considered.

If the toxin paralyzes the respiratory muscles, ventilator support may be needed.

PUBLIC HEALTH REFERENCE SHEET
Botulism

Clinical Guidelines for Diagnosis and Treatment of Botulism, 2021 | MMWR (cdc.gov)
https://www.cdc.gov/mmwr/volumes/70/rr/rr7002a1.htm

How can botulism be prevented?
There is currently no approved vaccine for botulism in the U.S.

- Foodborne botulism: Follow safe home canning instructions from the U.S. Department of Agriculture. Because high temperatures destroy the botulism toxin, persons who eat at-home canned foods should consider boiling the food for 10 minutes before eating it.

- Infant botulism: Raw honey is an identified and avoidable cause of infant botulism (under1 year old). Do not allow children younger than 12 months old to eat raw honey or ingest dirt if laying on the ground.

- Wound botulism: Patients should seek treatment from a licensed medical provider for medical or cosmetic injections.

What are some public health considerations?
- Specify the clinical form of the disease.
- Document the source of infection if known.

References:

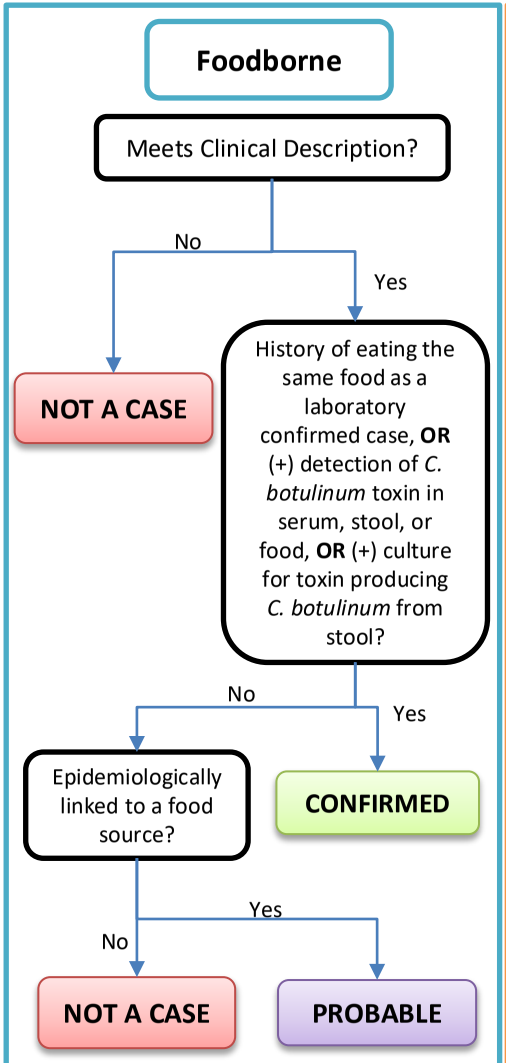
"Botulism," Centers for Disease Control and Prevention, last reviewed June 8, 2022. https://www.cdc.gov/botulism/

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions*. https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

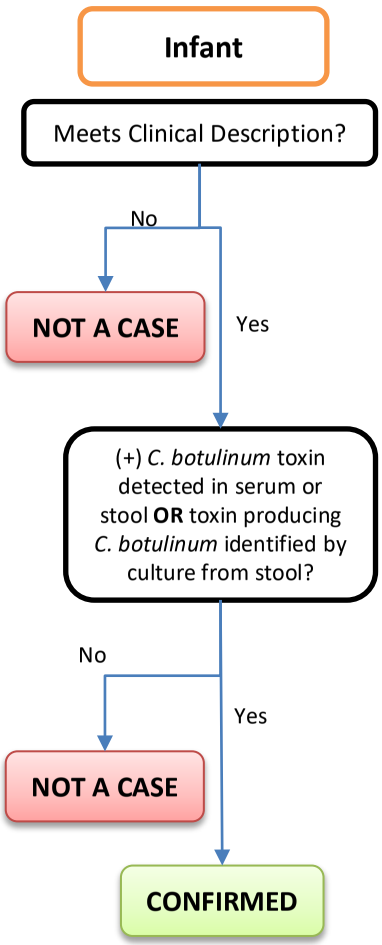
Botulism

Foodborne



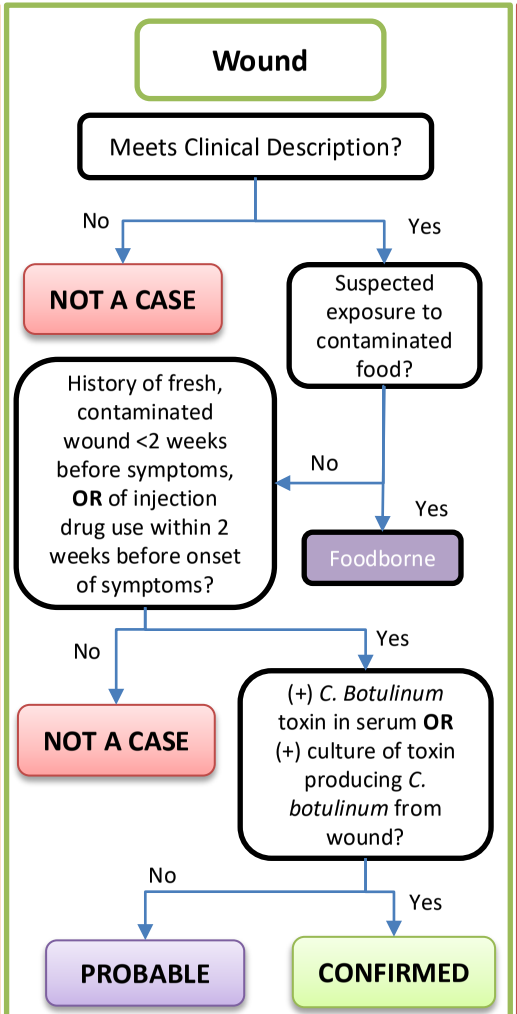
Clinical Description:
An illness of variable severity. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

Infant



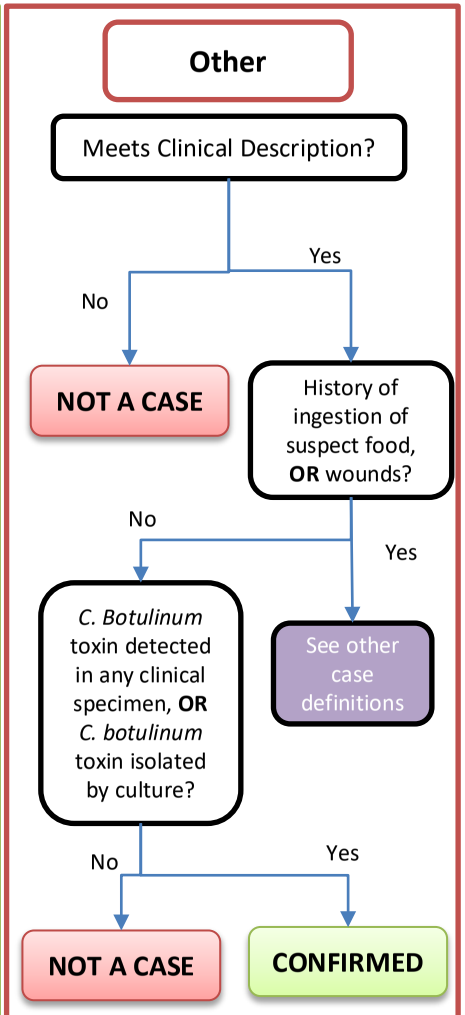
Clinical Description:
An illness of infants, characterized by constipation, poor feeding, and "failure to thrive" that may be followed by progressive weakness, impaired respiration, and death.

Wound



Clinical Description:
An illness resulting from toxin produced by *Clostridium botulinum* that has infected a wound. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

Other



Clinical Description:
An illness of variable severity that occurs among persons greater than 1 year of age. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Botulism

Confirmed ○ Probable ○ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N
Symptomatic	☐	☐
Difficulty swallowing	☐	☐
Double vision	☐	☐
Blurred vision	☐	☐
Slurred speech	☐	☐
Ptosis (eyelid droop)	☐	☐
Muscle weakness	☐	☐
Respiratory distress	☐	☐
Ocular palsy	☐	☐
Bulbar weakness	☐	☐
Constipation	☐	☐

Onset date: ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Max Temp: _____°F/°C (☐ unk)

Epidemiologic Link	Y	N
Is the case epidemiologically linked to another laboratory-confirmed case of Botulism?	☐	☐
Is this case part of a larger group/community outbreak?	☐	☐

Foodborne botulism signs and symptoms:

- **Nausea** ☐
- **Abdominal pain** ☐
- **Diarrhea** ☐

Infant botulism signs and symptoms:

- **Poor feeding** ☐
- **Sluggish pupils** ☐
- **Flattened facial expression** ☐
- **Gag/suck reflexes weak** ☐
- **Altered cry** ☐
- **Respiratory distress or failure** ☐

TREATMENT

Treated with antitoxin? Y ☐ N ☐

Type of antitoxin	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____

Botulism Antitoxin Heptavalent (A, B, C, D, E, F, G) - (Equine) is for treatment of symptomatic serotypes A, B, C, D, E, F or G in adults and pediatric patients.
BabyBIG®, Botulism Immune Globulin Intravenous (Human) (BIG-IV), is for treatment of infant botulism types A and B.

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Food Source Stool Other Gastric Aspirate	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Food Source Stool Other Gastric Aspirate	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Food Source Stool Other Gastric Aspirate	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Food Source Stool Other Gastric Aspirate Stool or Wound	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Food Source Stool Other Gastric Aspirate	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Food Source Stool Other Gastric Aspirate	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Neurological symptoms of foodborne botulism usually appear within 12–72 hours of toxin ingestion, but onset can range from 2 hours to 8 days. Incubation periods due to intestinal colonization in infants is estimated to be up to 30 days, but for adults is unknown. For wound botulism generally 4–14 days.

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Brucellosis

Name	*Brucella* spp. bacteria
Reservoir & Transmission	Cattle, swine, goats, and sheep are most common; also camel, bison, elk, equids, caribou, and some species of deer Ingestion of undercooked meat, raw milk, and dairy products from infected animals; contact with animal tissues and secretions; inhalation when working in laboratories or meat processing facilities
Incubation Period	1–2 months is common, range of 5 days to 5 months
Common Symptoms	Fever, headache, weakness, sweating, arthralgia, myalgia, fatigue, anorexia, weight loss
Gold Standard Diagnostic Test	Isolation by culture
Risk Groups	Occupations with animals or their tissues, in biosafety level 3 laboratories; consuming undercooked meat or unpasteurized dairy products
Geographic Significance	Worldwide; especially Mediterranean basin (Portugal, Spain, Southern France, Italy, Greece, Turkey, North Africa), Eastern Europe, the Middle East, Africa, Asia, India, Central and South America, and Mexico, the Caribbean

What is brucellosis?
Brucellosis is an acute systemic disease caused by the bacteria of the genus *Brucella*. These bacteria are primarily passed among animals and cause disease in many different vertebrates, including humans. There are four Brucella species known to cause disease in humans (*B. abortus, B. melitensis, B. suis, B. canis*). *B. melitensis* is thought to be the most virulent and causes the most severe and acute cases of brucellosis; it is also the most prevalent worldwide. Brucellosis is a CDC Category B Bioterrorism agent/disease.

What is the occurrence of brucellosis?
In the United States, only 100 to 200 cases occur each year.

How is brucellosis transmitted?
Ingestion of contaminated milk products from sheep, goats, cows, or camels is the most common way of transmission, as the bacteria can be transmitted to persons who consume unpasteurized milk, cheeses, or ice cream.

Contact with infected animals or animal excretions (e.g., placenta) poses the risk of the bacteria entering wounds in the skin or mucous membranes. Occupational risk includes those who work in slaughterhouses, meat packing facilities, and veterinarians. Hunters may be infected through skin wounds, ingesting undercooked meat, or inhaling the bacteria when cleaning infected animals such as bison, elk, moose, caribou, and wild hogs (feral swine).

Inhalation of *Brucella* organisms can be an occupational hazard for people in laboratories that work with the bacteria and for those working in slaughterhouses and meat-packing facilities.

Direct person-to-person spread of brucellosis is extremely rare. Mothers who are infected may transmit the infection through breastfeeding. Sexual transmission has been rarely reported. Although uncommon, transmission may occur via tissue transplantation or blood transfusions.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Brucellosis

B. canis is the species of *Brucella* that can infect dogs. This species has occasionally been transmitted to humans, but most 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. 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 (receiving treatment for cancer, HIV, or transplant) should not handle dogs known to be infected with *B. canis*.

What are the signs and symptoms of brucellosis?
Brucellosis has an acute or insidious onset with continued, intermittent, or irregular fever of variable duration; headache; weakness; profuse sweating; malaise; fatigue; anorexia; pain in muscles, joints, and/or back; and weight loss.

What are potential complications of brucellosis?
Some signs and symptoms may persist, recur, or not resolve. These can include recurrent fevers, arthritis, chronic fatigue, neurologic symptoms (in up to 5% of all cases), meningitis; inflammation of the spine (spondylitis); focal organ involvement (endocarditis); swelling of the testicle (orchitis, epididymitis), liver (hepatomegaly), and/or spleen (splenomegaly); or depression. Organ infections can last up to a year or longer if left untreated. Mortality is rare (<2% of all cases) and is usually associated with endocarditis.

How is brucellosis diagnosed?
The gold standard for patient diagnosis is microbiological isolation of *Brucella* species in samples of blood, bone marrow, or other body tissues or fluids. Blood serum is tested to detect antibodies (*Brucella* total antibody titer by slide agglutination test (SAT)). Any clinical specimen may be tested for *Brucella* nucleic acid (DNA) (example: polymerase chain reaction (PCR), sequencing, nucleic acid amplification test (NAAT)). An acute noncomplicated case is confirmed by at least a fourfold increase of *Brucella* antibody titer on an agglutination assay between paired acute and convalescent sera separated by at least 2 weeks. For chronic, complicated, or neuro-brucellosis cases, serologic assays other than agglutination, such as enzyme-linked immunosorbent assay (ELISA), are recommended. Serologic tests to detect *B. canis* antibodies are not performed routinely by diagnostic laboratories.

How is brucellosis treated?
Treatment is a combination of doxycycline and rifampicin, or streptomycin, for at least 6 weeks. The streptomycin-containing regimen is generally associated with a lower rate of relapse, although it may be less effective in treating neurobrucellosis, due to low penetration into cerebrospinal fluid and the potential for neurotoxicity. Doxycycline for 6 weeks in combination with gentamicin for 7 days may be an acceptable alternative. Depending on the timing of treatment and severity of illness, recovery may take a few weeks to several months.

How can brucellosis be prevented?
A vaccine is not available for humans. Do not consume unpasteurized milk, cheese, or ice cream. Hunters should use rubber gloves, goggles, and a gown or apron when handling animals.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Brucellosis

What are some public health considerations?

- A positive *Brucella* slide agglutination test (SAT) is the same as Microagglutination Test (MAT); it therefore meets the probable case definition and should be reported.
- Document relevant travel and deployment history occurring within the incubation period (5 days to 5 months).
- Document the source of infection, if known.
- Document the circumstances for exposure (e.g., duty exposure, occupational activities, environmental exposures, other high-risk activities).
- Standard notification (routine data submission) is the criterion for cases not temporally or spatially clustered.
- Notification within 24 hours is the criterion for multiple brucellosis cases, temporally or spatially clustered.
- A brucellosis case report form is available from the CDC. https://www.cdc.gov/brucellosis/surveillance/index.html

References:

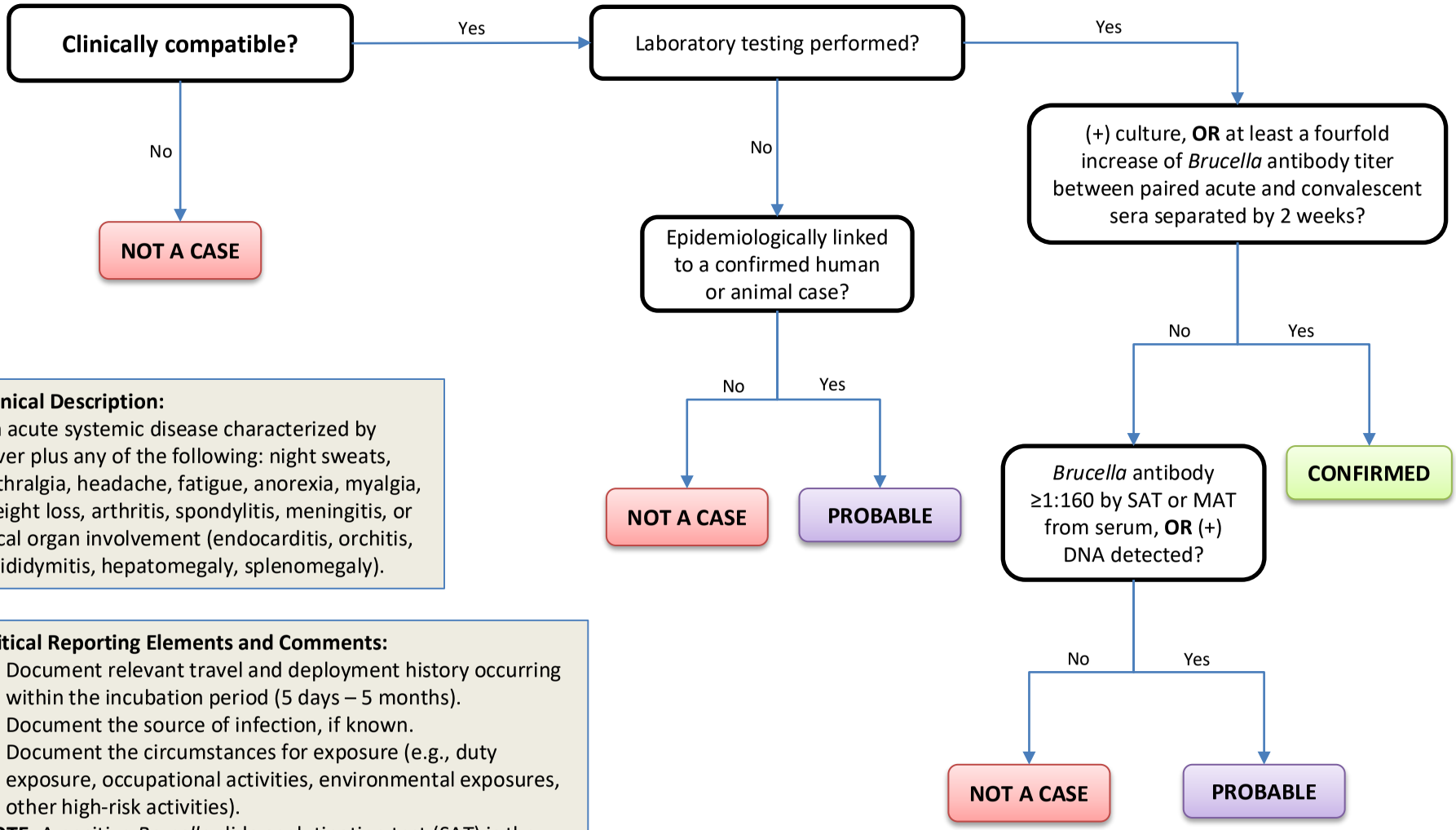
"Brucellosis," Centers for Disease Control and Prevention (CDC), last reviewed November 2, 2021. https://www.cdc.gov/brucellosis/

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Last Updated September 1, 2023

Brucellosis



Clinical Description:
An acute systemic disease characterized by fever plus any of the following: night sweats, arthralgia, headache, fatigue, anorexia, myalgia, weight loss, arthritis, spondylitis, meningitis, or focal organ involvement (endocarditis, orchitis, epididymitis, hepatomegaly, splenomegaly).

Critical Reporting Elements and Comments:

- Document relevant travel and deployment history occurring within the incubation period (5 days – 5 months).
- Document the source of infection, if known.
- Document the circumstances for exposure (e.g., duty exposure, occupational activities, environmental exposures, other high-risk activities).

NOTE: A positive *Brucella* slide agglutination test (SAT) is the same as the Microagglutination Test (MAT); it therefore meets the probable case definition and should be reported.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Brucellosis

Confirmed ○ Probable ○ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk)

Night sweats Y ☐ N ☐ *Describe any other symptoms not listed:*

Arthritis Y ☐ N ☐

Meningitis Y ☐ N ☐

Spondylitis Y ☐ N ☐
(arthritis in the spine and large joints)

Focal organ involvement* Y ☐ N ☐

Other symptoms Y ☐ N ☐
(Describe)

***SPECIFY FOCAL ORGAN INVOLVEMENT:**

Endocarditis Y ☐ N ☐

Orchitis Y ☐ N ☐

Epididymitis Y ☐ N ☐

Hepatomegaly Y ☐ N ☐

Splenomegaly Y ☐ N ☐

Other: *(Describe below)* Y ☐ N ☐

TRAVEL HISTORY

In the 6 months before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐

2. Was travel out of country? Y ☐ N ☐ Unk ☐

3. Did case receive theater/ country clearance before recent out-of-country trip? Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

	Test (type of test perfomed)	Pathogen	Collection Date	Source (CSF, Serum, etc)	Result (Record titer, list result, etc)
☐	**Antibody** *Acute*	_____	_____/_____/_____	_____	_____
☐	**Repeat aby** *Convalescent*	_____	_____/_____/_____	_____	_____
☐	**PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐	**Culture**	_____	_____/_____/_____	_____	_____
☐	**Other:**_____	_____	_____/_____/_____	_____	_____

EXPOSURE HISTORY

In the six months prior to illness onset, did the case.....

1. Have contact with animals? **Y** ☐ **N** ☐ **Unk** ☐

Type of contact	Cattle	Pig	Goat	Sheep	Dog	Deer	Bison	Elk	Other:_____
Animal Products	☐	☐	☐	☐	☐	☐	☐	☐	☐
Skinning/slaughter	☐	☐	☐	☐	☐	☐	☐	☐	☐
Hunting	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other	☐	☐	☐	☐	☐	☐	☐	☐	☐

Who owns the animal(s)?

Case	Private	Wild	Commercial	Unk
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐
☐	☐	☐	☐	☐

2. Consume unpasteurized dairy or undercooked meat? **Y** ☐ **N** ☐ **Unk** ☐

Type of food	Cattle	Pig	Goat	Sheep	Dog	Deer	Bison	Elk	Other:_____
Milk	☐	☐	☐	☐	☐	☐	☐	☐	☐
Fresh/soft cheese	☐	☐	☐	☐	☐	☐	☐	☐	☐
Meat	☐	☐	☐	☐	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐	☐	☐	☐	☐

From what country was product acquired?

U.S.	Other:_____	Other:_____
☐	☐	☐
☐	☐	☐
☐	☐	☐
☐	☐	☐

3. Have a link to a confirmed case? **Y** ☐ **N** ☐ **Unk** ☐

Relationship to case: ☐ **Household** ☐ **Neighbor** ☐ **Coworker** ☐ **Other:**_____

4. Did case receive Post-Exposure Prophylaxis? **Y** ☐ **N** ☐ **Unk** ☐ **Was PEP completed?** **Y** ☐ **N** ☐ **Unk** ☐

If no, why not?:_____

Other comments:

PUBLIC HEALTH REFERENCE SHEET
Campylobacteriosis

Name	*Campylobacter jejuni* (most common)
Reservoir & Transmission	Animals, most frequently poultry and cattle; puppies, kittens, other pets; swine, sheep, rodents, and birds also sources of human infection Ingestion of organisms in undercooked meat, unpasteurized dairy products, or other contaminated food or water, or from direct contact with infected animals
Incubation Period	Usually 2–5 days with a range of 1–10 days
Common Symptoms	Diarrhea (which may be bloody), abdominal pain, fever, malaise, and nausea, sometimes with vomiting
Gold Standard Diagnostic Test	Culture from any clinical specimen (most commonly stool)
Risk Groups	Immunocompromised; those with decreased stomach acidity
Geographic Significance	Present worldwide

What is campylobacteriosis?
Campylobacteriosis (Campylobacter enteritis) is an infectious disease caused by bacteria of the genus *Campylobacter*.

What is the occurrence of campylobacteriosis?
Campylobacter is one of the most common causes of diarrheal illness in the United States. Most cases occur as isolated, sporadic events and are not part of recognized outbreaks. Active surveillance through the Foodborne Diseases Active Surveillance Network (FoodNet) indicates that about 20 cases are diagnosed each year for each 100,000 persons in the population. Many more cases go undiagnosed or unreported, and campylobacteriosis is estimated to affect over 1.5 million persons every year. Campylobacteriosis occurs much more frequently in the summer months than in the winter. The organism is isolated from infants and young adults more frequently than from persons in other age groups and from males more frequently than females. Although *Campylobacter* infection does not commonly cause death, case-fatality rates have been estimated from 0.01% to 1%.

How is *Campylobacter* transmitted?
Most cases of campylobacteriosis are associated with eating raw or undercooked poultry meat or from cross-contamination of other foods by these items. Outbreaks of *Campylobacter* have most often been associated with unpasteurized dairy products or contaminated water, poultry, and produce. Animals can also be infected, and some people get infected from contact with the stool of an ill dog or cat. The organism is not usually spread from one person to another, but this can happen if the infected person is producing a large volume of diarrhea. It only takes very few *Campylobacter* organisms (fewer than 500) to make a person sick. As little as one drop of juice from raw chicken meat can have enough *Campylobacter* in it to infect a person. The *Campylobacter* organisms from the raw meat can get onto the other foods.

Who is at risk for campylobacteriosis?
Anyone can get campylobacteriosis; however, it occurs most often in infants and young adults, as well as more often in males than females. Individuals with decreased stomach acidity, such as taking proton pump inhibitors (PPIs) or have hypochlorhydria (low stomach acid), may be more susceptible to campylobacteriosis. Those with weakened immune systems are at higher risk for severe disease.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Campylobacteriosis

What are the signs and symptoms of campylobacteriosis?
People exposed to *Campylobacter* may experience mild or severe symptoms or no symptoms at all. The symptoms of campylobacteriosis include diarrhea, cramping, abdominal pain, and fever. The diarrhea may be bloody and can be accompanied by nausea and vomiting. In persons with compromised immune systems, *Campylobacter* occasionally spreads to the bloodstream and causes a serious life-threatening infection. Severe abdominal pain may be mistaken for acute appendicitis or inflammatory bowel disease. Symptoms persist for several days to 2 weeks.

What are potential complications of campylobacteriosis?
Although rare, some long-term consequences can result from campylobacteriosis. Some people may develop arthritis. Others may develop Guillain-Barré syndrome, which occurs when the immune system is "triggered" to attack the body's own nerves. This can lead to paralysis that lasts several weeks and usually requires intensive care. Approximately 1 in every 1,000 reported campylobacteriosis cases leads to Guillain-Barré syndrome.

How is campylobacteriosis diagnosed?
Campylobacter infection is diagnosed through stool culture.

How is campylobacteriosis treated?
There is no specific treatment for campylobacteriosis. Supportive treatment includes management of diarrhea. Azithromycin and fluoroquinolones (e.g., ciprofloxacin) are commonly used for treatment of severe disease; however, resistance to fluoroquinolones is common. Antimicrobial susceptibility testing can help guide appropriate therapy.

How can campylobacteriosis be prevented?
Proper food handling and handwashing practices can help prevent campylobacteriosis. This includes thoroughly cooking all poultry products before eating; washing hands with soap before and immediately after handling raw meat; and cleaning all cutting boards, countertops, and utensils with soap and hot water after preparing raw meat. In addition, avoid consuming unpasteurized milk (raw milk) and untreated surface water.

What are some public health considerations?
- Document species and source of infection, if known.
- Document relevant travel and deployment history occurring within the incubation period (2–5 days, range 1–10 days).
- Document circumstances for exposure (e.g., duty exposure, occupational activities, environmental exposures, other high-risk activities).
- Document if the case lives in, works in, or attends a high transmission setting.

References:

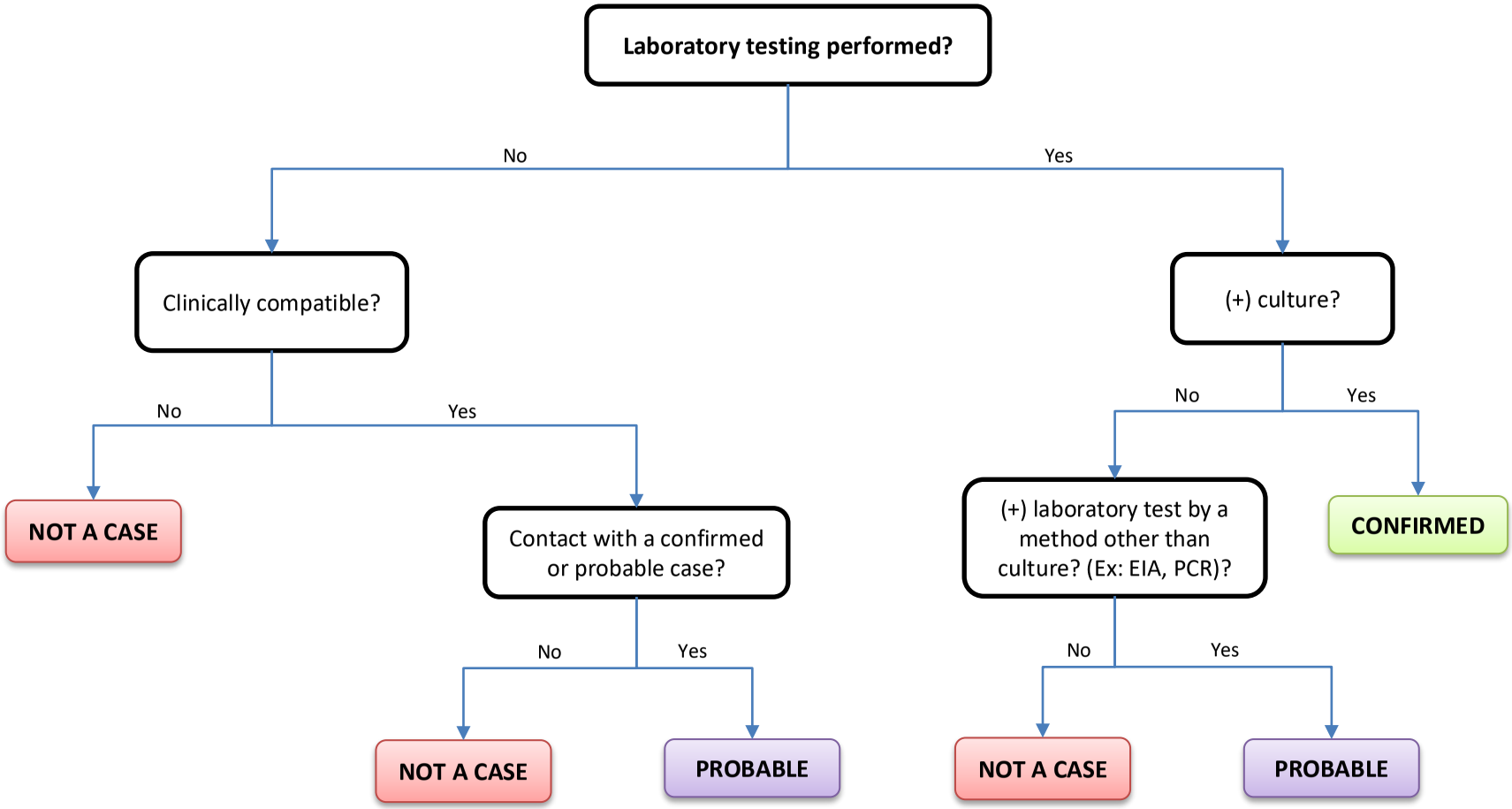
"Campylobacter," Centers for Disease Control and Prevention (CDC), last reviewed April 14, 2021. https://www.cdc.gov/campylobacter/faq.html#

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Last Updated September 1, 2023

Campylobacteriosis



Clinical Description:
Acute enteric disease with diarrhea, abdominal pain, nausea, and sometimes vomiting**.** Severe symptoms and invasive infections occur rarely, causing bacteremia, meningitis, or other focal infections.

Critical Reporting Elements and Comments:
- Document species and source of infection, if known.
- Document relevant travel and deployment history occurring within the incubation period (2–5 days, range 1–10 days).
- Document circumstances for exposure (e.g., duty exposure, occupational activities, environmental exposures, other high-risk activities).
- Document if the case lives in, works in, or attends a high transmission setting.

GASTROINTESTINAL INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

This form can be used for the following reportable medical events:

☐ **Campylobacter** ☐ **Salmonella (non-Typhi)**

☐ **Cryptosporidium** ☐ **Shiga-toxin producing E. coli**

☐ **Norovirus** ☐ **Shigella**

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk) **Duration of symptoms:** _____ ☐ **Still ill**

Diarrhea Y ☐ N ☐ *Describe any other symptoms or pertinent clinical information:*

Bloody diarrhea Y ☐ N ☐

Abdominal cramps Y ☐ N ☐

Vomiting Y ☐ N ☐

Nausea Y ☐ N ☐

Chills Y ☐ N ☐

Muscle aches Y ☐ N ☐

Other (describe): Y ☐ N ☐

Laboratory results:

Test type: **Culture** ☐ **PCR** ☐ **Antibody** ☐ **Other** ☐

Collection Date: ____/____/____ **Result date:** ____/_____/_____

Result: **Positive** ☐ **Negative** ☐ **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ **Unk** ☐

Details: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

CONTACTS

List all household contacts, ill or not ill, and any close contacts regardless of where they live (i.e., caregivers, partners, etc). Indicate for all contacts if high risk; if symptomatic, give onset date and testing information. List additional contacts on the last page of this form if needed.

Name/Contact	Age	Relationship to case	Symptoms		Onset Date	Lab testing	High Risk		
			Yes	No		Y/N, coll. date, result	Day care	Health care	Food Svc.

ENVIRONMENTAL EXPOSURES

In the 7 days before illness onset, from _____/_____/_____ to _____/_____/_____ did [you/your child]:

WATER-RELATED EXPOSURES	YES	NO	UNK	*If yes, details:*
1. Stay in a home with a septic system?				
2. Primarily use water from a well for drinking water?				*Treatment:*
3. Primarily drink bottled water?				*Brand(s):*
4. Drink any untreated water (pond, lake, etc)?				
5. Swim or wade in untreated water?				*Where?*
6. Swim or wade in treated water (pool, hot tub, etc)?				*Where?*
ANIMAL CONTACT	YES	NO	UNK	*If yes, details:*
1. Have contact with an animal?				
If yes, did [you/your child] have contact with a:				
a. Dog				
b. Cat				
c. Other pet mammal				*Specify:*
d. Reptile or amphibian				*Specify:*
e. Live poultry				
f. Pet bird				
g. Cattle, goat, or sheep				*Specify:*
h. Pig				
i. Other animal				*Specify:*
j. Pet with diarrhea				
2. Visit, work, or live on a farm, ranch, or petting zoo?				*Specify:*
3. Have exposure to a daycare or nursery?				*Where?*
4. Have a household or close contact with diarrhea?				*Who?*
5. Work in a restaurant or prepare food for others?				*Specify:*

FOOD HISTORIES

(For all cases, complete for the 7 days before illness. If case was asymptomatic or the onset is unknown, complete for the 7 days before collection. List ALL ingredients in each meal.)

Start with most recent date and move back

Date							
Morning/breakfast							
Afternoon/lunch							
Evening/dinner							
Snacks/other							

FOOD SOURCES

In the 7 days before illness, from _____/_____/_____ to _____/_____/_____, did [you/your child]:	YES	NO	UNK
1. Attend any events where food was served? (if yes, list below)			

Event	Date	Location	Foods Eaten
a.			
b.			
c.			

2. Eat at any restaurants? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

3. Eat food purchased from a farm or farm stand? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			

4. List all stores where food eaten in the days prior to illness were purchased (e.g. grocery stores, ethnic markets).

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

Also complete food exposure questions for ALL Campylobacter, non-Typhi Salmonella, and STEC cases

Notes and Summary of Investigation

List actions taken on cases and contacts and outcome:

FOOD EXPOSURES

[Instructions: Complete for all Campylobacter, non-Typhi Salmonella, and STEC cases. For all questions, ask for the 7-day period prior to onset of illness or, if unknown or asymptomatic, in the 7 days prior to collection date. For questions answered YES, use the space on the right to provide additional details, such as the specific type of food and where the food was purchased or eaten. Be specific.]

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household HANDLE any:	YES	NO	UNK	*If yes: provide specific details*
1. Raw beef?				
2. Raw poultry?				
3. Raw seafood?				
In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
MEAT PRODUCTS				
1. Chicken or foods containing chicken?				
If yes: a. Chicken prepared outside the home?				*Where?*
If yes: b. Chicken at home that was bought fresh?				*Which part(s):*
If yes: c. Chicken at home that was bought frozen?				*Which part(s):*
If yes: d. Frozen chicken that was stuffed or filled?				
If yes: e. Ground chicken?				
2. Turkey or foods containing turkey?				
if yes: a. Turkey prepared outside the home?				*Where?*
if yes: b. Ground turkey?				
3. Other poultry (e.g. Cornish hen, quail, etc)?				*Specify:*
4. Beef or foods containing beef?				
if yes: a. Beef prepared outside the home?				*Where?*
if yes: b. Ground beef?				
if yes: > Undercooked or raw ground beef?				
5. Pork or foods containing pork?				
6. Lamb or mutton?				
7. Liver?				
if yes a. Undercooked or raw liver?				
if yes b. Liver pate?				
8. Deli meat (e.g. ham, roast beef, salami)?				*Specify:*
9. Other meat (e.g. venison, goat)?				*Specify:*
FISH AND SEAFOOD				
10. Fish or fish products?				
if yes a. Fish prepared outside the home?				*Where?*
if yes b. Undercooked or raw fish (e.g. sushi)?				
11. Seafood (e.g. crab, shrimp, oysters, clams)?				*Specify:*
if yes a. Seafood prepared outside the home?				*Where?*
if yes b. Undercooked or raw seafood?				*Which?*

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
FROZEN FOODS				
12. Frozen meals (e.g. pizza, soup, entrée)?				*Specify:*
DAIRY PRODUCTS				
13. Dairy products (e.g. milk, yogurt, cheese, cream)?				
a. Pasteurized cow's or goat's milk?				
if yes b. Unpasteurized milk?				*From where?*
c. Soft cheese (e.g. queso fresco)?				
if yes >Unpasteurized soft cheese?				*From where?*
if yes d. Any other raw or unpasteurized dairy products?				*From where?*
14. Eggs?				
a. Eggs made outside the home?				*Where?*
if yes b. Eggs that were runny, raw, or uncooked foods made with raw eggs?				*From where?*
FRESH FRUITS AND VEGETABLES				
15. Fresh cantaloupe?				
16. Fresh watermelon?				
17. Fresh (unfrozen) berries?				*Specify:*
18. Other fresh fruit eaten raw?				*Specify:*
19. Unpasteurized, not from concentrate juice (sold at an orchard or farm, or commercially with label)?				*From where?*
20. Fresh green onion or scallions?				
21. Fresh cucumber?				
22. Fresh, raw tomatoes?				*Type(s) & from where?*
23. Fresh peppers (e.g. bell, hot, sweet)?				*Specify:*
24. Fresh, raw lettuce?				*Specify loose ( ) or pre-packaged ( )*
25. Fresh (unfrozen), raw spinach?				*Specify loose ( ) or pre-packaged ( )*
26. Sprouts?				*Specify:*
27. Other fresh vegetables eaten raw?				*Specify:*
28. Fresh (not dried) herbs (e.g. basil, cilantro)?				*Specify:*
29. Nuts or seeds?				*Specify:*

Any other comments, notes, or contacts:

PUBLIC HEALTH REFERENCE SHEET
Chikungunya Virus Disease

Name	Chikungunya (CHIKV)
Reservoir & Transmission	Mosquitoes, namely *Aedes aegypti* and *Aedes albopictus* Bite of an infected mosquito; Less commonly, is spread from mother to infant during pregnancy
Incubation Period	3–7 days, range 1–12 days
Common Symptoms	Sudden onset of fever (typically >39°C or 102°F) and bilateral symmetrical joint pain
Gold Standard Diagnostic Test	Testing serum or plasma to detect virus, viral nucleic acid (first 8 days of illness), or virus-specific immunoglobulin (Ig) M and neutralizing antibodies (first 3 days of illness)
Risk Groups	Neonates exposed intrapartum, adults >65 years, and people with underlying medical conditions
Geographic Significance	Most common in Africa, Asia, parts of Central and South America, islands in the Indian Ocean, Western and South Pacific, and Caribbean

What is Chikungunya?
Chikungunya is an infection caused by the chikungunya virus (CHIKV).

What is the occurrence of Chikungunya?
Prior to 2013, chikungunya virus outbreaks had been identified in Africa, Asia, Europe, and the Indian and Pacific Oceans. In late 2013, the first local transmission of chikungunya virus in the Americas was identified in Caribbean countries and territories. Since then, local transmission has been identified in 45 countries and territories throughout the Americas, with more than 1.7 million suspected cases reported to the Pan American Health Organization from affected areas.

How is Chikungunya transmitted?
Chikungunya is primarily transmitted to humans through *Aedes aegypti* and *Aedes albopictus* mosquitoes. Humans are the primary host of chikungunya virus during epidemic periods. Blood-borne transmission is possible; cases have been documented among laboratory personnel handling infected blood and a healthcare worker drawing blood from an infected patient.

The risk of a person transmitting the virus to a biting mosquito or through blood is highest when the patient is viremic during the first week of illness. More rarely, in utero transmission during the second trimester and intrapartum transmission happen when the mother was viremic around the time of delivery. Chikungunya has not been found in breastmilk.

Who is at risk for Chikungunya?
Neonates exposed intrapartum, older adults (e.g., >65 years), and persons with underlying medical conditions (e.g., hypertension, diabetes, or cardiovascular disease) are at risk.

What are the signs and symptoms of Chikungunya?
Most people infected with chikungunya become symptomatic, most often characterized by acute onset of fever (typically >39°C or 102°F) and polyarthralgia. Joint symptoms are usually bilateral and symmetric and can be severe and debilitating. Other symptoms include headache, myalgia, arthritis, conjunctivitis, nausea/vomiting, or maculopapular rash. Clinical laboratory findings can include lymphopenia, thrombocytopenia, elevated creatinine, and elevated hepatic

transaminases. Approximately 3%–28% of people infected with chikungunya virus will remain asymptomatic. Acute symptoms typically resolve within 7–10 days. Chronic symptoms may persist months to years.

What are potential complications of Chikungunya?
Rare complications include uveitis, retinitis, myocarditis, hepatitis, nephritis, bullous skin lesions, hemorrhage, meningoencephalitis, myelitis, Guillain-Barré syndrome, and cranial nerve palsies. Some patients may have relapse of rheumatologic symptoms (e.g., polyarthralgia, polyarthritis, tenosynovitis) in the months following acute illness. Persistent joint pains may last for months to years. Mortality is rare and occurs mostly in older adults.

How is chikungunya diagnosed?
Chikungunya should be considered in patients with acute onset of fever and polyarthralgia, particularly in travelers who recently returned from areas with known virus transmission.

Preliminary diagnosis is based on the patient's clinical features, places and dates of travel, and activities. Laboratory diagnosis is generally accomplished by testing serum or plasma to detect virus, viral nucleic acid, or virus-specific immunoglobulin M and neutralizing antibodies. Convalescent-phase samples should be obtained from patients whose acute-phase samples test negative.

Co-infections and cross-reactivity are a possibility, as dengue and chikungunya viruses are transmitted by the same mosquitoes and have similar clinical features. The two viruses can circulate in the same area and can cause occasional co-infections in the same patient. Chikungunya virus is more likely to cause high fever, severe arthralgia, arthritis, rash, and lymphopenia, while dengue virus infection is more likely to cause neutropenia, thrombocytopenia, hemorrhage, shock, and death. It is important to rule out dengue virus infection because proper clinical management of dengue can improve outcome.

In addition to dengue, other considerations include leptospirosis, malaria, rickettsia, group A streptococcus, rubella, measles, parovirus, enteroviruses, adenovirus, other alphavirus infections (e.g., Mayaro, Ross River, Barmah Forest, O'nyong-nyong, and Sindbis viruses), post-infections arthritis, and rheumatologic conditions.

How is Chikungunya treated?
There is no specific antiviral therapy for chikungunya virus infection. Supportive treatment for symptoms includes rest, fluids, and use of non-steroidal anti-inflammatory medications (NSAIDs). Those with persistent joint pain may benefit from use of NSAIDs, corticosteroids, or physiotherapy.

How can Chikungunya be prevented?
People infected with Chikungunya should be protected from further mosquito exposure during the first week of illness to reduce the risk of local transmission. In November 2023, the U.S. Food and Drug Administration licensed a vaccine for chikungunya virus for adults aged 18 years and older. An Advisory Committee on Immunization Practices (ACIP) Work Group is reviewing the data on this chikungunya vaccine and considering use of the vaccine in people in the U.S. at risk of chikungunya, including those who travel abroad, laboratory workers working with chikungunya virus, and residents of U.S. states and territories with, or at risk of, transmission. Final recommendations will be posted on CDC's ACIP vaccine website when available.

PUBLIC HEALTH REFERENCE SHEET
Chikungunya Virus Disease

What are some public health considerations?

- Document relevant travel and deployment history occurring within the incubation period (3–7 days, range 1–12 days).
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

References

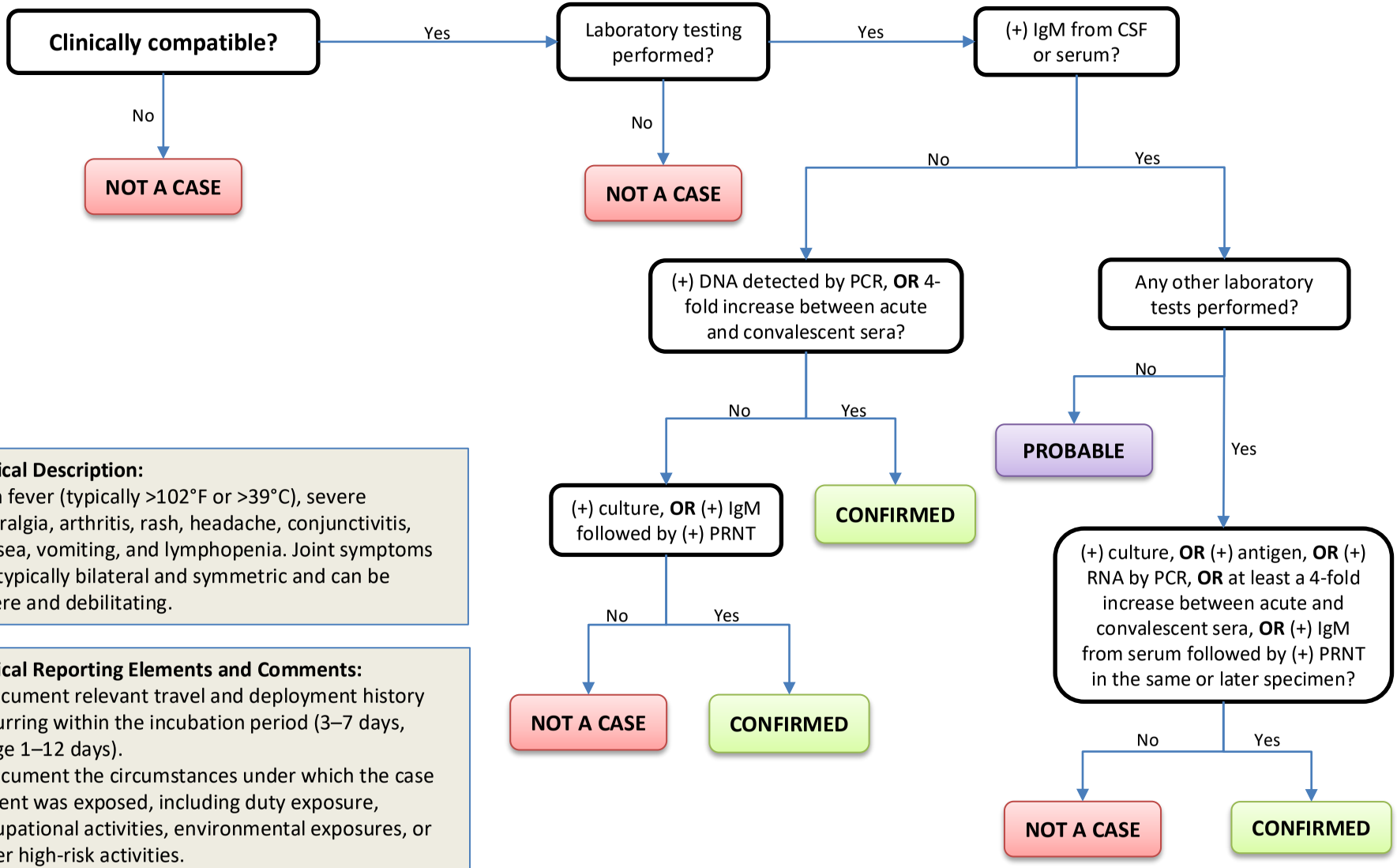
"Chikungunya," Centers for Disease Control and Prevention (CDC), last reviewed June 2, 2022. https://www.cdc.gov/chikungunya/

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Last Updated December 13, 2023

Chikungunya Virus Disease



Clinical Description:
High fever (typically >102°F or >39°C), severe arthralgia, arthritis, rash, headache, conjunctivitis, nausea, vomiting, and lymphopenia. Joint symptoms are typically bilateral and symmetric and can be severe and debilitating.

Critical Reporting Elements and Comments:
- Document relevant travel and deployment history occurring within the incubation period (3–7 days, range 1–12 days).
- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

MOSQUITO-BORNE INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

☐ Arboviral Disease:_____ *Please specify*	◯ Confirmed	◯ Probable	◯ Not a case
☐ Chikungunya Virus	◯ Confirmed	◯ Probable	◯ Not a case
☐ Dengue Virus	◯ Confirmed	◯ Probable	◯ Not a case
☐ Malaria	◯ Confirmed	◯ Suspect	◯ Not a case
☐ Zika Virus	◯ Confirmed	◯ Probable	◯ Not a case

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.
Outbreak investigations must be reported immediately to DRSi through the outbreak module at https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ PARENT/GUARDIAN: _____

DOB: _____/_____/_____ AGE: _____ FMP: _____ SEX: ☐ M ☐ F ☐ Unk RACE: _____

UNIT: _____ SERVICE:_____ RANK: _____ DUTY STATUS:_____

ADDRESS: *(Street)*_____ DoD ID:_____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ Clinic/Hospital:_____

Hospitalized Y ☐ N ☐ Admit Date: _____/_____/_____ Discharge date: _____/_____/_____

Deceased Y ☐ N ☐ Date of death: _____/_____/_____ Cause of death:_____

Symptomatic	Y ☐	N ☐	Onset Date: _____/_____/_____ Clinic Date: _____/_____/_____ Diagnosis Date: _____/_____/_____
Fever	Y ☐	N ☐	Max Temp: _____°F/°C (☐ unk)
Rash	Y ☐	N ☐	
Chills/sweats	Y ☐	N ☐	
Arthralgia	Y ☐	N ☐	
Myalgia	Y ☐	N ☐	
Nausea/vomiting	Y ☐	N ☐	
Headache	Y ☐	N ☐	
Fatigue	Y ☐	N ☐	
Conjunctivitis	Y ☐	N ☐	
Joint swelling	Y ☐	N ☐	
Neurological symptoms	Y ☐	N ☐	
Complications*	Y ☐	N ☐	

MEDICAL HISTORY

(Provide dates and all known details for each question)

History of mosquito-borne illness? Y ☐ N ☐ Describe:_____

Immune suppression? Y ☐ N ☐ Describe:_____

Underlying illness? Y ☐ N ☐ Describe:_____

Transfusion or transplant <30 days before onset? Y ☐ N ☐ Describe:_____

Describe any other pertinent medical information:

CHEMOPROPHYLAXIS

Was chemoprophylaxis taken? Y ☐ N ☐

If yes, please indicate:

Chloroquine ☐ Doxycycline ☐

Mefloquine ☐ Malarone ☐

Started: ____/____/____ Ended: ____/____/____

IF PREGNANT:

Is case pregnant? Y ☐ N ☐

Trimester: _____

Pregnancy complications? Y ☐ N ☐

Describe:_____

Evidence of microcephaly or Guillain-Barre syndrome?*(Zika)* Y ☐ N ☐

*IF COMPLICATIONS:

(check all that apply and describe below)

☐ Encephalitis/meningitis
☐ Acute flaccid paralysis
☐ Lymphopenia
☐ Leukopenia
☐ Severe plasma leakage
☐ Severe organ involvement
☐ Severe bleeding
☐ Coma

DIAGNOSIS

Did provider diagnose this current illness as a mosquito-borne disease?

☐ Yes (mark all that apply)

☐ Chikungunya V. ☐ Dengue V.

☐ Malaria ☐ Zika V.

☐ "mosquito-borne illness"

☐ Other: _____

☐ No, NOT a mosquito-borne illness

Describe: _____

MALARIA ONLY

Specify malaria species:

☐ Falciparum ☐ Vivax

☐ Malariae ☐ Ovale

☐ Unspecified ☐ Other:_____

Arboviral Disease incubation periods for mosquito-borne diseases are:

- **West Nile fever - most often 2–6 days, ranges up to 2–14 days, up to 21 days for immunocompromised**
- **West Nile encephalitis - most often 2–6 days, ranges up to 2–14 days,**
- **Japanese encephalitis (JE) - 5–15 days**
- **Western Equine encephalitis (WEE) - 5–15 days**
- **Eastern Equine encephalitis (EEE) - 4–10 days**
- **St. Louis encephalitis (SLE) - 5–15 days**
- **California encephalitis (CE) - 3–7 days**

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test	Pathogen	Collection Date	Source	Result
	(type of test performed)	*(Specify if Dengue, CHIK, etc)*		*(CSF, Serum, etc)*	*(Ex: IgM positive, IgG negative)*
☐ **Antibody** *Acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

Additional labs (if case has co-infection)

☐ **Antibody** *Acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

TRAVEL HISTORY

In the 3 months before illness onset (when symptoms started), did the case....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Chlamydia

Name	*Chlamydia trachomatis*
Reservoir & Transmission	Humans; sexual contact with the penis, vagina, mouth, or anus of an infected partner. Neonatal infection results from exposure to the mother's infected cervix.
Incubation Period	Poorly defined, probably 7–14 days or longer
Common Symptoms	Mostly asymptomatic. In males, manifests as urethritis, and in females as cervicitis are most common manifestations.
Gold Standard Diagnostic Test	Nucleic acid amplification tests offer >90% sensitivity and high specificity and can be used with noninvasive and minimally invasive specimens, including vaginal swabs and urine specimens.
Risk Groups	Sexually active persons, especially adolescents and young adults, and those with concurrent or multiple sex partners
Geographic Significance	Most common Sexually Transmitted Infection (STI) in the United States; can be found worldwide

What is chlamydia?
Chlamydia is a common Sexually Transmitted Infection (STI) caused by infection with *Chlamydia trachomatis*. It can cause cervicitis, urethritis, and proctitis. In women, these infections can lead to pelvic inflammatory disease (PID), tubal factor infertility, ectopic pregnancy, and chronic pelvic pain. Lymphogranuloma venereum (LGV) is another type of STI caused by *C. trachomatis*. LGV is the cause of recent proctitis outbreaks among gay, bisexual, and other men who have sex with men (MSM) worldwide.

What is the occurrence of chlamydia?
The CDC estimates that there were 4 million chlamydial infections in 2018. Chlamydia is also the most frequently reported bacterial sexually transmitted infection in the United States. It is difficult to account for many cases of chlamydia. Most people with the infection have no symptoms and do not seek testing.

Chlamydia is most common among young people. Almost two-thirds of new chlamydia infections occur among youth aged 15–24 years. It is estimated that 1 in 20 sexually active females aged 14–24 years have chlamydia.

Disparities persist among racial and ethnic minority groups. In 2020, chlamydia rates for African Americans/Blacks were six times that of Whites. Chlamydia is also common among MSM. Among MSM screened for rectal chlamydial infection, positivity ranges from 3.0% to 10.5%. Among MSM screened for pharyngeal chlamydial infection, positivity has ranges from 0.5% to 2.3%. Depending on the affected anatomical site/exposure to chlamydia the Military Treatment Facilities will test lab samples from swabs collected from all anatomical sites.

How is chlamydia transmitted?
Chlamydia spreads through vaginal, anal, or oral sex with someone with the infection. Semen does not have to be present to get or spread the infection.

Pregnant people can give chlamydia to their baby during childbirth. This can cause ophthalmia neonatorum (conjunctivitis) or pneumonia in some infants. Rectal or genital infection can persist 1 year or longer in infants infected at birth. However, sexual abuse should be a consideration among young children with vaginal, urethral, or rectal infection beyond the neonatal period.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Chlamydia

People treated for chlamydia can get the infection again if they have sex with a person with chlamydia.

Who is at risk for chlamydia?
Sexually active people can get chlamydia through vaginal, anal, or oral sex without a condom with a partner who has chlamydia. It is a very common STI, especially among young people.

Sexually active young people are at high risk of getting chlamydia for behavioral, biological, and cultural reasons. Some don't always use condoms. Some may move from one monogamous relationship to another during the likely infectivity period of chlamydia. This can increase the risk of transmission. Teenage girls and young women may have cervical ectopy (where cells from the endocervix are present on the ectocervix). Cervical ectopy may increase susceptibility to chlamydial infection. High chlamydia prevalence among young people also may reflect barriers to accessing STI prevention services. These barriers can include lack of transportation, cost, and perceived stigma.

MSM are also at risk for infection since chlamydia can spread by oral or anal sex. Among MSM screened for rectal infection, positivity ranges from 3.0% to 10.5%. Among MSM screened for pharyngeal infection, positivity ranges from 0.5% to 2.3%.

What are the signs and symptoms of chlamydia?
Some refer to chlamydia as a "silent" infection. This is because most people with the infection have no symptoms or abnormal physical exam findings. Studies find that the proportion of people with chlamydia who develop symptoms vary by setting and study methodology. Two modeling studies estimate that about 10% of men and 5–30% of women with a confirmed infection develop symptoms. The incubation period of chlamydia is unclear. Given the relatively slow replication cycle of the organism, symptoms may not appear until several weeks after exposure in people who develop symptoms.

In women, the bacteria initially infect the cervix. This may cause signs and symptoms of cervicitis (e.g., mucopurulent endocervical discharge, easily induced endocervical bleeding). It also can infect the urethra. This may cause signs and symptoms of urethritis (e.g., pyuria, dysuria, urinary frequency). Infection can spread from the cervix to the upper reproductive tract (i.e., uterus, fallopian tubes), causing PID. PID may be asymptomatic ("subclinical PID") or acute, with typical symptoms of abdominal and/or pelvic pain. Signs of cervical motion tenderness and uterine or adnexal tenderness also may occur during examination.

Men with symptoms typically have urethritis, with a mucoid or watery urethral discharge and dysuria. Some men develop epididymitis (with or without symptomatic urethritis) with unilateral testicular pain, tenderness, and swelling.

Chlamydia can infect the rectum in men and women, either directly (through receptive anal sex), or possibly via spread from the cervix and vagina in a woman with cervical chlamydial infection. While these infections are often asymptomatic, they can cause symptoms of proctitis (e.g., rectal pain, discharge, and/or bleeding). Sexually acquired chlamydial conjunctivitis can occur in both men and women through contact with infected genital secretions. While chlamydia can also be found in the throats of women and men having oral sex with an infected partner, it is typically asymptomatic and not thought to be an important cause of pharyngitis.

PUBLIC HEALTH REFERENCE SHEET
Chlamydia

What are potential complications of chlamydia?
The initial damage that chlamydia causes is often unnoticed. However, chlamydial infections can lead to serious health problems with both short- and long-term consequences. In women, untreated chlamydia can spread into the uterus or fallopian tubes and cause PID.

Symptomatic PID occurs in about 10 to 15% of women with untreated chlamydia. However, chlamydia can also cause subclinical inflammation of the upper genital tract ("subclinical PID"). Both acute and subclinical PID can cause long-term damage to the fallopian tubes, uterus, and surrounding tissues. The damage can lead to chronic pelvic pain, tubal factor infertility, and potentially fatal ectopic pregnancy.

Some patients with chlamydial PID develop perihepatitis, or "Fitz-Hugh-Curtis Syndrome," an inflammation of the liver capsule and surrounding peritoneum, which can cause right upper quadrant pain. In pregnant women, untreated chlamydia has been associated with pre-term delivery, ophthalmia neonatorum (conjunctivitis), and pneumonia in the newborn. Reactive arthritis can occur in men and women following symptomatic or asymptomatic chlamydial infection. This is sometimes part of a triad of symptoms (with urethritis and conjunctivitis), formerly referred to as Reiter's Syndrome.

Untreated chlamydia can cause pre-term delivery, the newborn may develop ophthalmia neonatorum (conjunctivitis), and pneumonia. Neonatal prophylaxis against gonococcal conjunctivitis routinely performed at birth does not effectively prevent chlamydial conjunctivitis.

How is chlamydia diagnosed?
Chlamydia is diagnosed with nucleic acid amplification tests (NAATs), cell culture, and other types of tests. NAATs are the most sensitive tests to use on easy-to-obtain specimens. This includes vaginal swabs (either clinician- or patient-collected) or urine.

To diagnose genital chlamydia in women using a NAAT, vaginal swabs are the optimal specimen. Urine is the specimen of choice for men. Urine is an effective alternative specimen type for women. Self-collected vaginal swab specimens perform as well as other approved specimens using NAATs. Patients may prefer self-collected vaginal swabs or urine-based screening to more invasive specimen collection. Adolescent girls may be good candidates for self-collected vaginal swab- or urine-based screening.

Rectal or pharyngeal infection is diagnosed by testing at the anatomic exposure site. While useful for these specimens, culture is not widely available. Most tests, including NAATs, are not FDA-cleared for use with rectal or pharyngeal swab specimens. NAATs have better sensitivity and specificity compared with culture for the detection of *C. trachomatis* at rectal sites.

How is chlamydia treated?
The primary antibiotics are doxycycline for 7 days or a single dose of azithromycin. Patients treated with a 7-day course of antibiotics should not have sex until they complete treatment, and their symptoms resolve. Patients treated with single-dose antibiotics should not have sex for 7 days. Although treatment will cure the infection, it will not repair any long-term damage caused by the disease. If a person's symptoms continue for more than a few days after receiving treatment, they should be reevaluated. Single-dose antibiotics should be considered in patients with history of questionable medication compliance and pregnant individuals.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Chlamydia

Repeat infection with chlamydia is common. Women whose sex partners do not receive appropriate treatment are at high risk for re-infection. Having multiple chlamydial infections increases a woman's risk of serious reproductive health problems (e.g., PID and ectopic pregnancy). A healthcare provider should retest those with chlamydia about 3 months after treatment of an initial infection. Retesting is necessary even if their partners receive successful treatment. If clinically indicated, retesting for "test of cure" should be done after 4 weeks, as premature retesting can still be positive even with successful treatment.

Infants with chlamydia may develop conjunctivitis and/or pneumonia. Healthcare providers can treat infection in infants with antibiotics. Chlamydia infection should be considered in an infant less than 3 months of age with pneumonia if the mother has a history of untreated chlamydia infection or no prenatal care.

In some states, healthcare providers may give people diagnosed with chlamydia an extra course of treatment or prescription for their sex partner(s), called "expedited partner therapy" (EPT). Partners should still seek medical care, regardless of whether they receive EPT.

How can chlamydia be prevented?
The only way to completely avoid chlamydia is to not have vaginal, anal, and oral sex. Using condoms correctly every time someone has sex can reduce the risk of getting or giving chlamydia. A long-term, mutually monogamous relationship with a partner who has been tested and does not have chlamydia reduces risk of disease.

Screening of women for *C. trachomatis* has been shown to reduce the risk of PID. Routine, periodic screening for chlamydia is recommended for defined groups in some countries. In the U.S., chlamydia screening is recommended yearly for all sexually active women aged 25 years and younger, older women with risk factors (e.g., new or multiple sex partners), and men who have receptive anal sex, as well as the first prenatal care visit for all pregnant women. More frequent screening may be performed based on patient risk factors.

Screening and treatment of chlamydia in pregnant women is the best method for preventing neonatal chlamydial disease. All pregnant women should be screened for chlamydia at their first prenatal visit. Pregnant women under 25 and those at increased risk for chlamydia (e.g., women who have a new or more than one sex partner) should be screened again in their third trimester. Pregnant women with chlamydial infection should be retested 4 weeks and 3 months after completion of recommended treatment.

The CDC recommends annual chlamydia screening of all sexually active women younger than 25, as well as older women with risk factors such as new or multiple partners, or a sex partner who has an STI.

Routine screening is not recommended for men; however, screening should be considered for 1) active young men in clinical settings with a high prevalence of chlamydia (e.g., adolescent clinics, correctional facilities), 2) sexually active MSM who have insertive intercourse and may be at risk for urethral chlamydial infection, 3) MSM who have receptive anal intercourse for rectal infection. Screening for pharyngeal infection is not recommended. MSM, including those with HIV, should receive more frequent chlamydia screening at 3- to 6-month intervals if risk behaviors persist or if they or their sexual partners have multiple partners.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Chlamydia

Individuals with HIV should be tested at initial work-up and at least annually.

What are some public health considerations?

- Report co-infections with other organisms, like gonorrhea, separately.

- Case contact investigations include partners for anal, vaginal, or oral sex within 60 days before symptom onset or diagnosis.

References:

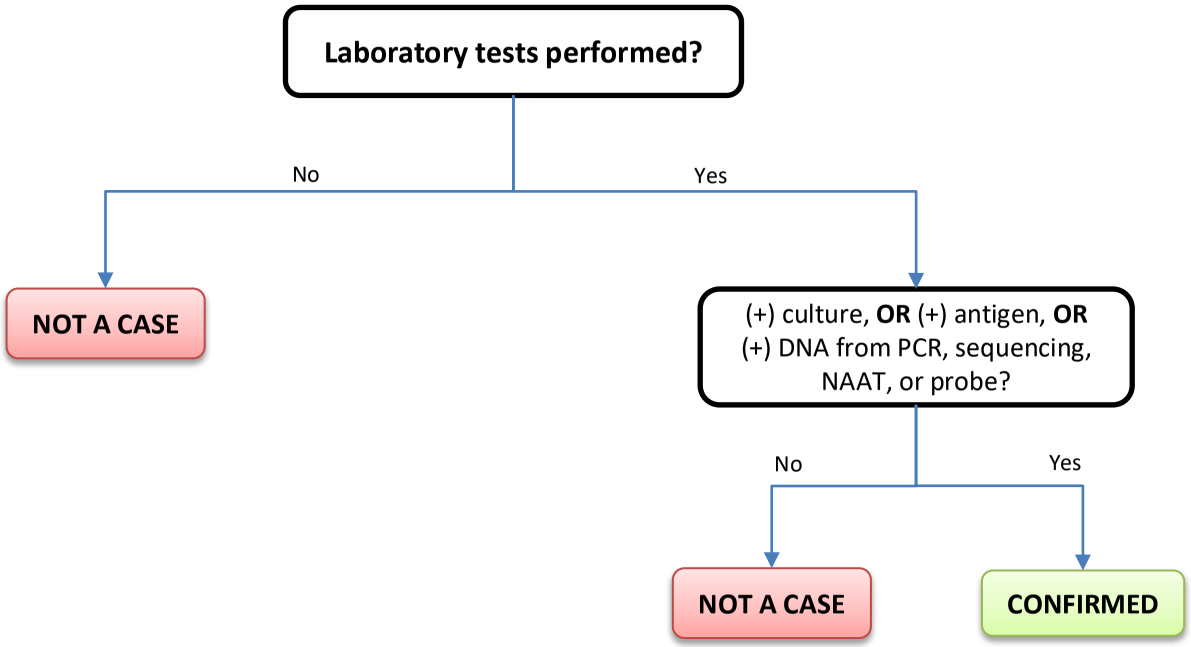
"Chlamydia," Centers for Disease Control and Prevention. last reviewed April 12, 2022. https://www.cdc.gov/std/chlamydia/

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

Last Updated September 1, 2023

Chlamydia Trachomatis Infection



Clinical Description:
An infection characterized by urethritis, epididymitis, cervicitis, acute salpingitis, or other syndromes when sexually transmitted. Infections are often asymptomatic in women. Perinatal infections may result in inclusion conjunctivitis and pneumonia in newborns. Other syndromes caused by C. trachomatis include lymphogranuloma venereum and trachoma.

Critical Reporting Elements and Comments:
- Report co-infections with other organisms, like gonorrhea, separately as individual RMEs.
NOTE: Complete a STI Risk Survey when interviewing the patient.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Chlamydial Infections

Gonococcal Infections

	Confirmed	Probable	Not a Case
Chlamydial Infections	◯	◯	◯
Gonococcal Infections	◯	◯	◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Pregnant? Y ☐ N ☐

If symptomatic, what was patient diagnosed with? _____

Anatomic site infection present/lab collected

_____

If asymptomatic, why was the patient tested? *(Check all that apply)*

- ☐ **Reported contact to another STI case (specify:** ☐ **Gonorrhea** ☐ **Chlaymdia** ☐ **Syphilis)**
- ☐ **Screening**
- ☐ **Rescreening after previous positive**
- ☐ **Patient request**
- ☐ **Other (*specify*):** _____

TREATMENT

Treated with antibiotics? ☐ Y ☐ N

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test *(type of test performed)*	**Pathogen** *(specify if Chlamydia or Gonorrhea)*	**Collection Date**	**Source** *(CSF, Serum, Urine, Urethral, Extragenital sites, Anus)*	**Result**
☐ **Antibody**	_____	_____/_____/_____	_____	_____
☐ **Repeat test**	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

This page is to be filled out for DRSi STI Risk Surveys.

Do NOT record patient's name or partner names/identifying information on these pages.

BEHAVIORAL

Does the patient have sex with: ☐ Men ☐ Women ☐ Both ☐ Other ☐ Unknown

Martial status:

- ☐ Single, never married
- ☐ Married
- ☐ Married, separated
- ☐ Divorced
- ☐ Widowed
- ☐ Cohabitating
- ☐ Committed relationship
- ☐ Unknown
- ☐ Refused to answer

Sexual behavior	within past 3 months	within past 12 months
Anonymous partner	☐	☐
Sex with spouse/partner	☐	☐
Men-sex-with-men	☐	☐
Exchanged money/drugs for sex	☐	☐
Injection drug use	☐	☐
Other	☐	☐
Unknown	☐	☐
Refused to answer	☐	☐

Prevention counseling and partner referral services conducted?

☐ Yes ☐ No ☐ Unk

PARTNER INFORMATION

Testing and treatment are appropriate for all named partners of this patient who were exposed within 60 days prior to the date of onset.

Partner # 1

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Partner # 2

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Print third page for additional partners

This page is to be filled out for DRSi STI Risk Surveys.

Do NOT record patient's name or partner names/identifying information on these pages.

ADDITIONAL PARTNER INFORMATION

Testing and treatment are appropriate for all named partners of this patient who were exposed within 60 days prior to the date of onset.

Partner #_____

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Partner #_____

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Partner #_____

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

PUBLIC HEALTH REFERENCE SHEET
Cholera

Name	*Vibrio cholera* O1 or O139
Reservoir & Transmission	Humans (fecal) and the environment (associated with copepods or other zooplankton in brackish water or estuaries). Ingestion of contaminated food or water
Incubation Period	From a few hours to 5 days, usually 2-3 days
Common Symptoms	Diarrhea, vomiting, dehydration
Gold Standard Diagnostic Test	In areas with limited laboratory testing: Crystal® VC Rapid Diagnostic Test (RDT) for initial recognition, followed by culture by fecal sample for isolation and identification In areas with full laboratory testing: culture of a stool specimen
Risk Groups	Lowest socioeconomic groups, particularly people without access to safe drinking water and adequate sanitation Persons with blood group O are more vulnerable to severe cholera Breastfed infants have a reduced risk
Geographic Significance	Present worldwide; particularly Sub-Saharan Africa, the Indian Subcontinent, and Southeast Asia. In 2022, cholera outbreaks affected several regions of the world, including West, Central, and Southern Africa, the Horn of Africa, the Caribbean, the Middle East, Southeast Asia, and the Western Pacific.

What is cholera?
Cholera is an acute, diarrheal illness caused by an intestinal infection with the bacterium *Vibrio cholerae*.

What is the occurrence of cholera?
An estimated 2.9 million cases and over 95,000 deaths occur globally each year. Cholera is most likely to be found and spread in places with inadequate water treatment, sanitation, and hygiene. The cholera bacterium may also live in the environment in brackish rivers and coastal waters. Shellfish eaten raw have been a source of cholera, and a few persons in the U.S. have contracted cholera after eating raw or undercooked shellfish from the Gulf of Mexico.

How is cholera transmitted?
The cholera bacterium is usually found in water or food sources that have been contaminated by feces from a person infected with cholera. A person can get cholera by drinking water or eating food contaminated with the cholera bacterium. In an epidemic, the source of the contamination is usually the feces of an infected person that contaminates water and/or food. The disease can disseminate rapidly in areas with inadequate sewage and drinking water treatments. The disease is not likely to spread directly from one person to another; casual contact with an infected person is not a risk for becoming ill.

What are the signs and symptoms of cholera?
The infection is often mild or without symptoms but can sometimes be severe. Approximately 5–10% of infected persons will have severe disease characterized by profuse watery diarrhea, vomiting, and leg cramps. Rapid loss of body fluids leads to dehydration and shock. Without treatment, death can occur within hours.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Cholera

How is cholera diagnosed?

The diagnosis is made by culturing the organism from the stool using Thiosulfate-citrate-bile salts-sucrose (TCBS) agar. Do not wait for a positive culture before starting treatment.

How is cholera treated?

Administration of fluids for volume replacement treats dehydration, shock, and acidosis. Antibiotic treatment is less important but will decrease the duration of illness. Only a small proportion, about 5–10%, of persons infected with *Vibrio cholerae* O1 or O139 may require treatment. Patients with severe dehydration or intractable vomiting need intravenous therapy with Ringer's lactate solution. Intravenous fluids should be given quickly to restore the circulation, followed by oral fluids as soon as possible. Rehydration with oral salt solution and intravenous fluids in a timely manner and in adequate volumes can reduce fatalities to under 1% of all patients. Breastfed children should continue to breastfeed. Avoid other types of fluids, such as juice, soft drinks, and sports drinks.

How can cholera be prevented?

All people in areas where cholera is occurring or has occurred should observe the following recommendations:

- Drink only bottled, boiled, or chemically-treated water and bottled or canned carbonated beverages. When drinking from bottles, make sure that the seal has not been broken. To disinfect water: boil for 1 minute or filter the water and add 2 drops of household bleach or ½ of an iodine tablet per liter of water.
- Use bottled, boiled, or chemically-treated water to wash dishes, brush teeth, wash and prepare food, or make ice.
- Avoid tap water, fountain drinks, and ice cubes.
- Wash hands often with soap and clean water.
- If water and soap are not available, use an alcohol-based hand cleaner (with at least 60% alcohol). Clean hands before preparing food, eating, and after using the bathroom.
- Eat foods that are packaged or that are freshly cooked and served hot. Do not eat raw and undercooked meats and seafood or unpeeled fruits and vegetables.
- Prevent cross-contamination between feces, water, and food sources.

What are some public health considerations?

- Specify the serogroup (*V. cholerae* O1 or *V. cholerae* O139) if known.
- Document relevant travel and deployment history occurring within the incubation period (0–5 days).
  NOTE: Not all *V. cholerae* O1 or O139 is reportable. Only *V. cholerae* O1 or O139 that produces cholera toxin is reportable.

References:

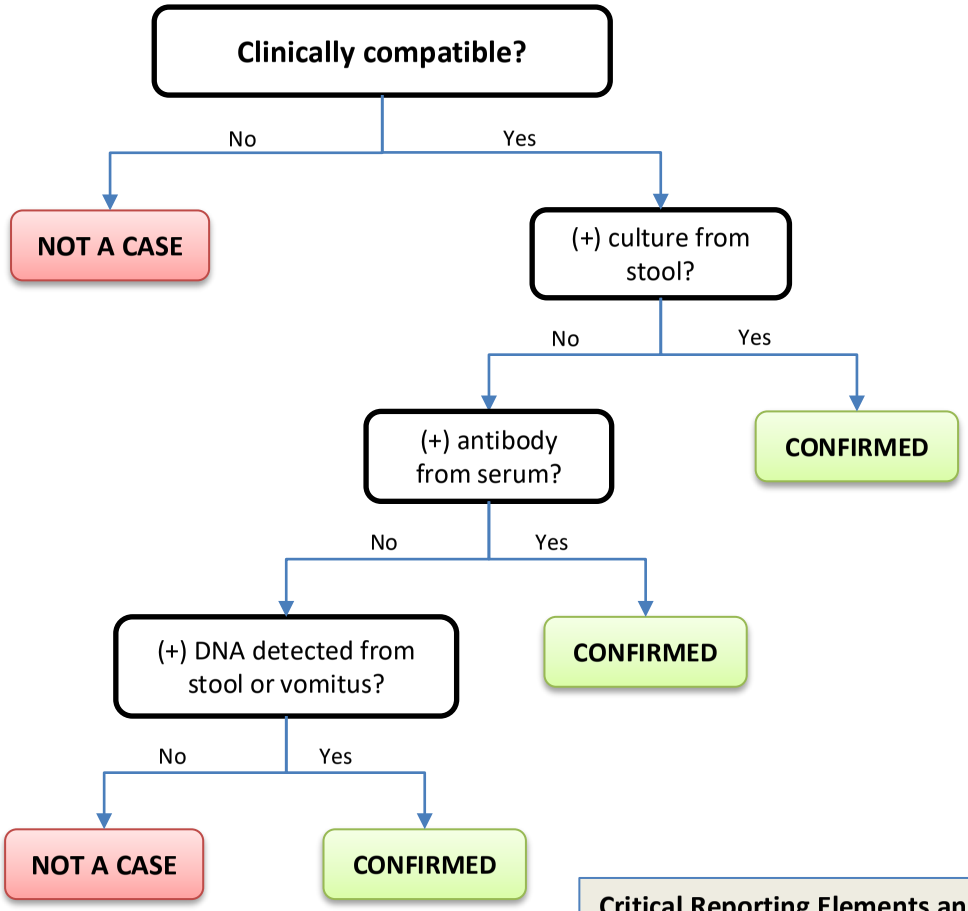
"Cholera," Centers for Disease Control and Prevention (CDC), last reviewed November 14, 2022. https://www.cdc.gov/cholera/

Defense Health Agency. 2023. *Armed Forces Reportable Medical Events Guidelines and Case Definitions*. https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. *Control of Communicable Diseases Manual*. 21st Edition. 2022. Washington, DC: APHA Press.

Last Updated September 1, 2023

Cholera



Clinical Description:
An acute illness characterized by profuse watery diarrhea and vomiting. Severity is variable; however, severe cases can result in rapid dehydration, electrolyte disturbances, or death.

Critical Reporting Elements and Comments:
- Specify the serogroup (*V. cholerae* O1 or
- *V. cholerae* O139) if known.
- Document relevant travel and deployment history occurring within the incubation period (0–5 days).

NOTE: Not all *V. cholerae* O1 or O139 is reportable. Only *V. cholerae* O1 or O139 that produces cholera toxin is reportable.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Cholera

Confirmed ○ Not a Case ○

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Vomiting	☐	☐	
Rapid heart rate	☐	☐	
Loss of skin elasticity	☐	☐	
Low blood pressure	☐	☐	
Excessive thirst	☐	☐	
Muscle cramps	☐	☐	
Restlessness/Irritability	☐	☐	

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

(If yes) **Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation Period: Few hours-5 days; usually 2–3 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Coccidioidomycosis

Name	*Coccidioides immitis* and *posadasii*
Reservoir & Transmission	Soil Breathing in the microscopic fungal spores from the air
Incubation Period	Primary infection: 1–3 weeks or 1–4 weeks Disseminated infection: may develop years after primary infection, sometimes without recognized symptoms of primary pulmonary infection
Common Symptoms	Can be asymptomatic; may resemble influenza-like illness; less than 1% leads to disseminated infection
Gold Standard Diagnostic Test	Precipitin tests: IgM antibodies appear 1–2 weeks after symptoms appear and persists for 3–4 months
Risk Groups	Laboratory technicians who may have exposure; those who move or visit endemic areas; the elderly are most commonly infected
Geographic Significance	Most common in Southwest United States, Mexico, Central and South America, and South-Central Washington State

What is coccidioidomycosis?
Valley fever is an infection caused by the fungus *Coccidioides*. The scientific name for Valley fever is "coccidioidomycosis," and it is also known as "San Joaquin Valley fever" or "desert rheumatism." The term "Valley fever" usually refers to *Coccidioides* infection in the lungs, but in severe cases can spread to other parts of the body, called "disseminated coccidioidomycosis". The fungus is known to live in the top layer of soil in arid and semiarid areas in the southwestern United States and parts of Mexico and Central and South America, and South-Central Washington State.

How is Valley fever transmitted?
People can get Valley fever by breathing in the microscopic fungal spores that can be mobilized during wind or dust storms, as well as during desert military operations. Valley fever is not contagious. *Coccidioides* can't spread from the lungs between people or between people and animals. In extremely rare instances, a wound infection with *Coccidioides* can spread Valley fever to someone else, or the infection can be spread through an organ transplant.

Who is at risk for Valley fever?
Anyone who lives in or travels to the southwestern United States (Arizona, California, Nevada, New Mexico, Texas, or Utah), or parts of Mexico or Central or South America can get Valley fever. Valley fever can affect people of any age, but it's most common in adults aged 60 and older. Certain groups of people may be at higher risk for developing the severe forms of Valley fever, such as people who have weakened immune systems, people who have had an organ transplant, people who or are taking medications such as corticosteroids or tumor necrosis factor (TNF)-inhibitors (typically immunosuppressive therapy for individuals with rheumatologic diseases), pregnant women, people who have diabetes, and people who are of African or Filipino race/descent/ancestry.

What are the signs and symptoms of Valley fever?
Symptoms of Valley fever include fatigue (tiredness), cough, fever, shortness of breath, headache, night sweats, muscle aches or joint pain, and rash on upper body or legs. In extremely rare cases, the fungal spores can enter the skin through a cut, wound, or splinter and cause a skin infection. Some people who are exposed to the fungus *Coccidioides* never develop

symptoms, while others may develop symptoms between 1 and up to 4 weeks after a breathing in the fungal spores and may last for a few weeks to a few months.

What are potential complications of Valley fever?
Approximately 5% to 10% of people who get Valley fever will develop serious or long-term problems in their lungs. In an even smaller percentage of people (about 1%), the infection spreads from the lungs to other parts of the body, such as the central nervous system (brain and spinal cord), skin, or bones and joints.

How is Valley fever diagnosed?
Medical and travel history, symptoms, physical examinations, and laboratory tests which may include serum specimens for *Coccidioides* antibodies or antigens, culture of body fluids or tissues, or histopathologic identification from a tissue biopsy. Imaging studies such as chest x-rays or CT scans may identify Valley fever pneumonia.

How is Valley fever treated?
The treatment is usually 3 to 6 months of fluconazole or another type of antifungal medication. There are no over-the-counter medications to treat Valley fever. For many people, the symptoms of Valley fever will go away within a few months without any treatment. Antifungal medication may be prescribed to reduce the severity of symptoms, prevent worsening of the infection, and given to those at higher risk for developing severe Valley fever. Those with severe lung infections or infections that have spread to other parts of the body always need antifungal treatment, may need to be hospitalized, and the course of treatment is usually longer than 6 months. Valley fever that develops into meningitis is fatal if not treated, thus lifelong antifungal treatment is necessary.

How can Valley fever be prevented?
Currently, there is not a vaccine to prevent Valley fever. However, those who had Valley fever may have developed immunity and be protected from reinfection. Respiratory protection in dusty environments may include an N95 respirator and use of indoor air filtration measures.

What are some public health considerations?
- Document source of infection, if known.
- Document relevant travel and deployment history occurring within the incubation period (1-3 weeks for primary infection).

References:
"Coccidioidomycosis," Centers for Disease Control and Prevention, last reviewed December 29, 2020. https://www.cdc.gov/fungal/diseases/coccidioidomycosis/.

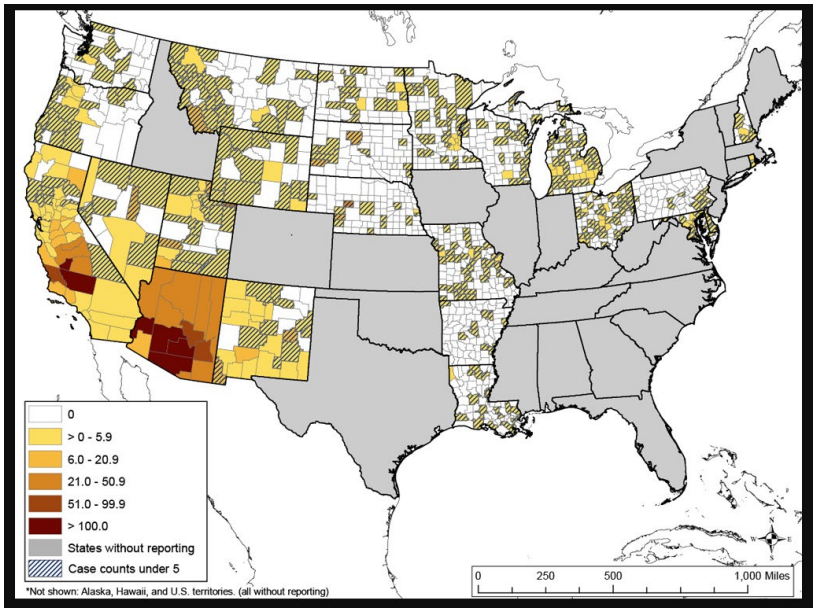
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

Coccidioidomycosis

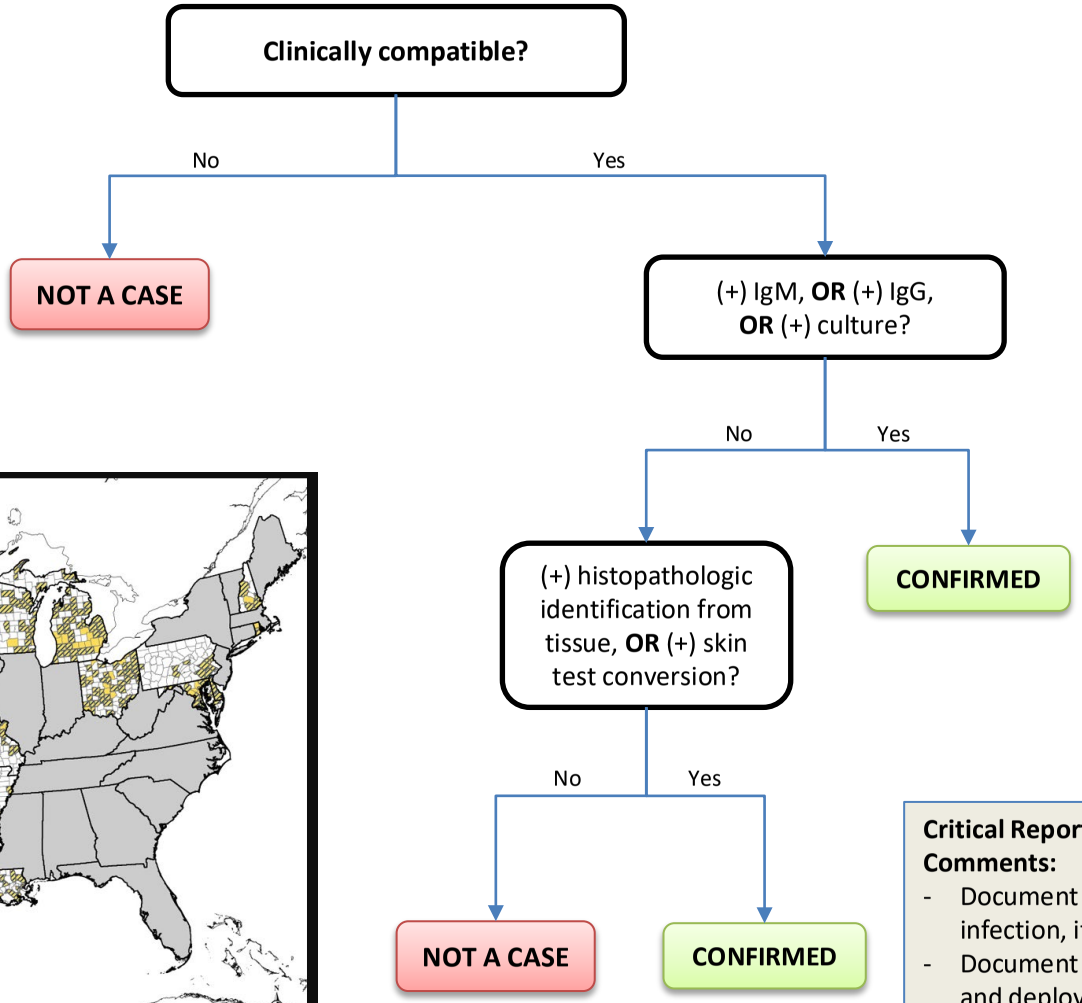
COMMON NAME: Valley Fever

Clinical Description:
An illness characterized with at least one of the following: Influenza-like symptoms (ex: fever, chest pain, cough, myalgia, arthralgia, or headache); pneumonia or pulmonary lesion; erythema nodosum or multiforme rash; involvement of bones, joints, or skin by dissemination, meningitis, or involvement of the viscera and lymph nodes. Infection may disseminate to multiple organ systems.



The average incidence of reported Coccidioidomycosis per 100,000 people, by county, during 2011–2017

https://www.cdc.gov/fungal/diseases/coccidioidomycosis/images/valley-fever-map-2017.jpg



Critical Reporting Elements and Comments:

- Document source of infection, if known.
- Document relevant travel and deployment history occurring within the incubation period (1–3 weeks for primary infection).

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Coccidioidomycosis

Confirmed ○ Not a Case ○

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: ***(Last)***_____ ***(First)***_____ ***(MI)***_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: ***(Street)***_____ **DoD ID:** _____

(City) _____ ***(State)*** _____ ***(Zip)*** _____ (_____) - _____ - _____ ***(h)***

PHONE:

(County)_____ ***(Country)***_____ (_____) - _____ - _____ ***(c)***

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____**°F/°C (☐ unk)**
Fatigue	☐	☐	
Cough	☐	☐	
Shortness of breath	☐	☐	
Headache	☐	☐	
Night sweats	☐	☐	
Muscle aches or joint pain	☐	☐	
Rash on upper body or legs	☐	☐	

TREATMENT

Treated with antifungal? Y ☐ N ☐

Type of antifungal	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: generally 1–3 weeks, can be up to 4 weeks

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Cold Weather Injuries (CWI)

Name	Hypothermia, freezing peripheral injuries, and non-freezing peripheral injuries
Reservoir & Transmission	N/A
Incubation Period	Depending on ambient temperature, injuries can occur within minutes.
Common Symptoms	Varies depending on type
Gold Standard Diagnostic Test	N/A
Risk Groups	All are susceptible to a CWI given the environmental conditions
Geographic Significance	Occurs worldwide; freezing temperatures are not required for hypothermia to occur.

What are cold weather injuries (CWIs)?
CWIs include three types of reportable injuries: hypothermia, freezing peripheral injuries, and non-freezing peripheral injuries. These injuries could occur simultaneously.

Who is at risk for cold weather injuries?
All are susceptible to a CWI given the environmental conditions. However, surveillance data from the Army and other Services indicate that rates of CWI appear higher among African Americans, women, Service members under 20 years old, and enlisted personnel. Because a person can have multiple CWIs at the same time, prevention of further cold exposure is crucial.

Other risk factors include:

- **Prior CWI or medical conditions**
  Soldiers who have had a CWI in the past are much more likely to develop a new CWI sooner or a more severe one in the future. Existing medical conditions may predispose an individual to a CWI. For example, Raynaud's Disease is a disorder that causes blood vessel constriction in cold temperatures or during emotional distress, resulting in reduced blood flow to the extremities (e.g., fingers and toes). Other conditions, such as anemia, diabetes, sickle cell disease, hypotension, and atherosclerosis, may also increase susceptibility to frostbite and injuries related to cold exposure.

- **Dehydration**
  Inadequate fluid intake affects the body's ability to sustain physical activity, which in turn affects thermoregulation (i.e., the balance between heat production and loss). Sensitivity to thirst declines in cold environments; this can increase the risk of dehydration during strenuous activity, where fluid loss often exceeds intake.

- **Over- and Under-Activity**
  Vigorous exercise/activity induces sweating, which leads to wet clothing and subsequent increased heat loss. Conversely, under-activity results in low heat production, which may lower the body's core temperature.

- **Tight clothing**
  Close-fitting clothing and reduced insulation may restrict movement, resulting in heat loss. Clothing should be worn loosely and layered to allow adjustments as physical activity levels and environmental conditions change.

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- **Inadequate nutrition**
  Underfeeding can cause low blood sugar (hypoglycemia) which impairs shivering, thereby making it difficult to generate body heat. Low carbohydrates also limit the ability to maintain physical activity.

- **Alcohol and nicotine**
  Alcohol imparts a sense of warmth and causes dilation of skin blood vessels, which increases heat loss to the environment. It may also impair the senses to judgement, making it difficult to detect signs and symptoms of a CWI. Tobacco use (smoking or chewing) causes increased constriction of skin blood vessels, which increases the risk for frostbite.

- **Medications**
  Some medications may affect thermoregulation by impairing vasoconstriction. These include benzodiazepines, tricyclic antidepressants, barbiturates, and general anesthetics.

How can CWI be prevented?
Be aware of risk factors and mitigation strategies.

For clothing: remember the acronym C-O-L-D: Keep it CLEAN, avoid OVERHEATING, Wear clothing LOOSE and in LAYERS, and keep clothing DRY.

For eyes: wear dark UV protective glasses; if no glasses are available, improvise with cut slits in cardboard/cloth, or use tape over regular eyeglasses.

For skin: keep skin clean, covered, and dry; use sunscreen and lip balm; and use gloves to handle all equipment and fuel products. Consider not using skin camouflage below 32ºF or when windchill is -10ºF or below because skin camouflage obscures detection of cold injuries.

For hydration: drink warm liquids and monitor urine color for dehydration.

For environment: use warming tents and monitor environmental conditions such as the wind chill index.

What are some public health considerations?
Critical Reporting Elements and Comments:
- Specify the type of injury.
- Document the anatomical site of injury.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Specify the ambient temperature, if known, in degrees Fahrenheit (estimate if unknown).

<u>Hypothermia</u>
Hypothermia is the reduction of body temperature to ≤95°F. It can result from either dry-land whole body exposure to cold temperatures or immersion in cold water. Freezing temperatures are not required to produce hypothermia. The initial stages of symptoms include shivering, dizziness, irritability, confusion, slurred speech, and stumbling. The later and more severe stages include a stop to the shivering, a desire to lie down and sleep, a faint heartbeat and

breathing, and unconsciousness. If the person is conscious, they should drink warm, sweet liquids. Rewarm with body-to-body contact or in a warmed sleeping bag and evacuate to higher level of medical treatment.

Freezing peripheral injuries

Freezing peripheral injuries (e.g., frostbite) result from the freezing of tissue fluids in the skin and/or subcutaneous tissues and cause a loss of feeling and color in the affected areas, which are most often the hands, fingers, feet, toes, ears, chin, nose, and groin area. Freezing peripheral injuries occur only when exposed to temperatures that are below freezing.

Although it has often been classified as first to fourth degree levels of injury severity, final classification often takes weeks and is not helpful for immediate treatment. A more recent classification system uses two levels, superficial or deep.

- Superficial frostbite: Partial or full thickness freezing of the epidermis without involvement of the underlying tissue. Mobility is unaffected, and blistering may occur.
- Deep frostbite: Full thickness freezing of the epidermis accompanied by freezing of subcutaneous tissue, which may involve muscles, tendons, and bones as severity increases.

What are the signs and symptoms of freezing peripheral injuries?

The skin may feel cold, stiff, or woody. It may turn grey or a waxy-white color, and blisters may form. The person may feel numbness, a tingling or stinging sensation, or absent or restricted joint movement. As the frostbite progresses, the underlying tissue may harden, and the skin will turn purple or black.

What are potential complications of freezing peripheral injuries?

Frostbite can permanently damage body tissues, and severe cases can lead to amputation. In extremely cold temperatures, the risk of frostbite increases among those with reduced blood circulation and those who are not dressed properly.

How can freezing peripheral injuries be treated?

Anyone suffering from suspected freezing peripheral injuries should get to a warm room as soon as possible. The person should not walk on frostbitten feet or toes as this can increase the damage to those areas. The body part with the injury should be immersed in warm but not hot water (i.e., the temperature should be comfortable to the touch for unaffected parts of the body). The affected areas should be warmed using body heat; for example, the heat of an armpit can be used to warm frostbitten fingers. The affected areas should not be rubbed or massaged as this can cause further damage. Do not use a heating pad; heat lamp; or heat of a stove, fireplace, or radiator for warming. The affected areas will be numb and can easily be burned.

Non-freezing peripheral injuries

Non-freezing peripheral injuries are a spectrum of localized non-freezing injuries, usually of extremities (e.g., chilblains, trench foot/immersion foot); these injuries occur due to prolonged vasoconstriction in response to cold that leads to tissue injury and destruction. The areas commonly affected by non-freezing peripheral injuries include ears, nose, fingers, and toes. (Note: The term “trench foot” is also used to describe a tropical foot injury or “jungle rot”.) These injuries develop over a period of hours to days, may occur at temperatures below or above freezing, and, with prolonged exposure, can occur at temperatures as high as 60°F. Injury is accelerated by exposure to damp conditions.

PUBLIC HEALTH REFERENCE SHEET
Cold Weather Injuries (CWI)

Chilblains are caused by the repeated exposure of skin to temperatures just above freezing to as high as 60°F. The cold exposure causes damage to the capillary beds in the skin. The damage is permanent, and the redness and itching will return with additional exposure. The redness and itching typically occurs on cheeks, ears, fingers, and toes. The symptoms of chilblains include redness, itching, possible blistering, inflammation, and possible ulceration in severe cases. If someone is suspected to have chilblains, they must avoid scratching, slowly warm the skin, use corticosteroid creams to relieve itching and swelling, and keep blisters and ulcers clean and covered.

Trench foot, also known as immersion foot, is an injury of the feet resulting from prolonged exposure to wet and cold conditions. Trench foot can occur at temperatures as high as 60°F if the feet are constantly wet. Injury occurs because wet feet lose heat 25 times faster than dry feet. Therefore, to prevent heat loss, the body constricts blood vessels to shut down circulation in the feet. Skin tissue begins to die because of a lack of oxygen and nutrients as well as the buildup of toxic products. The symptoms of trench foot include reddening of the skin, numbness, leg cramps, swelling, tingling pain, blisters or ulcers, bleeding under the skin, and gangrene (i.e., the foot may turn dark purple, blue, or gray). If someone is suspected to have trench foot, they should immediately remove shoes/boots and wet socks, dry their feet, and avoid walking on their feet as this may cause further tissue damage.

References:

"Cold Weather," Centers for Disease Control and Prevention (CDC), last reviewed March 16, 2023. https://www.cdc.gov/niosh/topics/coldstress/

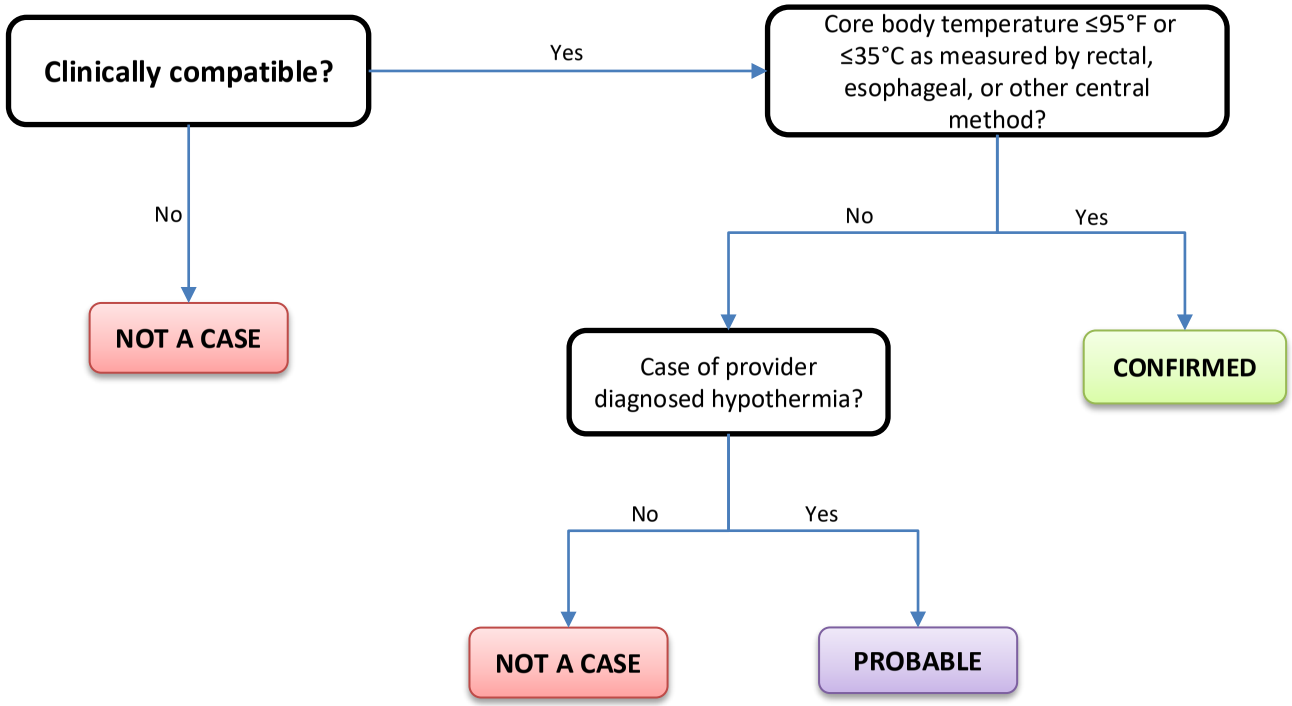
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Last Updated September 1, 2023

Cold Weather Injuries - Hypothermia

INCLUDES: Service member cases only

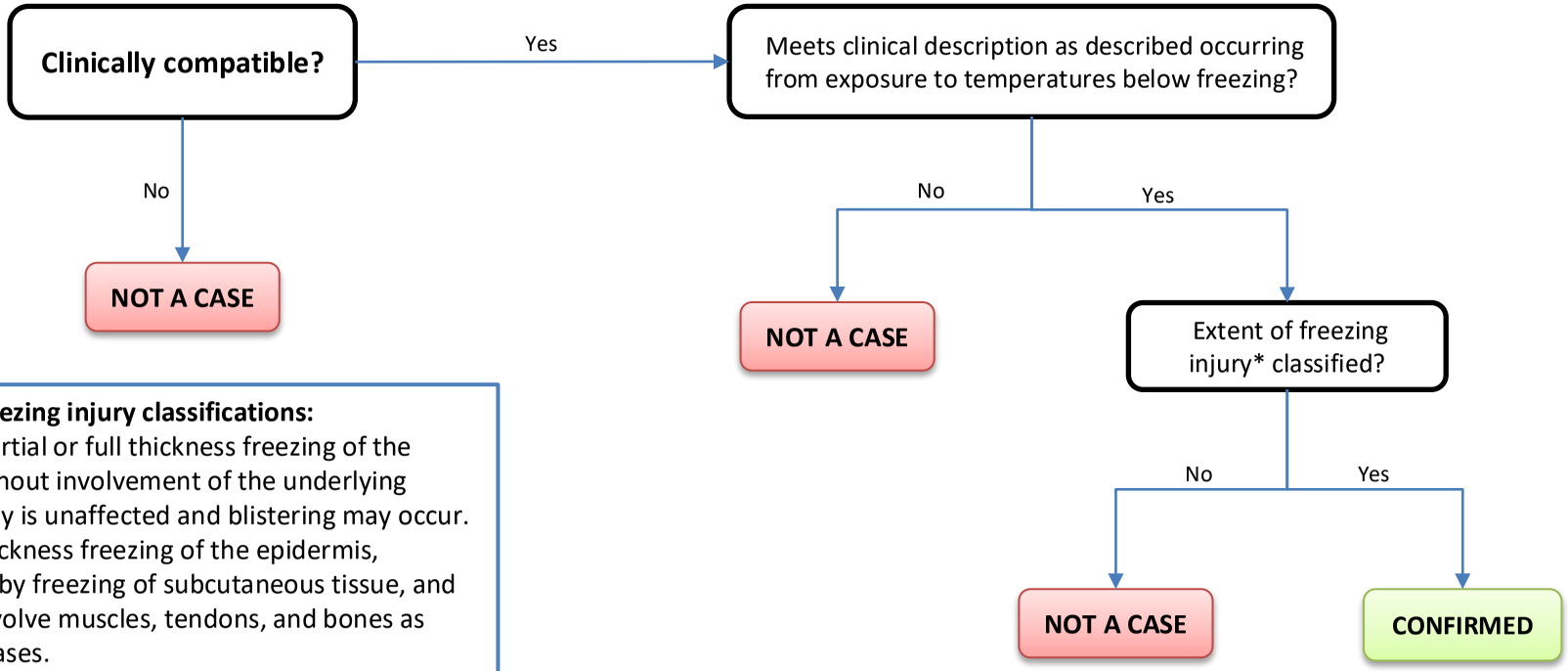


Clinical Description:
Hypothermia: Reduction of body temperature to ≤95°F. It can result from either dry land whole body exposure to cold temperatures or immersion in cold water. Freezing temperatures are not required to produce hypothermia.

Critical Reporting Elements and Comments:
- Specify the type of injury.
- Document the anatomical site of injury.
- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Please specify ambient temperature, if known, in degrees Fahrenheit (estimate if unknown).

Cold Weather Injuries – Freezing Peripheral Injuries

INCLUDES: Service member cases only



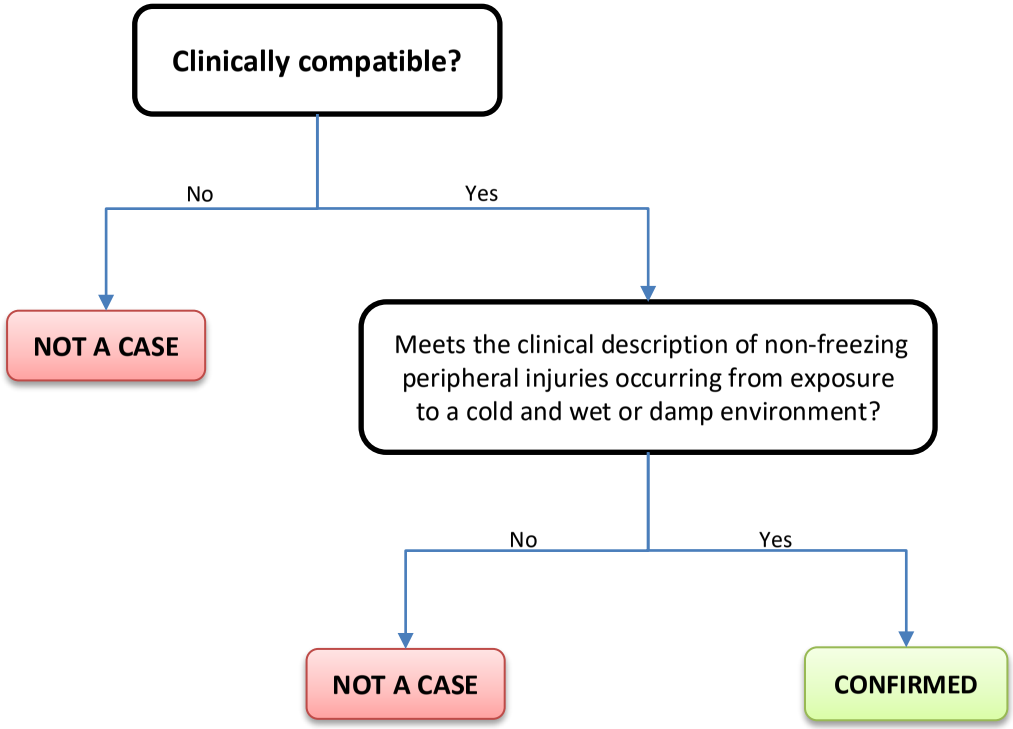
***Extent of freezing injury classifications:**
Superficial: Partial or full thickness freezing of the epidermis without involvement of the underlying tissue. Mobility is unaffected and blistering may occur.
Deep: Full thickness freezing of the epidermis, accompanied by freezing of subcutaneous tissue, and which may involve muscles, tendons, and bones as severity increases.
Unknown: As yet unclassified.

Clinical Description:
Freezing Peripheral Injuries: Freezing injuries (e.g., frostbite) occur only when exposed to temperatures below freezing. They result from the freezing of tissue fluids in the skin and/or subcutaneous tissues. Although it has often been classified as 1st to 4th degree levels of injury severity, final classification often takes weeks and is not helpful for immediate treatment. A more recent classification system uses two levels: superficial or deep injuries. Do not delay reporting to determine classification.

Critical Reporting Elements and Comments:
- Specify the type of injury.
- Document the anatomical site of injury.
- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Please specify ambient temperature if known in degrees Fahrenheit (estimate if unknown).

Cold Weather Injuries – Non-Freezing Peripheral Injuries

INCLUDES: Service member cases only



Clinical Description:

Non-Freezing Peripheral Injuries: A spectrum of localized non-freezing injuries, usually of extremities (e.g., trench foot, immersion foot, chilblains), that occur due to prolonged vasoconstriction in response to cold that leads to tissue injury and destruction. These injuries develop over a period of hours to days. They may occur at temperatures below or above freezing and can occur at temperatures as high as 60°F with prolonged exposure. Injury is accelerated by exposure to damp conditions. (Note: the term "trench foot" is also sometimes used to describe a tropical foot injury or "jungle rot".)

Critical Reporting Elements and Comments:

- Specify the type of injury.
- Document the anatomical site of injury.
- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Please specify ambient temperature, if known, in degrees Fahrenheit (estimate if unknown).

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

POC:_____

(_____) - _____ - _____

Cold Weather Injuries

	Confirmed	Probable	Not a Case
Hypothermia	○	○	○
Freezing Peripheral Injury	○		○
Non-Freezing Peripheral Injury	○		○

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ **PHONE:** (_____) - _____ - _____ *(h)*

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Frostbite Y ☐ N ☐ **Core Body Temperature:** _____°F/°C (☐ unk)

Trench foot Y ☐ N ☐

Chilblains Y ☐ N ☐

Other *(describe below)*: Y ☐ N ☐

(Hypothermia only below):
Diagnosed with Hypothermia by a provider? Y ☐ N ☐

Indicate site of frostbite or tissue injury

- ☐ Head/face
- ☐ Hands/fingers
- ☐ Feet/toes
- ☐ Other *(describe):*

For Freezing Peripheral Injuries: Specify type of Injury

- ☐ Superficial
- ☐ Deep
- ☐ Unknown

Activity at the time of illness

- ☐ General work duties/field exercise
- ☐ Off duty
- ☐ Individual PT
- ☐ Unit PT
- ☐ Not recorded

Environmental Exposures

Ambient temp:_____°F/°C

Water submersion? Y ☐ N ☐

Describe any other relevant information below

Describe any other relevant information here:

PUBLIC HEALTH REFERENCE SHEET
COVID-19 Associated Hospitalization and Death (SARS coronavirus-2)

Name	Coronavirus Disease 2019, SARS-CoV-2 INCLUDES: Hospitalized cases and deaths caused by SARS-CoV-2 EXCLUDES: Non-hospitalized COVID-19 cases and seasonal (non-pandemic) coronavirus (CoV-NL63, CoV-229E, CoV-OC43, and CoV-HKU1, etc.) cases; asymptomatic COVID-19 cases; hospitalizations for reasons other than COVID-19 (even with a positive test)
Reservoir & Transmission	Humans and some animals Droplet
Incubation Period	2–14 days, up to 27 days
Common Symptoms	Acute onset or worsening of any cough; shortness of breath; difficulty breathing; olfactory disorder; taste disorder; confusion or change in mental status; persistent pain or pressure in the chest; pale, grey, or blue-colored skin, lips, or nail beds (depending on skin tone); inability to wake or stay awake; clinical radiographic evidence of pneumonia; or acute respiratory distress syndrome (ARDS)
Gold Standard Diagnostic Test	Nucleic acid amplification tests (NAATs) (e.g., reverse transcription PCR (RT-PCR) and antigen tests
Risk Groups	Age and underlying medical conditions increase a person's risk for severe disease and death. The risk of severe disease and death increases significantly with age (≥50 years old), pregnancy, obesity, and with an increasing number of comorbidities.
Geographic Significance	Present worldwide

What is Covid-19 (SARS-CoV-2)?
COVID-19 (coronavirus disease 2019) is a viral disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is a single-stranded, positive-sense RNA virus that belongs to the family *Coronaviridae*, genus *Betacoronavirus,* and accumulates frequent mutations.

What is the occurrence of Covid-19 (SARS-CoV-2)?
The first cases of COVID-19 were reported in December 2019 in Wuhan, China, and since then, the virus has spread to all continents. International travel has played an ongoing role in the epidemiology of the pandemic, facilitating the initial global spread of the virus as well as each successive SARS-CoV-2 variant.

How is Covid-19 (SARS-CoV-2) transmitted?
SARS-CoV-2 is primarily transmitted from person-to-person following close (≤6 ft) exposure to respiratory fluids carrying infectious virus. When an infected person breathes, sings, talks, coughs, or sneezes, they release infectious aerosol particles (droplet nuclei) into the air. Exposure can occur when aerosol particles and small respiratory droplets are inhaled, or they contact exposed mucous membranes. Infection from contaminated surfaces or objects (fomites) is possible but is unlikely to contribute significantly to new infections.

Infection through inhalation is most likely to occur at closer distances (≤6 ft), but transmission over distances >6 ft by inhalation of very fine aerosolized, infectious particles (airborne transmission) has been documented. The risk of transmission is enhanced in poorly ventilated indoor spaces (CDC, 2023).

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET

COVID-19 Associated Hospitalization and Death (SARS coronavirus-2)

Who is at risk for Covid-19 (SARS-CoV-2)?

Anyone can be infected with SARS-CoV-2. People who are more likely than others to get very sick from COVID-19 include those who are older (>65 years), immunocompromised, have certain disabilities, or underlying health conditions. Conditions that may increase risk of severe illness include, but are not limited to, HIV; TB; cancer; cerebrovascular disease; chronic disease of the kidney, liver, lung; cystic fibrosis; dementia or neurological conditions; diabetes type 1 or 2; and pregnancy. A person's risk of severe illness from COVID-19 increases as the number of underlying medical conditions they have increases. People can be reinfected with SARS-CoV-2 multiple times. Each time a person is infected or reinfected with SARS-CoV-2, they have a risk of developing Long COVID.

What are the signs and symptoms of Covid-19 (SARS-CoV-2)?

SARS-CoV-2 infection can present with an array of clinical findings, ranging from asymptomatic to severe (e.g., multiorgan involvement, respiratory failure, death). Most infections are mild; however, about 40% of people are asymptomatic. Among cases that do not result in severe disease or hospitalization, fatigue; headache; muscle aches; rhinitis; and sore throat are reported most often. Other reported symptoms and signs include fever, chills, cough, shortness of breath, loss of taste and smell, nausea, vomiting, and diarrhea. There is evidence that clinical presentation and illness severity differ depending on the SARS-CoV-2 variant (CDC, 2023).

What are the potential complications of Covid-19 (SARS-CoV-2)?

Within a few weeks after onset, most people make a full, uneventful recovery. Some people have effects that last longer than 4 weeks; this is known as Long COVID or Post-COVID Conditions. Long COVID is broadly defined as signs, symptoms, and conditions that continue or develop after initial COVID-19 infection. Long COVID is not one illness but rather can include a wide range of ongoing health problems from damaged organ function as well as symptoms such as joint pain, chronic change or continued loss of smell and taste, sleep disorder, amnesia, depression, rash, and hair loss. These conditions can last weeks, months, or years.

How is Covid-19 (SARS-CoV-2) diagnosed?

Viral tests that detect current infection with SARS-CoV-2 are used for COVID-19 diagnosis and include nucleic acid amplification tests (NAATs) (e.g., reverse transcription PCR (RT-PCR) and antigen tests. Tests that detect antibody to SARS-CoV-2 can be used to identify previous infection and might be useful for surveillance purposes; however, these tests are not typically used for diagnosis, except for multisystem inflammatory syndrome in children and adults.

How is Covid-19 (SARS-CoV-2) treated?

For mild disease, medications such as acetaminophen or ibuprofen can provide symptomatic relief. Ill people also should rest and stay well hydrated. For people at greater risk for progression to severe disease, the FDA has issued Emergency Use Authorization for several postexposure treatments, including antiviral medications and monoclonal antibodies. For maximal efficacy, administer medications as soon as possible after diagnosis. Emergence of future variants might impact future treatment options. The National Institutes of Health regularly updates COVID-19 treatment guidelines at https://www.covid19treatmentguidelines.nih.gov/.

How can Covid-19 (SARS-CoV-2) be prevented?

- Vaccines are available, safe, and effective at preventing severe illness, hospitalization, and death from COVID-19, as well as limiting the spread of the virus.
- Inhalation of virus particles and deposition of virus on mucous membranes can be prevented by wearing a well-fitting mask or respirator and avoiding crowded indoor spaces with poor ventilation. Handwashing can help prevent transmission from contact with contaminated

surfaces (fomite transmission). Used in combination, layered interventions (e.g., mask wearing, avoiding crowded indoor spaces with poor ventilation, testing, isolation, quarantine, vaccination) are measures that can reduce risk of transmission.
- In addition to the CDC, resources are available from the Defense Centers for Public Health–Aberdeen at https://ph.health.mil/topics/discond/covid19/Pages/default.aspx.

What are some Public Health considerations?
- Guidance for contact tracing is available at: https://ph.health.mil/PHC Resource Library/cv19-contact-tracing-toolkit.pdf
- Guidance for specific settings, such as school and childcare, is available at: https://www.cdc.gov/coronavirus/2019-ncov/community/index.html
- When reporting cases of COVID-19 in the Disease Reporting System internet (DRSi) system—
    - Document if the patient was hospitalized, including admission and discharge dates, place of hospital admission, and clinical course.
    - Document if the patient died, including the date of death.
    - Document if the patient works in, lives in, or attends a high transmission setting such as, daycare, school, group living, health care, training center, or ship.
    - Document if the patient has any relevant comorbidities, underlying illnesses, or is otherwise immunocompromised (e.g., via immunocompromising medications).
    - Document if the patient was vaccinated for SARS-CoV-2, vaccine manufacturer, and date(s) of vaccination.
    - Specify the variant, if known.
- Hospitalization is defined as an admission to an inpatient ward of a hospital, a medical transfer, or evacuation to a facility with a higher level of care. Patients admitted for observation and discharged the same day are considered hospitalized for this case definition. An overnight stay is not required. Emergency room or outpatient clinic visits that do not result in hospital admission are not considered hospitalizations.
- Cases that are hospitalized for other reasons (e.g., childbirth, surgery) with an incidental COVID-19 positive test do not meet this case definition and, therefore, are not reportable.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Covid-19," Centers for Disease Control and Prevention (CDC), last reviewed September 25, 2023. https://www.cdc.gov/coronavirus/2019-ncov/index.html

Guagliardo, Sarah Anne and Friedman, Cindy. "COVID-19." *CDC Yellow Book 2024: Travel-Associated Infections & Diseases.* Centers for Disease Control and Prevention, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/covid-19

COVID-19 Associated Hospitalization and Death

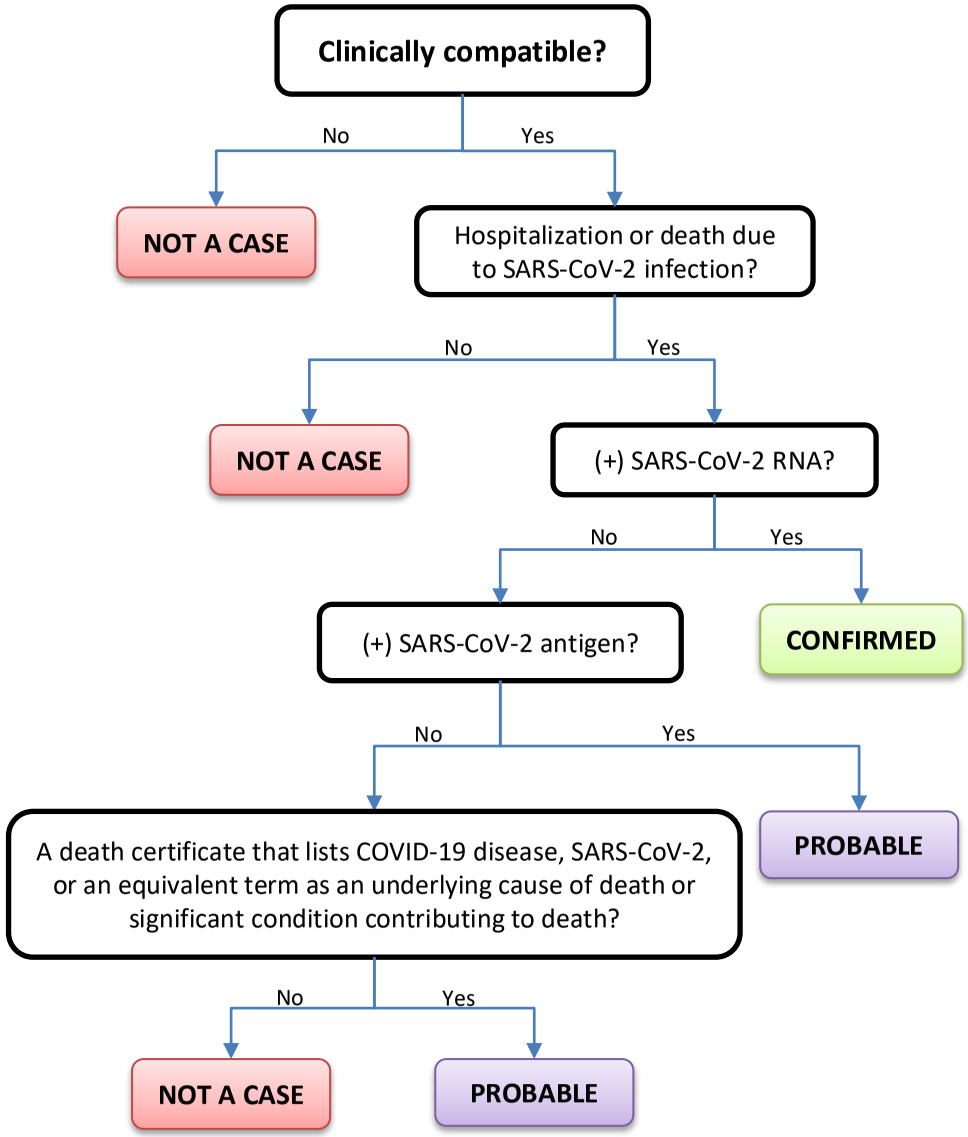
INCLUDES: Hospitalized cases and deaths caused by SARS-CoV-2

EXCLUDES: Non-hospitalized COVID-19 cases and seasonal (non-pandemic) coronavirus (SARS-CoV, COV-NL63, CoV-229E, CoV-OC43, and CoV-HKU1, etc.) cases; hospitalizations for reasons other than COVID-19 (even with a positive test)

Clinical Description:
An illness with acute onset or worsening of any cough; shortness of breath; difficulty breathing; olfactory disorder; taste disorder; confusion or change in mental status; persistent pain or pressure in the chest; pale, grey, or blue-colored skin, lips, or nail beds (depending on skin tone); inability to wake or stay awake; clinical radiographic evidence of pneumonia; or acute respiratory distress syndrome (ARDS)

Critical Reporting Elements and Comments:

- Document if the patient was hospitalized, including admission and discharge dates, place of hospital admission, and clinical course.
- Document if the patient died, including the date of death.
- Document if the patient works in, lives in, or attends a high-transmission setting such as, daycare, school, group living, health care, training center, or ship.
- Document if the patient has any relevant comorbidities, underlying illnesses, or is otherwise immunocompromised (e.g., via immunocompromising medications).
- Document if the patient was vaccinated for SARS-CoV-2, vaccine manufacturer, and date(s) of vaccination.
- Specify the variant, if known.
- Hospitalization is defined as an admission to an inpatient ward of a hospital, or a medical transfer or evacuation to a facility with a higher level of care. Patients admitted for observation and discharged the same day are considered hospitalized for this case definition. An overnight stay is not required. Emergency room or outpatient clinic visits that do not result in hospital admission are not considered hospitalizations.
- Cases that are hospitalized for other reasons (e.g., childbirth, surgery) with an incidental COVID-19 positive test do not meet this case definition and, therefore, are not reportable.



INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Covid-19 Associated Hospitalization and Death

Confirmed ○ Probable ○ Suspected ○ Not a Case

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module at https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N			
Hospitalized	☐	☐	**Admit date:** ____/_____/_____	**Discharge date:** ____/_____/_____	**Location:** _____
Deceased	☐	☐	**Date of death:** ____/_____/_____	**Cause of death:** _____	

	Y	N			
Symptomatic	☐	☐	**Onset date:** ____/_____/_____	**Clinic date:** _____/_____/_____	**Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk	**If COVID-19 positive, specify variant if known**_____	
Cough	☐	☐			
Shortness of breath	☐	☐			
Chills	☐	☐			
Muscle Aches	☐	☐			
Diarrhea	☐	☐			

	Y	N
Difficulty breathing	☐	☐
Olfactory disorder	☐	☐
Taste disorder	☐	☐
Confusion	☐	☐
Change in mental status	☐	☐
Pain or pressure in the chest	☐	☐
Skin tone changes (pallor/blue)	☐	☐
Inability to stay awake	☐	☐
Evidence of Pneumonia on Xray or CT	☐	☐
Acute Respiratory Distress Syndrome	☐	☐

TREATMENT

Treated with antivirals? Y ☐ N ☐

Type of antiviral	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ **Antibody**	_____/_____/_____	Serum CSF Saliva Nasal Swab	☐ **Positive**	☐ **Negative**
☐ **Antigen**	_____/_____/_____	Serum CSF Saliva Nasal Swab	☐ **Positive**	☐ **Negative**
☐ **PCR (DNA)**	_____/_____/_____	Serum CSF Saliva Nasal Swab	☐ **Positive**	☐ **Negative**
☐ **Culture**	_____/_____/_____	Serum CSF Saliva Nasal Swab	☐ **Positive**	☐ **Negative**
☐ **Screen**	_____/_____/_____	Serum CSF Saliva Nasal Swab	☐ **Positive**	☐ **Negative**
☐ **NAAT** ***Describe below***	_____/_____/_____	Serum CSF Saliva Nasal Swab	☐ **Positive**	☐ **Negative**

TRAVEL HISTORY

In the 14 days before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Does the case/patient work, live, or attend a high-transmission setting (e.g., daycare, school, barracks, hospital)? Y ☐ N ☐

Does the case/patient have any relevant comorbidities, underlying illnesses, or is otherwise immunocompromised? Y ☐ N ☐

Did the case/patient receive any vaccinations for SARS-CoV-2 ? Y ☐ N ☐

If yes: Vaccine manufacturer_____ Date of vaccination_____

PUBLIC HEALTH REFERENCE SHEET
Cryptosporidiosis

Name	*Cryptosporidium hominis* and *Cryptosporidium parvum*
Reservoir & Transmission	Humans and various animals; Fecal-oral transmission, which includes person-to-person, animal-to-person, waterborne, and foodborne transmission
Incubation Period	Variable: 1–12 days is the likely range; 7-day average
Common Symptoms	Diarrhea, which may be profuse and watery and is associated with abdominal pain and cramping
Gold Standard Diagnostic Test	Fecal smears for identification of oocysts or of life cycle stages in intestinal biopsy sections. For epidemiological studies, serology tests may be useful.
Risk Groups	Children younger than 2 years, animal handlers, travelers, men who have sex with men, and close personal contacts of infected individuals
Geographic Significance	Worldwide. In industrialized countries, prevalence is <1%–4.5%. In developing regions, prevalence ranges from 3% to 20%.

What is cryptosporidiosis?
Cryptosporidium, an intracellular protozoan, is a microscopic parasite that causes the diarrheal disease cryptosporidiosis. Both the parasite and the disease are commonly known as “Crypto.” There are many species of *Cryptosporidium* that infect animals, some of which also infect humans. The parasite is protected by an outer shell that allows it to survive outside the body for long periods of time and makes it very tolerant to chlorine disinfection.

What is the occurrence of cryptosporidiosis?
Cryptosporidium is a leading cause of waterborne disease among humans in the United States. *Cryptosporidium* causes over half of the reported waterborne disease outbreaks associated with swimming in chlorinated public swimming pools. As of 2018, an estimated 823,000 cryptosporidiosis cases occur in the U.S. annually.

How is cryptosporidiosis transmitted?
Crypto lives in the gut of infected humans or animals. An infected person or animal sheds Crypto parasites (oocysts) in their stool, which can contain 10 million to 100 million parasites in a single bowel movement. Swallowing as few as 10 Cryptosporidium oocysts can cause infection. Crypto can be found in water, food, soil, or on surfaces or hands that have been contaminated with the feces of humans or animals that are infected with the parasite. While this parasite can be transmitted in several different ways, water (i.e., drinking water and recreational water) is the most common way to spread the parasite.

- Swallowing recreational water found in pools, fountains, lakes, and rivers serves as a major mode of transmission, especially due to the parasite’s high chlorine tolerance and resistance to other chemical water disinfectants. The oocysts are not always effectively removed by filtration systems.
- Consuming contaminated water, ice, beverages, unpasteurized apple cider or milk, or undercooked food is a main source of disease transmission.
- Touching contaminated surfaces or objects (e.g., toys, bathroom fixtures, changing tables, and diaper pails), changing diapers, caring for an infected person, and touching an infected animal can transmit the parasite.
- Exposure through oral-anal sexual contact is a contributing cause of disease.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Cryptosporidiosis

Who is at risk for cryptosporidiosis?
People in poor health or have a weakened immune system are at higher risk for more severe and prolonged illness. Rapid fluid loss from diarrhea may be life threatening to infants. Pregnant women and young children may be more susceptible to dehydration. People who are most likely to become infected with *Cryptosporidium* include children who attend childcare centers; childcare workers; parents of infected children; people who take care of people who are infected; international travelers; backpackers, hikers, and campers who drink unfiltered or untreated water such as from shallow and unprotected wells; those who handle infected animals like sheep; or those exposed to human feces such as through sexual contact.

What are the signs and symptoms of cryptosporidiosis?
Symptoms of cryptosporidiosis generally begin 2 to 10 days (average 7 days) after becoming infected with the parasite. Some people with Crypto do not have symptoms. The most common symptom of cryptosporidiosis is watery diarrhea. Other symptoms include stomach cramps or pain, dehydration, nausea, vomiting, fever, and weight loss. Symptoms can come and go for up to 30 days but usually last about 1 to 2 weeks (range of a few days to 4 or more weeks) in persons with healthy immune systems.

What are potential complications of cryptosporidiosis?
People may experience a recurrence of symptoms after a brief period of recovery before the illness ends. The small intestine is the site most commonly affected. However, in immunocompromised persons, *Cryptosporidium* infections could possibly affect other areas of the digestive tract or the respiratory tract. People with weakened immune systems may develop serious, chronic, and sometimes fatal illness.

How is cryptosporidiosis diagnosed?
Crypto is diagnosed by examining stool samples. People infected with Crypto can shed the parasite irregularly through their stool, so three samples may be collected on three different days to ensure that a negative test result is accurate. Most often, stool specimens are examined microscopically using different techniques (e.g., acid-fast staining, direct fluorescent antibody (DFA), and/or enzyme immunoassays (EIA) for detection of *Cryptosporidium* sp. antigens). *Cryptosporidium* nucleic acid (DNA) can be detected from any clinical specimen through molecular methods (i.e., polymerase chain reaction (PCR), sequencing, nucleic acid amplification test (NAAT)) and can be used to identify *Cryptosporidium* at the species level. Tests for *Cryptosporidium* are not routinely done in most laboratories; therefore, healthcare providers should specifically request testing for this parasite.

How is cryptosporidiosis treated?
Nitazoxanide, an antiprotozoal agent, has been FDA-approved for treatment of diarrhea caused by *Cryptosporidium* in people with healthy immune systems. However, the effectiveness of nitazoxanide in immunosuppressed individuals is unclear. Prevent or manage dehydration. Most people with healthy immune systems will recover from cryptosporidiosis without treatment.

How can cryptosporidiosis be prevented?
Good hygiene practices and disinfecting surfaces and objects can help prevent outbreaks. Exclude children and staff from the childcare setting until the diarrhea has resolved.

What are some Public Health considerations?
- Refrain from swimming until 2 weeks after resolution of symptoms due to *Cryptosporidium*'s chlorine resistance and documented excretion for weeks after resolution of symptoms.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Cryptosporidiosis

- Document the source of infection, if known.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Document if the case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

References:

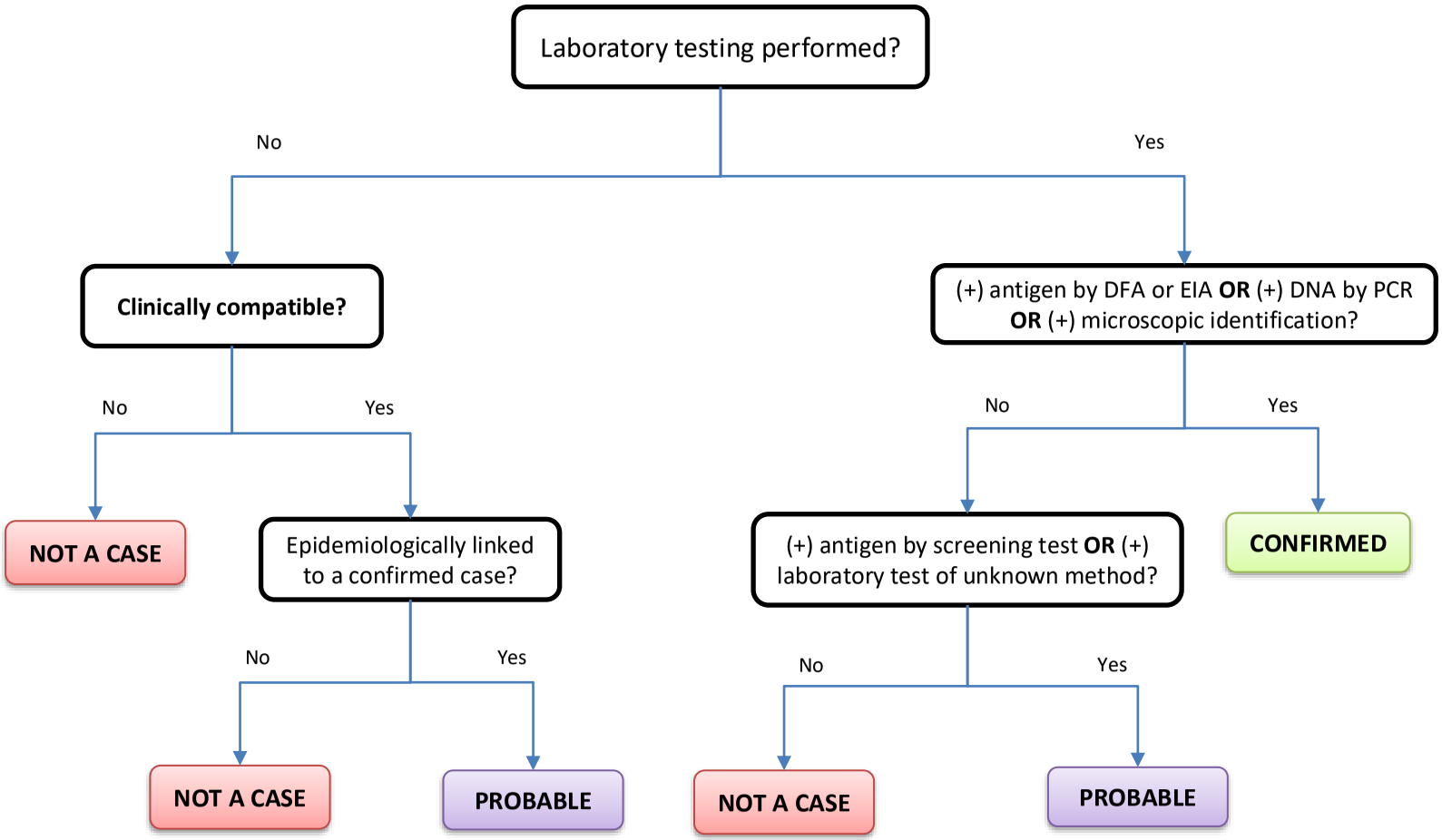
"Cryptosporidiosis," Centers for Disease Control and Prevention (CDC), last reviewed December 14, 2021. https://www.cdc.gov/parasites/crypto/

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Last Updated September 1, 2023

Cryptosporidiosis



Clinical Description:
An illness characterized by diarrhea and any of the following: duration of diarrhea of 72 hours or more, abdominal cramping, vomiting, or anorexia.

Critical Reporting Elements and Comments:
- Document the source of infection, if known.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Document if the case lives in, works in, or attends a high-transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

GASTROINTESTINAL INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

This form can be used for the following reportable medical events:

☐ **Campylobacter** ☐ **Salmonella (non-Typhi)**

☐ **Cryptosporidium** ☐ **Shiga-toxin producing E. coli**

☐ **Norovirus** ☐ **Shigella**

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk) **Duration of symptoms:** _____ ☐ **Still ill**

Diarrhea Y ☐ N ☐ *Describe any other symptoms or pertinent clinical information:*

Bloody diarrhea Y ☐ N ☐

Abdominal cramps Y ☐ N ☐

Vomiting Y ☐ N ☐

Nausea Y ☐ N ☐

Chills Y ☐ N ☐

Muscle aches Y ☐ N ☐

Other (describe): Y ☐ N ☐

Laboratory results:

Test type: **Culture** ☐ **PCR** ☐ **Antibody** ☐ **Other** ☐

Collection Date: ____/____/____ **Result date:** ____/_____/_____

Result: **Positive** ☐ **Negative** ☐ **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ **Unk** ☐

Details: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

CONTACTS

List all household contacts, ill or not ill, and any close contacts regardless of where they live (i.e., caregivers, partners, etc). Indicate for all contacts if high risk; if symptomatic, give onset date and testing information. List additional contacts on the last page of this form if needed.

Name/Contact	Age	Relationship to case	Symptoms		Onset Date	Lab testing	High Risk		
			Yes	No		Y/N, coll. date, result	Day care	Health care	Food Svc.

ENVIRONMENTAL EXPOSURES

In the 7 days before illness onset, from _____/_____/_____ to _____/_____/_____ did [you/your child]:

WATER-RELATED EXPOSURES	YES	NO	UNK	*If yes, details:*
1. Stay in a home with a septic system?				
2. Primarily use water from a well for drinking water?				*Treatment:*
3. Primarily drink bottled water?				*Brand(s):*
4. Drink any untreated water (pond, lake, etc)?				
5. Swim or wade in untreated water?				*Where?*
6. Swim or wade in treated water (pool, hot tub, etc)?				*Where?*
ANIMAL CONTACT	YES	NO	UNK	*If yes, details:*
1. Have contact with an animal?				
If yes, did [you/your child] have contact with a:				
a. Dog				
b. Cat				
c. Other pet mammal				*Specify:*
d. Reptile or amphibian				*Specify:*
e. Live poultry				
f. Pet bird				
g. Cattle, goat, or sheep				*Specify:*
h. Pig				
i. Other animal				*Specify:*
j. Pet with diarrhea				
2. Visit, work, or live on a farm, ranch, or petting zoo?				*Specify:*
3. Have exposure to a daycare or nursery?				*Where?*
4. Have a household or close contact with diarrhea?				*Who?*
5. Work in a restaurant or prepare food for others?				*Specify:*

FOOD HISTORIES

(For all cases, complete for the 7 days before illness. If case was asymptomatic or the onset is unknown, complete for the 7 days before collection. List ALL ingredients in each meal.)

Start with most recent date and move back

Date							
Morning/breakfast							
Afternoon/lunch							
Evening/dinner							
Snacks/other							

FOOD SOURCES

In the 7 days before illness, from _____/_____/_____ to _____/_____/_____, did [you/your child]:	YES	NO	UNK
1. Attend any events where food was served? (if yes, list below)			

Event	Date	Location	Foods Eaten
a.			
b.			
c.			

2. Eat at any restaurants? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

3. Eat food purchased from a farm or farm stand? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			

4. List all stores where food eaten in the days prior to illness were purchased (e.g. grocery stores, ethnic markets).

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

Also complete food exposure questions for ALL Campylobacter, non-Typhi Salmonella, and STEC cases

Notes and Summary of Investigation

List actions taken on cases and contacts and outcome:

FOOD EXPOSURES

[Instructions: Complete for all Campylobacter, non-Typhi Salmonella, and STEC cases. For all questions, ask for the 7-day period prior to onset of illness or, if unknown or asymptomatic, in the 7 days prior to collection date. For questions answered YES, use the space on the right to provide additional details, such as the specific type of food and where the food was purchased or eaten. Be specific.]

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household HANDLE any:	YES	NO	UNK	*If yes: provide specific details*
1. Raw beef?				
2. Raw poultry?				
3. Raw seafood?				
In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
MEAT PRODUCTS				
1. Chicken or foods containing chicken?				
If yes: a. Chicken prepared outside the home?				*Where?*
If yes: b. Chicken at home that was bought fresh?				*Which part(s):*
If yes: c. Chicken at home that was bought frozen?				*Which part(s):*
If yes: d. Frozen chicken that was stuffed or filled?				
If yes: e. Ground chicken?				
2. Turkey or foods containing turkey?				
if yes: a. Turkey prepared outside the home?				*Where?*
if yes: b. Ground turkey?				
3. Other poultry (e.g. Cornish hen, quail, etc)?				*Specify:*
4. Beef or foods containing beef?				
if yes: a. Beef prepared outside the home?				*Where?*
if yes: b. Ground beef?				
if yes: > Undercooked or raw ground beef?				
5. Pork or foods containing pork?				
6. Lamb or mutton?				
7. Liver?				
if yes a. Undercooked or raw liver?				
if yes b. Liver pate?				
8. Deli meat (e.g. ham, roast beef, salami)?				*Specify:*
9. Other meat (e.g. venison, goat)?				*Specify:*
FISH AND SEAFOOD				
10. Fish or fish products?				
if yes a. Fish prepared outside the home?				*Where?*
if yes b. Undercooked or raw fish (e.g. sushi)?				
11. Seafood (e.g. crab, shrimp, oysters, clams)?				*Specify:*
if yes a. Seafood prepared outside the home?				*Where?*
if yes b. Undercooked or raw seafood?				*Which?*

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
FROZEN FOODS				
12. Frozen meals (e.g. pizza, soup, entrée)?				*Specify:*
DAIRY PRODUCTS				
13. Dairy products (e.g. milk, yogurt, cheese, cream)?				
a. Pasteurized cow's or goat's milk?				
if yes b. Unpasteurized milk?				*From where?*
c. Soft cheese (e.g. queso fresco)?				
if yes >Unpasteurized soft cheese?				*From where?*
if yes d. Any other raw or unpasteurized dairy products?				*From where?*
14. Eggs?				
a. Eggs made outside the home?				*Where?*
if yes b. Eggs that were runny, raw, or uncooked foods made with raw eggs?				*From where?*
FRESH FRUITS AND VEGETABLES				
15. Fresh cantaloupe?				
16. Fresh watermelon?				
17. Fresh (unfrozen) berries?				*Specify:*
18. Other fresh fruit eaten raw?				*Specify:*
19. Unpasteurized, not from concentrate juice (sold at an orchard or farm, or commercially with label)?				*From where?*
20. Fresh green onion or scallions?				
21. Fresh cucumber?				
22. Fresh, raw tomatoes?				*Type(s) & from where?*
23. Fresh peppers (e.g. bell, hot, sweet)?				*Specify:*
24. Fresh, raw lettuce?				*Specify loose ( ) or pre-packaged ( )*
25. Fresh (unfrozen), raw spinach?				*Specify loose ( ) or pre-packaged ( )*
26. Sprouts?				*Specify:*
27. Other fresh vegetables eaten raw?				*Specify:*
28. Fresh (not dried) herbs (e.g. basil, cilantro)?				*Specify:*
29. Nuts or seeds?				*Specify:*

Any other comments, notes, or contacts:

PUBLIC HEALTH REFERENCE SHEET
Cyclosporiasis

Name	*Cyclospora cayetanensis*
Reservoir & Transmission	Humans. Occurs through drinking (or swimming in) contaminated water or through consumption of contaminated fresh fruits and vegetables Person-to-person transmission is unlikely
Incubation Period	Approximately 1 week
Symptoms	Watery diarrhea, nausea, anorexia, abdominal cramps, fatigue, myalgia, and weight loss; fever is rare
Gold Standard Diagnostic Test	Microscopic identification or DNA identification through PCR
Risk Groups	Those with HIV and HIV/tuberculosis co-infection are particularly susceptible
Geographic Significance	Most common in tropical and subtropical countries, where asymptomatic infections are not infrequent; also associated with diarrhea in travelers to Asia, the Caribbean, and Latin America

What is Cyclosporiasis?
Cyclosporiasis is an intestinal infection caused by a single-cell microscopic parasite called *Cyclospora cayetanensis*.

How is *Cyclospora* transmitted?
Cyclospora is spread by people ingesting food or water that contaminated with feces, or through consumption of contaminated fresh fruits and vegetables. *Cyclospora* needs time (days to weeks) after being passed in a bowel movement to become infectious for another person. Therefore, it is unlikely that *Cyclospora* is passed directly from one person to another.

Who is at risk for Cyclosporiasis?
People living or traveling in tropical or subtropical regions of the world may be at increased risk for infection because cyclosporiasis is endemic in some countries in these zones. In the United States, foodborne outbreaks of cyclosporiasis have been linked to various types of imported fresh produce.

What are the signs and symptoms of Cyclosporiasis?
The time between becoming infected and becoming sick is usually about 1 week. *Cyclospora* infects the small intestine and usually causes watery diarrhea, with frequent, sometimes explosive, bowel movements. Other common symptoms include loss of appetite, weight loss, stomach cramps/pain, bloating, increased gas, nausea, and fatigue. Vomiting, body aches, headache, fever, and other flu-like symptoms may be noted. Some infected people remain asymptomatic. If not treated, the illness may last from a few days to a month or longer. Symptoms may seem to go away and then relapse. Fatigue is common.

How is Cyclosporiasis diagnosed?
Identification of this parasite in stool requires special laboratory tests that are not routinely done. More than one stool specimen from different days is submitted and testing is specifically requested for *Cyclospora* as well as other organisms that can cause similar symptoms.

How is Cyclosporiasis treated?
The recommended treatment is a combination of two antibiotics, trimethoprim-sulfamethoxazole, also known as Bactrim®, Septra®, or Cotrim®. Nitazoxanide (anti-parasite/anti-protozoal) or ciprofloxacin may be considered to treat patients who are allergic to

or cannot tolerate sulfa drugs. People who have diarrhea should also rest and drink plenty of fluids.

How is Cyclosporiasis prevented?
Avoiding food or water that might have been contaminated with stool may help prevent the infection. People who have previously been afflicted with *Cyclospora* can become infected again. Cooking foods that may be infected may kill the parasite. Thoroughly washing and peeling contaminated fruits and vegetables may help prevent infection.

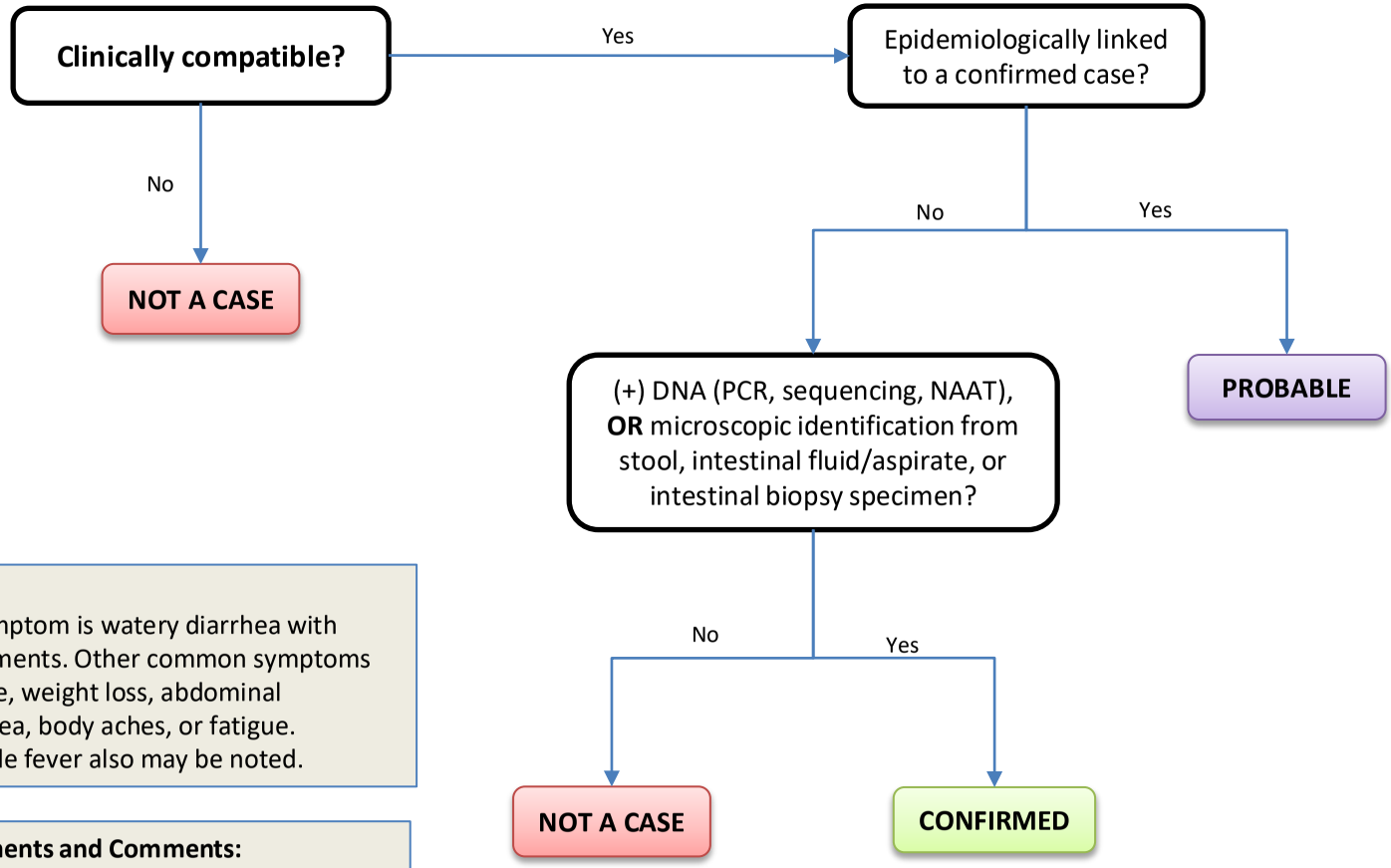
What are some public health considerations?
- Document the source of the infection, if known.
- Document if the case patient works in, lives in, or attends a high transmission setting such as food handling, day care, school, group living, healthcare, training center, or ship.

References:
"Cyclosporiasis," Centers for Disease Control and Prevention, last reviewed March 12, 2022. https://www.cdc.gov/parasites/cyclosporiasis/.

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

Cyclosporiasis



Clinical Description:
The most common symptom is watery diarrhea with frequent bowel movements. Other common symptoms include loss of appetite, weight loss, abdominal cramps/bloating, nausea, body aches, or fatigue. Vomiting and low-grade fever also may be noted.

Critical Reporting Elements and Comments:
- Document species and source of infection, if known.
- Document if the case lives in, works in, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Cyclosporiasis

Confirmed ○ Probable ○ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ **PHONE:** (_____) - _____ - _____ *(h)*

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Watery diarrhea	☐	☐	**Describe any other relevant symptoms or clinical information below:**
Loss of appetite	☐	☐	
Weight Loss	☐	☐	
Abdominal cramps	☐	☐	
Nausea	☐	☐	
Body aches	☐	☐	
Fatigue	☐	☐	
Vomiting	☐	☐	
Other *(describe)*	☐	☐	

	Y	N
Is this case epidemiologically linked to a confirmed case of cyclosporiasis?	☐	☐

Laboratory results:

Test type: **Culture** ☐ **PCR** ☐ **Antibody** ☐ **Other** ☐

Collection Date: ____/____/____ **Result date:** ____/_____/_____

Result: **Positive** ☐ **Negative** ☐ **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ Unk ☐

Details: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

CONTACTS

List all household contacts, ill or not ill, and any close contacts regardless of where they live (i.e., caregivers, partners, etc). Indicate for all contacts if high risk; if symptomatic give onset date and testing information. List additional contacts on the last page of this form if needed.

Name/Contact	Age	Relationship to case	Symptoms		Onset Date	Lab testing	High Risk		
			Yes	No		Y/N, coll. date, result	Day care	Health care	Food Svc.

ENVIRONMENTAL EXPOSURES

In the 7 days before illness onset, from _____/_____/_____ to _____/_____/_____ did [you/your child]:

WATER-RELATED EXPOSURES	YES	NO	UNK	*If yes, details:*
1. Stay in a home with a septic system?				
2. Primarily use water from a well for drinking water?				*Treatment:*
3. Primarily drink bottled water?				*Brand(s):*
4. Drink any untreated water (pond, lake, etc)?				
5. Swim or wade in untreated water?				*Where?*
6. Swim or wade in treated water (pool, hot tub, etc)?				*Where?*
ANIMAL CONTACT	YES	NO	UNK	*If yes, details:*
1. Have contact with an animal?				
If yes, did [you/your child] have contact with a:				
a. Dog				
b. Cat				
c. Other pet mammal				*Specify:*
d. Reptile or amphibian				*Specify:*
e. Live poultry				
f. Pet bird				
g. Cattle, goat, or sheep				*Specify:*
h. Pig				
i. Other animal				*Specify:*
j. Pet with diarrhea				
2. Visit, work, or live on a farm, ranch, or petting zoo?				*Specify:*
3. Have exposure to a daycare or nursery?				*Where?*
4. Have a household or close contact with diarrhea?				*Who?*
5. Work in a restaurant or prepare food for others?				*Specify:*

FOOD HISTORIES

(For all cases, complete for the 7 days before illness. If case was asymptomatic or the onset is unknown, complete for the 7 days before collection. List ALL ingredients in each meal.)

Start with most recent date and move back

Date							
Morning/breakfast							
Afternoon/lunch							
Evening/dinner							
Snacks/other							

FOOD SOURCES

In the 7 days before illness, from _____/_____/_____ to _____/_____/_____, did [you/your child]:	YES	NO	UNK
1. Attend any events where food was served? (if yes, list below)			

Event	Date	Location	Foods Eaten
a.			
b.			
c.			

2. Eat at any restaurants? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

3. Eat food purchased from a farm or farm stand? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			

4. List all stores where food eaten in the days prior to illness were purchased (e.g. grocery stores, ethnic markets).

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

Notes and Summary of Investigation

List actions taken on cases and contacts and outcome:

FOOD EXPOSURES

[Instructions: For all questions, ask for the 7 day period prior to onset of illness or, if unknown or asymptomatic, in the 7 days prior to collection date. For questions answered YES, use the space on the right to provide additional details, such as the specific type of food and where the food was purchased or eaten. Be specific.]

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household HANDLE any:	YES	NO	UNK	*If yes: provide specific details*
1. Raw beef?				
2. Raw poultry?				
3. Raw seafood?				
In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
MEAT PRODUCTS				
1. Chicken or foods containing chicken?				
If yes: a. Chicken prepared outside the home?				*Where?*
If yes: b. Chicken at home that was bought fresh?				*Which part(s):*
If yes: c. Chicken at home that was bought frozen?				*Which part(s):*
If yes: d. Frozen chicken that was stuffed or filled?				
If yes: e. Ground chicken?				
2. Turkey or foods containing turkey?				
if yes: a. Turkey prepared outside the home?				*Where?*
if yes: b. Ground turkey?				
3. Other poultry (e.g. Cornish hen, quail, etc)?				*Specify:*
4. Beef or foods containing beef?				
if yes: a. Beef prepared outside the home?				*Where?*
if yes: b. Ground beef?				
if yes: > Undercooked or raw ground beef?				
5. Pork or foods containing pork?				
6. Lamb or mutton?				
7. Liver?				
if yes a. Undercooked or raw liver?				
if yes b. Liver pate?				
8. Deli meat (e.g. ham, roast beef, salami)?				*Specify:*
9. Other meat (e.g. venison, goat)?				*Specify:*
FISH AND SEAFOOD				
10. Fish or fish products?				
if yes a. Fish prepared outside the home?				*Where?*
if yes b. Undercooked or raw fish (e.g. sushi)?				
11. Seafood (e.g. crab, shrimp, oysters, clams)?				*Specify:*
if yes a. Seafood prepared outside the home?				*Where?*
if yes b. Undercooked or raw seafood?				*Which?*

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
FROZEN FOODS				
12. Frozen meals (e.g. pizza, soup, entrée)?				*Specify:*
DAIRY PRODUCTS				
13. Dairy products (e.g. milk, yogurt, cheese, cream)?				
a. Pasteurized cow's or goat's milk?				
if yes b. Unpasteurized milk?				*From where?*
c. Soft cheese (e.g. queso fresco)?				
if yes >Unpasteurized soft cheese?				*From where?*
if yes d. Any other raw or unpasteurized dairy products?				*From where?*
14. Eggs?				
a. Eggs made outside the home?				*Where?*
if yes b. Eggs that were runny, raw, or uncooked foods made with raw eggs?				*From where?*
FRESH FRUITS AND VEGETABLES				
15. Fresh cantaloupe?				
16. Fresh watermelon?				
17. Fresh (unfrozen) berries?				*Specify:*
18. Other fresh fruit eaten raw?				*Specify:*
19. Unpasteurized, not from concentrate juice (sold at an orchard or farm, or commercially with label)?				*From where?*
20. Fresh green onion or scallions?				
21. Fresh cucumber?				
22. Fresh, raw tomatoes?				*Type(s) & from where?*
23. Fresh peppers (e.g. bell, hot, sweet)?				*Specify:*
24. Fresh, raw lettuce?				*Specify loose ( ) or pre-packaged ( )*
25. Fresh (unfrozen), raw spinach?				*Specify loose ( ) or pre-packaged ( )*
26. Sprouts?				*Specify:*
27. Other fresh vegetables eaten raw?				*Specify:*
28. Fresh (not dried) herbs (e.g. basil, cilantro)?				*Specify:*
29. Nuts or seeds?				*Specify:*

Any other comments, notes, or contacts:

D-I

PUBLIC HEALTH REFERENCE SHEET
Dengue

Name	*Dengue Virus, serotypes* 1, 2, 3, and 4
Reservoir & Transmission	Human-*Aedes* mosquito cycle; *Aedes aegypti* and to a lesser extent *Aedes albopictus;* Sylvatic monkey-mosquito cycle, which may spill into human populations of southeastern Asia and western Africa
Incubation Period	3–14 days, commonly 4–7 days
Common Symptoms	Ranges from critical to asymptomatic; sudden onset of fever, which lasts 2–7 days and may be biphasic; also, may include headache, myalgia, arthralgia, bone pain, retro-orbital pain, anorexia, vomiting, macular or maculopapular rash, and minor hemorrhagic manifestations including petechiae, ecchymosis, purpura, epistaxis, bleeding gums, hematuria, or a positive tourniquet test
Gold Standard Diagnostic Test	Rapid Immunochromatographic test (ICT) detecting NS1, IgM, and IgG Rapid tests should be confirmed by enzyme-linked immunosorbent assay (ELISA); virus isolation or molecular methods (PCR)
Risk Groups	People who live in endemic areas. Infants infected with dengue viruses (DENV) at 6–12 months of age, and born to mothers previously infected with DENV, are at increased risk for severe infection. Travelers from non-endemic regions that travel to endemic regions are at risk for febrile illness.
Geographic Significance	Endemic in at least 100 countries in Asia, the Pacific, the Americas, and the Caribbean (see map below)

What is dengue?
Dengue, an acute febrile illness, is caused by infection with any of four related positive-sense, single-stranded RNA viruses of the genus Flavivirus, dengue viruses (DENV) 1, 2, 3, or 4. Approximately 1 in 20 patients with dengue virus disease progress to develop life-threatening severe dengue. The second infection by a different serotype to the first dengue infection is epidemiologically associated with the highest risk of severe dengue.

What is the occurrence of dengue?
Sporadic outbreaks with local transmission have occurred in Florida, Hawaii, and Texas (along the border with Mexico). Dengue is endemic throughout the tropics and subtropics and is a leading cause of febrile illness among travelers returning from Latin America, the Caribbean, and Southeast Asia. Dengue occurs in more than 100 countries in the Americas, the Caribbean, Africa, Europe, the Middle East, Asia, and Oceania.

How is dengue transmitted?
Dengue viruses are spread to people through the bite of an infected Aedes mosquito (species *Ae. aegypti or Ae. albopictus*); dengue is not contagious and there is no direct person-to-person spread of dengue. In the Western Hemisphere, the *Aedes aegypti* mosquito is the most important transmitter or vector of dengue viruses. The mosquito becomes infected with dengue virus when it bites a person who has dengue virus in their blood. After about 1 week, the mosquito can then transmit the virus while biting a healthy person. Because of the approximately 7-day viremia in humans, bloodborne transmission is possible through exposure to infected blood, organs, or other tissues (such as bone marrow). Perinatal dengue transmission occurs when the mother is infected near the time of birth, in which infection occurs via micro-transfusions (i.e., when the placenta is detached or through mucosal contact with mother's blood during birth). Dengue viruses may also be transmitted through breast milk. There is no evidence of sexual transmission.

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PUBLIC HEALTH REFERENCE SHEET
Dengue

What are the signs and symptoms of dengue?
An estimated 1 in 4 dengue virus infections are symptomatic. Symptomatic dengue virus infection most commonly presents as a mild to moderate, nonspecific, acute febrile illness. The World Health Organization (WHO) classifies dengue illness as 1) dengue with or without warning signs for progression toward severe dengue, and 2) severe dengue. Warning signs of dengue: lives in or has traveled to a dengue-endemic area; has a fever; and has two of the following: nausea and vomiting, rash, aches and pains, tourniquet test positive, or leukopenia.

Warning signs of progression to severe dengue occur in the late febrile phase around the time of defervescence (abatement of fever) and include severe abdominal pain or tenderness, persistent vomiting, clinical fluid accumulation, mucosal bleeding, lethargy or restlessness, difficulty breathing, postural hypotension, liver enlargement, or an increase in hematocrit concurrent with a rapid decrease in platelet count.

Severe dengue: severe plasma leakage leading to shock or fluid accumulation with respiratory distress, severe bleeding, or severe organ impairment. Symptoms include hemorrhagic manifestations (bruise easily, bleeding nose or gums, frank hemorrhage, hematemesis, hematochezia, melena, menorrhagia); pleural effusion or ascites; hypoproteinemia; hemoconcentration; fulminant hepatitis; myocarditis; pancreatitis; and encephalitis.

There may be three phases of dengue:

- Febrile phase: high fever, severe headache, severe pain behind the eyes; muscle, bone, and joint pain; macular or maculopapular rash; and minor hemorrhagic manifestations including petechia, ecchymosis, purpura, epistaxis, bleeding gums, hematuria, or a positive tourniquet test result. Some patients have injected oropharynx and facial erythema in the first 24–48 hours after onset. Fever typically lasts 2–7 days and can be biphasic. Dengue fever is also called “breakbone fever” because of the very severe and debilitating muscle, bone, and joint pain. Symptoms can take up to 2 weeks to develop but usually end in a week. Generally, younger children and those with their first dengue infection have milder illness than older children and adults.

- Critical phase: begins at abatement of fever and typically lasts 24–48 hours. Patients with severe plasma leakage may have pleural effusions, ascites, hypoproteinemia, or hemoconcentration. Most patients clinically improve during this phase with maintenance of fluid volume and hemodynamic status, but those with significant plasma leakage can progress to severe dengue.

- Convalescent phase: begins when plasma leakage subsides, and intravenous, pleural, and abdominal fluids reabsorb, hemodynamic status stabilizes, and diuresis ensues. Generalized erythematous rash with circular areas of nonerythematous skin may desquamate and be pruritic.

How is dengue diagnosed?
Patients with symptoms consistent with dengue can be tested with both molecular and serologic diagnostic tests during the first 7 days of illness. After the first 7 days of illness, test only with serologic diagnostic tests. Testing cerebrospinal fluid is recommended in suspect patients with central nervous system clinical manifestations such as encephalopathy and aseptic meningitis. https://www.cdc.gov/dengue/healthcare-providers/testing/testing-guidance.html

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PUBLIC HEALTH REFERENCE SHEET
Dengue

Areas with co-circulating flaviviruses: For people living in or traveling to an area with endemic or concurrently circulating dengue, Zika, and other flaviviruses (such as, Japanese encephalitis, West Nile, yellow fever, clinicians) will need to order appropriate tests to best differentiate dengue virus from other flaviviruses and consult with state or local public health laboratories or CDC.

How is dengue treated?
There is no specific antiviral therapy for dengue. During the febrile phase, use acetaminophen; do not use aspirin-containing drugs or nonsteroidal anti-inflammatory drugs, as these drugs may increase the risk of bleeding due to dengue. Clinical management depends on early recognition of the development of capillary leakage and prompt intravenous fluid replacement with isotonic crystalloids.

How can dengue be prevented?
A dengue vaccine is approved for use in children aged 9 to 16 years with laboratory-confirmed previous dengue virus infection and living in areas where dengue is endemic (common). Endemic areas include some U.S. Territories and freely associated States. The vaccine is not approved for use in U.S. travelers who are visiting but not living in an area where dengue is common.

Eliminate the places where the mosquito lays eggs, primarily artificial containers that hold water. Employment of a combination of effective mosquito (vector) control programs. (See Vector Control section of the Control of Communicable Diseases Manual.)

Using air conditioning or window and door screens reduces the risk of mosquitoes coming indoors. Using bed nets if sleeping outdoors also reduces the risk of mosquito bites. Avoid outdoor activity around dusk and dawn.

Application of mosquito repellents containing 20–30% DEET as the active ingredient on exposed skin and clothing, such as long-sleeved shirts, long pants, and hats, decreases the risk of being bitten by mosquitoes. Consider wearing clothing impregnated with permethrin or functional equivalent.

What are some public health considerations?
- Specify serotype if known (DENV-1, -2, -3, or -4).
- Document relevant travel and deployment history occurring within the incubation period of 3 to 14 days.

Although the geographic distribution of dengue is similar to malaria, dengue is more of a risk in urban and residential areas than is malaria. The dengue map (www.healthmap.org/dengue/index.php) shows up-to-date information on areas of ongoing transmission.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Dengue

Map of Dengue risk in the Americas and the Caribbean

Source: https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/dengue

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Dengue

Map: Dengue risk in Africa, Europe, and the Middle East

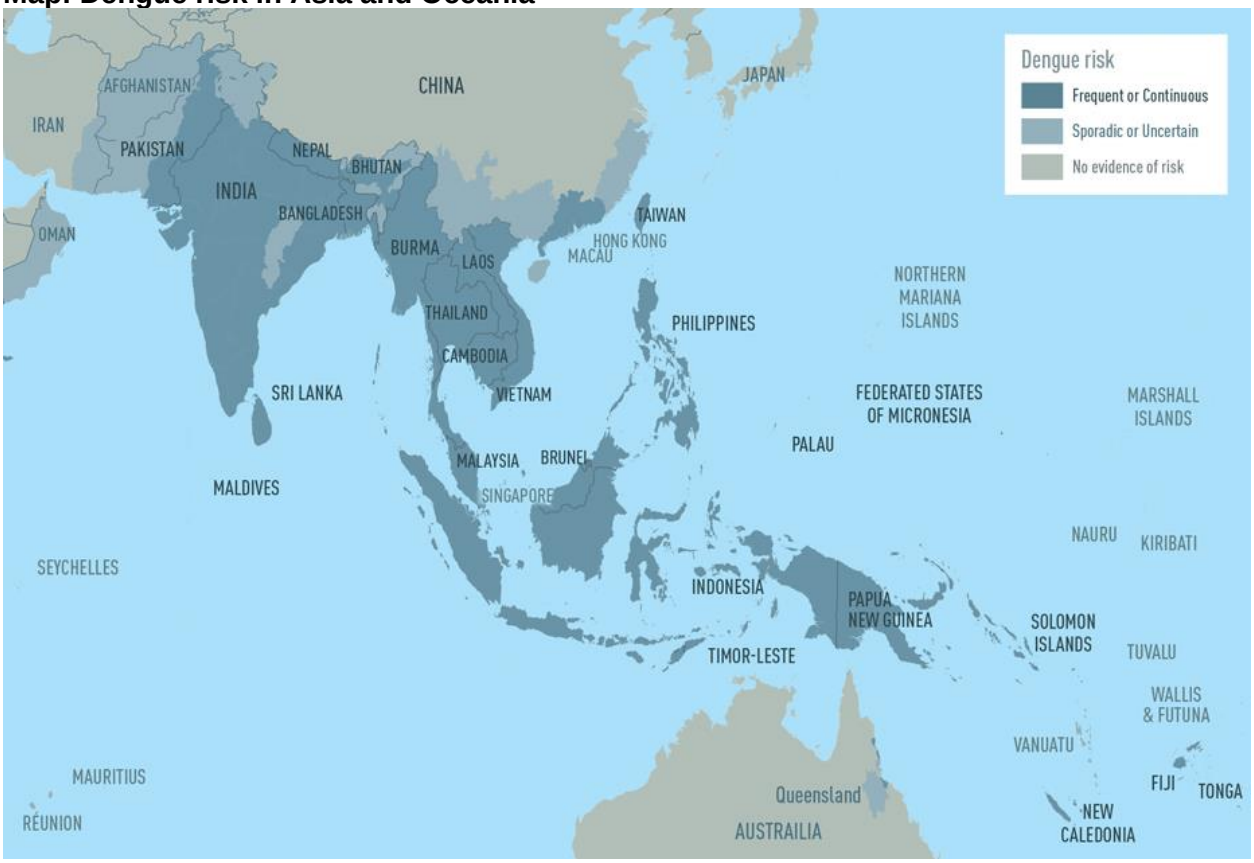
Risk areas are shown on a national level except for where evidence exists of different risk levels at subnational regions. Areas that are too small to be seen on the regional maps are labeled in dark blue or light blue depending on their risk categorization.

Source: https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/dengue

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Dengue

Map: Dengue risk in Asia and Oceania



Source: https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/dengue

References:

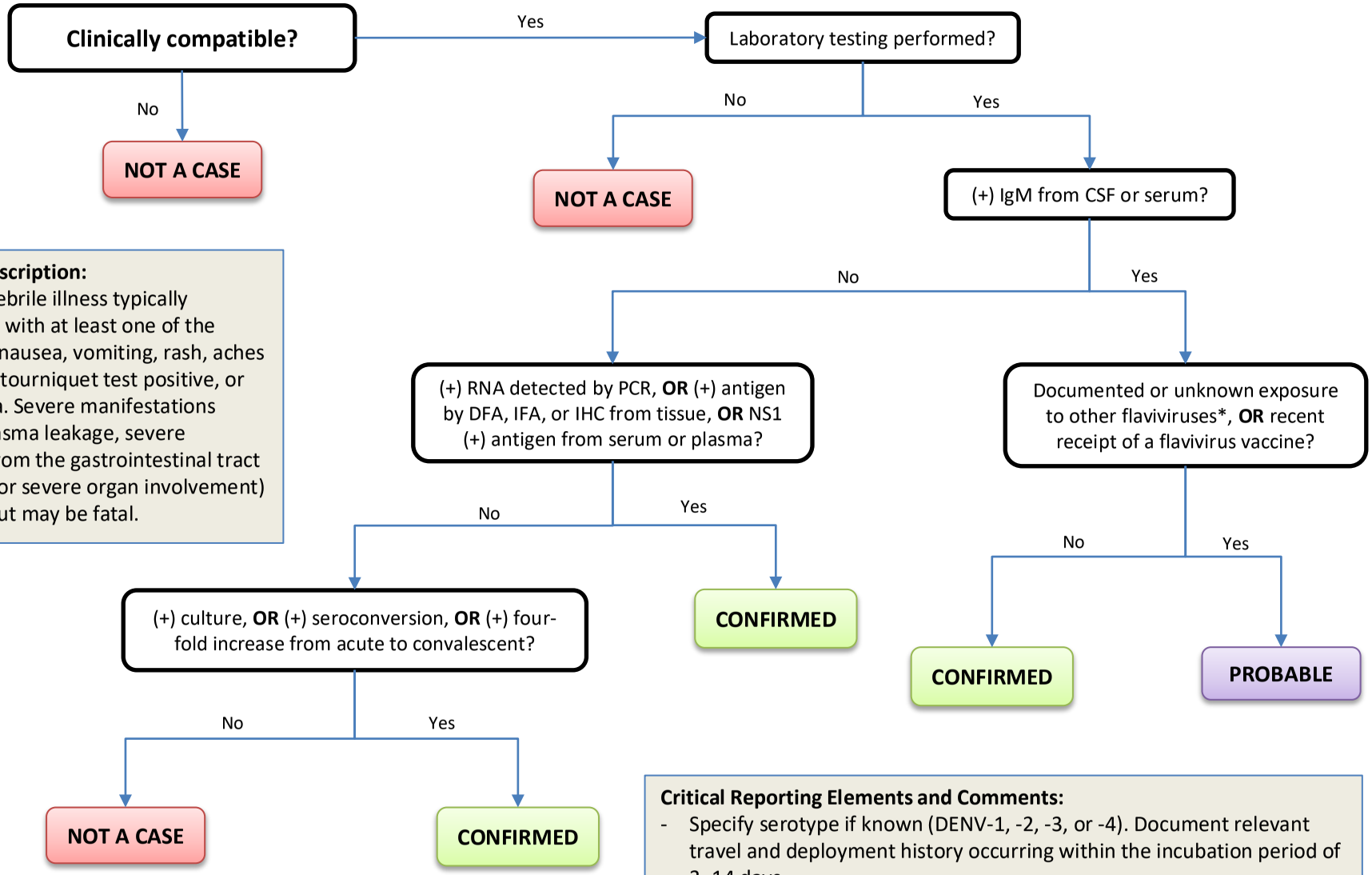
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

"Dengue Fever," Centers for Disease Control and Prevention, last reviewed July 1, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/dengue

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*, 21st Edition, Washington DC: APHA Press.

Last Updated September 1, 2023

Dengue Virus Infection



Clinical Description:
An acute febrile illness typically presenting with at least one of the following: nausea, vomiting, rash, aches and pains, tourniquet test positive, or leukopenia. Severe manifestations (severe plasma leakage, severe bleeding from the gastrointestinal tract or vagina, or severe organ involvement) are rare, but may be fatal.

Critical Reporting Elements and Comments:
- Specify serotype if known (DENV-1, -2, -3, or -4). Document relevant travel and deployment history occurring within the incubation period of 3–14 days.

*Other flaviviruses: Yellow Fever, Japanese Encephalitis, West Nile Virus

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Dengue Virus Infection

Confirmed ◯ Probable ◯ Not a Case ◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: ***(Last)***_____ ***(First)***_____ ***(MI)***_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: ***(Street)***_____ **DoD ID:** _____

(City) _____ ***(State)*** _____ ***(Zip)*** _____ (_____) - _____ - _____ ***(h)***

PHONE:

(County)_____ ***(Country)***_____ (_____) - _____ - _____ ***(c)***

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Headaches	☐	☐	
Muscle pain	☐	☐	
Joint pain	☐	☐	
Bone pain	☐	☐	
Retro-orbital pain	☐	☐	
Anorexia	☐	☐	
Nausea	☐	☐	
Vomiting	☐	☐	
Skin rashes	☐	☐	

	Y	N
Tourniquet test positive	☐	☐
Bleeding from gastrointestinal tract or vagina	☐	☐
Leukopenia	☐	☐

Serotype 1 ☐

Serotype 2 ☐

Serotype 3 ☐

Serotype 4 ☐

TREATMENT

Treated with pain relievers Y ☐ N ☐

	Date Started	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result		COMMENTS
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative	
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative	
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative	
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative	
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative	
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative	Rapid ICT detecting NS1, IgM, and IgG. Confirmed by enzyme-linked immunosorbent assay (ELISA).

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation period: typically 3–14 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Documented exposure to other flaviviruses? (e.g., Yellow Fever, Japanese Encephalitis, West Nile Virus)

_____

Recent receipt of a flavivirus vaccine?

_____

PUBLIC HEALTH REFERENCE SHEET
Diphtheria

Name	*Corynebacterium diphtheria*
Reservoir & Transmission	- Humans - Person-to-person contact
Incubation Period	Usually 2–5 days, (range 1–10 days)
Common Symptoms	Weakness, sore throat, fever, adenitis in the neck, and adherent membrane lesions in the nose, pharynx, larynx, or on the tonsils
Gold Standard Diagnostic Test	Culture
Risk Groups	Non-immunized or under-immunized children younger than 15 years
Geographic Significance	Present worldwide, particularly tropical areas, less common in vaccinated countries

What is diphtheria?
Diphtheria is an acute, bacterial disease caused by toxin-producing strains of *Corynebacterium diphtheria*, an aerobic gram-positive bacillus. This disease primarily manifests as respiratory infections that may result in death, but it may also present as mild infections in non-respiratory sites, such as skin infections. A case of diphtheria may present as:

- Respiratory: Upper respiratory tract illness with an adherent membrane of the nose, pharynx, tonsils, or larynx; or
- Non-respiratory: Infection of a non-respiratory anatomical site (e.g., skin, wound, conjunctiva, ear, genital mucosa)

How is diphtheria transmitted?
Diphtheria is transmitted from person-to-person, usually through respiratory droplets, from coughing or sneezing. Rarely, transmission may occur from skin lesions (e.g., an abnormal sore) or clothes that are contaminated with discharges from lesions of an infected person.

Who is at risk for diphtheria?
Once a widespread fatal childhood disease, diphtheria cases decreased due to vaccination. Respiratory diphtheria is uncommon in the United States. People at increased risk of getting sick include individuals in the same household or with a history of frequent, close contact with the patient, or directly exposed to secretions from the suspected infection site (e.g., mouth, skin) of the patient.

What are the signs and symptoms of diphtheria?
The incubation period of diphtheria is usually 2–5 days (range: 1–10 days).
A case of diphtheria may present as:

- Respiratory: Upper respiratory tract illness with an adherent membrane of the nose, pharynx, tonsils, or larynx. When the bacteria that cause diphtheria invade the respiratory system, they produce a poison (toxin) that can cause weakness, sore throat, mild fever, malaise, and swollen glands in the neck. Within 2 to 3 days, a thick gray coating called a "pseudomembrane" can amass over the nasal tissues; tonsils; voice box; and throat, which makes it very hard to breathe and swallow. The toxin may be absorbed into the blood stream and may cause damage to the heart, kidneys, and nerves.

- Cutaneous: Infection of a non-respiratory anatomical site (e.g., skin, wound, conjunctiva, ear, genital mucosa). Cutaneous diphtheria may present as a scaling rash or ulcers with

clearly demarcated edges and membrane; however, any chronic skin lesion may harbor *C. diphtheriae* along with other organisms. The systemic complications from cutaneous diphtheria with toxigenic strains appear to be less than from other sites.

What are potential complications from diphtheria?
Most complications of respiratory diphtheria, including death, are attributable to effects of the toxin. The most frequent complications of respiratory diphtheria are myocarditis and neuritis. Other complications include otitis media and respiratory insufficiency due to airway obstruction, especially in infants. The overall case-fatality rate for diphtheria is 5%–10%, with higher death rates (up to 20%) among persons younger than 5 and older than 40 years of age.

Cutaneous diphtheria infection rarely results in severe disease.

How is diphtheria diagnosed?
Diagnosis of respiratory diphtheria is usually made based on clinical presentation. Then, it is confirmed by isolating *C. diphtheriae* and testing the isolate for toxin production by the Elek test, which is an in vitro immunoprecipitation (immunodiffusion) assay. Other tests, such as polymerase chain reaction (PCR) and matrix assisted laser desorption/ionization-time of flight mass spectrometry (MALDI-TOF), may identify *C. diphtheriae*. However, when used alone, these tests do not confirm toxin production and are considered supplemental.

Specimens for culture should be obtained from the nostrils and oropharynx, or any mucosal or cutaneous lesion. If possible, material should be obtained from beneath the membrane (if present) or a portion of the membrane itself. Specimens are more likely to be culture-positive if obtained before the patient receives antibiotic treatment.

How is diphtheria treated?
It is imperative to begin presumptive therapy quickly. After the provisional clinical diagnosis is made, obtain appropriate clinical specimens, start antibiotic treatment, and contact the state health department and CDC regarding antitoxin for respiratory diphtheria.

The recommended antibiotics for respiratory or cutaneous diphtheria are either erythromycin or penicillin. Even though disease is usually not contagious 48 hours after antibiotic treatment begins, maintain droplet precautions until the diphtheria patient has completed the antibiotic course and is culture negative. Document elimination of the organism by obtaining two consecutive negative cultures 24 hours apart, once antibiotic therapy is completed.

Treatment of cutaneous diphtheria with antibiotics is usually sufficient, and antitoxin is typically not needed. Contact precautions are recommended for cutaneous disease, until elimination of the organism is documented by obtaining two consecutive negative cultures 24 hours apart, once antibiotic therapy is completed.

The Food and Drug Administration has not licensed diphtheria antitoxin (DAT) for use in the United States. However, the CDC is authorized to distribute DAT to treating clinicians as an investigational new drug (IND).

Diphtheria disease might not confer immunity. Persons recovering from diphtheria should begin or complete vaccination with diphtheria toxoid during convalescence if not up-to-date with vaccination.

PUBLIC HEALTH REFERENCE SHEET
Diphtheria

How can diphtheria be prevented?
Combination vaccines (diphtheria toxoid, tetanus toxoid, and acellular pertussis) used to prevent diphtheria include DTaP, Tdap, and Td. Each of these vaccines prevents diphtheria and tetanus. DTaP and Tdap vaccines also prevent pertussis (whooping cough). DTaP vaccines are given to children younger than 7 years of age. Tdap and Td vaccines are given to older children, teens, and adults. Service members are required to stay current on this vaccine, but other adults may not be current or may have never had an adult Tdap dose.

Toxoids in vaccines are inactivated (rendered harmless) bacterial toxins. Toxoids retain the ability to stimulate the body's formation of antitoxins against the bacterial toxins but does not provide any protection (antibodies) against the bacteria itself.

In 2023, following an interruption in the distribution of TDVAX, the CDC issued temporary guidance on using Tdap vaccine in lieu of Td vaccine. https://www.cdc.gov/vaccines/vpd/dtap-tdap-td/hcp/recommendations.html#tdap-td

In 2023, Sanofi Pasteur, Inc. stopped manufacturing the diphtheria and tetanus toxoids absorbed vaccine, commonly known as DT. Check with the CDC for updated vaccine recommendations for infants and children who should not receive acellular pertussis-containing vaccines. https://www.cdc.gov/diphtheria/clinicians.html

What are some public health considerations?

- Document relevant travel and deployment history occurring within the incubation period.
- Note the patient's diphtheria immunization history.
- Document if the case patient works in, lives in, or attends a high transmission setting, such as daycare, school, group living, or health care.
- A patient without evidence of clinical symptoms, as described above, is not considered a reportable case, despite a confirmatory lab test for toxin-producing *C. diphtheriae*.
- Management of close contacts should include monitoring for possible respiratory or cutaneous diphtheria for 7 to 10 days from the time of the last exposure to the diphtheria patient and obtaining nasal and throat cultures for *C. diphtheriae*.

References:

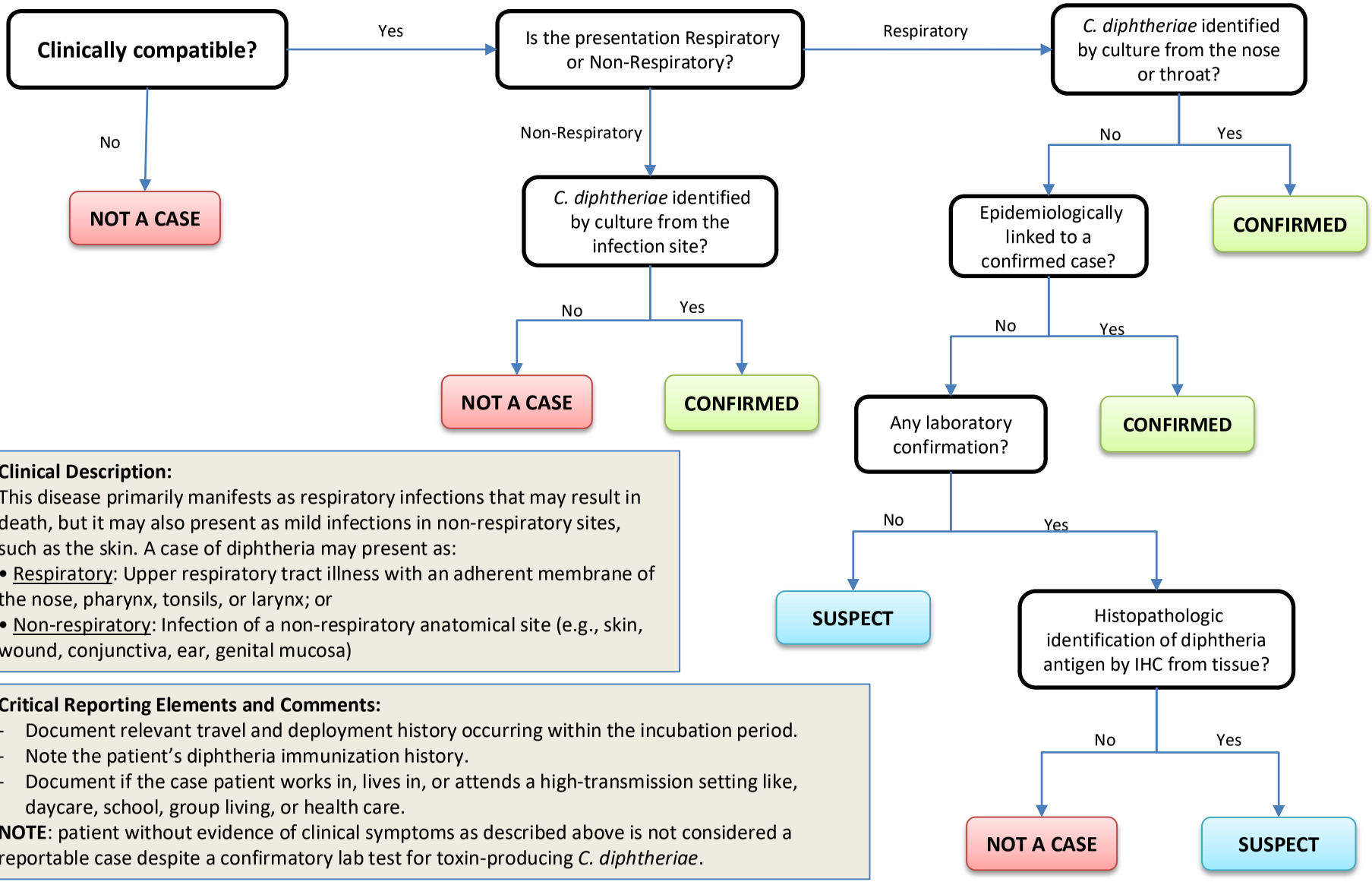
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

"Diphtheria," Centers for Disease Control and Prevention (CDC), last reviewed September 9, 2022. https://www.cdc.gov/diphtheria/clinicians.html

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Last Updated September 28, 2023

Diphtheria



Clinical Description:
This disease primarily manifests as respiratory infections that may result in death, but it may also present as mild infections in non-respiratory sites, such as the skin. A case of diphtheria may present as:
• Respiratory: Upper respiratory tract illness with an adherent membrane of the nose, pharynx, tonsils, or larynx; or
• Non-respiratory: Infection of a non-respiratory anatomical site (e.g., skin, wound, conjunctiva, ear, genital mucosa)

Critical Reporting Elements and Comments:
- Document relevant travel and deployment history occurring within the incubation period.
- Note the patient's diphtheria immunization history.
- Document if the case patient works in, lives in, or attends a high-transmission setting like, daycare, school, group living, or health care.

NOTE: patient without evidence of clinical symptoms as described above is not considered a reportable case despite a confirmatory lab test for toxin-producing *C. diphtheriae*.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Diphtheria

Confirmed ○ Suspect ○ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ **PHONE:** (_____) - _____ - _____ *(h)*

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____**°F/°C** (☐ **unk**)
Weakness	☐	☐	***Describe any other symptoms or relevant clinical history below:***
Sore throat	☐	☐	
Adenitis in neck	☐	☐	
Lesions	☐	☐	
Other *(describe)*	☐	☐	

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test (type of test performed)	Collection Date	Source (Circle Type)	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the 5 days before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

VACCINATION AND EXPOSURE

Vaccination History

	Y	N
Has the case been vaccinated against diphtheria?	☐	☐

Vaccination date: _____/_____/_____

Booster: _____/_____/_____

Exposure History

	Y	N
Does the case work in, live in, or attend a high-transmission setting?	☐	☐

If yes, where:

Describe any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Escherichia coli, Shiga Toxin producing (STEC)

Name	*Escherichia coli* (*E. Coli*), Shiga toxin producing
Reservoir & Transmission	Cattle most frequently; also, sheep, goats, and deer. Humans may serve as reservoir for person-to-person transmission. Ingestion of food or water contaminated with ruminant feces, direct contact with animals or their environment
Incubation Period	Usually 2–10 days; median of 3–4 days for most serotypes
Common Symptoms	Diarrhea (often bloody), severe abdominal pain, hemolytic uremic syndrome (HUS), thrombotic thrombocytopenic purpura (TTP)
Gold Standard Diagnostic Test	Culture from any clinical specimen, commonly stool
Risk Groups	All ages; primarily children, elderly, and immunocompromised
Geographic Significance	North America, Europe, Japan, Australia, the southern cone of South America, and Southern Africa

What is *Escherichia coli*?
Escherichia coli (*E. coli*) are a large and diverse group of bacteria. Although most strains of *E. coli* are part of the normal human intestinal microbiota, others can cause illnesses such as diarrhea, urinary tract infections, respiratory illness, and pneumonia. Some strains of *E. coli* are used as markers for water contamination (e.g., coliforms in drinking water or swimming pools), which may not be harmful but could indicate the presence of disease-causing bacteria and/or inadequate disinfection.

What is Shiga toxin-producing E. coli (STEC)?
STEC is a heterogeneous group of *E. coli* bacteria that express cytotoxins called Shiga toxins 1 and 2. STEC may also be referred to as Verocytotoxin-producing *E.* coli (VTEC) or enterohemorrhagic *E. coli* (EHEC). Over 70 STEC serogroups have been isolated from ill persons. STEC strains vary in virulence to include no apparent human virulence, mild or bloody diarrhea, or hemolytic uremic syndrome (HUS), which is the most severe manifestation. STEC O157 is an enterohemorrhagic bacterial strain, which is a food and waterborne pathogen that causes diarrhea, hemorrhagic colitis, and HUS in humans.

What is the occurrence of STEC infections?
An estimated 265,000 STEC infections occur each year in the United States. STEC O157 causes about 36% of these cases, and non-O157 serogroups cause the rest of the cases. These are estimates as not all STEC infections are diagnosed. This is because not many people seek medical care; of those who do seek care, a stool specimen may not be submitted for testing; and not all laboratories test for non-O157 STEC.

How are STEC infections transmitted?
STEC lives in the gut of ruminant animals, including cattle, goats, sheep, deer, and elk. Cattle are the major source of human STEC infections. STEC that cause human illness generally do not cause illness in animals. Pigs and birds may contract STEC from the environment and may spread it. Infections start when STEC is ingested. Exposures that result in illness include consumption of contaminated food, consumption of unpasteurized milk (raw milk) or water that has not been disinfected, contact with cattle, or contact with the feces of infected people. A high risk of *E. coli* O157 is from unpasteurized milk, unpasteurized apple cider, and soft cheeses made from raw milk. Infection may occur by swallowing lake water, touching the animals and surfaces in petting zoos and other animal exhibits, and by eating contaminated food.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Escherichia coli, Shiga Toxin producing (STEC)

Who is at risk for STEC infection?
People of any age can become infected. Very young children and the elderly are more likely than others to develop severe illness and HUS; however, healthy older children and young adults can become seriously ill.

What are the signs and symptoms of STEC infections?
The incubation period is usually 3–4 days after the exposure but may be as short as 1 day or as long as 10 days. The symptoms often begin slowly with mild stomach pain or non-bloody diarrhea that worsens over several days. HUS, if it occurs, develops an average 7 days after the first symptoms, when the diarrhea is improving. The symptoms of STEC infections include severe stomach cramps, diarrhea (often bloody), and vomiting. If there is fever, it is usually low grade (less than 101˚F/38.5˚C). Some infections are very mild, but others are severe or even life-threatening.

Young children tend to carry STEC longer than adults. Some people can keep shedding these bacteria for several months. Policies for return to school and work differ by local jurisdiction.

What are potential complications of STEC infections?
Most people recover from a STEC infection within 5–7 days. Approximately 5–10% of those who are diagnosed with STEC infection develop HUS, a potentially life-threatening complication. Indications that a person is developing HUS include decreased frequency of urination, fatigue, and loss of pink color in cheeks and inside the lower eyelids. Persons with HUS should be hospitalized. Most persons with HUS recover within a few weeks, but some suffer permanent damage or die.

How are STEC infections diagnosed?
STEC infections are diagnosed through laboratory testing of stool specimens. Once the illness is resolved, STEC may not be found in the feces, but it may be shed for several weeks, even after symptoms resolve. Identifying the specific strain of STEC is essential for outbreak investigations. Many labs can determine if STEC are present, and most can identify *E. coli* O157. Labs that test for the presence of Shiga toxins in stool can detect non-O157 STEC infections. However, for the O group (serogroup) and other characteristics of non-O157 STEC to be identified, Shiga toxin-positive specimens must be sent to a state public health laboratory.

How are STEC infections treated?
STEC infections are treated with supportive therapy, including hydration. Do not use antidiarrheal agents and antibiotics which may increase the risk of HUS.

How can STEC infections be prevented?
STEC infections can be prevented by—

- Washing hands after using the bathroom or changing diapers, after contact with animals or their environments (at farms, petting zoos, fairs), and before preparing or eating food.
- Cooking meats thoroughly. Ground beef and meat that has been needle-tenderized should be cooked to a temperature of at least 160°F/ 70°C as measured with a thermometer.
- Preventing cross-contamination in food preparation areas by thoroughly washing hands, counters, cutting boards, and utensils after contact with raw meat.
- Avoiding raw milk, unpasteurized dairy products, and unpasteurized juices.

Last Updated September 1, 2023

- Avoiding swallowing water when swimming or playing in lakes, ponds, streams, or pools.

What are some public health considerations?

- Report: *E. coli* O157:H7, *E. coli* O113, *E. coli* O118, *E. coli* O111, *E. coli* O26
  - Do not report: Enterotoxigenic *E. coli* (ETEC), Enteropathogenic *E. coli* (EPEC), Enteroinvasive *E. coli* (EIEC), Enteroaggregative *E. coli (EAEC)*
- Document if the case patient works, lives, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.
- Document the source of the infection, if known.
- Document relevant travel and deployment history occurring within the incubation period (2–10 days).

References

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

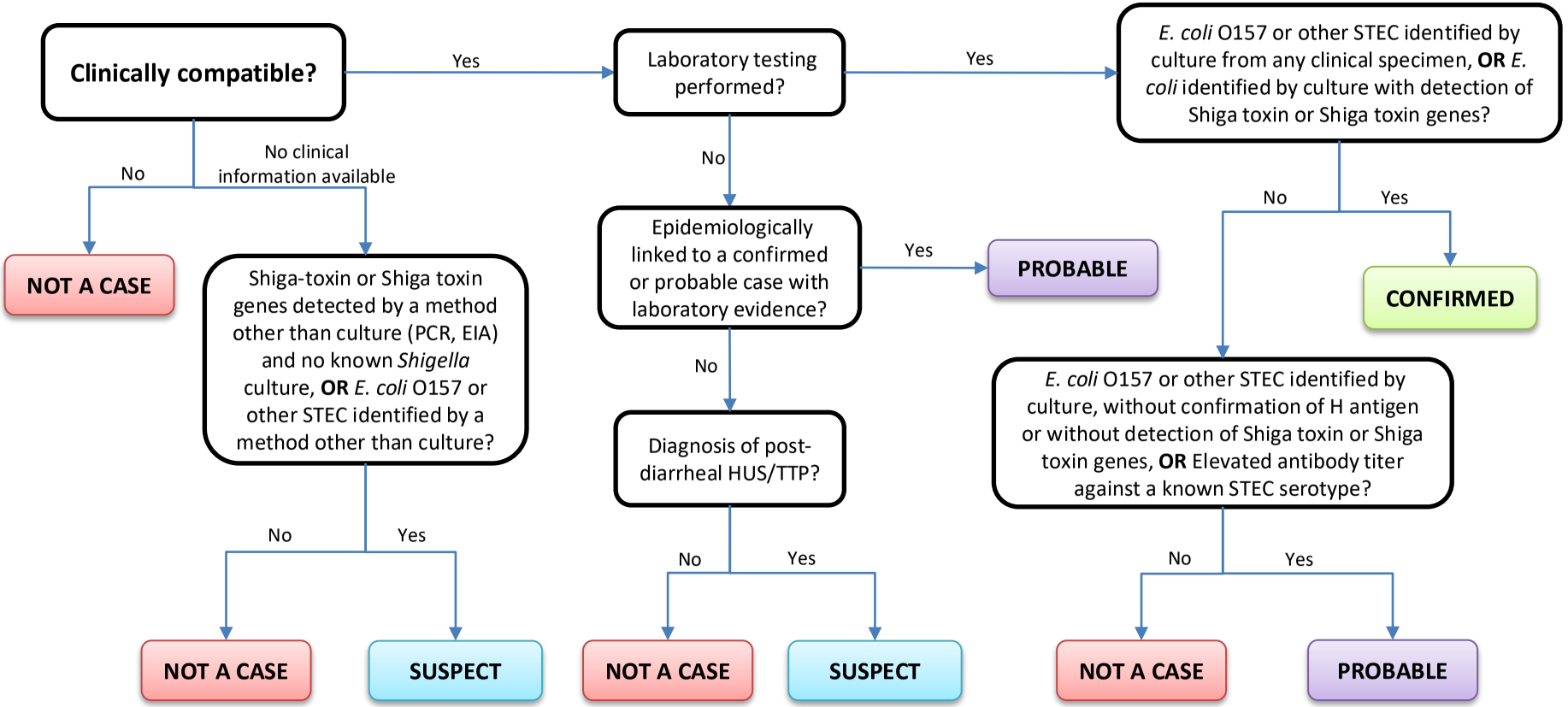
"E. coli," Centers for Disease Control and Prevention (CDC), last reviewed December 1, 2022. https://www.cdc.gov/ecoli/index.html

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Escherichia coli, Shiga toxin producing infection (STEC)

INCLUDES: *E. coli* O157:H7, *E. coli* O113, *E. coli* O118, *E. coli* O111, *E. coli* O26

EXCLUDES: Enterotoxigenic *E. coli* (ETEC), Enteropathogenic *E. coli* (EPEC), Enteroinvasive *E. coli* (EIEC), Enteroaggregative *E. coli (EAEC)*



Clinical Description:

An infection of variable severity characterized by diarrhea (often bloody) and abdominal cramps. The illness may be complicated by hemolytic uremic syndrome (HUS) or thrombotic thrombocytopenic purpura (TTP). HUS is characterized by the acute onset of microangiopathic hemolytic anemia, renal injury, and low platelet count. TTP is also characterized by these features but can include central nervous system (CNS) involvement, fever, and may have a more gradual onset. Most cases of HUS (but few cases of TTP) occur after an acute gastrointestinal illness (usually diarrheal). The organism rarely causes extraintestinal infections.

Critical Reporting Elements and Comments:

- Document if the case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.
- Document the source of the infection, if known.
- Document relevant travel and deployment history occurring within the incubation period (2–10 days).

GASTROINTESTINAL INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

This form can be used for the following reportable medical events:

☐ **Campylobacter** ☐ **Salmonella (non-Typhi)**

☐ **Cryptosporidium** ☐ **Shiga-toxin producing E. coli**

☐ **Norovirus** ☐ **Shigella**

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk) **Duration of symptoms:** _____ ☐ **Still ill**

Diarrhea Y ☐ N ☐ *Describe any other symptoms or pertinent clinical information:*

Bloody diarrhea Y ☐ N ☐

Abdominal cramps Y ☐ N ☐

Vomiting Y ☐ N ☐

Nausea Y ☐ N ☐

Chills Y ☐ N ☐

Muscle aches Y ☐ N ☐

Other (describe): Y ☐ N ☐

Laboratory results:

Test type: **Culture** ☐ **PCR** ☐ **Antibody** ☐ **Other** ☐

Collection Date: ____/____/____ **Result date:** ____/_____/_____

Result: **Positive** ☐ **Negative** ☐ **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ **Unk** ☐

Details: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

CONTACTS

List all household contacts, ill or not ill, and any close contacts regardless of where they live (i.e., caregivers, partners, etc). Indicate for all contacts if high risk; if symptomatic, give onset date and testing information. List additional contacts on the last page of this form if needed.

Name/Contact	Age	Relationship to case	Symptoms		Onset Date	Lab testing	High Risk		
			Yes	No		Y/N, coll. date, result	Day care	Health care	Food Svc.

ENVIRONMENTAL EXPOSURES

In the 7 days before illness onset, from _____/_____/_____ to _____/_____/_____ did [you/your child]:

WATER-RELATED EXPOSURES	YES	NO	UNK	*If yes, details:*
1. Stay in a home with a septic system?				
2. Primarily use water from a well for drinking water?				*Treatment:*
3. Primarily drink bottled water?				*Brand(s):*
4. Drink any untreated water (pond, lake, etc)?				
5. Swim or wade in untreated water?				*Where?*
6. Swim or wade in treated water (pool, hot tub, etc)?				*Where?*
ANIMAL CONTACT	YES	NO	UNK	*If yes, details:*
1. Have contact with an animal?				
If yes, did [you/your child] have contact with a:				
a. Dog				
b. Cat				
c. Other pet mammal				*Specify:*
d. Reptile or amphibian				*Specify:*
e. Live poultry				
f. Pet bird				
g. Cattle, goat, or sheep				*Specify:*
h. Pig				
i. Other animal				*Specify:*
j. Pet with diarrhea				
2. Visit, work, or live on a farm, ranch, or petting zoo?				*Specify:*
3. Have exposure to a daycare or nursery?				*Where?*
4. Have a household or close contact with diarrhea?				*Who?*
5. Work in a restaurant or prepare food for others?				*Specify:*

FOOD HISTORIES

(For all cases, complete for the 7 days before illness. If case was asymptomatic or the onset is unknown, complete for the 7 days before collection. List ALL ingredients in each meal.)

Start with most recent date and move back

Date							
Morning/breakfast							
Afternoon/lunch							
Evening/dinner							
Snacks/other							

FOOD SOURCES

In the 7 days before illness, from _____/_____/_____ to _____/_____/_____, did [you/your child]:	YES	NO	UNK
1. Attend any events where food was served? (if yes, list below)			

Event	Date	Location	Foods Eaten
a.			
b.			
c.			

2. Eat at any restaurants? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

3. Eat food purchased from a farm or farm stand? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			

4. List all stores where food eaten in the days prior to illness were purchased (e.g. grocery stores, ethnic markets).

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

Also complete food exposure questions for ALL Campylobacter, non-Typhi Salmonella, and STEC cases

Notes and Summary of Investigation

List actions taken on cases and contacts and outcome:

FOOD EXPOSURES

[Instructions: Complete for all Campylobacter, non-Typhi Salmonella, and STEC cases. For all questions, ask for the 7-day period prior to onset of illness or, if unknown or asymptomatic, in the 7 days prior to collection date. For questions answered YES, use the space on the right to provide additional details, such as the specific type of food and where the food was purchased or eaten. Be specific.]

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household HANDLE any:	YES	NO	UNK	*If yes: provide specific details*
1. Raw beef?				
2. Raw poultry?				
3. Raw seafood?				
In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
MEAT PRODUCTS				
1. Chicken or foods containing chicken?				
If yes: a. Chicken prepared outside the home?				*Where?*
If yes: b. Chicken at home that was bought fresh?				*Which part(s):*
If yes: c. Chicken at home that was bought frozen?				*Which part(s):*
If yes: d. Frozen chicken that was stuffed or filled?				
If yes: e. Ground chicken?				
2. Turkey or foods containing turkey?				
if yes: a. Turkey prepared outside the home?				*Where?*
if yes: b. Ground turkey?				
3. Other poultry (e.g. Cornish hen, quail, etc)?				*Specify:*
4. Beef or foods containing beef?				
if yes: a. Beef prepared outside the home?				*Where?*
if yes: b. Ground beef?				
if yes: > Undercooked or raw ground beef?				
5. Pork or foods containing pork?				
6. Lamb or mutton?				
7. Liver?				
if yes a. Undercooked or raw liver?				
if yes b. Liver pate?				
8. Deli meat (e.g. ham, roast beef, salami)?				*Specify:*
9. Other meat (e.g. venison, goat)?				*Specify:*
FISH AND SEAFOOD				
10. Fish or fish products?				
if yes a. Fish prepared outside the home?				*Where?*
if yes b. Undercooked or raw fish (e.g. sushi)?				
11. Seafood (e.g. crab, shrimp, oysters, clams)?				*Specify:*
if yes a. Seafood prepared outside the home?				*Where?*
if yes b. Undercooked or raw seafood?				*Which?*

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
FROZEN FOODS				
12. Frozen meals (e.g. pizza, soup, entrée)?				*Specify:*
DAIRY PRODUCTS				
13. Dairy products (e.g. milk, yogurt, cheese, cream)?				
a. Pasteurized cow's or goat's milk?				
if yes b. Unpasteurized milk?				*From where?*
c. Soft cheese (e.g. queso fresco)?				
if yes >Unpasteurized soft cheese?				*From where?*
if yes d. Any other raw or unpasteurized dairy products?				*From where?*
14. Eggs?				
a. Eggs made outside the home?				*Where?*
if yes b. Eggs that were runny, raw, or uncooked foods made with raw eggs?				*From where?*
FRESH FRUITS AND VEGETABLES				
15. Fresh cantaloupe?				
16. Fresh watermelon?				
17. Fresh (unfrozen) berries?				*Specify:*
18. Other fresh fruit eaten raw?				*Specify:*
19. Unpasteurized, not from concentrate juice (sold at an orchard or farm, or commercially with label)?				*From where?*
20. Fresh green onion or scallions?				
21. Fresh cucumber?				
22. Fresh, raw tomatoes?				*Type(s) & from where?*
23. Fresh peppers (e.g. bell, hot, sweet)?				*Specify:*
24. Fresh, raw lettuce?				*Specify loose ( ) or pre-packaged ( )*
25. Fresh (unfrozen), raw spinach?				*Specify loose ( ) or pre-packaged ( )*
26. Sprouts?				*Specify:*
27. Other fresh vegetables eaten raw?				*Specify:*
28. Fresh (not dried) herbs (e.g. basil, cilantro)?				*Specify:*
29. Nuts or seeds?				*Specify:*

Any other comments, notes, or contacts:

PUBLIC HEALTH REFERENCE SHEET
Ehrlichiosis and Anaplasmosis

Name	*Anaplasma phagocytophilum, Ehrlichia chaffeensis, Ehrlichia ewingii*
Reservoir & Transmission	White-tailed deer, dogs, small rodents, ruminants, and field rodents Tick bite: *A. phagocytophilum:* black-legged tick (*Ixodes scapularis*) and western black-legged tick (*Ixodes pacificus*). *E.chaffeensis* and *E. ewingii:* lone star tick (*Ambloyomma americanum*) in North America and *Ambloyomma cajenennse* in Southern and Central America On rare occasions, known to be transmitted through blood transfusions and organ transplants
Incubation Period	7–14 days
Common Symptoms	Fever plus one or more of the following: headache, myalgia, malaise, anemia, leukopenia, thrombocytopenia, or elevated liver enzymes
Gold Standard Diagnostic Test	Polymerase Chain Reaction (PCR) assay
Risk Groups	Individuals participating in outdoor activities in wooded, bushy, or grassy areas. Older and immunocompromised individuals are likely to suffer more serious infection.
Geographic Significance	North America, Europe, Asia

Ehrlichiosis

Ehrlichiosis is the general name used to describe several bacterial diseases that affect animals and humans. Human ehrlichiosis is a disease caused by at least three different ehrlichial species in the United States: *Ehrlichia chaffeensis*, *Ehrlichia ewingii*, and a third *Ehrlichia* species provisionally called *Ehrlichia muris*-like (EML).

How is ehrlichiosis transmitted?

Ehrlichiae are transmitted to humans by the bite of an infected tick. The lone star tick (*Amblyomma americanum*) is the primary vector of both *Ehrlichia chaffeensis* and *Ehrlichia ewingii* in the southeastern and southcentral United States. This disease poses a risk to be transmitted through blood transfusions and organ transplants.

What are the signs and symptoms of ehrlichiosis?

Ehrlichiosis often causes fever, headache, chills, malaise, muscle pain, nausea/vomiting/diarrhea, confusion, conjunctival injection (red eyes), and rash (in up to 60% of children, less than 30% of adults). In severe cases, individuals may have difficulty breathing or bleeding disorders. The symptoms caused by infection with these *Ehrlichia* species usually develop 1–2 weeks after being bitten by an infected tick. The tick bite is usually painless, and about half of the people who develop Ehrlichiosis may not remember being bitten by a tick.

How is ehrlichiosis diagnosed?

The diagnosis of ehrlichiosis must be made based on clinical signs and symptoms and can later be confirmed using specialized confirmatory laboratory tests. Rash is not considered a common feature in ehrlichiosis and should not be used to rule in or rule out infection. Do not delay treatment pending the receipt of laboratory test results. Do not withhold treatment based on an initial negative laboratory result.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Ehrlichiosis and Anaplasmosis

How is ehrlichiosis treated?
Doxycycline is the first line treatment for adults and children of all ages and should begin immediately whenever ehrlichiosis is suspected.

Use of antibiotics other than doxycycline and other tetracyclines is associated with a higher risk of fatal outcome for some rickettsial infections. Doxycycline is most effective at preventing severe complications from developing if it is started early in the course of disease. Therefore, treatment must be based on clinical suspicion alone and should always begin before laboratory results return.

If the patient is treated within the first 5 days of the disease, fever generally subsides within 24–72 hours. Failure to respond to doxycycline suggests that the patient's condition might not be due to Ehrlichiosis. Severely ill patients may require longer periods before their fever resolves. Resistance to doxcycline or relapses in symptoms after the completion of the recommended course have not been documented.

How can ehrlichiosis be prevented?
The best way to prevent ehrlichiosis and other tick-borne diseases is preventive measures against ticks year-round.

- Walk in the center of trails and avoid woody and bushy areas.
- Use repellants that contain 20% to 30% DEET on exposed skin for protection that lasts up to several hours.
- Use products that contain permethrin on clothing.
- Services members should wear uniforms treated with permethrin (factory or individually treated).
- Bathe as soon as possible, preferably within 2 hours, to more easily find ticks that may be on the body.

Anaplasmosis

Anaplasmosis is a tick-borne disease caused by the bacterium *Anaplasma phagocytophilum*. It was previously known as human granulocytic ehrlichiosis (HGE) and has more recently been called human granulocytic anaplasmosis (HGA).

How is anaplasmosis transmitted?
Anaplasmosis is transmitted to humans by tick bites primarily from the black-legged tick (*Ixodes scapularis*) and the western black-legged tick (*Ixodes pacificus*). Of the four distinct phases in the tick lifecycle (egg, larvae, nymph, adult), nymphal and adult ticks are most frequently associated with transmission of anaplasmosis to humans. This disease poses a risk to be transmitted through blood transfusions and organ transplants.

What are the signs and symptoms of anaplasmosis?
Anaplasmosis often causes fever, headache, chills, malaise, muscle pain, nausea/abdominal, confusion, and rash (rare). In severe cases, individuals may have difficulty breathing, hemorrhage, renal failure, or neurological problems. The first symptoms of anaplasmosis typically begin within 1–2 weeks after the bite of an infected tick.

How is anaplasmosis diagnosed?
The diagnosis of anaplasmosis must be made based on clinical signs and symptoms and can

later be confirmed using specialized confirmatory laboratory tests. Treatment should **never** be delayed pending the receipt of laboratory results or be withheld based on an initial negative laboratory result.

What are some public health considerations?

- Document relevant travel and deployment history occurring within the incubation period.
- Document the circumstances under which the case patient was exposed to ticks including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Specify the etiologic agent.

NOTE: For acute and convalescent testing, the first serum should be taken in the first week of illness.

MilTICK is a free tick testing and identification service available for ticks removed from Department of Defense (DoD) personnel and their dependents. For more information about services provided, including identifying tick species, assessing how long the tick has been attached, and testing the tick for human pathogens, and contact information, go to: https://ph.health.mil/topics/envirohealth/epm/Pages/HumanTickTestKitProgram.aspx.

References:

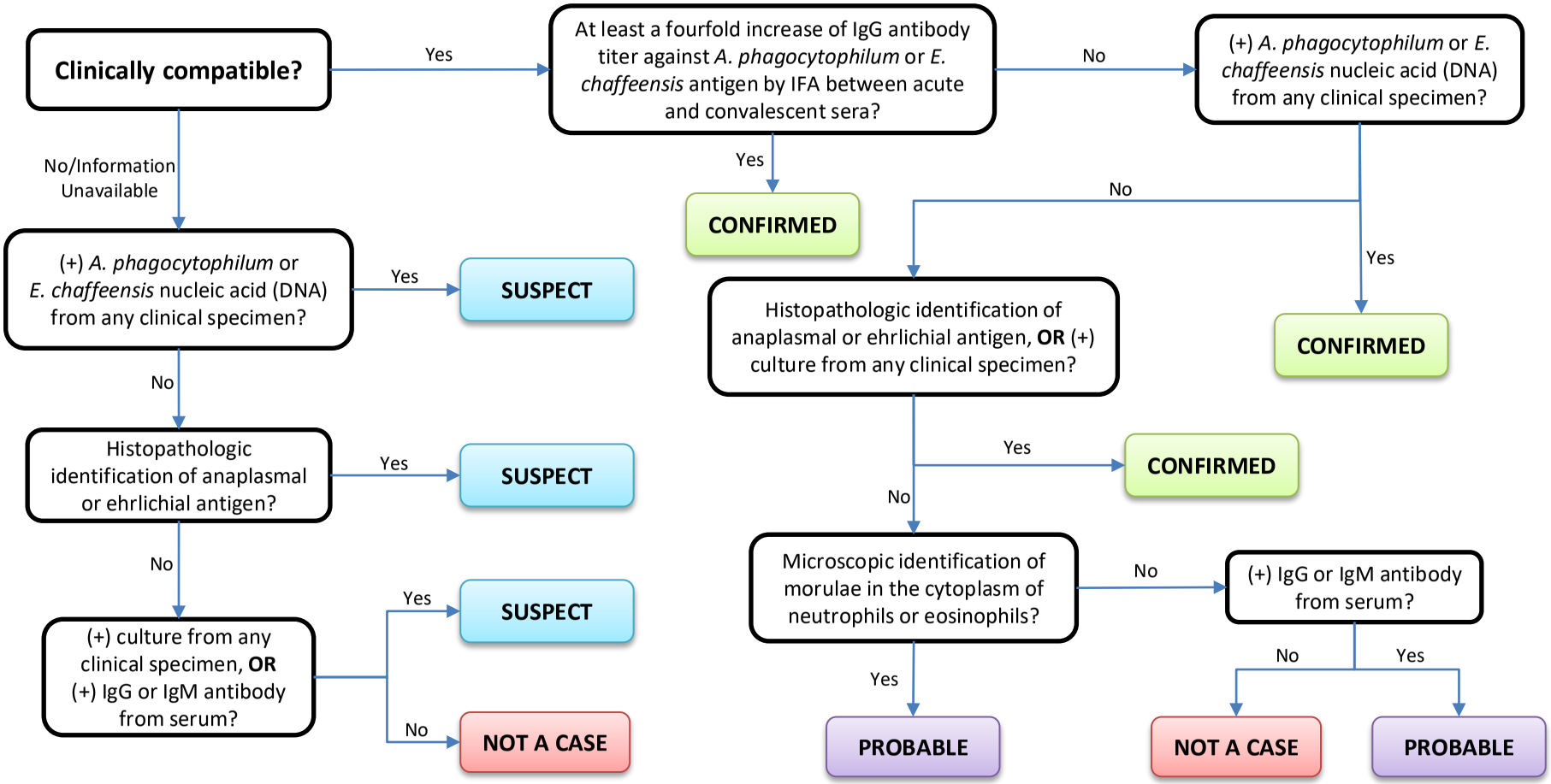
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

"Ehrlichiosis," Centers for Disease Control and Prevention (CDC), last reviewed May 22, 2022. https://www.cdc.gov/ehrlichiosis/index.html

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

Ehrlichiosis and Anaplasmosis

A. Phagocytophilum or E. chaffeensis



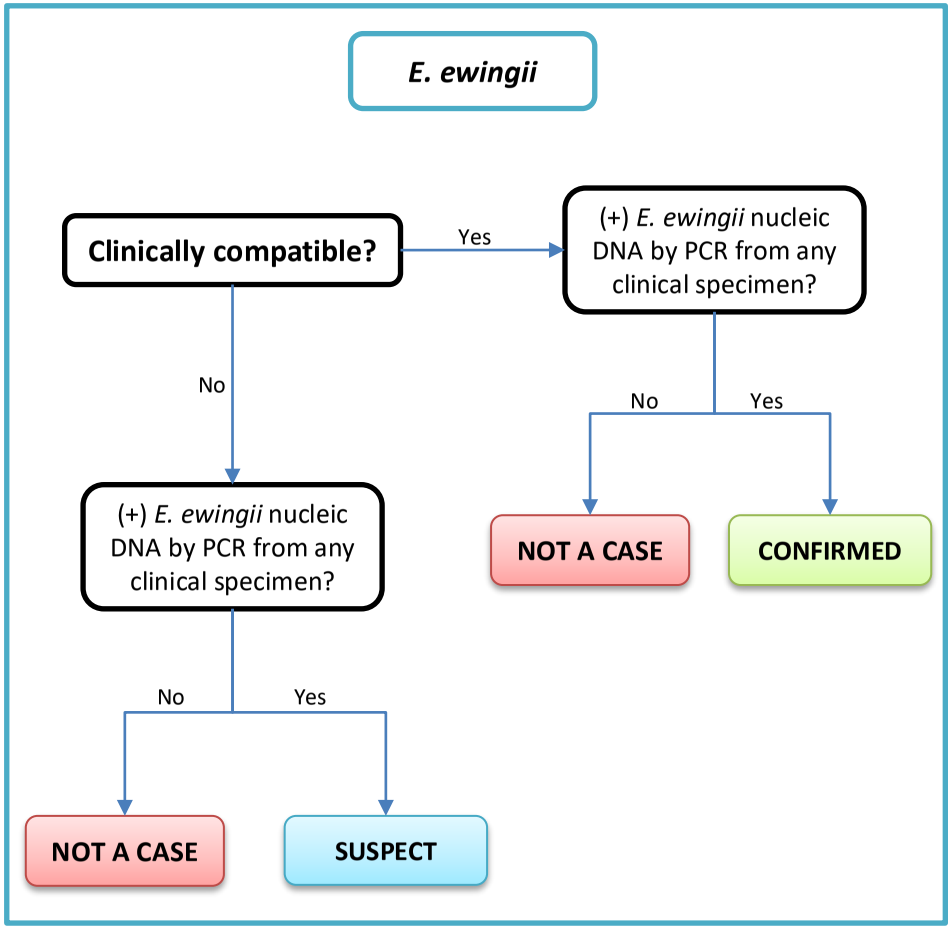
Clinical Description:
Tick-borne illnesses characterized by fever plus one or more of the following: headache, myalgia, malaise, anemia, leukopenia, thrombocytopenia, or elevated hepatic transaminases.

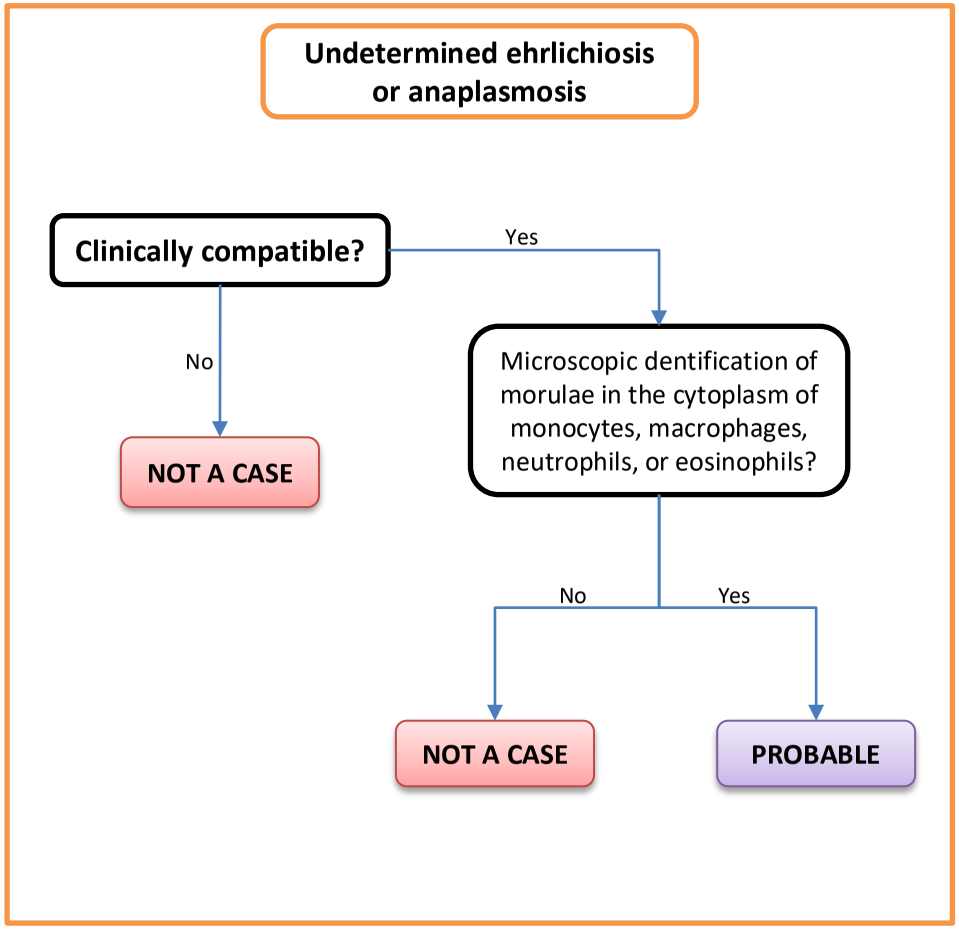
Critical Reporting Elements and Comments:
- Document relevant travel and deployment history occurring within the incubation period.
- Document the circumstances under which the case patient was exposed to ticks, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Specify the etiologic agent.

NOTE: For acute and convalescent testing, the first serum should be taken in the first week of illness.

Ehrlichiosis and Anaplasmosis

***E. ewingii* and undetermined ehrlichiosis or anaplasmosis**





Clinical Description:
Tick-borne illnesses characterized by fever plus one or more of the following: headache, myalgia, malaise, anemia, leukopenia, thrombocytopenia, or elevated hepatic transaminases.

Critical Reporting Elements and Comments:
- Document relevant travel and deployment history occurring within the incubation period.
- Document the circumstances under which the case patient was exposed to ticks, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Specify the etiologic agent.

NOTE: For acute and convalescent testing, the first serum should be taken in the first week of illness.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

☐ Ehrlichiosis/Anaplasmoisis	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Lyme Disease	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Powassan Virus	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Tick-Borne Encephalitis	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Spotted Fever Rickettsiosis	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ PARENT/GUARDIAN: _____

DOB: _____/_____/_____ AGE: _____ FMP: _____ SEX: ☐ M ☐ F ☐ Unk RACE: _____

UNIT: _____ SERVICE:_____ RANK: _____ DUTY STATUS:_____

ADDRESS: *(Street)*_____ DoD ID: _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ Clinic/Hospital:_____

Hospitalized Y ☐ N ☐ Admit date: _____/_____/_____ Discharge date: _____/_____/_____

Deceased Y ☐ N ☐ Date of death: _____/_____/_____ Cause of death:_____

Symptomatic Y ☐ N ☐ Onset date: ____/_____/_____ Clinic date: _____/_____/_____ Diagnosis date: _____/_____/____

Fever Y ☐ N ☐ Max Temp: _____°F/°C (☐ unk)

Rash Y ☐ N ☐ Describe rash:

Chills/sweats Y ☐ N ☐

Headache Y ☐ N ☐

Myalgia Y ☐ N ☐

Arthralgia Y ☐ N ☐

Other symptoms Y ☐ N ☐

Complications* Y ☐ N ☐

LYME ONLY LATE MANIFESTATIONS:

Arthritis & joint swelling Y ☐ N ☐

Lymphocytic meningitis Y ☐ N ☐

Bell's palsy Y ☐ N ☐

Radiculoneuropathy Y ☐ N ☐

Encephalomyelitis Y ☐ N ☐

2nd/3rd heart block Y ☐ N ☐

PLEASE SEE LABORATORY VALUES AND EXPOSURE HISTORY ON BACK OF PAGE

TICK-BORNE ENCEPHALITIS ONLY

History of TBE vaccination Y ☐ N ☐

Vaccination date: _____/_____/_____

Exposure to raw/ unpasteurized dairy? Y ☐ N ☐

Date of exposure: _____/_____/_____

*Describe complications:

☐ Encephalitis/meningitis

☐ Seizure(s)

☐ Heart failure

☐ Renal failure

☐ Other *(describe above)*

DIAGNOSIS

Did provider diagnose this current illness as a tick-borne disease?

☐ Yes (mark all that apply)

☐ Anaplasmosis ☐ Ehrlichiosis

☐ Lyme Disease ☐ Powassan V.

☐ Spotted Fever Rickettsiosis ☐ Tick-borne Encephalitis

☐ "tick-borne illness"

☐ Other: _____

☐ No, NOT a tick-borne illness

Describe: _____

BLOOD VALUES

		DATE
Anemia	Y ☐ N ☐	Lowest Hgb: _____ Hct: _____
Leukopenia	Y ☐ N ☐	Lowest WBC:_____
Thrombocytopenia	Y ☐ N ☐	Lowest PLT: _____
Elevated liver enzymes	Y ☐ N ☐	Highest ALP: _____ ALT:_____ AST:_____

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test *(type of test performed)*	Pathogen *(specify if Lyme, HA, PV, etc)*	Collection Date	Source *(CSF, Serum, etc)*	Result *(Describe result)*
☐ **Antibody** *Western blot or acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

Additional labs (if case has co-infection)

☐ **Antibody** *Western blot or acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

EXPOSURE HISTORY

In the 3–30 days before illness onset, did the case.....

1. **Have a known tick bite?*** **Y** ☐ **N** ☐ **Unk** ☐ **Details and date:** _____
2. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐ **Location and dates:** _____
   - **If yes, was travel duty-related?** **Y** ☐ **N** ☐ **Unk** ☐ **Location and dates:** _____
3. **Engage in outdoor activities?** **Y** ☐ **N** ☐ **Unk** ☐ **Location and dates:** _____
   - **Habitat (wooded, brushy, grassy, etc):** _____
   - **Activity (PT, jogging, camping, etc):** _____
4. **Use tick repellent?** **Y** ☐ **N** ☐ **Unk** ☐ **Type (Permethrin, DEET, etc):** _____

***Note: A tick bite that occurred outside of the 32-day incubation period is not applicable.**

PUBLIC HEALTH REFERENCE SHEET
Filariasis, Loiasis, and Onchocerciasis

Name	Filariasis *(Wuchereria bancrofti, Brugia malayi, Brugia timori)* Loiasis (*Loa loa*) Onchocerciasis (*Onchocerca volvulus*)
Reservoir & Transmission	Filariasis: Human reservoir; transmission through mosquito bite Loiasis: Human reservoir; transmission through *Chrysops* deer fly bite Onchocerciasis: Human reservoir, transmission through *Simulium* female blackfly bite
Incubation Period	Filariasis: 3–6 months in *B. malayi;* 6–12 months in *W. bancrofti* Loiasis: 4 months–several years Onchocerciasis: 6 months–1 year
Common Symptoms	Filariasis: recurrent fevers, lymphadentis, retrograde lymphangitis, elephantiasis, or tropical pulmonary eosinophilia syndrome Loiasis: transient swelling and generalized pruritus, often with eosinophilia. May also result in eye worm causing eye congestion, itching, pain, and light sensitivity Onchocerciasis: Small nodules beneath the skin, severe pruiritus, pigmentation changes, and corneal opacities potentially leading to blindness in severe infections
Gold Standard Diagnostic Test	Microscopic identification
Risk Groups	Universal susceptibility to infection is probable. Repeated infections may occur in endemic regions.
Geographic Significance	Tropical and subtropical areas of Asia, Africa, Western Pacific, parts of South America, and the Caribbean

Filariasis

Filariasis, also called lymphatic filariasis (LF), is a parasitic disease caused by microscopic, thread-like worms. The adult worms only live in the human lymph system. There are three different filarial species that can cause filariasis in humans. Most of the infections worldwide are caused by *Wuchereria bancrofti*. In Asia, the disease can also be caused by *Brugia malayi* and *Brugia timori*.

What is the occurrence of filariasis?

Filariasis affects over 120 million people in 73 countries throughout the tropics and sub-tropics of Asia, Africa, the Western Pacific, and parts of the Caribbean and South America. It has not been reported to occur from worms in the United States.

How is filariasis transmitted?

The disease spreads from person-to-person by mosquito bites. A wide range of mosquitoes can transmit the parasite, depending on the geographic area. In Africa, the most common vector is *Anopheles*. In the Americas, *Culex quinquefasciatus* is most common. In the Pacific and in Asia, *Aedes and Mansonia* can transmit the infection.When a mosquito bites a person who has LF, microscopic worms, microfilariae, circulating in the person's blood enter and infect the mosquito. The microfilariae pass from the mosquito through the human skin and travel to the lymph vessels. In the lymph vessels, the larval worms grow into adult worms, which is a process that takes 6 months or more. An adult worm lives for about 5–7 years. The adult worm mates and releases millions of microfilariae into the blood. People with microfilariae in their blood can serve

as a source of infection to others. LF occurs after repeated mosquito bites over several months to years.

Who is at risk for filariasis?
People living for a long time in tropical or sub-tropical areas where the disease is common are at the greatest risk for infection. Short-term tourists have a very low risk.

What are the signs and symptoms of filariasis?
Most infected people are asymptomatic and will never develop clinical symptoms, even though the parasite damages the lymph system. If present, systemic symptoms, such as headache or fever, are generally mild. Chronic manifestations of lymphedema and/or hydrocele will develop in approximately 30% of LF-infected persons. Lymphedema mostly affects the legs, but can also occur in the arms, breasts, and genitalia. Most people develop these symptoms years after infection has cleared.

What are potential complications of filariasis?
Elephantiasis, a hardening and thickening of the skin, indicates an advanced stage of lymphedema from recurrent secondary bacterial infections in the skin and lymph system.
In postpubertal males, adult *Wuchereria bancrofti* organisms may cause funiculitis, epididymitis, or orchitis.

Filarial hydrocele, swelling of the scrotum, is thought to be the consequence of lymphatic damage caused by adult worms.

Chyluria, which results from rupture of dilated lymphatics into the renal pelvis, can occur as a manifestation of bancroftian filariasis.

Tropical pulmonary eosinophilia syndrome includes symptoms of include cough, fever, marked eosinophilia, high serum immunoglobulin E concentrations, and positive antifilarial antibodies. These are typically reported in long-term residents, men 20–40 years old, from Asia.

How is filariasis diagnosed?
Microscopic examination for identification of microfilariae is the standard method for diagnosing active infection. This is not always feasible because in most parts of the world microfilariae are nocturnally periodic, which means that they only circulate in the blood at night. For this reason, the blood collection has to be done at night to coincide with the appearance of the microfilariae. Serologic enzyme immunoassay tests, including antifilarial IgG1 and IgG4, provide an alternative to microscopic detection of microfilariae for the diagnosis of LF. Since lymphedema may develop many years after infection, lab tests are often negative with these patients.

Tissue specimens: allow visualization of adult worms or microfilariae.

Ultrasonography: allows visualization of adult worms.

How is filariasis the treated?
Because LF is rare in the United States, Diethylcarbamazine citrate (DEC) is no longer approved by the Food and Drug Administration (FDA). Physicians can obtain the medication from CDC after confirmed positive lab results.

PUBLIC HEALTH REFERENCE SHEET
Filariasis, Loiasis, and Onchocerciasis

The main goal of treatment of an infected person is to kill the adult worm. DEC, which is both microfilaricidal and active against the adult worm, is the drug of choice for LF. The late phase of chronic disease is not affected by chemotherapy. Ivermectin is effective against the microfilariae of *W. bancrofti* but has no effect on the adult parasite. The adult worm is responsible for the pathology of lymphedema and hydrocele. Some studies have shown doxycycline (200mg/day for 4–6 weeks) to treat adult worm.

How can filariasis be prevented?
Avoiding mosquito bites is the best form of prevention. The mosquitoes that carry the microscopic worms usually bite between the hours of dusk and dawn. If you live in or travel to an area with LF:

- Sleep under a mosquito net.
- Wear long sleeves and trousers.
- Use mosquito repellent on exposed skin between dusk and dawn.

Loiasis

Loiasis, also called African eye worm, is an infection caused by the parasitic worm *Loa loa*.

What is the occurrence of loiasis?
Deerflies in certain rain forests of West and Central Africa usually bite during the day and are more common during the rainy season.

How is loiasis transmitted?
Deerflies, also known as mango flies or mangrove flies, of the genus Chrysops become infected when they bite an infected person. These deerflies bite during the day. If a deerfly eats infected blood from an infected human, the larvae (non-adult parasites) will infect cells in its abdomen. After 7–12 days, the larvae develop the ability to infect humans. Then, the larvae move to the mouth parts of the fly. When the deerfly breaks a human's skin to eat blood, the larvae enter the wound and begin moving through the person's body. It takes about 5 months for larvae to become adult worms inside the human body. Larvae can become adults only inside the human body. The adult worms live between layers of connective tissue (e.g., ligaments, tendons) under the skin and between the thin layers of tissue that cover muscles (fascia). Fertilized females can make thousands of microfilariae a day. The microfilaria moves into the lymph vessels of the human body, then into the lungs, where they spend most of their time. These microfilariae enter the blood, usually around midday. It takes 5 or more months for microfilariae to be found in the blood after someone is infected with Loa loa. The microfilariae can live up to 1 year in the human body. The microfilariae will die if not consumed in a blood meal by a deerfly. Adult worms may live up to 17 years in the human body and can continue to make new microfilariae for much of this time. Travelers are more likely to become infected with the parasite if they are in areas where they are bitten by deerflies for many months, though occasionally they get infected even if they are in the area for less than 30 days.

What are the signs and symptoms of loiasis?
Most people do not develop any symptoms, and symptoms usually do not show up for many months after infection. People who get infected while visiting areas with loiasis but do not come from areas where loiasis is found (travelers) are more likely to have symptoms. The most common manifestations of the disease are Calabar swellings and eye worm. Calabar swellings are localized, non-tender swellings usually found on the arms and legs and near joints. Itching can occur around the area of swelling or can occur all over the body. Eye worm is the visible

movement of the adult worm across the surface of the eye. Eye worm can cause eye congestion, itching, pain, and light sensitivity. Eye worm lasts less than 1 week (often just hours) and usually causes very little damage to the eye. People with loiasis can have itching all over the body (even when they do not have Calabar swellings), hives, muscle pains, joint pains, and tiredness. Sometimes adult worms can be seen moving under the skin. High numbers of blood cells called eosinophils are sometimes found on blood counts.

How is loiasis diagnosed?
Loiasis is diagnosed with the identification of the adult worm in the eye, or microscopic identification of the adult worm after it is removed from under the skin or eye; identification of the microfilariae on a blood smear made from blood taken from the patient between 10AM and 2PM; or identification of antibodies against L. loa on specialized blood test, which is not widely available in the United States. A positive antibody blood test in someone with no symptoms means only that the person was infected sometime in their life. It does not mean that the person still has living parasites in their body.

How is loiasis treated?
Consult an infectious disease or tropical medicine expert. Surgical removal of adult worms moving under the skin or across the eye can relieve anxiety but does not cure loiasis. Diethylcarbamazine (DEC) can be used to kill the microfilariae and adult worms. Albendazole is believed to kill adult worms and is sometimes used in patients who are not cured with multiple DEC treatments. Sometimes treatment with medications is not recommended.

How can loiasis be prevented?
- Avoid areas with deerflies—muddy, shaded areas along rivers or around wood fires.
- Use insect repellants that contain DEET, treat clothes with permethrin, and wearing long pants and long-sleeved shirts during the day when deerflies bite.
- The flies do not typically enter homes, but may be attracted to homes that are well lit.
- Consult a tropical medicine expert to determine if DEC—300mg taken once a week—is available to reduce risk of infection.

Onchocerciasis (River Blindness)

Onchocerciasis is a neglected tropical disease caused by the parasitic worm *Onchocerca volvulus*. It is also called River Blindness because the fly that transmits infection breeds in rapidly flowing streams and the infection can cause blindness.

What is the occurrence of onchocerciasis?
Onchocerca infections are found in tropical climates. Onchocerciasis is locally transmitted in 31 countries in sub-Saharan Africa. The parasite is also found in limited areas in Yemen in the Middle East. Only a small, single transmission zone remains in South America, crossing the border between the Bolivarian Republic of Venezuela and Brazil.

How is onchocerciasis transmitted?
Onchocerciasis is spread through repeated bites of infected blackflies of the genus *Simulium*.

Who is at risk for onchocerciasis?
People most at risk are those who live or work near streams or rivers where there are *Simulium* blackflies, such as rural agricultural areas in sub-Saharan Africa. Many bites are needed before

becoming infected; long-term travelers (more than 3 months) to at-risk areas include missionaries, Peace Corps volunteers, and field researchers.

What are the sign and symptoms of onchocerciasis?
This disease can cause skin disease, including intense itching, rashes, or nodules under the skin, in addition to visual impairment or blindness.

How is onchocerciasis diagnosed?
Onchocerciasis is diagnosed with the microscopic identification of microfilariae from blood, urine, or skin or the identification of the adult worm after it is removed from under the skin or eye.

How is onchocerciasis treated?
Treatment is to prevent long-term skin damage and blindness. Ivermectin, given every 6 months for the lifespan of the adult worms (i.e., 10–15 years) or for as long as the infected person has evidence of skin or eye infection. Ivermectin kills the parasitic larvae and prevents them from causing damage, but it does not kill the adult worms. A promising treatment is using doxycycline that kills the adult worms by killing the Wolbachia bacteria on which the adult worms depend on to survive.

How can onchocerciasis be prevented?
There are no vaccines or medications available to prevent becoming infected with *O. volvulus* Personal protection measures against biting insects include using insecticides that contain N,N-Diethyl-meta-toluamide (DEET) on exposed skin, wearing long sleeve shirts and pants during the day when blackflies bite, and wearing permethrin treated clothing.

What are some public health considerations?
- Specify the etiologic/causative agent.
- Document relevant travel and deployment history occurring within the incubation period.

References:
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

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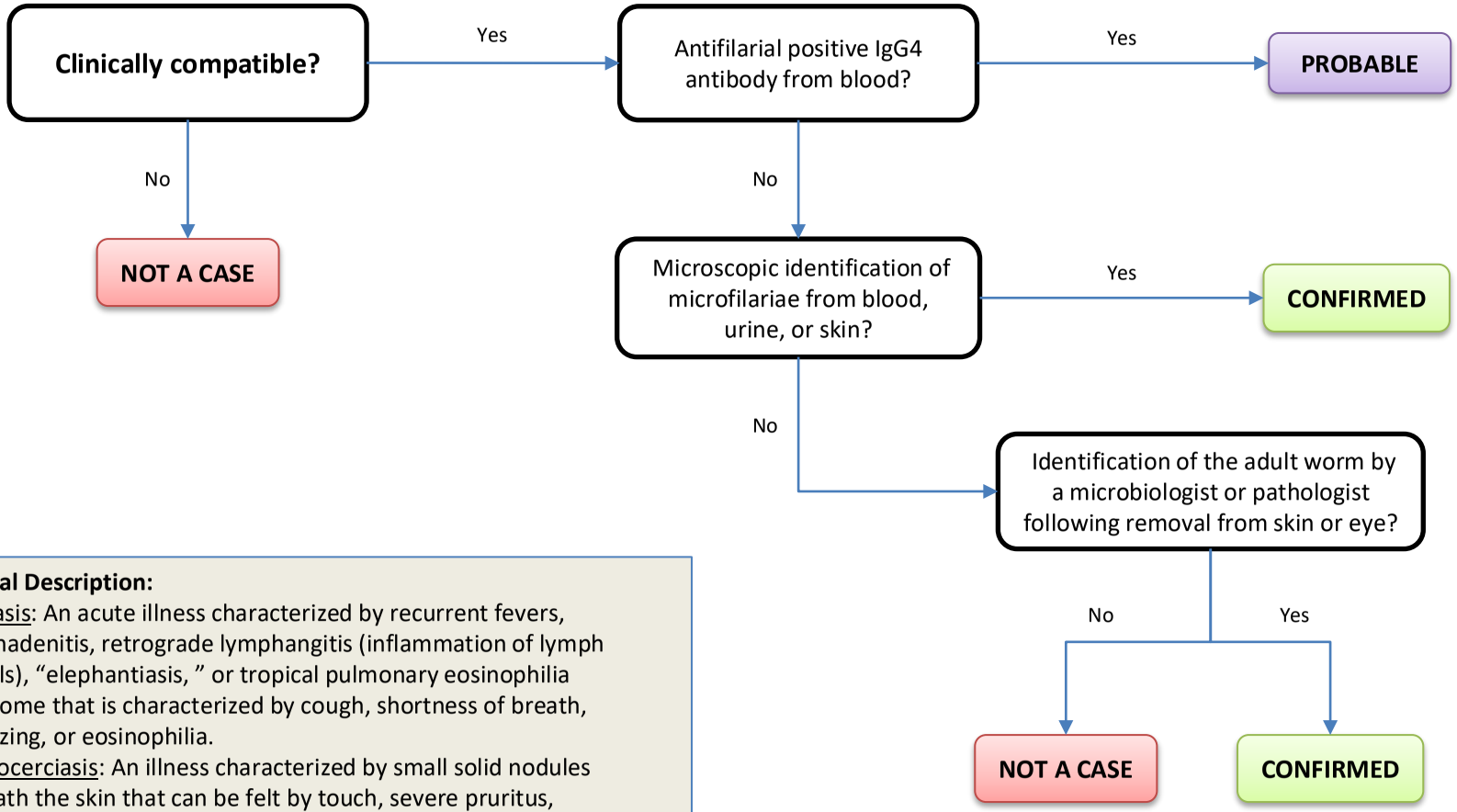
"Lymphatic Filariasis," Centers for Disease Control and Prevention, last reviewed September 1, 2021. https://www.cdc.gov/parasites/lymphaticfilariasis/epi.html

"Onchocerciasis," Centers for Disease Control and Prevention, last reviewed September 6, 2019. https://www.cdc.gov/parasites/onchocerciasis

Filarial Infections

INCLUDES: Filariasis (*Wuchereria bancrofti, Brugia malayi, Brugia timori),* Loiasis (Loa loa), and Onchocerciasis (*Onchocerca volvulus)*



Clinical Description:
Filariasis: An acute illness characterized by recurrent fevers, lymphadenitis, retrograde lymphangitis (inflammation of lymph vessels), "elephantiasis, " or tropical pulmonary eosinophilia syndrome that is characterized by cough, shortness of breath, wheezing, or eosinophilia.
Onchocerciasis: An illness characterized by small solid nodules beneath the skin that can be felt by touch, severe pruritus, pigmentation changes, and corneal opacities that potentially leads to blindness in severe infections.
Loiasis: An illness characterized by transient swelling and generalized pruritus, often with eosinophilia. Loiasis may also result in eye worm, causing eye congestion, itching, pain, and light sensitivity.

Critical Reporting Elements and Comments:
- Specify the etiologic/causative agent.
- Document relevant travel and deployment history occurring within incubation period.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Filarial Infections

Confirmed ○ Probable ○ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ **PHONE:** (_____) - _____ - _____ *(h)*

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Headaches	☐	☐	
Chills	☐	☐	
Body aches	☐	☐	
Swollen lymph nodes	☐	☐	
Edema	☐	☐	
Swelling of genitalia	☐	☐	
Larvae in the eye	☐	☐	
Skin rashes	☐	☐	
Lymphatic damage	☐	☐	

TREATMENT

Treated with antifilarial or antiparasitic? Y ☐ N ☐

Type of antifilarial or antiparasitic:	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

Diethylcarbamazine citrate (DEC) is not approved by the FDA; obtain from CDC after confirmed positive lab results. Ivermectin, anti-parasitic, effective against the microfilariae of W. bancrofti, but has no effect on the adult parasite. Doxycycline (200mg/day for 4–6 weeks) to treat adult worm

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

Identification of microfilariae in a blood smear by microscopic examination; or serologic enzyme immunoassay tests, including antifilarial IgG1 and IgG4. See lab note below

TRAVEL HISTORY

In the (INCUBATION PERIOD)* infections before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: 3–6 months in B. *malayi*; 6-12 months in W. *bancrofti*

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Notes on diagnostic testing:

1. **Blood smear by microscopic examination**
2. **Serologic enzyme immunoassay tests, including antifilarial IgG1 and IgG4, provide an alternative to microscopic detection of microfilariae for the diagnosis of lymphatic filariasis.**
3. **Tissue specimens to visualize adult worms or microfilariae**
4. **Ultrasonography which allows visualization of adult worms**

PUBLIC HEALTH REFERENCE SHEET
Giardia

Name	*Giardia lamblia*
Reservoir & Transmission	-Human, wild, and domestic animals (e.g., dogs, cats, cattle, beaver) -Ingestion of organisms via contaminated water or food -Person-to-person (daycare centers, institutions)
Incubation Period	Usually 3–25 days or longer; median 7–10 days
Common Symptoms	Diarrhea, abdominal cramps, bloating, weight loss, or malabsorption
Gold Standard Diagnostic Test	Microscopic identification of cysts or trophozoites
Risk Groups	Persons with HIV may have more serious and prolonged giardiasis
Geographic Significance	Worldwide

What is giardiasis?
Giardiasis is a diarrheal disease caused by the microscopic protozoan parasite *Giardia.* Once a person or animal (for example, cats, dogs, cattle, deer, and beavers) has been infected with *Giardia,* the parasite lives in the intestines and is passed in feces. The risk of humans acquiring *Giardia* infection from dogs or cats is low. The exact type of *Giardia* that infects humans is usually not the same type that infects dogs and cats. Once outside the body, *Giardia* can sometimes survive for weeks or months. *Giardia* can be found within every region of the U.S. and around the world.

What is the occurrence of giardiasis?
Giardiasis is a global disease that infects nearly 2% of adults and 6%–8% of children in developed countries worldwide. Nearly 33% of people in developing countries have had giardiasis. In the United States, *Giardia* infection is the most common intestinal parasitic disease affecting humans. *Giardia* infection rates have been known to go up in late summer. Between 2006–2008 in the United States, known cases of giardiasis were twice as high between June and October as they were between January and March.

How is giardiasis transmitted?
- Swallowing *Giardia* cysts picked up from surfaces (such as bathroom handles, changing tables, diaper pails, or toys) that contain feces from an infected person or animal.
- Drinking water or using ice made from water sources where *Giardia* may live, especially in lakes, rivers, springs, ponds, and streams.
- Eating uncooked food that contains *Giardia* organisms.
- Having contact with someone who is ill from giardiasis.
- Traveling to countries where giardiasis is common (sub-Saharan Africa: all of the countries south of the Sahara Desert, such as South Africa, Gambia, and Kenya. Other common areas include south and southeast Asia, particularly India and Nepal).

Who is at risk for giardiasis?
Though giardiasis is commonly thought of as a camping or backpacking-related disease and is sometimes called “Beaver Fever,” anyone can get giardiasis. People more likely to become infected include:
- Children in childcare settings, especially diaper-aged children.
- Close contacts of people with giardiasis (for example, people living in the same household) or people who care for those sick with giardiasis.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Giardia

- People who drink water or use ice made from places where *Giardia* may live (for example, untreated or improperly treated water from lakes, streams, or wells; chemical disinfection is not always reliable).
- Service members, backpackers, hikers, and campers who drink unsafe water, do not properly disinfect surface contaminated water (boiling, filters that remove cysts) or who do not practice good hygiene (i.e., proper hand washing).
- People who swallow water while swimming and playing in recreational water where *Giardia* may live, especially in lakes, rivers, springs, ponds, and streams.
- International travelers.
- People exposed to human feces through sexual contact or otherwise.

What are the signs and symptoms of giardiasis?
Symptoms of giardiasis normally begin 1 to 3 weeks after becoming infected and may last 2 to 6 weeks in otherwise healthy people. Occasionally, symptoms last longer. These symptoms may also lead to weight loss. Some people with *Giardia* infection have no symptoms at all, but they can shed cyst for several months. A variety of intestinal symptoms include:

- Diarrhea
- Gas or flatulence (may appear as temporary lactose intolerance)
- Greasy stool that can float
- Stomach or abdominal cramps
- Upset stomach or nausea
- Dehydration
- Bloody diarrhea is typically NOT a feature of giardiasis (Giardia is non-invasive)

How is giardiasis diagnosed?
Because *Giardia* cysts can be excreted intermittently, multiple stool collections (i.e., three stool specimens collected on separate days) increase test sensitivity. The use of concentration methods and trichrome staining might not be sufficient to identify *Giardia* because variability in the concentration of organisms in the stool can make this infection difficult to diagnose. Therefore, fecal immunoassays that are more sensitive and specific should be used.

Rapid immune-chromatographic cartridge assays are also available but should not take the place of routine ova and parasite examination. Only molecular testing (e.g., polymerase chain reaction) can be used to identify the subtypes of *Giardia.*

How is giardiasis treated?
Several drugs can be used to treat *Giardia* infection. Effective treatments include metronidazole, tinidazole, and nitazoxanide. Alternatives to these medications include paromomycin, quinacrine, and furazolidone. Some of these drugs may not be routinely available in the United States. Persons with HIV infection may have more serious and prolonged giardiasis. Different factors may shape how effective a drug regimen will be, including medical history, nutritional status, and condition of the immune system.

How can giardiasis be prevented?
Treating drinking water with calcium hypochlorite, chlorine tablet/kits, or iodine tablets is the mainstay of individual and unit-level water disinfection in military settings when bottled water or other approved water supply is not available. Chemical disinfection with iodine or chlorine has a low to moderate effectiveness in killing *Giardia*.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Giardia

What are some public health considerations?

- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Document if case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

References:

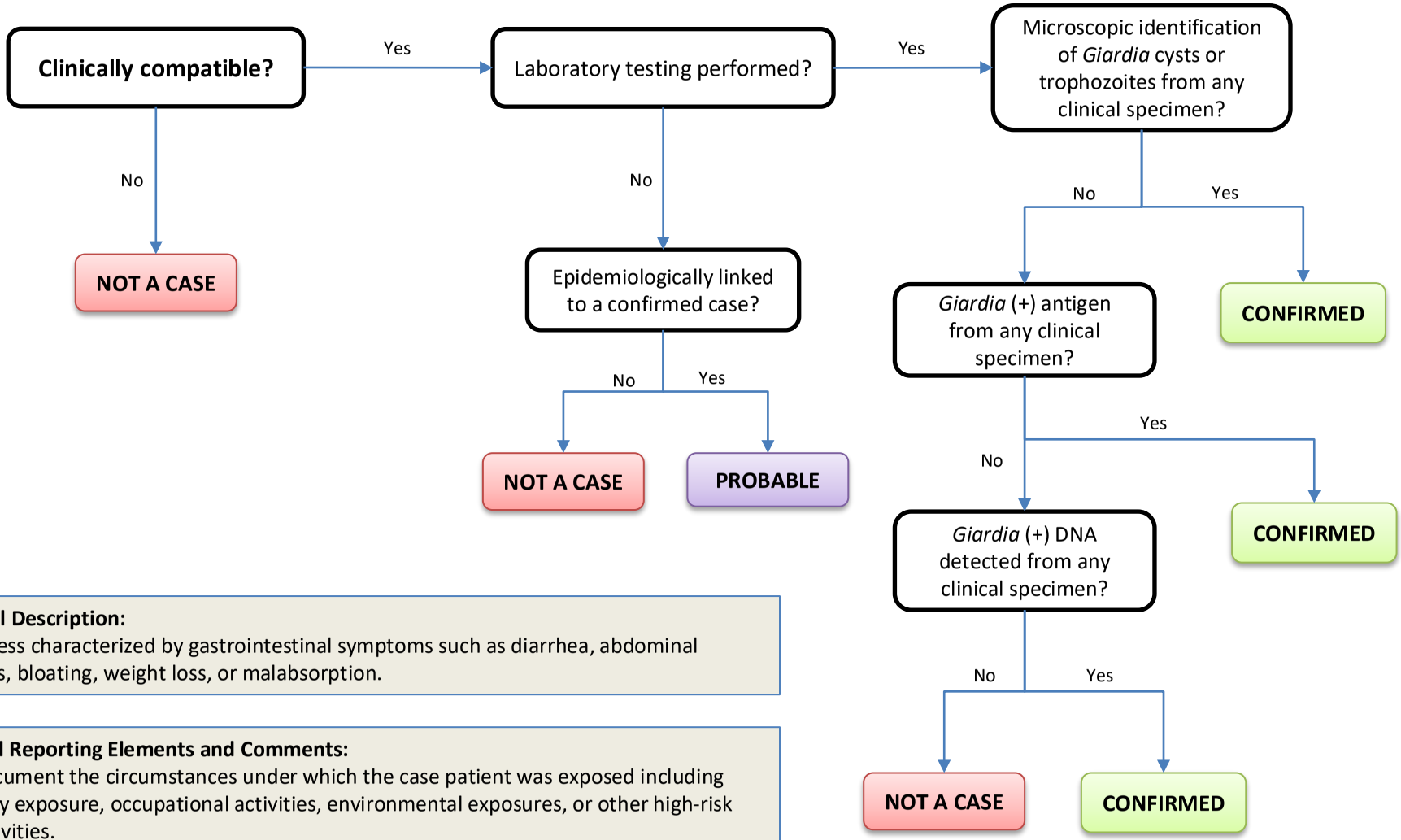
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

"Giardia," Centers for Disease Control and Prevention, last reviewed May 19, 2022. https://www.cdc.gov/parasites/giardia/

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

Last Updated September 1, 2023

Giardiasis



Clinical Description:
An illness characterized by gastrointestinal symptoms such as diarrhea, abdominal cramps, bloating, weight loss, or malabsorption.

Critical Reporting Elements and Comments:

- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Document if case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

INVESTIGATION WORKSHEET

Defense Health Agency ®

Giardiasis

Confirmed ◯ Probable ◯ Not a Case

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk) **Duration of symptoms:** _____ ☐ **Still ill**

Bloating Y ☐ N ☐ *Describe any other symptoms or pertinent clinical information (including underlying conditions):*

Diarrhea Y ☐ N ☐

Abdominal Cramps Y ☐ N ☐

Malabsorption Y ☐ N ☐

Weight Loss Y ☐ N ☐

Other (describe):

Laboratory results:

Test type: ☐ Culture ☐ PCR ☐ Antibody ☐ Other:_____

Collection Date: ____/____/____ **Result date:** ____/_____/_____

Result: ☐ Positive ☐ Negative **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ Unk ☐

Details: _____

Incubation Period: Usually 3–25 days or longer; median 7–10 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

CONTACTS

List all household contacts, ill or not ill, and any close contacts regardless of where they live (i.e., caregivers, partners, etc). Indicate for all contacts if high risk; if symptomatic, give onset date and testing information. List additional contacts on the last page of this form if needed.

Name/Contact	Age	Relationship to case	Symptoms		Onset Date	Lab testing	High Risk		
			Yes	No		Y/N, coll. date, result	Day care	Health care	Food Svc.

ENVIRONMENTAL EXPOSURES

In the 3 - 25 days before illness onset, from _____/_____/_____ to _____/_____/_____ did [you/your child]:

WATER-RELATED EXPOSURES	YES	NO	UNK	*If yes, details:*
1. Stay in a home with a septic system?				
2. Primarily use water from a well for drinking water?				*Treatment:*
3. Primarily drink bottled water?				*Brand(s):*
4. Drink any untreated water (pond, lake, etc)?				
5. Swim or wade in untreated water?				*Where?*
6. Swim or wade in treated water (pool, hot tub, etc)?				*Where?*
ANIMAL CONTACT	YES	NO	UNK	*If yes, details:*
1. Have contact with an animal?				
If yes, did [you/your child] have contact with a:				
a. Dog				
b. Cat				
c. Other pet mammal				*Specify:*
d. Reptile or amphibian				*Specify:*
e. Live poultry				
f. Pet bird				
g. Cattle, goat, or sheep				*Specify:*
h. Pig				
i. Other animal				*Specify:*
j. Pet with diarrhea				
2. Visit, work, or live on a farm, ranch, or petting zoo?				*Specify:*
3. Have exposure to a daycare or nursery?				*Where?*
4. Have a household or close contact with diarrhea?				*Who?*
5. Work in a restaurant or prepare food for others?				*Specify:*

PUBLIC HEALTH REFERENCE SHEET
Gonorrhea

Name	*Neisseria gonorrhoeae*
Reservoir & Transmission	Humans Sexually transmitted; perinatal transmission
Incubation Period	Generally, 1–14 days; can be longer
Common Symptoms	Urethritis, purulent discharge, cervicitis, salpingitis, or pharyngitis
Gold standard Diagnostic Test	Gram stain of discharge, bacteriological culture on selective media (e.g., modified Thayer–Martin agar), or molecular tests that detect gonococcal nucleic acid. Typical Gram-negative intracellular diplococci can be considered diagnostic in male urethral smears, but Gram stain is not recommended to diagnose *N. gonorrhoeae* infection in women or from extragenital sites.
Risk Groups	Men who have sex with men (MSM), commercial sex workers, socioeconomically marginalized groups, and sexually active youth
Geographic Significance	Worldwide; prevalence is generally higher in communities of lower socioeconomic status

What is gonorrhea?
Gonorrhea is a sexually transmitted infection (STI) caused by infection with the *Neisseria gonorrhoeae* bacterium. *N. gonorrhoeae* can infect the mucous membranes of the reproductive tract, including the cervix, uterus, and fallopian tubes in women, and the urethra in women and men. *N. gonorrhoeae* can also infect the mucous membranes of the mouth, throat, eyes, and rectum.

N. gonorrhoeae is also the cause for Gonococcal Ophthalmia Neonatorum disease, which is an important cause of blindness throughout the world. Occurrence varies widely according to prevalence of maternal infection, prenatal screening coverage, and use of infant eye prophylaxis at delivery. This infection presents with acute redness and swelling of conjunctiva in one or both eyes with mucopurulent and purulent discharge, typically occurring within 1–5 days of birth. Corneal ulcer, perforation, scarring, and blindness may occur if antimicrobial treatment is not given promptly.

What is the occurrence of gonorrhea?
Gonorrhea is a very common infectious disease. CDC estimates that approximately 1.6 million new gonococcal infections occurred in the United States in 2018, and more than half occur among young people aged 15–24. Gonorrhea is the second most reported bacterial STI in the United States. However, many infections are asymptomatic, so reported cases only capture a fraction of the true burden.

How is gonorrhea transmitted?
Gonorrhea is transmitted through contact with exudates from mucous membranes of infected people, almost always because of sexual activity. Ejaculation does not have to occur for gonorrhea to be transmitted or acquired. Gonorrhea can also be spread perinatally from mother to baby during childbirth. People who have had gonorrhea and received treatment may be reinfected if they have sexual contact with a person infected with gonorrhea. Gonorrhea in children older than 1 year is considered indicative of sexual abuse. The disease may be

communicable for months in untreated individuals. Effective treatment ends communicability within hours. Transmission by fomites is extremely rare.

Who is at risk for gonorrhea?
Any sexually active person can be infected with gonorrhea. Those at risk tend to belong to sexual networks characterized by high rates of partner change and condomless sex; men who have sex with men (MSM), female key populations, socioeconomically marginalized groups, and sexually active youth are disproportionately affected. Infection with gonorrhea increases the risk of both acquisition and transmission of human immunodeficiency virus (HIV) infection, either biologically, behaviorally, or both. Humoral and secretory antibodies have been demonstrated, but gonococcal strains are antigenically heterogeneous, and reinfection is common.

What are the signs and symptoms of gonorrhea?
In men, gonococcal infection generally presents as an acute purulent discharge from the anterior urethra with dysuria within 2–7 days after exposure but can sometimes take longer. Most urogenital gonococcal infections in males are symptomatic but sometimes may be only mildly symptomatic or truly asymptomatic. In cases where urethral infection is complicated by epididymitis, men with gonorrhea may also complain of testicular or scrotal pain.

Most women with gonorrhea are asymptomatic. Even when a woman has symptoms, they are often so mild and nonspecific that they are mistaken for a bladder or vaginal infection. The initial symptoms and signs in women include dysuria, increased vaginal discharge, or vaginal bleeding between periods. Women with gonorrhea are at risk of developing serious complications from the infection, regardless of the presence or severity of symptoms. Symptoms of rectal infection in both men and women may include discharge, anal itching, soreness, bleeding, or painful bowel movements. Rectal infection also may be asymptomatic. Pharyngeal infection may cause a sore throat, but usually is asymptomatic. Infection of the eye (by autoinoculation) causes purulent conjunctivitis and can lead to permanent corneal damage.

What are the potential complications of gonorrhea?
Untreated gonorrhea can cause serious and permanent health problems in both women and men. In women, gonorrhea can spread into the uterus or fallopian tubes and cause pelvic inflammatory disease (PID). The symptoms may be quite mild or can be very severe and can include abdominal pain and fever. PID can lead to internal abscesses and chronic pelvic pain. PID can also damage the fallopian tubes enough to cause infertility or increase the risk of ectopic pregnancy. In men, gonorrhea may be complicated by epididymitis. In rare cases, this may lead to infertility. If left untreated, gonorrhea can also spread to the blood and cause disseminated gonococcal infection (DGI). DGI is usually characterized by arthritis, tenosynovitis, and/or dermatitis. This condition can be life threatening. Untreated gonorrhea can increase a person’s risk of acquiring or transmitting HIV.

If a pregnant woman has gonorrhea, she may give the infection to her baby as the baby passes through the birth canal during delivery. This can cause blindness, joint infection, or a life-threatening blood infection in the baby. Treatment of gonorrhea as soon as it is detected in pregnant women will reduce the risk of these complications. Pregnant women should consult a healthcare provider for appropriate examination, testing, and treatment, as necessary.

PUBLIC HEALTH REFERENCE SHEET
Gonorrhea

How is gonorrhea diagnosed?

Any sexually active person can be infected with gonorrhea. Anyone with genital symptoms such as discharge, burning during urination, unusual sores, or rash should stop having sex and see a healthcare provider immediately. Also, anyone with an oral, anal, or vaginal sex partner who has been recently diagnosed with an STI should see a healthcare provider for evaluation.

The CDC recommends yearly gonorrhea screening for all sexually active women younger than 25 years, as well as older women with risk factors such as new or multiple sex partners, or a sex partner who has an STI. People who have gonorrhea should also be tested for other STIs.

Urogenital gonorrhea can be diagnosed by testing urine, urethral (for men), or endocervical or vaginal (for women) specimens using nucleic acid amplification testing (NAAT). It can also be diagnosed using gonorrhea culture, which requires endocervical or urethral swab specimens. FDA-cleared rectal and oral diagnostic tests for gonorrhea have been validated for clinical use.

How is gonorrhea treated?

CDC now recommends a single 500 mg intramuscular dose of ceftriaxone for the treatment of uncomplicated gonorrhea. Alternative regimens are available when ceftriaxone cannot be used to treat urogenital or rectal gonorrhea. Although medication will stop the infection, it will not repair any permanent damage done by the disease. Antimicrobial resistance in gonorrhea is of increasing concern, and successful treatment of gonorrhea is becoming more difficult. A test-of-cure (i.e., follow-up testing to be sure the infection was treated successfully) is not needed for genital and rectal infections; however, if a person's symptoms continue for more than a few days after receiving treatment, he or she should return to a healthcare provider to be reevaluated. If symptoms persist, reinfection is most likely, but specimens should be obtained for culture and antimicrobial susceptibility testing to rule out treatment failure. Retreatment is recommended, sometimes with a doubling of doses of therapies, particularly azithromycin. A test-of-cure is needed 7–14 days after treatment for people who are treated for pharyngeal (infection of the throat) gonorrhea. If NAAT is performed as test-of-cure, it should be done with sufficient time after treatment (i.e., closer to 14 days after treatment) to avoid false-positive results from detection of nonviable organisms that may not represent persistent infection. Because re-infection is common, men and women with gonorrhea should be retested 3 months after treatment of the initial infection, regardless of whether they believe that their sex partners were successfully treated. Patients should refrain from sexual intercourse until antimicrobial therapy is completed and for 7 days after treatment. To avoid reinfection, abstain from sex with previous sex partners until they have been treated. All infants born to infected mothers must receive prophylactic treatment.

How can gonorrhea be prevented?

Latex condoms, when used consistently and correctly, can reduce the risk of transmission of gonorrhea. The surest way to avoid transmission of gonorrhea or other STIs is to abstain from vaginal, anal, and oral sex, or to be in a long-term mutually monogamous relationship with a partner who has been tested and is known to be uninfected. Having easy and rapid access to treatment facilities would help with diagnosis. Regular screening of key populations or users of HIV preexposure prophylaxis, who may be at greater risk of several STIs (gonorrhea, chlamydia, syphilis), is advisable to detect asymptomatic infections when feasible.

Last Updated September 28, 2023

PUBLIC HEALTH REFERENCE SHEET
Gonorrhea

What are some public health considerations?

- Suspected gonorrhea cephalosporin treatment failure or any *N. gonorrhoeae* specimen with decreased cephalosporin susceptibility should be reported directly to CDC. Clinicians or health departments should complete the Suspected Gonorrhea Treatment Failure Consultation Form. Clinicians should contact their state or local health department to coordinate completion of the report form prior to submitting it to CDC.
- If a person has been diagnosed and treated for gonorrhea, he or she should tell all recent anal, vaginal, or oral sex partners so they can see a health provider and be treated. Sexual contacts of cases should be examined, tested, and treated if their last sexual contact with the case was within 60 days before the onset of symptoms or diagnosis in the case. A person with gonorrhea and all his or her sex partners must avoid having sex until they have completed their treatment for gonorrhea and until they no longer have symptoms.
- Report co-infections with other organisms, like chlamydia, separately as individual reportable medical events.

References:

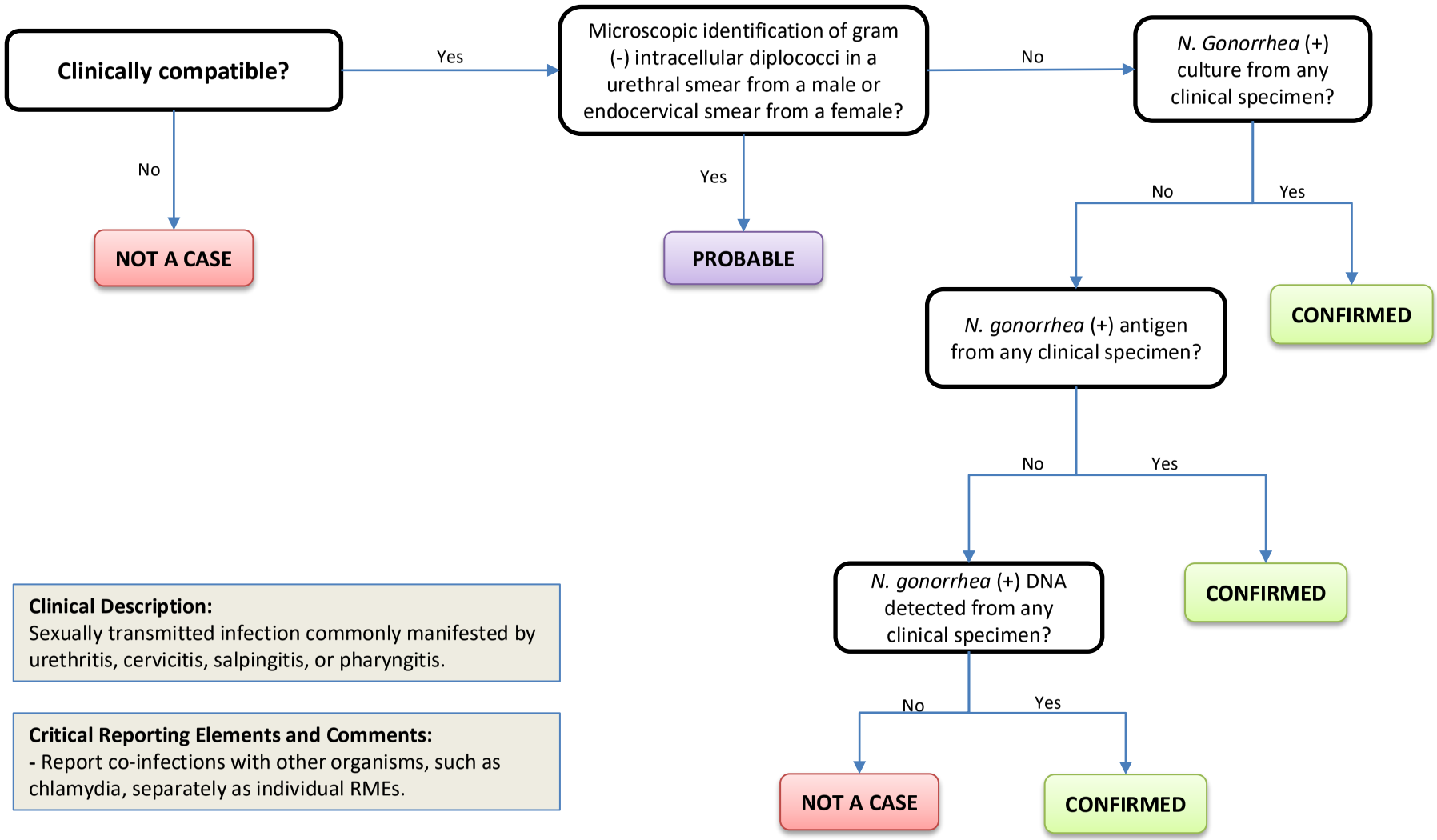
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

"Gonorrhea," Centers for Disease Control and Prevention (CDC), last reviewed April 11, 2023. https://www.cdc.gov/std/gonorrhea/

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Last Updated September 28, 2023

Gonorrhea



Clinical Description:
Sexually transmitted infection commonly manifested by urethritis, cervicitis, salpingitis, or pharyngitis.

Critical Reporting Elements and Comments:
- Report co-infections with other organisms, such as chlamydia, separately as individual RMEs.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Chlamydial Infections
Gonococcal Infections

	Confirmed	Probable	Not a Case
Chlamydial Infections	◯	◯	◯
Gonococcal Infections	◯	◯	◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Pregnant? Y ☐ N ☐

If symptomatic, what was patient diagnosed with? _____

Anatomic site infection present/lab collected

_____

If asymptomatic, why was the patient tested? *(Check all that apply)*

- ☐ **Reported contact to another STI case (specify:** ☐ **Gonorrhea** ☐ **Chlaymdia** ☐ **Syphilis)**
- ☐ **Screening**
- ☐ **Rescreening after previous positive**
- ☐ **Patient request**
- ☐ **Other (*specify*):** _____

TREATMENT

Treated with antibiotics? ☐ Y ☐ N

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____

LABORATORY RESULTS

	Test *(type of test performed)*	**Pathogen** *(specify if Chlamydia or Gonorrhea)*	**Collection Date**	**Source** *(CSF, Serum, Urine, Urethral, Extragenital sites, Anus)*	**Result**
☐	**Antibody**	_____	_____/_____/_____	_____	_____
☐	**Repeat test**	_____	_____/_____/_____	_____	_____
☐	**PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐	**Culture**	_____	_____/_____/_____	_____	_____
☐	**Other**	_____	_____/_____/_____	_____	_____

This page is to be filled out for DRSi STI Risk Surveys.

Do NOT record patient's name or partner names/identifying information on these pages.

BEHAVIORAL

Does the patient have sex with: ☐ Men ☐ Women ☐ Both ☐ Other ☐ Unknown

Martial status:

- ☐ Single, never married
- ☐ Married
- ☐ Married, separated
- ☐ Divorced
- ☐ Widowed
- ☐ Cohabitating
- ☐ Committed relationship
- ☐ Unknown
- ☐ Refused to answer

Sexual behavior	within past 3 months	within past 12 months
Anonymous partner	☐	☐
Sex with spouse/partner	☐	☐
Men-sex-with-men	☐	☐
Exchanged money/drugs for sex	☐	☐
Injection drug use	☐	☐
Other	☐	☐
Unknown	☐	☐
Refused to answer	☐	☐

Prevention counseling and partner referral services conducted?

☐ Yes ☐ No ☐ Unk

PARTNER INFORMATION

Testing and treatment are appropriate for all named partners of this patient who were exposed within 60 days prior to the date of onset.

Partner # 1

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Partner # 2

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Print third page for additional partners.

This page is to be filled out for DRSi STI Risk Surveys.

Do NOT record patient's name or partner names/identifying information on these pages.

ADDITIONAL PARTNER INFORMATION

Testing and treatment are appropriate for all named partners of this patient who were exposed within 60 days prior to the date of onset.

Partner #_____

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Partner #_____

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Partner #_____

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

PUBLIC HEALTH REFERENCE SHEET
Haemophilus influenzae, Invasive

Name	*Haemophilus influenzae*
Reservoir & Transmission	Humans Droplet transmission from discharges of nose and throat
Incubation Period	Unknown; likely 2–4 days
Common Symptoms	Clinical syndromes including pneumonia, bacteremia, meningitis, epiglottitis, septic arthritis, cellulitis, or purulent pericarditis, and less often endocarditis or osteomyelitis
Gold Standard Diagnostic Test	Culture or PCR
Risk Groups	Universal
Geographic Significance	Worldwide

What is Invasive *H. influenzae*?
Haemophilus influenzae (*H. influenzae*) is a pleomorphic gram-negative coccobacillus that may be either encapsulated (typeable) or unencapsulated (non-typeable). There are six encapsulated serotypes (designated a through f) that have distinct capsular polysaccharides. These bacteria do not cause influenza (the "flu"), which is a virus.

- *Haemophilus influenzae* type b (Hib) is the most common serotype. Invasive disease is when the bacteria enter the spinal fluid or blood, is usually severe, and can be fatal. The most common types of disease caused by Hib include pneumonia, bacteremia, otitis media, meningitis, epiglottitis, cellulitis, septic arthritis, or purulent pericarditis. Less common infections include endocarditis and osteomyelitis.
- Typeable *H. influenzae,* that is not serotype b, (i.e., a, c, d, e, and f), is referred to as non-b *H. influenzae* and can cause disease similar to Hib infections.
- Nontypeable *H. influenzae* commonly causes ear infections in children and bronchitis in adults but can also cause invasive disease.

What is the occurrence of *H. influenzae* infection?
In the U.S., Hib disease is not common. It occurs primarily in under immunized children and in infants too young to have completed the primary vaccination series. Nontypeable *H. influenzae* now cause the majority of invasive *H. influenzae* disease in all age groups. Nontypeable *H. influenzae* cause 30% to 52% of episodes of acute otitis media and sinusitis in children and can be a common cause of recurrent otitis media.

How is *H. influenzae* transmitted?
Haemophilus influenzae bacteria, including Hib, are spread person-to-person through direct contact with respiratory droplets from a nasopharyngeal carrier or case patient. Neonates can acquire infection by aspiration of amniotic fluid or contact with genital tract secretions containing the bacteria. The bacteria can spread through the blood, causing serious infection.

Who is at risk for *H. influenzae* infection?
Groups at increased risk of Hib disease:
- Unimmunized children younger than 5 years of age
- Household contacts of a person with Hib disease
- Daycare classmates of a person with Hib disease

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Haemophilus influenzae, Invasive

Groups at increased risk of *H. influenzae* disease (caused any serotype or non-typeable bacteria):

- Children younger than 5 years of age
- Adults 65 years or older
- American Indian and Alaska Native people
- People with any of the following medical conditions:
    - Sickle cell disease
    - Asplenia
    - HIV
    - Immunoglobulin and complement component deficiencies
    - Malignant neoplasms requiring hematopoietic stem cell transplant, chemotherapy, or radiation therapy

What are the signs and symptoms of *H. influenzae* infection?
Invasive *H. influenzae* diseases include clinical syndromes of meningitis, bacteremia or sepsis, epiglottitis, pneumonia, septic arthritis, pericarditis, and cellulitis. Less common infection manifestations include endocarditis and osteomyelitis. In contrast, syndromes of mucosal infections such as bronchitis, sinusitis, and otitis media are considered noninvasive disease and are not reportable.

What are potential complications of *H. influenzae* infection?
Between 3% to 6% of Hib cases in children are fatal. People ≥65 years of age with invasive *H. influenzae* disease (Hib, non-b, and nontypeable) have higher case-fatality ratios than children. Up to 20% of patients who survive Hib meningitis have permanent hearing loss or other long-term neurological sequelae.

How is *H. influenzae* infection diagnosed?
Culture is the gold standard laboratory test for identification of *H. influenzae* disease; however, can it be difficult to grow in the lab. Culture has poor sensitivity in specimens that are not handled properly and in specimens from persons who have received antibiotics. PCR is a rapid test with high sensitivity and specificity to use when a patient has been treated with antibiotics before a clinical specimen is obtained for culture. Specimens for testing include normally sterile body sites (CSF, blood, joint fluid, pleural fluid, pericardial fluid).
https://www.cdc.gov/meningococcal/laboratory/pcr-guidance-mening-hflu.html

How is *H. influenzae* infection treated?
Haemophilus influenzae disease, including Hib disease, is treated with antibiotics. Most cases of invasive disease require hospitalization. Even with antibiotic treatment, 3%–6% of all children with Hib meningitis die from the disease. Rifampin chemoprophylaxis is recommended for index case-patients, unless treated with cefotaxime or ceftriaxone.

How can *H. influenzae* infection be prevented?
In the U.S., vaccines licensed by the Federal Drug Administration are available to prevent Hib disease, but not the other serotypes of *H. influenzae* bacteria. There are two licensed combination vaccines that contain Hib vaccine. The Hib vaccine is recommended for all children younger than 5 years of age in the U.S. and scheduled to be given to infants starting at 2 months of age. For household contacts of a person with invasive Hib disease, rifampin chemoprophylaxis **is not** indicated if all persons are 48 months of age or older, or if children younger than 48 months of age are fully vaccinated. Rifampin chemoprophylaxis **is**

recommended for all household contacts with members less than 4 years of age who are not fully vaccinated or members less than 18 years of age who are immunocompromised, regardless of their vaccination status.

What are some public health considerations?

- Reporting of *H. influenzae* varies by state. The noninvasive syndromes are not nationally notifiable. Reporting excludes conjunctivitis.
- Note the patient's *H. influenza* immunization history.
- Collect vaccine failure information for case-patients who received all required doses of vaccines but still contracted Hib.
- The CDC *Haemophilus influenzae* Surveillance Worksheet (Appendix 4-3) may be used as a guide for collecting case investigation information. https://www.cdc.gov/vaccines/pubs/surv-manual/appendix.html

References

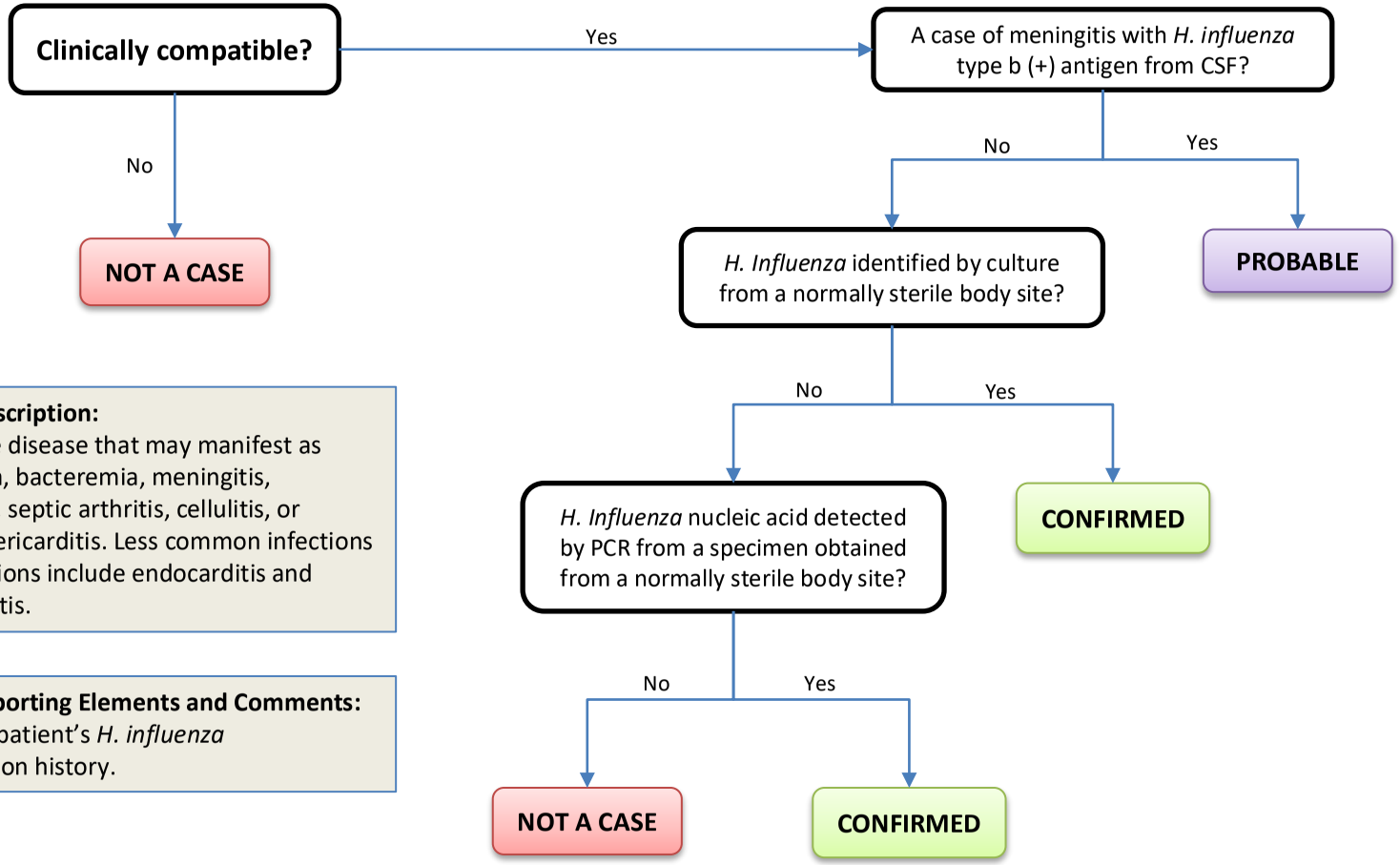
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

"*Haemophilus influenzae* disease," Centers for Disease Control and Prevention (CDC), last reviewed March 4, 2022. https://www.cdc.gov/hi-disease/clinicians.html

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Haemophilus influenza, Invasive

EXCLUDES: Conjunctivitis



Clinical Description:
An invasive disease that may manifest as pneumonia, bacteremia, meningitis, epiglottitis, septic arthritis, cellulitis, or purulent pericarditis. Less common infections manifestations include endocarditis and osteomyelitis.

Critical Reporting Elements and Comments:
- Note the patient's *H. influenza* immunization history.

INVESTIGATION WORKSHEET

Defense Health Agency ®

Confirmed ○ Probable ○ Not a Case

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Haemophilus influenzae, Invasive

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ **PHONE:** (_____) - _____ - _____ *(h)*

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)
Pneumonia	☐	☐	***Include any other relevant symptoms below:***
Bacteremia	☐	☐	
Meningitis	☐	☐	
Epiglottitis	☐	☐	
Septic arthritis	☐	☐	
Cellulitis	☐	☐	
Purulent pericarditis	☐	☐	
Endocarditis	☐	☐	
Osteomyelitis	☐	☐	

Does case work in, live in, or attend a high-transmission setting such as food handling, daycare, school, group living, etc:

Y ☐ N ☐ If yes, where: _____

_____

_____

_____

_____

_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)		
Is the case vaccinated?	☐	☐	____/_____/_____	**2nd:** ____/_____/_____	**3rd:**____/_____/_____

If not ever vaccinated, why?

- ☐ **Religious Exemption**
- ☐ **Medical Contraindication**
- ☐ **Philosophical Objection**
- ☐ **Lab Evidence of Previous Disease**
- ☐ **MD Diagnosis of Previous Disease**
- ☐ **Under Age for Vaccination**
- ☐ **Parental Refusal**
- ☐ **Other:** _____
- ☐ **Unknown**

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the 5 days before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Include any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Hantavirus Disease

Name	*Bunyaviridae* viruses
Reservoir & Transmission	Rodents: deer mouse (*Peromyscus maniculatus*), cotton rat (*Sigmodon hispidus*), rice rat (*Oryzomys palustris*), white-footed mouse (*Peromyscus leucopus*) Aerosol transmission from rodent excreta
Incubation Period	HPS: range from a few days to 6 weeks HFRS: range from a few days to 2 months, usually 2–4 weeks
Common Symptoms	Febrile prodrome, thrombocytopenia, leukocytosis, capillary leakage Hantavirus infection, non-pulmonary syndrome: nonspecific viral symptoms: fever (temperature >101.0°F or 38.3°C), chills, myalgia, headache, and/or gastrointestinal symptoms, without cardiopulmonary symptoms Hantavirus pulmonary syndrome (HPS): febrile illness (temperature >101.0°F or 38.3°C) with chills, myalgia, gastrointestinal symptoms, and at least one of the following: bilateral diffuse interstitial edema, acute respiratory distress syndrome, noncardiogenic pulmonary edema Hemorrhagic fever with renal syndrome (HFRS) including Korean Hemorrhagic Fever: acute onset of fever, lower back pain, hemorrhagic manifestations, and/or renal involvement
Gold Standard Diagnostic Test	PCR, ELISA, IFA
Risk Groups	Persons in rural areas; occupational exposure or contact with rodents
Geographic Significance	Western United States, Canada, South America, Central America, China, Russia, and Korea

What is Hantavirus?
Hantaviruses are a group of zoonotic disease-causing viruses that are carried by some rodents. More than 25 antigenically distinguishable viral species exist, each associated primarily with a single rodent species. In the Americas, hantaviruses cause a disease known as hantavirus pulmonary syndrome (HPS). Throughout the world, different hantaviruses cause Hemorrhagic fever with renal syndrome (HFRS).

Hantavirus pulmonary syndrome (HPS)
HPS is a severe, sometimes fatal, respiratory disease in humans caused by infection with hantaviruses.

What is the occurrence of HPS?
To date, no cases of HPS have been reported in the U.S. in which the virus was transmitted from one person to another. In Chile and Argentina, rare cases of person-to-person transmission have occurred among close contacts of a person who was ill with a type of hantavirus called Andes virus. While HPS remains a very rare disease, cases have occurred in all regions of the U.S. except for Alaska and Hawaii. More than 95% of reported cases have occurred in states west of the Mississippi River, and about 75% of patients with HPS have been residents of rural areas. Cases may occur among forestry workers, farmers, and Service members participating in field operations or other exercises simulating combat conditions.

Last updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Hantavirus Disease

In the U.S. and Canada, the Sin Nombre hantavirus is responsible for most cases of hantavirus infection. The host of the Sin Nombre virus is the deer mouse (Peromyscus maniculatus), present throughout the western and central U.S. and Canada. The New York hantavirus, carried by the white-footed mouse, is associated with HPS cases in the northeastern U.S. The Black Creek hantavirus, carried by the cotton rat, is found in the southeastern U.S. Cases of HPS have been confirmed elsewhere in the Americas, including Canada, Argentina, Bolivia, Brazil, Chile, Panama, Paraguay, and Uruguay.

How is HPS transmitted?
The rodents shed the virus in their urine, droppings, and saliva. The virus is mainly transmitted to people through airborne transmission (i.e., breathe in air contaminated with the virus). Rarely, people can become infected with hantavirus if bitten by a rodent with the virus. Rodents may transmit hantavirus to people who touch something that has been contaminated by rodent urine, droppings, or saliva.

Who is at risk for HPS?
Anyone, regardless of age or gender, who may contact rodent droppings, urine, saliva, or nesting materials is at risk for HPS infection. Activities that increase risk of HPS include improperly cleaning up urine, droppings, and nests; cleaning a shed or cabin that has been closed; and working in areas where rodents live (e.g., barn, shed, abandoned building).

What are the signs and symptoms of HPS?
The incubation period is believed to be 1 to 8 weeks after exposure. Early symptoms of HPS include fever and severe muscle aches, especially in the large muscle groups (e.g., quadriceps, hips, back, shoulders). Approximately half of all individuals with HPS have headaches, dizziness, chills, and abdominal problems, such as nausea, vomiting, diarrhea, and abdominal pain. From 4 to 10 days after the initial phase of illness, late symptoms of HPS include difficulty breathing, coughing, shortness of breath, and tightness in the chest and face. Most patients recover completely. No chronic infection has been detected in humans. Some patients have experienced longer than expected recovery times, but the virus has not been shown to leave lasting effects on the patient.

What are potential complications of HPS?
HPS can be fatal. The mortality rate is 38%.

How is HPS diagnosed?
Almost every hantavirus case can be traced to direct contact with rodents or with rodent infestations in enclosed spaces. Diagnosing HPS in an individual who has only been infected for a few days is difficult because early nonspecific symptoms, such as fever, muscle aches, and fatigue, are easily confused with influenza. However, HPS is likely if the individual is experiencing fever and fatigue and has a history of potential rural rodent exposure, combined with shortness of breath.

How is HPS treated?
There is no specific treatment, cure, or vaccine for Hantavirus infection. Early recognition and supportive treatment improve outcomes.

Last updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Hantavirus Disease

Hemorrhagic fever with renal syndrome (HFRS)

HFRS is a group of clinically similar illnesses caused by hantaviruses. HFRS includes diseases such as Korean hemorrhagic fever, epidemic hemorrhagic fever, and nephropathia epidemica. The viruses that cause HFRS include Hantaan, Dobrava, Saaremaa, Seoul, and Puumala.

What is the occurrence of HFRS?

HFRS is found throughout the world. Haantan virus is widely distributed in eastern Asia, particularly in China, Russia, and Korea. Puumala virus is found in Scandinavia, western Europe, and western Russia. Dobrava virus is found primarily in the Balkans, and Seoul virus is found worldwide. Saaremaa virus is found in central Europe and Scandinavia.

How is HFRS transmitted?

Rodents are the natural reservoir for hantaviruses. Known carriers include:

- The striped field mouse (*Apodemus agrarius*), the reservoir for both the Saaremaa and Hantaan virus;
- The brown or Norway rat (*Rattus norvegicus*), the reservoir for Seoul virus;
- The bank vole (*Clethrionomys glareolus*), the reservoir for Puumala virus; and
- The yellow-necked field mouse (*Apodemus flavicollis*), which carries Dobrava virus.

People can become infected with these viruses and develop HFRS after exposure to aerosolized urine, droppings, or saliva of infected rodents or after exposure to dust from their nests. Transmission may occur when infected materials are directly introduced into broken skin or onto the mucous membranes of the eyes, nose, or mouth. Individuals can be exposed to hantaviruses through rodent bites from infected animals. Transmission from one human to another may occur, but it is extremely rare.

Who is at risk for HFRS?

Individuals who live or work in areas with known rodent carriers are at risk for HFRS.

What are the signs and symptoms of HFRS?

Symptoms of HFRS usually develop within 1 to 2 weeks after exposure to infectious material, but in rare cases, they may take up to 8 weeks to develop. Initial symptoms begin suddenly and include intense headaches, back and abdominal pain, fever, chills, nausea, and blurred vision. Individuals may have flushing of the face, inflammation or redness of the eyes, or a rash. Later symptoms can include low blood pressure, acute shock, vascular leakage, and acute kidney failure, which can cause severe fluid overload. The severity of the disease varies depending upon the virus causing the infection. Hantaan and Dobrava virus infections usually cause severe symptoms, while Seoul, Saaremaa, and Puumala virus infections are usually more moderate. Complete recovery can take weeks or months.

What are potential complications of HFRS?

Depending upon which virus is causing the HFRS, death occurs in less than 1% to as many as 15% of patients. Fatality ranges from 5 to 15% for HFRS caused by Hantaan virus, and it is less than 1% for disease caused by Puumala virus.

How is HFRS diagnosed?

Several laboratory tests are used to confirm a diagnosis of HFRS in patients with a clinical

history compatible with the disease. Patients are determined to have HFRS if they have serologic test results positive for hantavirus infection, evidence of hantavirus antigen in tissue by immunohistochemical staining and microscope examination, or evidence of hantavirus RNA sequences in blood or tissue.

How is HFRS treated?

Supportive therapy includes managing hydration and electrolytes, oxygenation, and blood pressure. Intravenous ribavirin, an antiviral drug, has been shown to decrease illness and death associated with HFRS if used very early in the disease. Treat secondary infections.

How can Hantavirus be prevented?

- Educate personnel and provide proper personal protective equipment to those tasked with inspections for rodent infestations and/or cleanup.
- Avoid all wild mice and rats.
- Keep rodents out of residences, workplaces, and dining facilities.
- Keep food and garbage in thick plastic or metal containers with tight lids.
- Do not leave pet-food or water bowls out overnight.
- Do not sweep or vacuum up mouse or rat urine, droppings, or nests as this will disperse virus particles into the air to be inhaled.
- Use wet moping with a disinfectant or mixture of bleach and water.
- Wear an approved respirator when cleaning.

What are some public health considerations?

- Specify the clinical form of the disease.
- Document relevant travel and deployment history occurring within the incubation period.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

References:

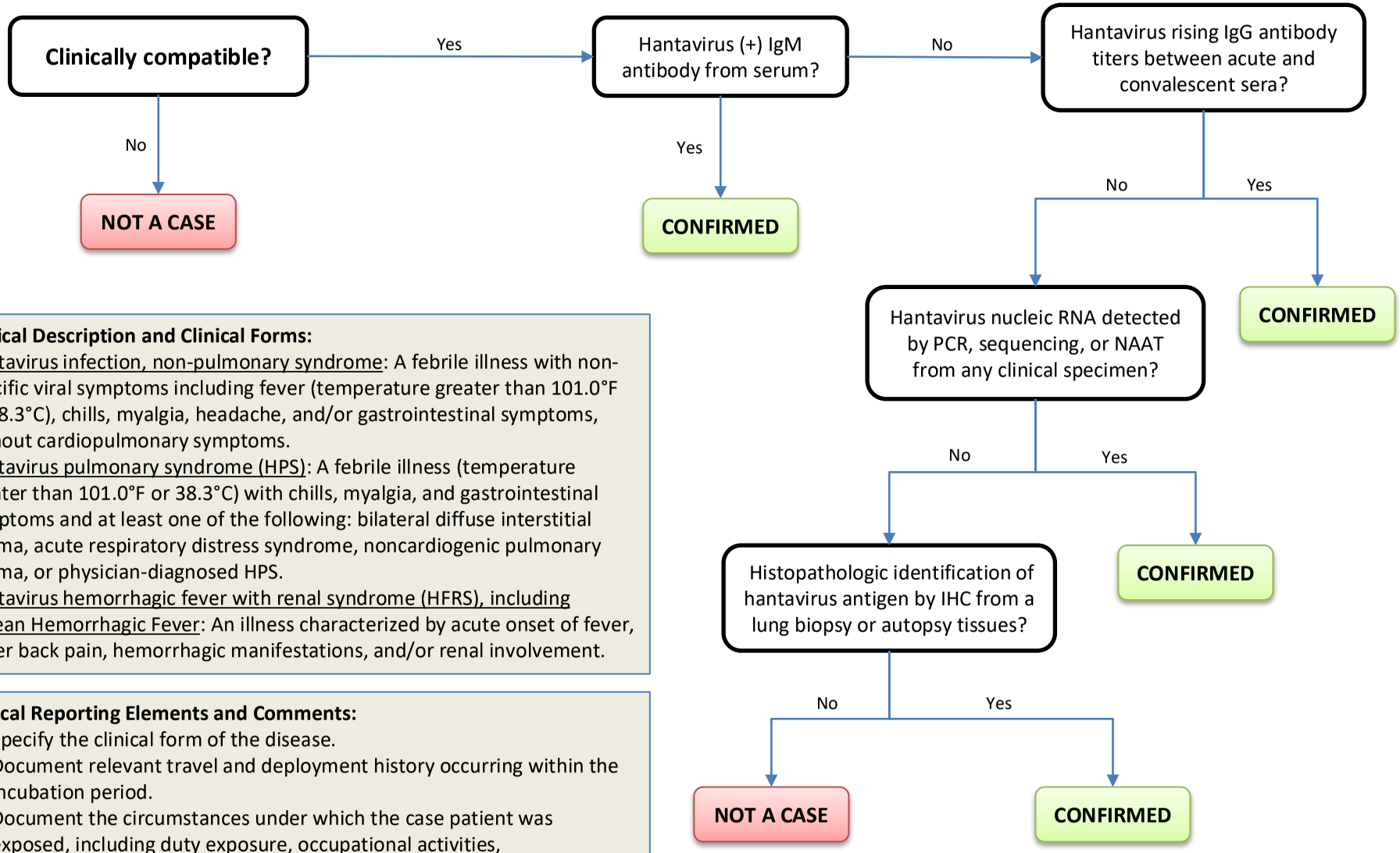
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

"Hantavirus," Centers for Disease Control and Prevention (CDC), last reviewed November 16, 2021. https://www.cdc.gov/hantavirus/

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Hantavirus Disease

COMMON NAME: Korean hemorrhagic fever, hemorrhagic fever with renal syndrome (HFRS)



Clinical Description and Clinical Forms:

Hantavirus infection, non-pulmonary syndrome: A febrile illness with non-specific viral symptoms including fever (temperature greater than 101.0°F or 38.3°C), chills, myalgia, headache, and/or gastrointestinal symptoms, without cardiopulmonary symptoms.

Hantavirus pulmonary syndrome (HPS): A febrile illness (temperature greater than 101.0°F or 38.3°C) with chills, myalgia, and gastrointestinal symptoms and at least one of the following: bilateral diffuse interstitial edema, acute respiratory distress syndrome, noncardiogenic pulmonary edema, or physician-diagnosed HPS.

Hantavirus hemorrhagic fever with renal syndrome (HFRS), including Korean Hemorrhagic Fever: An illness characterized by acute onset of fever, lower back pain, hemorrhagic manifestations, and/or renal involvement.

Critical Reporting Elements and Comments:

- Specify the clinical form of the disease.
- Document relevant travel and deployment history occurring within the incubation period.
- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Hantavirus Disease

Confirmed ◯ Not a Case ◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk)

Chills Y ☐ N ☐

Myalgia Y ☐ N ☐

Headache Y ☐ N ☐

GI symptoms Y ☐ N ☐

Low back pain Y ☐ N ☐

Did the case experience any of the following: *(Check all that apply, if * then describe in detail)*

- ☐ **Bilateral diffuse interstitial edema**
- ☐ **Acute Respiratory Distress Syndrome**
- ☐ **Noncardiogenic pulmonary edema**
- ☐ **Physician-diagnosed Hantavirus pulmonary syndrome (HPS)**
- ☐ **Hemorrhagic manifestations***
- ☐ **Renal involvement***

Describe: _____

_____

_____

Please specify the clinical form of Hantavirus:

- ☐ **Hantavirus infection, non-pulmonary syndrome**
- ☐ **Hantavirus pulmonary syndrome (HPS)**
- ☐ **Hantavirus hemorrhagic fever with renal syndrome (HFRS), including Korean Hemorrhagic Fever**

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test	Pathogen	Collection Date	Source (CSF, Serum, etc)	Result (Describe result)
☐ Antibody	_____	_____/_____/_____	_____	_____
☐ Repeat aby	_____	_____/_____/_____	_____	_____
☐ PCR (DNA)	_____	_____/_____/_____	_____	_____
☐ Culture	_____	_____/_____/_____	_____	_____
☐ Other	_____	_____/_____/_____	_____	_____

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation Period: HPS ranges from a few days to 6 weeks; HFRS ranges from a few days to 2 months, usually 2–4 weeks

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Comments/other pertinent information:

PUBLIC HEALTH REFERENCE SHEET
Heat Illness

Name	Exertional heat illness, heat stroke (reportable), heat exhaustion (reportable)
Reservoir & Transmission	N/A
Incubation Period	Depending on ambient temperature, illness can occur within minutes
Common Symptoms	High temperature, red/hot/dry skin, dizziness; further symptoms depend on heat illness type
Gold Standard Diagnostic Test	N/A, though measurement of core body temperature can help determine between heat stroke and heat exhaustion
Risk Groups	Those who have previously experienced heat illness, poor fitness, current illness; those with chronic health conditions; those taking certain medications; young children (age 0–4); older adults (age 65+); pregnant women; and individuals working or participating in activities outdoors
Geographic Significance	Most frequently in regions with high temperatures (including low and high humidity) and excessive sunlight, though exertional heat illness can happen in any geographic location

What is heat illness?
Heat illness encompasses a spectrum of acute conditions associated with exertion or heat exposure. Exertional heat illness comprises heat exhaustion (HE), exertional heat injury (EHI), and exertional heat stroke (EHS). The descriptor “exertional” differentiates the form of heat illness experienced by physically active persons who are producing substantial metabolic heat loads (common among military personnel and athletes) from the “classical” form that occurs in vulnerable populations passively exposed to heat (young children, elderly persons, those without drinking water, or those with impaired thermoregulation due to illness or medication).

HE is the most common form of exertional heat illness without significant organ injury; however, it is a reportable medical event. It occurs when the body cannot sustain the level of cardiac output necessary to meet the combined demands of increased skin blood flow for heat dissipation as well as blood flow for the metabolic requirements of exercising skeletal muscle and vital organs. Contributing factors include dehydration-mediated drop in circulating volume, blood pooling in dilated blood vessels in the skin, and failure of vessels in the abdominal organs to maintain pressure, which together limit venous return. Service members who experience multiple episodes of HE may be placed on profiles, and/or require referral for evaluation regarding standards of medical fitness. Service healthcare professionals (HCPs) should consult current Service-specific guidance on heat illness profiling and medical fitness.

Exertional heat injury (EHI) is intermediate in severity between heat exhaustion and exertional heat stroke. Individuals with EHI will initially have clinical evidence of damage to a vital organ. The symptoms of EHI will improve slowly with cessation of exertion and cooling measures. Service members diagnosed with EHI may be placed on profiles, and/or require referral for evaluation regarding standards of medical fitness. Service HCPs should consult current Service-specific guidance on heat illness profiling and medical fitness.

Exertional heat stroke (EHS) is a serious and reportable life-threatening condition characterized by profound central nervous system (CNS) dysfunction (for example, delirium, agitation, inappropriate aggressiveness, convulsions, or coma) in the presence of severe hyperthermia.

PUBLIC HEALTH REFERENCE SHEET
Heat Illness

EHS involves multi-organ (heart, stomach and bowel, liver, kidneys, and skeletal muscle) damage that manifests across a varied time course, which depends on the magnitude and duration of elevated body core temperature (usually measured rectally) of greater than (>) 104 degrees Fahrenheit (°F). However, the temperature does not necessarily correspond with the amount of damage, and EHS should not be excluded if the temperature is not > 104 °F. The recovery period for an EHS casualty can vary greatly. An EHS casualty is placed on an initial profile for a minimum period of 2 weeks and is reevaluated weekly to determine need for further profiling, or a referral is made to a medical evaluation board.

How is heat illness transmitted?

Heat illness isn't "transmitted" like an infectious disease. It arises from individual exposure to excessive heat, often combined with exertion. People suffer heat-related illness when the body's temperature control system is overloaded. The body normally cools itself by sweating. But under some conditions, sweating isn't enough to release body heat. In such cases, a person's body temperature can rise quickly and dangerously. Very high body temperatures (>103°F or >39°C) may damage the brain and/or other vital organs. Heat illnesses can be life threatening and require immediate treatment to prevent death or permanent disability.

Who is at risk for heat illness?

Those at greatest risk for heat-related illness include infants and children up to 4 years of age; people 65 years of age and older; people who are overweight; people who are ill; people who have chronic health conditions; or people taking certain medications. However, anyone can be impacted by heat illness. Individual and environmental factors that adversely influence thermoregulation can increase the risk of an exertional heat illness as listed in the table below, published in the Headquarters, Department of the Army, Technical Bulletin, Medical (TB MED) 507, *Heat Stress Control and Heath Casualty Management*, 12 April 2022. https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN35159-TB_MED_507-000-WEB-1.pdf

The risk for heat-related illness and death may increase among people using the certain drugs; a complete list of these drugs is available at https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN35159-TB_MED_507-000-WEB-1.pdf.

What are the signs and symptoms of heat illness?

Signs and symptoms of HE are nonspecific and typically include undue fatigue, transient ataxia (slurred speech, stumbling, falling, incoordination), dizziness, headache, nausea, vomiting, malaise, tachycardia (rapid heart rate), hyperventilation, and transient mildly impaired cognition. Sweating persists and may even be profuse. Blood pressure may be normal to mildly decreased, and there may be an element of orthostasis. The diagnosis of HE versus severe exertional heat illness is important due to the difference in treatment and prognosis. Treatment should entail cessation of exertion, removal from heat stress, and expeditious cooling to prevent progression to severe heat illness. The skin may be cool and moist. The pulse rate will be fast and weak, and breathing will be fast and shallow. If heat exhaustion is untreated, it may progress to heat stroke.

Signs and symptoms of EHS may vary but may include red, hot, and dry skin (no sweating), nausea or vomiting, and elevated core body temperature with CNS dysfunction such as change in mental status, confusion, slurred speech, delirium, stupor, coma, or seizures. It might also be accompanied by organ/tissue damage and systemic inflammatory activation.

Last Updated September 14, 2023

PUBLIC HEALTH REFERENCE SHEET
Heat Illness

What are possible complications from heat illness?
Complications can range from organ and tissue damage to systemic inflammatory activation and disseminated intravascular coagulation.

How is heat illness diagnosed?
- Heat Exhaustion: Clinical presentation during or after exertion or heat exposure with core body temperature between 100.5°F (38°C) and 104°F (40°C).
- Heat Stroke: Clinical presentation during or after exertion or heat exposure with core body temperature ≥ 104°F (40°C), combined with CNS dysfunction.

A consistent definition to the type and diagnosis of exertional heat illness is critical to the safe disposition, profiling, prevention of further injury, and the prognosis of the Service member. All medical personnel must familiarize with and be able to differentiate the types of exertional heat illness according to AR 40–501. Service members admitted to the hospital with EHI or EHS will have an eProfile up to the maximal time required for recovery documented prior to discharge. See AR 40–501, Table 3–2 for details on profiling for HE, EHI, and EHS with or without sequelae.

How is heat illness treated?
For heat exhaustion, rapid resolution is often seen with minimal cooling intervention.
The first line of treatment for victims of heat stroke is cooling; thus, immediate and aggressive cooling, along with medical interventions for complications, may be required.

The following can be used as cooling measures:
- Get the victim to a shady area.
- Remove excess clothing.
- Cool the victim rapidly, using any available means. For example, immerse the victim in a tub of cold or ice water; wrap the victim in a cold, wet sheet (i.e., ice sheet).
- In addition to early rapid and effective cooling, the clinician should activate the EMS, administer IV fluids, provide supplemental oxygen (if available), and communicate with the receiving Military Treatment Facility (MTF). The receiving emergency department physicians should be alerted to the possibility of explosive rhabdomyolysis and possible grave metabolic consequences. Treatment will include immediate hospital transfer for aggressive fluid and electrolyte management, as well as cardiac monitoring.
- Refer to the link below for the field treatment of heat casualties.
  https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN35159-TB_MED_507-000-WEB-1.pdf

How can heat illness be prevented?
The body normally rids itself of heat through the skin, constituting heat relief. Some heat is lost by radiation and convection (movement of air) from the skin, but the body relies mostly on evaporation of sweat from the skin to cool itself. The adverse impact of high environmental temperature can be reduced by—
- Acclimatization to the heat over time. A Service member can take up to 21 days to adapt to an increased heat and humidity environment, with regular exposure to heat and strenuous exercise. Factors to consider in acclimatizing Service members are the Wet Bulb Globe Temperature (WBGT) index work rates and duration; uniform and equipment; and Service members' physical and mental conditions.
- Adequate hydration. See tables below for fluid replacement guidelines.
- Regular breaks in shade or cool environments.

Last Updated September 14, 2023

- Wearing appropriate clothing and use sun protection. Service members need to maintain their supply of sunscreen and lip balm, apply it approximately 30 minutes before sun exposure, and reapply at least every 2 hours throughout the day.
- Avoiding strenuous activities during peak heat hours.
- Electric fans may provide comfort, but when the temperature is in the high 90s, fans will not prevent heat-related illness. Taking a cool shower or bath or moving to an air-conditioned place is a more effective way to cool off. Air conditioning is the strongest protective factor against heat-related illness.
- The WBGT is an effective measure for assessing the risk of heat-related illnesses. Monitoring WBGT can help in setting guidelines for activities during hot conditions.

What are some public health considerations?

Surveillance, recordkeeping, and reporting.

- Surveillance is the cornerstone to the public health approach to exertional heat illness prevention because an understanding of the presence and magnitude of a problem is necessary before any of the other steps can be implemented. Surveillance includes heightened provider and leadership awareness of cases meeting the exertional heat illness criteria and vigilance in recordkeeping and disease reporting through the installation public health department or, in an operational or training setting, preventive medicine units, through appropriate channels to the Armed Forces Health Surveillance Branch. Only through data-based-policy and decision-making can exertional heat illness and its serious complications be minimized.
- Recordkeeping provides data for DoD and the Army. Safety and medical documentation of a heat illness event should include the following circumstances under which the exertional heat illness occurred and the time course of clinical symptoms and signs:
    - Training activities at the time of the exertional heat illness event
    - Personal risk factors in the training population
    - Weather conditions
    - Amount and timing of exercise
    - Adherence to work-rest cycles and fluid consumption
    - Clothing and gear involved
    - Medications (prescriptions and over-the-counter) taken in the days preceding the event
    - Nutritional supplement use taken in the days preceding the event

When combined with active monitoring of outcomes and all exercise-related deaths, a more thorough understanding of trends and potential areas for programmatic interventions to reduce morbidity and mortality can be gained at tactical, operational, and strategic levels.

- Reporting instructions include the following:
    - EHIs occurring in deployed settings will be reported according to applicable combatant command/unit level policy to include safety channels (Mishap Reporting) and Disease Reporting System internet (DRSi).
    - Non-deployed units should coordinate with the installation public health department, examining provider, MTF, and command safety to ensure that heat illnesses diagnosed at any level/location are reported. National Guard and Reserve units with or without preventive medicine personnel should report heat illnesses through command channels and command safety through the USACRC.

- All heat illnesses meeting the case definition outlined by the Armed Forces Reportable Medical Events Guidelines and Case Definitions should be entered into the DRSi.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

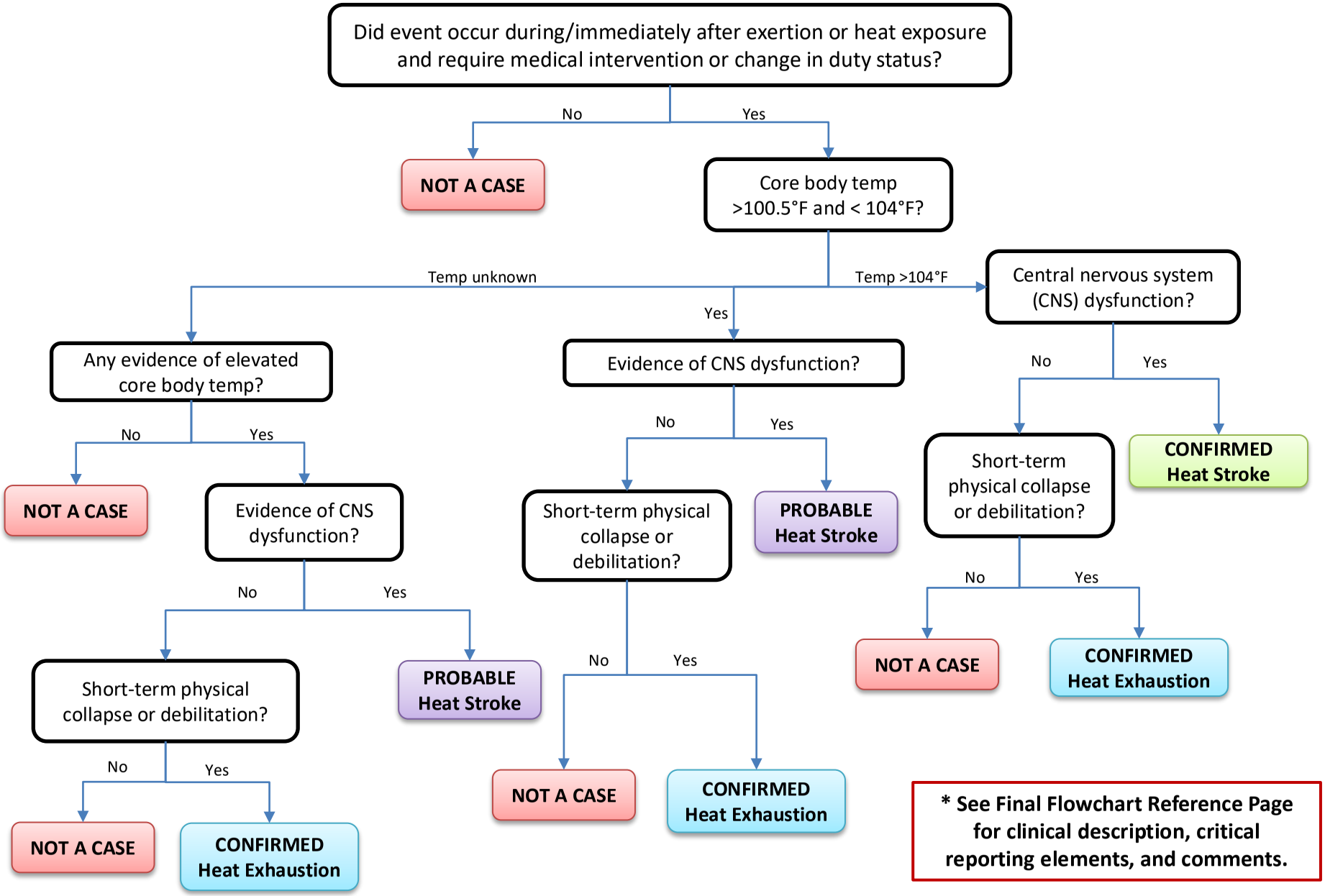
"Heat Illness Prevention & Sun Safety," Defense Centers for Public Health – Aberdeen, last reviewed August 17, 2023. https://ph.health.mil/topics/discond/hipss/Pages/default.aspx

Department of the Army. 2022. Technical Bulletin, Medical (TB MED) 507, *Heat Stress Control and Heat Casualty Management*. https://armypubs.army.mil/epubs/DR_pubs/DR_a/ARN35159-TB_MED_507-000-WEB-1.pdf

"Heat Stress – Heat related illness," Centers for Disease Control and Prevention (CDC), last reviewed May 31, 2022. https://www.cdc.gov/niosh/topics/heatstress/default.html

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

Heat Illness



*** See Final Flowchart Reference Page for clinical description, critical reporting elements, and comments.**

Heat Illness

Clinical Description, Critical reporting Elements, and Comments

Clinical Description:

- Heat Illness encompasses a spectrum of acute conditions associated with exertion or heat exposure.
- Heat Exhaustion: Heat exhaustion (HE) is defined as the inability to continue physical activity due to competing demand for cardiac output between thermoregulation and metabolic requirements. Clinically, HE may present as weakness, fatigue, ataxia, dizziness, headache, nausea, vomiting, and malaise in individuals with a core body temperature less than 104°F or 40°C. HE may be accompanied by evidence of end organ damage (Hypo/hyperkalemia, elevated aspartate aminotransferase (AST) or alanine aminotransferase (ALT), elevated creatinine kinase (CK), rhabdomyolysis/myoglobinuria). HE resolves rapidly with minimal cooling intervention.
- Heat Stroke: Heat stroke (HS) is defined as an elevated core body temperature associated with central nervous system (CNS) dysfunction. Clinically, HS presents as hyperthermia, physical collapse or debilitation, and encephalopathy as evidenced by a change in mental status, delirium, stupor, or coma, occurring during or immediately following exertion or significant heat exposure. HS may be complicated by organ and/or tissue damage, systemic inflammatory activation, and disseminated intravascular coagulation. Heat stroke will likely be the working diagnosis for any Service member with altered mental status and exposure history consistent with heat illness.

Critical Reporting Elements and Comments:

- Specify type of illness (HS vs HE).
- Document the circumstances under which the case patient was exposed; i.e., duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Enter wet bulb globe temperature, if available.
- Enter the core body temperature, if available.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

POC:_____

(_____) - _____ - _____

Heat Illness

	Confirmed	Probable	Not a Case
Heat Stroke	○	○	○
Heat Exhaustion	○		○

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk)

Weakness Y ☐ N ☐

Fatigue Y ☐ N ☐

Ataxia Y ☐ N ☐

Dizziness Y ☐ N ☐

Headache Y ☐ N ☐

Nausea/Vomiting Y ☐ N ☐

Malaise Y ☐ N ☐

Loss of consciousness* Y ☐ N ☐

Other (describe): Y ☐ N ☐

Indicate all clinical features present: *(check all that apply)*

- ☐ Organ Damage
- ☐ Hypo/hyperkalemia
- ☐ Elevated AST or ALT
- ☐ Elevated CK
- ☐ Rhabdomyolysis/myoglobinuria
- ☐ Central nervous dysfunction
- ☐ Physical collapse
- ☐ Debilitation
- ☐ Encephalopathy
- ☐ Change in mental status *(describe below)*

Activity at the time of illness

- ☐ General work duties/field exercise
- ☐ Off duty
- ☐ Individual PT
- ☐ Unit PT
- ☐ Not recorded

Environmental Exposures

Wet bulb globe:_____°F/°C

Ambient: _____ °F/°C

Describe any other relevant information below

Worst Observed Mental Status

- ☐ Alert and Oriented
- ☐ Confused
- ☐ Obtunded*
- ☐ Unresponsive*

Any case with a loss of consciousness or altered mental status beyond confusion or dizziness may meet the Heat Stroke case definition for DRSi reporting. A heat stroke clinical diagnosis by a provider is **not required to meet the Heat Stroke case definition.*

Describe any other relevant information here:

PUBLIC HEALTH REFERENCE SHEET
Hemorrhagic Fever, Viral (VHF)

Name	Varies. Includes but is not limited to: Junin virus (Argentine hemorrhagic fever (AHF)), Machupo virus, Guanarito virus, Sabia virus, Lassa virus, Lujo virus, Crimean-Congo hemorrhagic fever virus, Omsk hemorrhagic fever virus, Kyasanur Forest Disease virus, Ebola virus, Marburg virus
Reservoir & Transmission	Varies by the virus; most zoonotic; some associated with bites from ticks or mosquitoes Transmission occurs when humans contact urine, fecal matter, saliva, or other body excretions from an infected animal host (bat, rodent, livestock). For vectorborne viruses, transmission occurs from a bite from an infected insect host (tick, mosquito). Some VHFs can spread from person-to-person through close contact with infected people or body fluids.
Incubation Period	1–3 weeks
Common Symptoms	Acute onset illness with a fever >104°F or >40°C and any of the following: severe headache, muscle pain, erythemous maculopapular rash on the trunk with fine desquamation 3 to 4 days after rash onset, vomiting, diarrhea, abdominal pain, thrombocytopenia, bleeding not related to injury. Other symptoms depend on virus type.
Gold Standard Diagnostic Test	Requires testing at a highly specialized reference laboratory ELISA from blood; or culture from blood or tissues; or RNA detected by PCR, sequencing, or NAAT from blood or tissue; or histopathologic identification of viral antigens from tissues
Risk Groups	Individuals engaging in animal research, healthcare workers
Geographic Significance	Varies depending on the causative agent. Risk areas include Africa, Eastern Europe, Central Asia, the Middle East, and South America.

What are viral hemorrhagic fevers?
Viral hemorrhagic fevers (VHFs) are a group of diseases that are caused by several distinct families of ribonucleic acid (RNA) viruses, which change over time at a high rate. VHF refers to a condition that affects multiple organ systems, damages the overall cardiovascular system, and reduces the body's ability to function. VHF virus families include Arenavirus, Flavivirus, Filovirus, Nairovirus, and Phenuivirus. Almost all VHF viruses are classified as Biosafety Level 4 (BSL-4) pathogens.

VHF **excludes** dengue hemorrhagic fever, hantavirus hemorrhagic fever, Korean hemorrhagic fever, chikungunya, yellow fever, and Rift Valley Fever.

What is the occurrence of viral hemorrhagic fevers?
The number of viruses known to cause disease in humans around the globe is ever-increasing, and the way VHF viruses spread is likely to shift due to globalization, international travel, and climate change.

How are viral hemorrhagic fevers transmitted?
- The viruses carried in rodent reservoirs are transmitted when humans have contact with urine, fecal matter, saliva, or other body excretions from infected rodents.

Last updated September 1, 2023

- The viruses associated with arthropod vectors are spread most often when the vector mosquito or tick bites a human, or when a human crushes a tick. Some of these vectors may spread the virus to animals (e.g., livestock), then humans can become infected when they care for or slaughter the animals.
- Ebola, Marburg, Lassa, and Crimean-Congo hemorrhagic fever viruses are associated with person-to-person transmission. Secondary transmission of the virus can occur directly, through close contact with blood or body fluids of infected people or indirectly, through contact with objects contaminated with infected body fluids (e.g., syringes and needles contributed to outbreaks of Ebola hemorrhagic fever and Lassa fever).

Who is at risk for viral hemorrhagic fevers?
The likelihood of contracting any VHF is considered extremely low, even for international travelers. However, exposure can occur when traveling to an affected area, especially if in direct contact with the blood or body fluids of infected people or animals, or objects contaminated with infected body fluids. A case is suspected in an individual that has any of the following within the 3 weeks before onset of symptoms:

- Contact with blood or other body fluids of a confirmed case; or
- Residence in or travel to a VHF endemic area; or
- Work in a laboratory that handles VHF specimens; or
- Work in a laboratory that handles bats, rodents, or primates from endemic areas; or
- Exposure to semen from a confirmed case of VHF within the 10 weeks of that person's onset of symptoms

What are the signs and symptoms of viral hemorrhagic fevers?
Signs and symptoms vary by the type of VHF. Nonspecific symptoms may include fever, headache, malaise, muscle aches, or sore throat. Clinical features common among VHFs include retro-orbital pain, joint pain, eye redness, abdominal pain, vomiting, and/or diarrhea. The clinical description is an acute onset illness with a fever >104°F or >40°C and any of the following: severe headache, muscle pain, erythemous maculopapular rash on the trunk with fine desquamation 3 to 4 days after rash onset, vomiting, diarrhea, pharyngitis (arenavirus only), abdominal pain, bleeding not related to injury, retrosternal chest pain (arenavirus only), proteinuria (arenavirus only), or thrombocytopenia.

What are potential complications of viral hemorrhagic fevers?
Severe cases of VHF may show signs of bleeding under the skin, in internal organs, or in the mouth, eyes, or ears. Some types of VHF are associated with renal failure. Severely ill patient cases may develop shock, nervous system malfunction, delirium, seizures, coma, or death.

The prognosis varies by disease. Many of these diseases can cause outbreaks and are associated with high morbidity and mortality, with case fatality rates as high as 80%–90% in developing countries.

How are viral hemorrhagic fevers diagnosed?
Almost all VHF viruses are classified as BSL-4 pathogens and must be handled in special facilities designed to contain them safely. Consult with the CDC's guidance for laboratory testing: https://www.cdc.gov/vhf/ebola/laboratory-personnel/index.html

PUBLIC HEALTH REFERENCE SHEET
Hemorrhagic Fever, Viral (VHF)

A confirmed case meets the clinical description with any of the following:

- VHF positive antigen by ELISA from blood
- VHF identified by culture from blood or tissue
- VHF nucleic acid (RNA) detected (e.g., PCR, sequencing, NAAT) from blood or tissue
- Histopathologic identification of VHF viral antigens from tissue

Consult with the CDC for assessing VHF risk in a returning traveler.
https://www.cdc.gov/vhf/abroad/assessing-vhf-returning-traveler.html

For any questions about current outbreaks of VHFs, call the CDC's Emergency Operations Center at 770-488-7100 or email: spather@cdc.gov.

How are viral hemorrhagic fevers treated?

Treatment is supportive care. Isolate the patient in a private room or area with a private bathroom, limit healthcare personnel, and use personal protective equipment as indicated.

- For Lassa virus, the anti-viral drug Ribavirin has been shown to improve treatment outcomes when given early in the disease course.
- For AHF, treatment with convalescent-phase plasma has been used with success in some patients.

How can viral hemorrhagic fevers be prevented?

A vaccine for AHF is not approved by the U.S. Food and Drug Administration. Vaccines are not available for other VHF diseases. These viruses may be destroyed with physical (heat, sunlight, gamma rays) and chemical (bleach, detergents, solvents) methods. Prevention efforts focus on avoiding contact with host species.

Rodent control: For hemorrhagic fever viruses spread by rodents, disease prevention efforts include controlling rodent populations; keeping rodents from entering or living in homes or workplaces; and using safe cleanup of rodent nests and droppings.

Arthropod control: For hemorrhagic fever viruses spread by arthropod vectors, disease prevention efforts often focus on community-wide insect and arthropod control. Use insect repellant, proper clothing, bed nets, window screens, and other insect barriers to avoid being bitten.

For those hemorrhagic fever viruses that can be transmitted from one person to another, avoiding close physical contact with infected people and their body fluids is the most important way of controlling the spread of disease. Barrier infection control techniques include isolating infected individuals and wearing protective clothing. Other infection control recommendations include proper use, disinfection, and disposal of instruments and equipment used in treating or caring for patients with VHF, such as needles and thermometers.

What are some public health considerations?

- Be aware that VHF are stable when aerosolized and thus classified as category A bioweapons agents and are associated with severe morbidity and mortality in infected individuals.
- Immediately notify infection control program and staff.
- Immediately notify local and state health department.
- Immediately notify the Defense Centers for Public Health.

Last updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Hemorrhagic Fever, Viral (VHF)

- Call the CDC's Emergency Operations Center at 770-488-7100.
- Specify the etiologic/causative agent.
- Document relevant travel and deployment history occurring within the incubation period.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

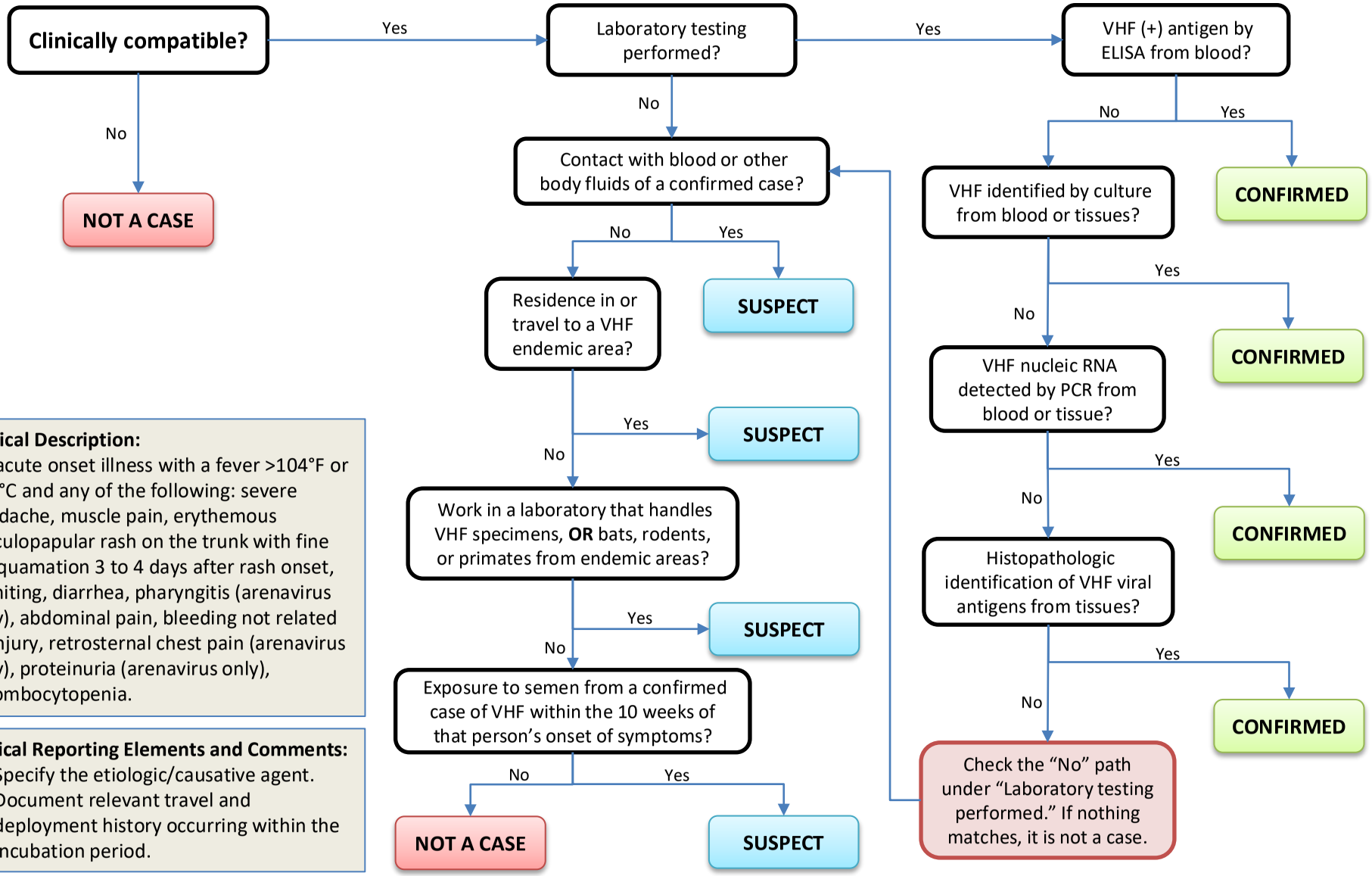
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Viral Hemorrhagic Fevers (VHF)," Centers for Disease Control and Prevention (CDC), last reviewed September 2, 2021. https://www.cdc.gov/vhf/index.html

Last updated September 1, 2023

Hemorrhagic Fever, Viral (VHF)

INCLUDES: Various viruses, including by not limited to: Junin virus, Machupo virus, Guanarito virus, Sabia virus, Lassa virus, Lujo virus, Crimean-Congo hemorrhagic fever virus, Omsk hemorrhagic fever virus, Kyasanur Forest Disease virus, Ebola virus, and Marburg virus.
EXCLUDES: Dengue hemorrhagic fever, hantavirus hemorrhagic fever, Korean hemorrhagic fever, chikungunya, yellow fever



Clinical Description:
An acute onset illness with a fever >104°F or >40°C and any of the following: severe headache, muscle pain, erythemous maculopapular rash on the trunk with fine desquamation 3 to 4 days after rash onset, vomiting, diarrhea, pharyngitis (arenavirus only), abdominal pain, bleeding not related to injury, retrosternal chest pain (arenavirus only), proteinuria (arenavirus only), thrombocytopenia.

Critical Reporting Elements and Comments:
- Specify the etiologic/causative agent.
- Document relevant travel and deployment history occurring within the incubation period.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Hemorrhagic Fever, Viral

Confirmed ○ Suspect ○ Not a Case

STOP: Prior to filling out this form, you MUST notify Defense Centers for Public Health - Aberdeen & local Public Health Department IMMEDIATELY

DCPH-A: 410-417-2377 **Local health department: _____ - _____ - _____**

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Headache	☐	☐	
Muscle pain	☐	☐	
Rash	☐	☐	
Vomiting	☐	☐	
Diarrhea	☐	☐	
Abdominal pain	☐	☐	
Pharyngitis	☐	☐	

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test (type of test performed)	Collection Date	Source (Circle Type)	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

(If yes) **Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation Period: 7–21 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Hepatitis A

Name	Hepatitis A virus
Reservoir & Transmission	Humans Person-to-person by fecal-oral route
Incubation Period	Average 28–30 days. Range 15–50 days.
Common Symptoms	Jaundice, elevated liver function levels, fatigue, nausea
Gold Standard Diagnostic Test	Detection of IgM antibodies
Risk Groups	Children, close personal contacts, men who have sex with men, recreational drug users
Geographic Significance	Worldwide

What is hepatitis A?
Hepatitis A is an acute and contagious vaccine-preventable infection of the liver caused by the hepatitis A virus (HAV).

What is the occurrence of hepatitis A?
In the U.S., a vaccine was licensed in 1995. Since 2016, the U.S. experienced hepatitis A outbreaks in multiple states that were caused by person-to-person spread primarily among adults who use drugs and experience homelessness. From 2020 to 2021, there was a 43% decrease in incidence. However, the number of cases reported in 2021 remains 4 times higher than in 2015.

How is hepatitis A transmitted?
Hepatitis A is transmitted through the fecal-oral route. This can happen through close person-to-person contact with an infected person, sexual contact with an infected person, or ingestion of contaminated food or water. A person can transmit the virus to others up to 2 weeks before symptoms appear. Although viremia occurs early in infection, bloodborne transmission of hepatitis A virus is uncommon. The hepatitis A virus can live outside the body for months, depending on the environmental conditions.

Who is at risk for hepatitis A?
Although anyone can get hepatitis A, people at increased risk for HAV infection include:

- Travel to or live in countries where hepatitis A is common
- Men who have sexual contact with other men
- Use illegal drugs, whether injected or not
- Have occupational risk for exposure
- Experience homelessness
- Close contact with an international adoptee

People at increased risk for severe disease from HAV infection include those with chronic liver disease and those with human immunodeficiency virus (HIV) infection.

What are the signs and symptoms of hepatitis A?
Adults are more likely to have symptoms than children. Most (70%) of infections in children younger than age 6 are not accompanied by symptoms. When symptoms are present, young children typically do not have jaundice, whereas most (>70%) older children and adults with HAV infection do have jaundice. If symptoms occur, they usually start appearing 4 weeks after exposure, but can occur between 2 and 7 weeks after exposure. Symptoms usually last less

than 2 months, although some (about 10–15% of cases) can be ill for as long as 6 months. Hepatitis A causes an acute illness with a discrete onset of any of the following: fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, or abdominal pain, as well as either of the following: jaundice or elevated total bilirubin levels ≥3.0 mg/dL or elevated serum alanine aminotransferase (ALT) levels > 200 IU/L.

What are potential complications of hepatitis A?
For symptomatic cases, severity can range from a mild illness lasting a few weeks to a severe illness lasting several months. Most people infected with hepatitis A recover completely and do not have lasting liver damage. In rare cases, notably among older people and those with serious health issues like chronic liver disease, hepatitis A can cause liver failure and death.

How is hepatitis A diagnosed?
A case that is epidemiologically linked to a laboratory-confirmed case 15 to 50 days before the onset of symptoms may confirm diagnosis in the absence of laboratory testing. Confirmatory laboratory evidence is Immunoglobulin M (IgM) antibody to hepatitis A virus (anti-HAV) positive, or Nucleic acid amplification test (NAAT; such as polymerase chain reaction [PCR] or genotyping) for hepatitis A virus RNA positive.

How is hepatitis A treated?
Unvaccinated people who have been exposed recently (within 2 weeks) to the hepatitis A virus should get the hepatitis A vaccine or immune globulin to prevent severe illness. Treatment is primarily supportive to include rest, adequate nutrition, and fluids. Post exposure prophylaxis (PEP) should be considered for all previously unvaccinated residents and employees when a confirmed hepatitis A case occurs, within a setting where close personal contact occurs regularly and hygiene standards are difficult to maintain (e.g., correctional facility, homeless shelter, psychiatric facility, group home or residential facility for the disabled). In a setting containing multiple enclosed units or sections (e.g., prison ward), PEP administration should be limited only to people in the area where there is exposure risk.

How can hepatitis A be prevented?
Vaccination with the two-dose series of hepatitis A vaccine is the best way to prevent infection. The number and timing of doses depends on the type of vaccine. Hand hygiene, including thoroughly washing hands after using the bathroom, changing diapers, and before preparing or eating food is important to prevent the spread of hepatitis A.

The hepatitis A vaccination is recommended for—

- All children 12–23 months of age.
- Unvaccinated children 2–18 years of age.
- Travelers to countries that have high rates of hepatitis A.
- Men who have sexual contact with other men.
- Users of injection and non-injection illegal drugs.
- People experiencing homelessness.
- People with chronic liver diseases, such as hepatitis B or hepatitis C.
- People with HIV infection.
- People who work with Hepatitis A infected animals or in a hepatitis A research laboratory.
- Any person wishing to obtain immunity.

PUBLIC HEALTH REFERENCE SHEET
Hepatitis A

Certain groups are at low risk and do not need routine vaccination against hepatitis A. These groups include people with clotting factor disorders, food handlers, workers exposed to sewage, healthcare personnel, and childcare center staff.

What are some public health considerations?

- Positive hepatitis A total antibody tests are commonly found in electronic health records, DO NOT meet this case definition, and are NOT reportable.
- Positive hepatitis A IgM results without symptoms do not meet this case definition and are NOT reportable.
- Document relevant travel and deployment history occurring within the incubation period (15–50 days).
- Document if the case patient works in, lives in, or attends a high-transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.
- Note the patient's hepatitis A immunization history.

References:

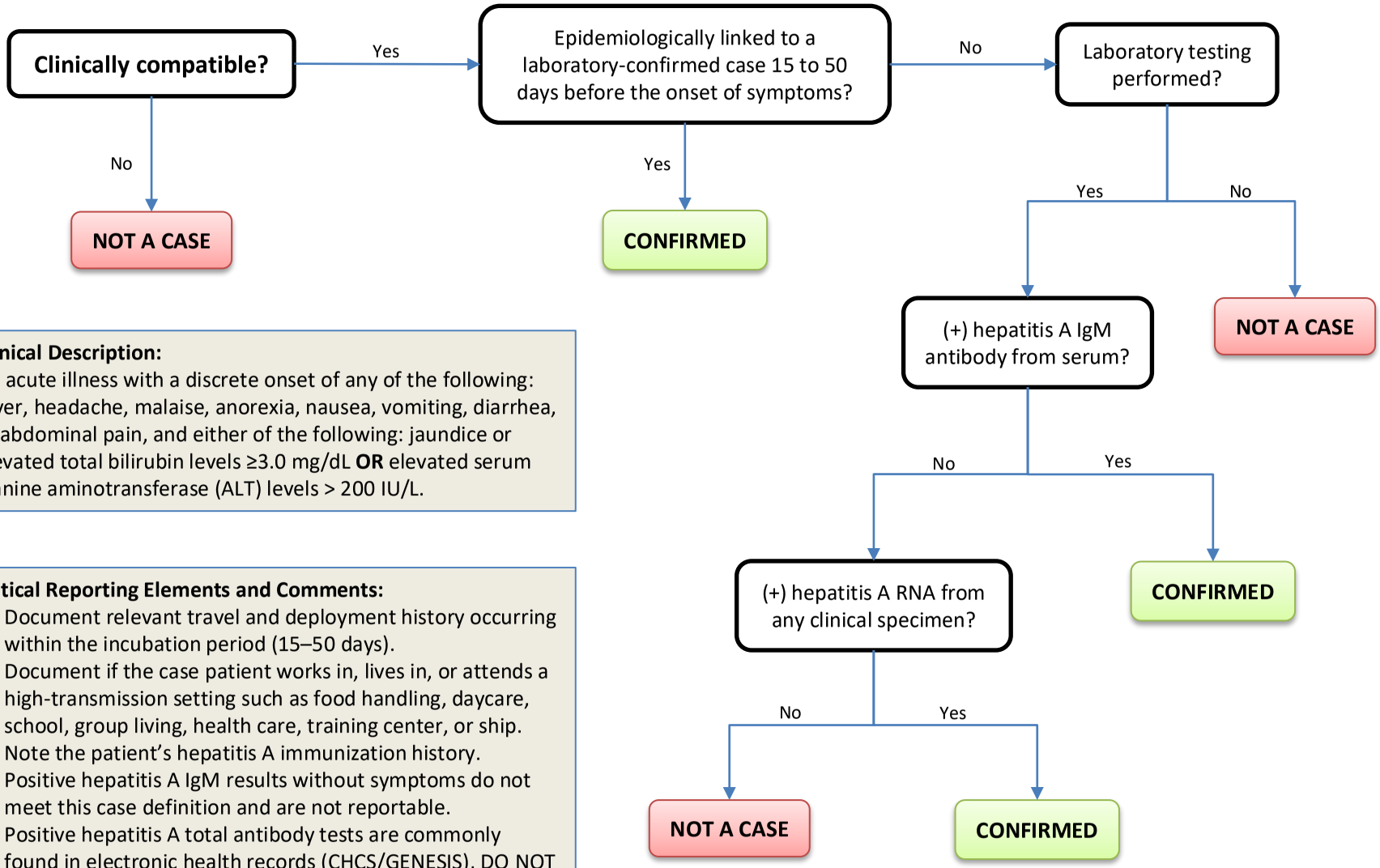
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

"Hepatitis A," Centers for Disease Control and Prevention (CDC), last reviewed September 27, 2023. https://www.cdc.gov/hepatitis/hav/havfaq.htm#general

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Last Updated October 1, 2023

Hepatitis A



Clinical Description:
An acute illness with a discrete onset of any of the following: fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, or abdominal pain, and either of the following: jaundice or elevated total bilirubin levels ≥3.0 mg/dL **OR** elevated serum alanine aminotransferase (ALT) levels > 200 IU/L.

Critical Reporting Elements and Comments:

- Document relevant travel and deployment history occurring within the incubation period (15–50 days).
- Document if the case patient works in, lives in, or attends a high-transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.
- Note the patient's hepatitis A immunization history.
- Positive hepatitis A IgM results without symptoms do not meet this case definition and are not reportable.
- Positive hepatitis A total antibody tests are commonly found in electronic health records (CHCS/GENESIS), DO NOT meet this case definition, and are not reportable.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Hepatitis A
Hepatitis B
Hepatitis C

	Confirmed	Probable	Not a Case
Hepatitis A	◯		◯
Hepatitis B	◯	◯	◯
Hepatitis C	◯	◯	◯

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____1_____ **Clinic/Hospita**

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N
Symptomatic	☐	☐
Fever	☐	☐
Headache	☐	☐
Malaise	☐	☐
Anorexia	☐	☐
Nausea	☐	☐
Vomiting	☐	☐
Diarrhea	☐	☐
Abdominal pain	☐	☐
Jaundice	☐	☐
Elevated ALT	☐	☐

Onset date: ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Max Temp: _____°F/°C (☐ unk)

Specify the type of hepatitis:

☐ **Acute**

☐ **Chronic**

Date of diagnosis: ____/_____/_____
(If chronic)

Does case work in, live in, or attend a high-transmission setting such as food handling, daycare, school, group living, etc:

Y ☐ N ☐ If yes, where: _____

_____

_____

If case is asymptomatic, why was case tested?

_____

_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)
Is the case vaccinated?	☐	☐	**1st:** ____/_____/_____ **2nd:** ____/_____/_____ **3rd:**____/_____/_____

If not ever vaccinated, why?

☐ **Religious Exemption** ☐ **Medical Contraindication** ☐ **Philosophical Objection**

☐ **Lab Evidence of Previous Disease** ☐ **MD Diagnosis of Previous Disease**

☐ **Under Age for Vaccination** ☐ **Parental Refusal** ☐ **Other:** _____

☐ **Unknown**

LABORATORY RESULTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ **Antibody**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Antigen**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **PCR (DNA)**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Culture**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Screen**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Other** *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**

COMMENTS

(+) Hep A IgM without symptoms is NOT REPORTABLE

HBsAg = Hepatitis B surface antigen
HBc-IgM = Hepatitis B core antigen
HBeAg = Hepatitis B e antigen
PCR = Hepatitis nucleic acid (DNA or RNA)
anti-HCV = Hepatitis C antibody

TRAVEL HISTORY

In the 5 weeks before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Include any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Hepatitis B

Name	Hepatitis B Virus (HBV)
Reservoir & Transmission	Humans Sexual transmission, perinatal transmission, intravenous drug use
Incubation Period	Usually 45–180 days, average 60–90 days As short as 2 weeks to the appearance of HBsAg, and rarely as long as 6–9 months
Common Symptoms	Acute infection: fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, abdominal pain with jaundice or elevated ALT levels Chronic infection: ranges from asymptomatic to evidence of liver disease such as cirrhosis or liver cancer
Gold Standard Diagnostic Test	Serum specific antigens and/or antibodies confirm diagnosis. Three antigen-antibody systems are identified for hepatitis B: HBsAg and antibody to HBsAg (anti-HBs) HBcAg and antibody to HBcAg (anti-HBc) Hepatitis B e antigen (HBeAg) and antibody to HBeAg (anti-HBe)
Risk Groups	Sexual partners and household contacts with infected persons; men who have sex with men; intravenous drug users; hemodialysis patients; inmates of juvenile detention facilities, prisons, and jails; healthcare and public safety workers who perform tasks involving contact with blood or blood-contaminated body fluids; clients and staff of institutions for the developmentally disabled who are bitten by patients; STI-positive patients and history of sexual activity with more than one partner in the previous 6 months; international travelers who plan to spend more than 6 months in areas with greater than 2% rates of chronic HBV infection and who will have close contact with the local population; and persons with diabetes who require blood glucose monitoring and other chronic conditions requiring frequent injections
Geographic Significance	Worldwide, endemic in many countries

What is hepatitis B?
Hepatitis B virus (HBV) is a small, circular, partially double-stranded DNA virus in the family Hepadnaviridae. Hepatitis B can be either acute or chronic.

Acute hepatitis B is a short-term illness that occurs within the first 6 months after someone is exposed to the hepatitis B virus. Some people with acute hepatitis B have no symptoms at all or only mild illness. For others, acute hepatitis B shows a discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain), and either jaundice or elevated serum alanine aminotransferase (ALT) levels >100 IU/L. Laboratory criteria for diagnosis of acute hepatitis B is HBsAg positive, and immunoglobulin M (IgM) antibody to hepatitis B core antigen (IgM anti-HBc) positive (if done).

Chronic HBV infection is a long-term illness that may have no evidence of liver disease or may have a spectrum of disease ranging from chronic hepatitis to cirrhosis or liver cancer. Laboratory criteria for diagnosis of chronic hepatis B is immunoglobulin M (IgM) antibodies to hepatitis B core antigen (IgM anti-HBc) negative AND a positive result on one of the following

tests: hepatitis B surface antigen (HBsAg), hepatitis B e antigen (HBeAg), or nucleic acid test for hepatitis B virus DNA (including qualitative, quantitative and genotype testing); or HBsAg positive or nucleic acid test for HBV DNA positive (including qualitative, quantitative, and genotype testing); or HBeAg positive two times at least 6 months apart.

What is the occurrence of hepatitis B?

HBV is a leading cause of chronic hepatitis, liver cirrhosis, and hepatocellular carcinoma worldwide. In 2015, an estimated 257 million people globally were living with chronic HBV infection, and HBV caused an estimated 887,000 deaths. However, HBV infections are likely underestimated because accurate data are lacking from many countries (Map 5-07).

Data demonstrating the specific risk to travelers are lacking; however, published reports of travelers acquiring hepatitis B are rare and the risk for travelers who do not have high-risk behaviors or exposures is low. The risk for HBV infection might be higher in countries where the prevalence of chronic HBV infection is ≥2% (e.g., in the western Pacific and African regions); expatriates, missionaries, and long-term development workers in those regions might be at increased risk for HBV infection.

How is hepatitis B transmitted?

HBV is transmitted by contact with contaminated blood, blood products, and other body fluids (e.g., semen). Travelers could be exposed to HBV through poor infection control during dental or medical procedures, receipt of blood products, injection drug use, tattooing or acupuncture, or unprotected sex.

Who is at risk for hepatitis B?

There are a variety of populations, activities, exposures, or conditions associated with an increased risk for HBV infection, including:

- Infants born to hepatitis B surface antigen (HBsAg)–positive pregnant people.
- People born in regions of the world with HBV infection prevalence of >2%.
- U.S.-born people not vaccinated as infants whose parents were born in regions with HBV infection prevalence of >8%.
- Injection drug use.
- Incarceration in a jail, prison, or other detention setting.
- HIV or Hepatitis C virus infection.
- Men who have sex with men.
- Sexually transmitted infections or multiple sex partners.
- Household contacts of people with known HBV infection.
- Needle-sharing or sexual contacts of people with known HBV infection.
- Maintenance dialysis, including in-center or home hemodialysis and peritoneal dialysis.
- Elevated alanine aminotransferase or aspartate aminotransferase levels of unknown origin.

What are the signs and symptoms of hepatitis B?

HBV infection primarily affects the liver. Typically, the incubation period for hepatitis B is 90 days (range 60–150 days). Newly acquired acute HBV infections only cause symptoms some of the time, and signs and symptoms vary by age. Most children <5 years of age and immunosuppressed adults are asymptomatic when newly infected, whereas 30%–50% of newly infected people aged ≥5 years have signs and symptoms. When present, typical signs and symptoms of acute infection include abdominal pain, anorexia, fatigue, fever, jaundice, joint

pain, malaise, nausea and vomiting, light (clay-colored) stool, and dark urine. The overall case-fatality ratio of acute hepatitis B is ≈1%.

Some acute HBV infections resolve on their own, but some develop into chronic infection. The risk for acute hepatitis B to progress to chronic HBV infection depends on the age at the time of initial infection as follows: >90% of neonates and infants, 25%–50% of children aged 1–5 years, and <5% of older children and adults. Most people with chronic HBV infection are asymptomatic and have no evidence of liver disease. However, 15%–40% of people with chronic HBV infection will develop liver cirrhosis, hepatocellular carcinoma, or liver failure, and 25% of chronically-infected people die prematurely from these complications. People infected with HBV are susceptible to infection with hepatitis D virus; coinfection increases the risk for fulminant hepatitis and rapidly progressive liver disease.

What are potential complications of hepatitis B?
Chronic hepatitis B can lead to serious health problems, including cirrhosis, liver cancer, and death. HBV reactivation is the abrupt reappearance or rise in HBV DNA in a patient with previously inactive chronic or resolved hepatitis B. It is often accompanied by a flare in disease activity with elevation of liver enzymes and with or without symptoms. HBV reactivation can be severe, resulting in death.

How is hepatitis B diagnosed?
Hepatitis B is a nationally notifiable disease. The clinical diagnosis of acute HBV infection is based on signs or symptoms consistent with viral hepatitis and elevated hepatic transaminases and cannot be distinguished from other causes of acute hepatitis. Serologic markers specific for hepatitis B are necessary to diagnose HBV infection and for appropriate clinical management. These markers can differentiate between acute, resolving, and chronic infection. Select Hepatitis B Genotyping for research use only, and Hepatitis B Serology and Quantitative PCR if testing regulated by Clinical Laboratory Improvement Amendments is needed.

How is hepatitis B treated?
No medications are available to treat acute HBV infection; treatment is supportive. Several antiviral medications are available for people with chronic HBV infection. People with chronic HBV infection should be under the care of a health professional, receive a thorough physical examination and laboratory testing to determine the need for antiviral therapy, and ongoing monitoring for hepatocellular carcinoma and liver damage. See American Association for the Study of Liver Diseases (AASLD) practice guidelines for the treatment of chronic HBV infection at https://www.aasld.org/practice-guidelines.

How can hepatitis B be prevented?
Vaccination is the best way to prevent hepatitis B infection. Vaccines licensed in different parts of the world may have varying dosages and schedules. In the U.S., booster doses are not recommended for immunocompetent persons vaccinated at any age.

As part of the pretravel education process, educate all travelers about exposure risks for hepatitis B and other bloodborne pathogens, including activities or procedures that involve piercing the skin or mucosa; receiving blood products; contaminated equipment used during cosmetic (e.g., tattooing or piercing), dental, or medical procedures; injection drug use; and unprotected sexual activity. Caution travelers against providers who use inadequately sterilized or disinfected equipment, who reuse contaminated equipment, or who do not use safe injection practices (e.g., reusing disposable needles and syringes).

PUBLIC HEALTH REFERENCE SHEET
Hepatitis B

In the U.S., the Advisory Committee on Immunization Practices (ACIP) recommends hepatitis B vaccination among all infants, children, and adolescents younger than 19 years of age, all adults aged 19 through 59 years, all adults aged 60 years and older with risk factors for hepatitis B, as well as adults 60 years and older without known risk factors.

For information on hepatitis B vaccination for infants, children, and adolescents see Hepatitis B Vaccination of Infants – Adolescents | CDC https://www.cdc.gov/hepatitis/hbv/vaccchildren.htm. For additional information on hepatitis B vaccination for adults see Hepatitis B – Vaccination of Adults | CDC https://www.cdc.gov/hepatitis/hbv/vaccadults.htm.

Postexposure prophylaxis (PEP) against HBV from an exposure to HBV should be given as soon as possible, but preferably within 24 hours, to effectively prevent infection. PEP includes hepatitis B vaccine, and in certain circumstances, Hepatitis B Immune Globulin (HBIG).

Testing is not a requirement for vaccination, and in settings where testing is not feasible or is refused by the patient, the clinician should recommend the person proceed with vaccination. Providers should administer the first vaccine dose immediately after the blood sample is collected and sent for serologic testing. There is no benefit and no risk to people who have already been infected with HBV and receive vaccination.

Infants born to HBsAg positive mothers should receive a single dose of vaccine within 12 hours of birth and, where available and depending on the epidemiology, HBIG. The first dose of vaccine should be given concurrently with HBIG, but at a separate site; second and third doses of vaccine (without HBIG) should be given 1–2 months and 6 months later, respectively.

What are some public health considerations?

- In the United States, case reports of viral hepatitis are classified as hepatitis A, acute hepatitis B, acute hepatitis C, perinatal HBV infection, chronic hepatitis B, hepatitis C, past or present, and perinatal HCV infection. Serologic testing is necessary to determine the etiology of viral hepatitis, and case reports should be based on laboratory confirmation. Each state and territory (jurisdiction) has a list of reportable diseases and conditions of public health importance.
- Guidelines for investigating a suspected case of acute viral hepatitis include:
    - Determining a discrete onset of illness,
    - Confirming evidence of acute liver disease (jaundice or elevated aminotransferase levels), and
    - Obtaining serologic laboratory results.
- The minimum recommended elements for investigating cases of chronic HBV infection and perinatal HBV infection include obtaining the serologic laboratory results needed to establish the case. Further investigation to determine the clinical characteristics of these cases may also be considered, although it is not required to confirm the case.
- The following information is epidemiologically important to collect in a case investigation for acute hepatitis B infection. Additional information may also be collected at the direction of the state health department.
    - Demographic information (clinical details, date of illness onset)
    - Symptoms, including jaundice
    - Laboratory results
    - Vaccination status
    - Risk behaviors/exposures
    - Contact investigation and prophylaxis

PUBLIC HEALTH REFERENCE SHEET
Hepatitis B

- The following information is epidemiologically important to collect in a case investigation for chronic hepatitis B infection. Additional information may also be collected at the direction/jurisdiction of the state health department.
    - Demographic information
    - Laboratory results
    - Risk behaviors/exposures
    - Pregnancy status. All HBsAg-positive pregnant women should be reported to the Perinatal Hepatitis B Prevention Program manager so that they can be tracked, and their infants can receive appropriate case management.
- The recommended elements of case investigation and follow-up of persons with chronic hepatitis B virus infection are detailed elsewhere. The following should be included:
    - Contact investigation and prophylaxis: Provision of hepatitis B vaccination for sexual, household, and other (needle-sharing) contacts of persons with hepatitis B, and counseling to prevent transmission to others
    - Counseling and referral for medical management, including assessing for biochemical evidence of chronic liver disease, and evaluating eligibility for antiviral treatment
- The following information is epidemiologically important to collect in a case investigation for perinatal HBV infection:
    - Demographic information about the child and mother
    - Laboratory results
    - Birth weight is useful because infants <2,000 grams will require an additional vaccine dose
    - Immunization history of the child, including date/time and doses of hepatitis B vaccine and HBIG
- Case investigation and follow-up of infants with hepatitis B virus infection should include the following:
    - Referral for medical management, including assessing for biochemical evidence of chronic liver disease, and evaluating eligibility for antiviral treatment
    - Identification of other susceptible infants and children in the household who require vaccination
- Persons reporting these conditions should contact their state/jurisdiction health department for jurisdiction-specific reporting requirements.
- Surveillance guidelines and forms are available from the CDC at https://www.cdc.gov/hepatitis/statistics/GuidelinesAndForms.htm.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

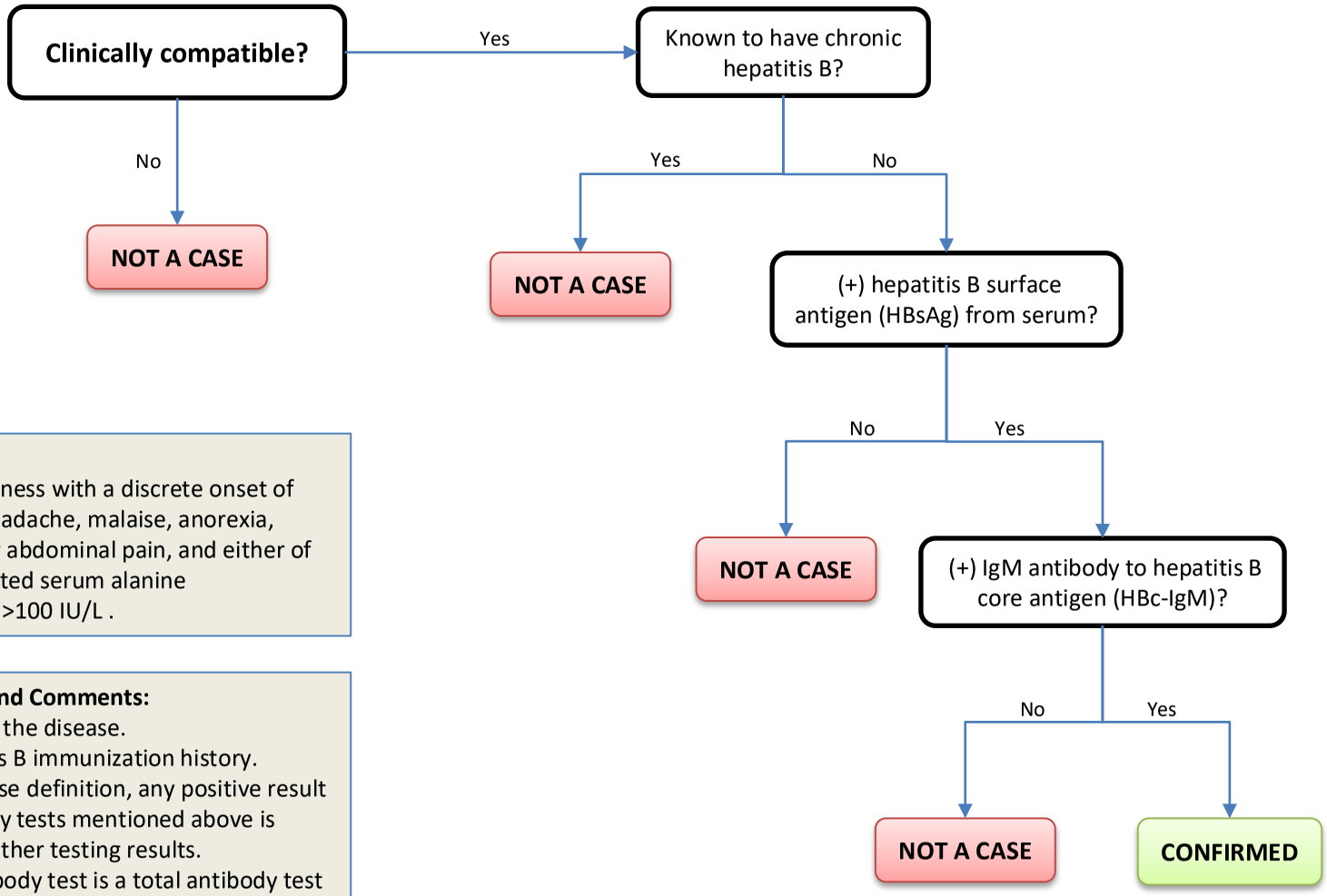
"Hepatitis B," Centers for Disease Control and Prevention (CDC), last reviewed March 9, 2023. https://www.cdc.gov/hepatitis/hbv/index.htm https://www.cdc.gov/vaccines/pubs/surv-manual/chpt04-hepb.html

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Manual for the Surveillance of Vaccine-Preventable Diseases – Hepatitis B," Centers for Disease Control and Prevention (CDC), last reviewed March 13, 2020. https://www.cdc.gov/vaccines/pubs/surv-manual/chpt04-hepb.html

Last Updated September 1, 2023

Hepatitis B, Acute

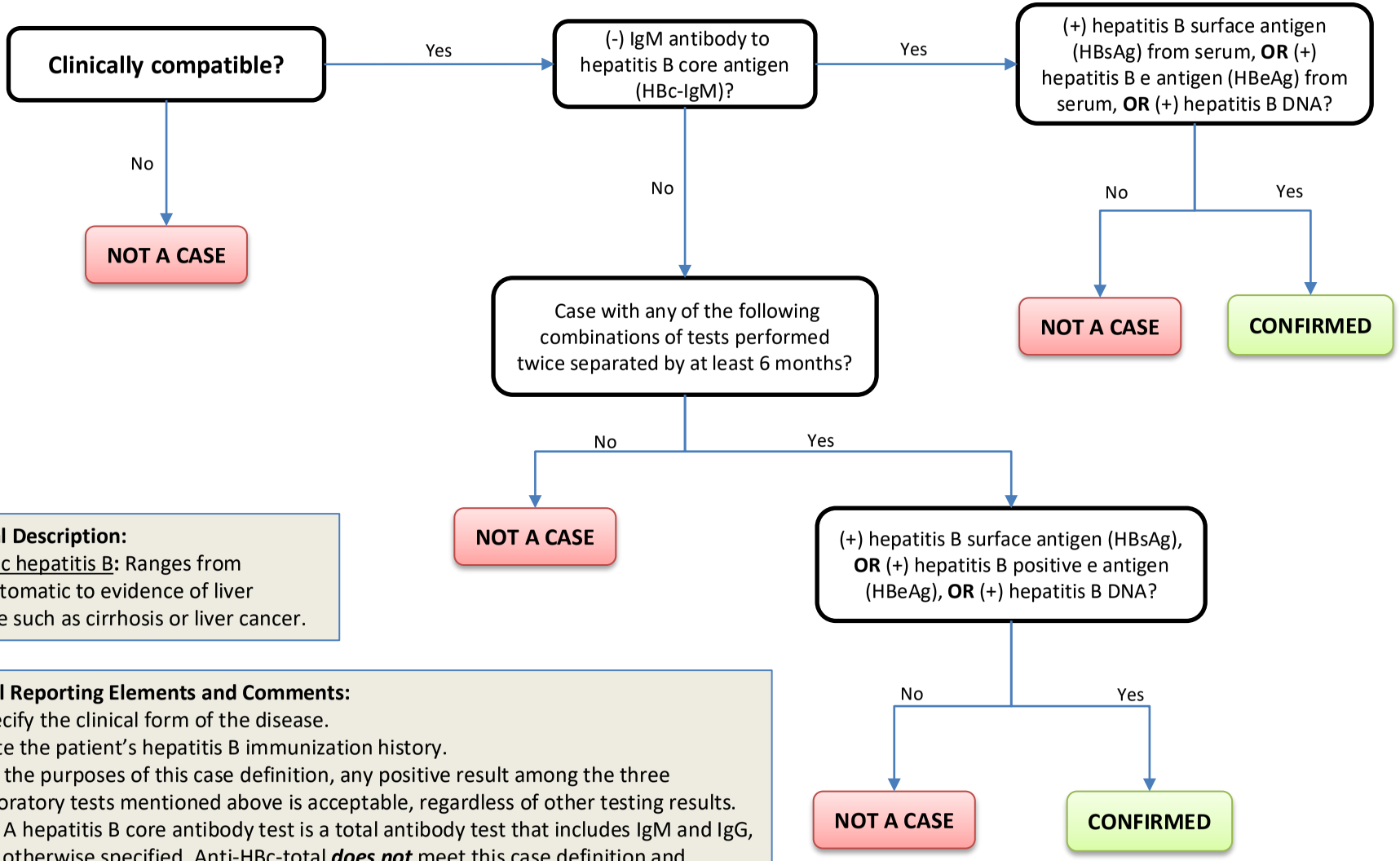


Clinical Description:
Acute hepatitis B: An acute illness with a discrete onset of any of the following: fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, or abdominal pain, and either of the following: jaundice, elevated serum alanine aminotransferase (ALT) levels >100 IU/L .

Critical Reporting Elements and Comments:
- Specify the clinical form of the disease.
- Note the patient's hepatitis B immunization history.
- For the purposes of this case definition, any positive result among the three laboratory tests mentioned above is acceptable, regardless of other testing results.

NOTE: A hepatitis B core antibody test is a total antibody test that includes IgM and IgG, unless otherwise specified. Anti-HBc-total ***does not*** meet this case definition and, therefore, is *not* reportable.

Hepatitis B, Chronic



Clinical Description:
Chronic hepatitis B: Ranges from asymptomatic to evidence of liver disease such as cirrhosis or liver cancer.

Critical Reporting Elements and Comments:
- Specify the clinical form of the disease.
- Note the patient's hepatitis B immunization history.
- For the purposes of this case definition, any positive result among the three laboratory tests mentioned above is acceptable, regardless of other testing results.

NOTE: A hepatitis B core antibody test is a total antibody test that includes IgM and IgG, unless otherwise specified. Anti-HBc-total ***does not*** meet this case definition and, therefore, is *not* reportable.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Hepatitis A
Hepatitis B
Hepatitis C

	Confirmed	Probable	Not a Case
Hepatitis A	◯		◯
Hepatitis B	◯	◯	◯
Hepatitis C	◯	◯	◯

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____1_____ **Clinic/Hospita**

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N
Symptomatic	☐	☐
Fever	☐	☐
Headache	☐	☐
Malaise	☐	☐
Anorexia	☐	☐
Nausea	☐	☐
Vomiting	☐	☐
Diarrhea	☐	☐
Abdominal pain	☐	☐
Jaundice	☐	☐
Elevated ALT	☐	☐

Onset date: ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Max Temp: _____°F/°C (☐ unk)

Specify the type of hepatitis:

☐ Acute

☐ Chronic

Date of diagnosis: ____/_____/_____
(If chronic)

Does case work in, live in, or attend a high-transmission setting such as food handling, daycare, school, group living, etc:

Y ☐ N ☐ If yes, where: _____

_____

_____

If case is asymptomatic, why was case tested?

_____

_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)
Is the case vaccinated?	☐	☐	**1st:** ____/_____/_____ **2nd:** ____/_____/_____ **3rd:**____/_____/_____

If not ever vaccinated, why?

☐ Religious Exemption ☐ Medical Contraindication ☐ Philosophical Objection

☐ Lab Evidence of Previous Disease ☐ MD Diagnosis of Previous Disease

☐ Under Age for Vaccination ☐ Parental Refusal ☐ Other: _____

☐ Unknown

LABORATORY RESULTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ **Antibody**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Antigen**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **PCR (DNA)**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Culture**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Screen**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Other** *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**

COMMENTS

(+) Hep A IgM without symptoms is NOT REPORTABLE

HBsAg = Hepatitis B surface antigen
HBc-IgM = Hepatitis B core antigen
HBeAg = Hepatitis B e antigen
PCR = Hepatitis nucleic acid (DNA or RNA)
anti-HCV = Hepatitis C antibody

TRAVEL HISTORY

In the 5 weeks before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Include any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Hepatitis C

Name	Hepatitis C, acute and chronic, hepatitis C virus (HCV)
Reservoir & Transmission	Humans HCV transmission is bloodborne and most often involves exposure to contaminated needles or syringes, or receipt of blood or blood products that have not been screened for HCV. Although infrequent, HCV can be transmitted through other procedures that involve blood exposure.
Incubation Period	Ranges from 2 weeks to 6 months; commonly 6–9 weeks Chronic infection may persist for several decades before the onset of cirrhosis or hepatocellular carcinoma.
Common Symptoms	Most (80%) people with acute HCV infection have no symptoms. When they occur, symptoms are indistinguishable from other forms of acute viral hepatitis and could include abdominal pain, anorexia and nausea, fatigue, jaundice, and dark urine. Most people with chronic HCV infection are asymptomatic or have non-specific symptoms such as chronic fatigue and depression. Many people eventually develop chronic liver disease, which can range from mild to severe, including cirrhosis and liver cancer.
Gold Standard Diagnostic Test	Detection of antibody to the hepatitis C virus (anti-HCV) and HCV RNA; tests that detect antibodies include the enzyme immunoassay (EIA), the enhanced chemiluminescence immunoassay, and the recombinant immunoblot assay.
Risk Groups	Persons who have received injections with non-sterilized needles and syringes in healthcare settings; injection drug users; recipients of unscreened donated blood, blood products, and organs; people who received a blood product for clotting problems made before 1987; hemodialysis patients; people who received body piercing or tattoos done with non-sterile instruments; people with known exposures to the HCV, such as healthcare workers injured by needlesticks and recipients of blood or organs from a donor who tested positive For the HCV, HIV-infected men who have sex with men, and children born to mothers infected with the HCV
Geographic Significance	Worldwide Regions of high prevalence in Africa, central, southern, and eastern Asia, and eastern Europe

What is hepatitis C?

Hepatitis C is a contagious liver disease that ranges in severity from a mild illness lasting a few weeks to a serious, lifelong illness that attacks the liver. Hepatitis C virus (HCV) is a spherical, enveloped, positive-strand ribonucleic acid (RNA) virus. Seven distinct HCV genotypes and 67 subtypes have been identified; genotypes 1a, 1b, 2, and 3 are the most common HCV genotypes in the United States. Hepatitis C can be either acute or chronic.

Acute hepatitis C is defined as an acute liver infection accompanied by jaundice, elevated serum alanine aminotransferase (ALT) levels greater than 200 IU/L or peak elevated total bilirubin levels greater or equal to 3.0 mg/dL, and with any HCV nucleic acid (RNA) detected for hepatitis C virus RNA positive or positive HCV antigen and antibody in a patient without a prior diagnosis of HCV infection.

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Hepatitis C

Chronic hepatitis C is defined as chronic liver infection with no clinical signs or symptoms, no record of a test conversion (i.e., no documented lab result of HCV negative antibody, HCV negative antigen, or HCV nucleic acid not detected, followed within 12 months by a positive result of any of these tests) within the past 12 months, and HCV positive results in either HCV RNA detected or HCV positive antigen tests.

What is the occurrence of hepatitis C?

Globally, an estimated 62 million people were living with HCV infection (chronically infected) in 2019. An estimated 2.4 million people in the United States were living with hepatitis C during 2013–2016; in 2019, a total of 4,136 cases of acute hepatitis C were reported to the CDC (CDC, 2023). After adjusting for under-ascertainment and under-reporting, an estimated 57,500 acute hepatitis C cases occurred in 2019. Pakistan, China, India, Egypt, and Unites States are the top 5 countries with highest total number of infections. Although the quality of epidemiologic data and prevalence estimates vary widely across countries and within regions, the most recent global estimates from 2019 indicate that the viremic prevalence of HCV infection (prevalence of HCV RNA) is <1.0% in most developed countries, including the United States. HCV prevalence is considerably higher in some countries in eastern Europe (3.1% in Ukraine, 2.9% in Russia, 2.9% in Moldova, 2.5% in Romania, 2.1% in Latvia) and certain countries in Africa (5.9% in Gabon, 3.6% in Burundi, 2.1% in Egypt), the Middle East (1.6% in Syria), and the South Caucasus and Central Asia (3.1% in Georgia, 3.0% in Uzbekistan, 2.7% in Tajikistan, 2.7% in Turkmenistan) (CDC 2023).

How is hepatitis C transmitted?

HCV is transmitted primarily through parenteral exposures to infectious blood or body fluids that contain blood. Possible exposures include:

- Injection-drug use (currently the most common mode of HCV transmission in the United States)
- Birth to an HCV infected mother

Although less frequent, HCV can also be spread through—

- Sex with an HCV infected person; it has been reported more often among men who have sex with men.
- Sharing glucose monitors, razors, nail clippers, toothbrushes, and other items that may have come into contact with infected blood.
- Other healthcare procedures that involve invasive procedures, such as injections.
- Unregulated tattooing.
- Receipt of donated blood, blood products, and organs (rare in the United States since blood screening became available in 1992).
- Needlestick injuries in healthcare settings.

Hepatitis C is not spread by sharing eating utensils, breastfeeding, hugging, kissing, holding hands, coughing, or sneezing. It is also not spread through food or water.

Who is at risk for hepatitis C?

The following people are at increased risk for hepatitis C:

- People with HIV infection
- Current or former people who use injection drugs (PWID), including those who injected only once many years ago

Last Updated October 1, 2023

- People with selected medical conditions, including those who ever received maintenance hemodialysis
- Prior recipients of transfusions or organ transplants, including people who received clotting factor concentrates produced before 1987, people who received a transfusion of blood or blood components before July 1992, people who received an organ transplant before July 1992, and people who were notified that they received blood from a donor who later tested positive for HCV infection
- Healthcare, emergency medical, and public safety personnel after needle sticks, sharps, or mucosal exposures to HCV-positive blood
- Children born to mothers with HCV infection

What are the signs and symptoms of hepatitis C?
Most (80%) people with acute HCV infection have no symptoms or have mild symptoms that are unlikely to prompt a visit to a healthcare professional. In those people who do develop symptoms, the average period from exposure to symptom onset is 2–12 weeks (range: 2–26 weeks). Symptoms are indistinguishable from other forms of acute viral hepatitis and could include fever, abdominal pain, anorexia and nausea, fatigue, joint-pain, jaundice, dark urine, or clay-colored stools.

Chronic liver disease in HCV-infected people is usually insidious, progressing slowly without any signs or symptoms for several decades. HCV infection is often not recognized until asymptomatic people are identified as HCV-positive when screened for blood donation or when elevated alanine aminotransferase (ALT, a liver enzyme) levels are detected during routine examinations. Chronic HCV infection is a major cause of cirrhosis (cirrhosis develops in approximately 10%–20% of people after 20–30 years of chronic infection) and liver cancer and is the leading reason for liver transplantation in the United States.

What are the potential complications of hepatitis C?
Of every 100 people infected with HCV, approximately 5–25 will develop cirrhosis within 10–20 years. Patients who develop cirrhosis have a 1%–4% annual risk of developing hepatocellular carcinoma and a 3%–6% annual risk of hepatic decompensation; for the latter patients, the risk of death in the following year is 15%–20%.

Some people with chronic HCV infection also develop medical conditions due to hepatitis C that are not limited to the liver, such as diabetes mellitus, glomerulonephritis, essential mixed cryoglobulinemia, and non-Hodgkin's lymphoma. Chronic liver disease and liver cancer caused by chronic HCV infection are common reasons for liver transplants in the United States. In 2018, a total of 15,713 U.S. death certificates had hepatitis C recorded as an underlying or contributing cause of death (CDC 2023).

How is hepatitis C diagnosed?
In the U.S., hepatitis C is a nationally notifiable disease. Hepatitis C testing is required for diagnosis. Testing is not routinely performed in many countries; however, most HCV-infected people are unaware of their infection. Two types of tests are available: IgG assays for HCV antibodies, and nucleic acid amplification tests (NAAT) to detect HCV RNA in blood (viremia). Both tests are commercially available in the United States and most countries. IgM assays, to detect early or acute infection, are not available. Because a positive HCV antibody test cannot discriminate between a previously infected person who resolved or cleared the infection and

someone with current infection, be certain that HCV RNA testing follows a positive HCV antibody test to identify people with current (recent and chronic) HCV infection.

In 2020, CDC updated recommendations to include ≥1 hepatitis C screening test for all adults ≥18 years of age during a lifetime, and hepatitis C screening for all pregnant people during each pregnancy. See information on how to obtain hepatitis C diagnostic support at https://www.cdc.gov/hepatitis/hcv/hcvfaq.htm#c3 including contact information, which samples to send, and how to send samples are also available at the above website or by calling 800-CDC-INFO (800-232-4636).

How is hepatitis C treated?

Over 90% of people infected with hepatitis C virus (HCV) can be cured of their infection, regardless of HCV genotype, with 8–12 weeks of oral therapy. With the exception of pregnant women and children under 3 years of age, people with acute hepatitis C (i.e., those with measurable HCV RNA) should be treated for their infection. There is no need to wait for potential spontaneous viral resolution. To provide healthcare professionals with timely guidance as new therapies are available and integrated into hepatitis C treatment regimens, the Infectious Diseases Society of America (IDSA) and American Association for the Study of Liver Diseases (AASLD), in collaboration with the International Antiviral Society–USA (IAS–USA), developed evidence-based, expert-developed recommendations for hepatitis C management. These recommendations are endorsed by CDC and available at http://www.hcvguidelines.org.

How can hepatitis C be prevented?

No vaccine or postexposure prophylaxis is available to prevent HCV infection, nor does immune globulin provide protection. The best way to prevent hepatitis C is by avoiding behaviors that can spread the disease, especially injecting drugs. Avoiding occupational exposure to blood is the primary way to prevent transmission of bloodborne illnesses among healthcare personnel.

What are some Public Health considerations?

- When reporting HSV infections in the Disease Reporting System internet (DRSi), specify the clinical form (acute or chronic) of the disease, if known.
- An acute case of hepatitis C should be reported as a chronic case of hepatitis C, if a positive NAAT for HCV RNA or a positive HCV antigen is reported 1 year or longer after acute case onset.
- A confirmed acute case may not be reported as a probable chronic case (i.e., HCV antibody positive, but with an unknown HCV RNA NAAT or antigen status).
- A chronic hepatitis C case that has already been reported in the past should not be reported again.
- No one should be excluded from work, school, play, childcare, or other settings on the basis of their infection status. There is no evidence that hepatitis C can be transmitted from food handlers, teachers, or other service providers in the absence of blood-to-blood contact.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

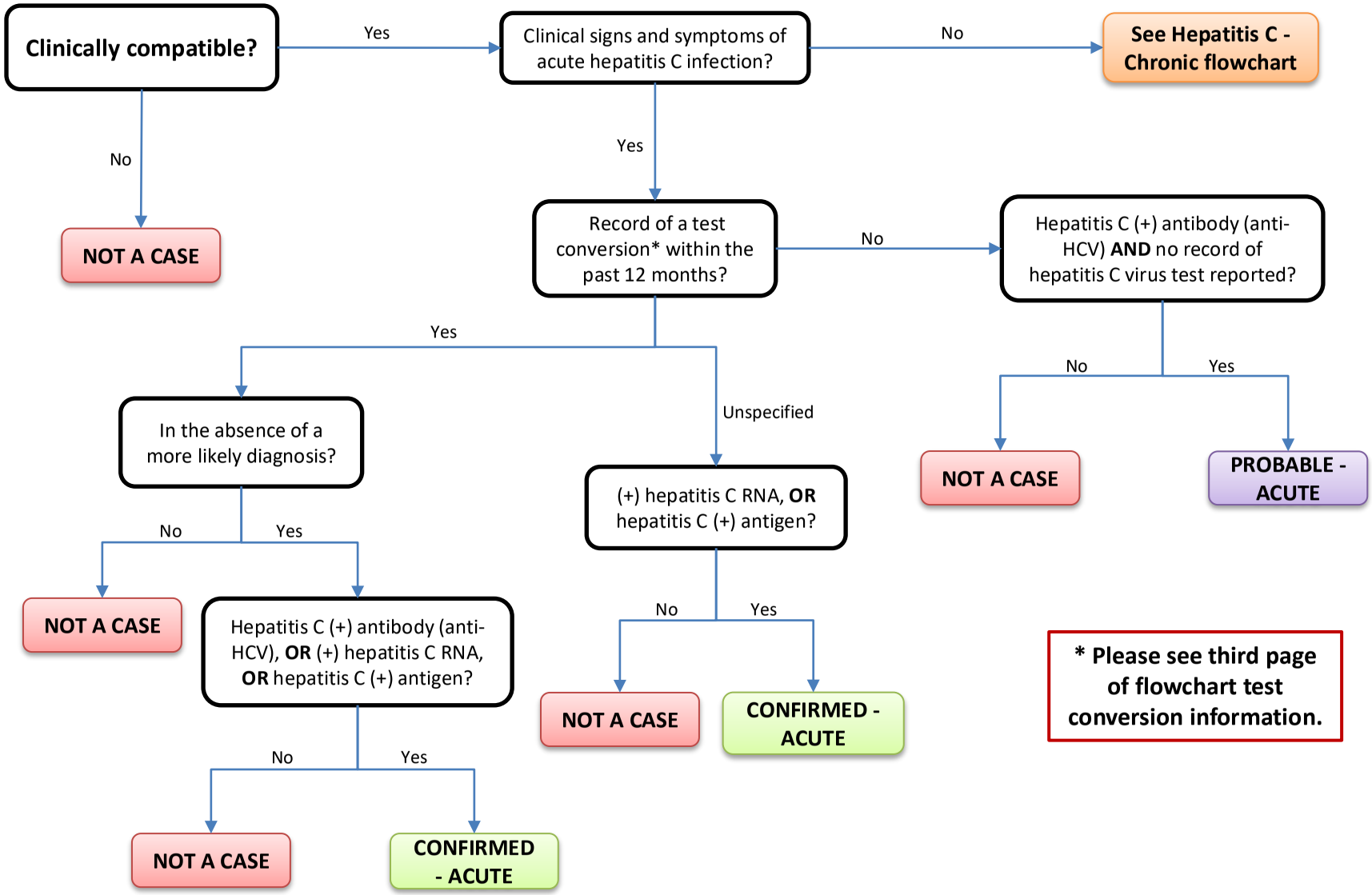
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

PUBLIC HEALTH REFERENCE SHEET
Hepatitis C

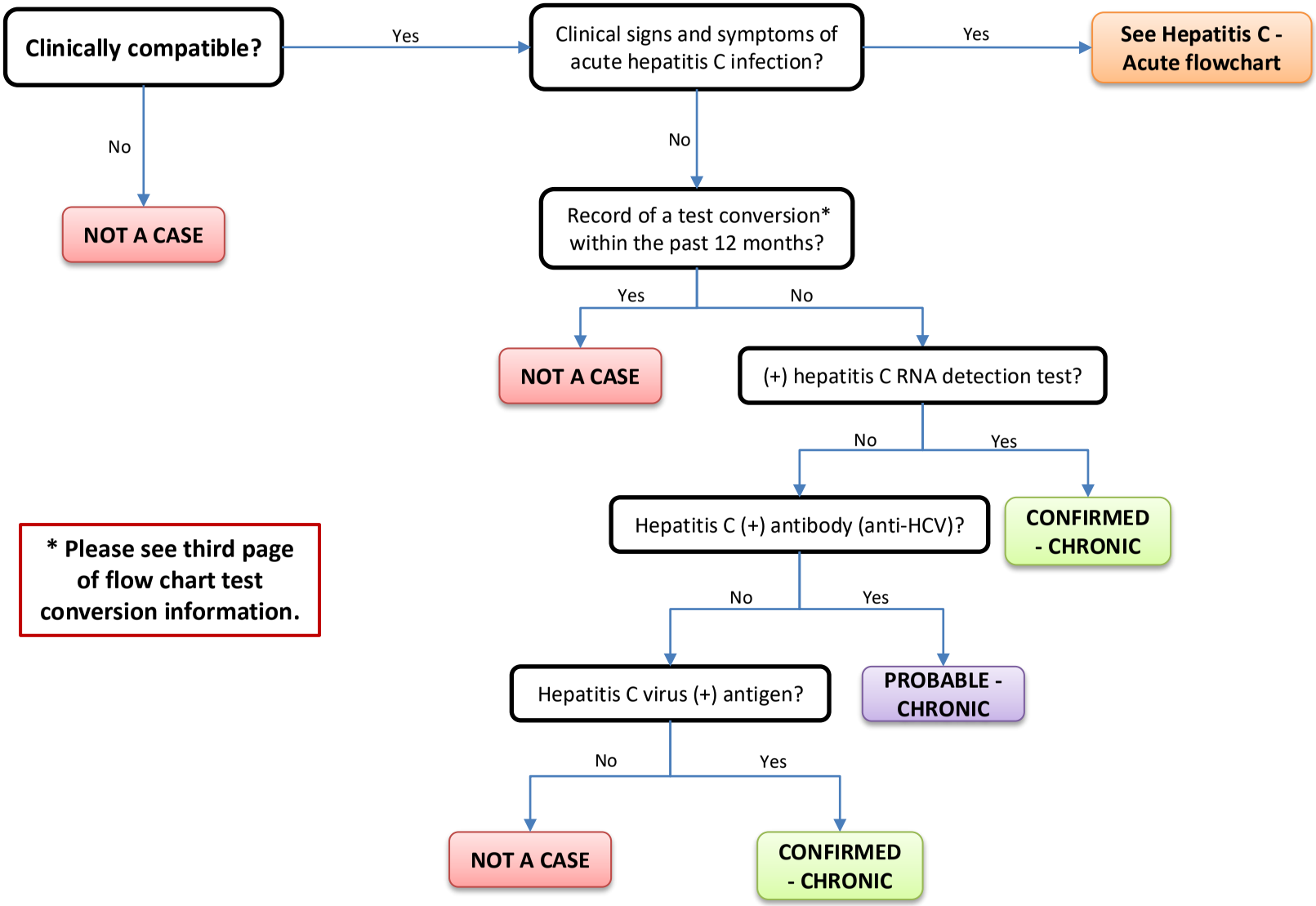
"Viral Hepatitis – Hepatitis C," Centers for Disease Control and Prevention (CDC), last reviewed April 11, 2023.
https://www.cdc.gov/hepatitis/hcv/index.htm

Last Updated October 1, 2023

Hepatitis C, Acute



Hepatitis C, Chronic



Hepatitis C

Clinical Description, Critical Reporting Elements, and Comments

Clinical Description:
In the absence of a more likely diagnosis (which may include evidence of acute liver disease due to other causes or advanced liver disease due to preexisting chronic hepatitis C virus infection or other causes, such as alcohol exposure, other viral hepatitis, hemochromatosis etc.) AND one or more of the following:

- Jaundice, OR
- Elevated serum alanine aminotransferase (ALT) levels > 200 IU/L, OR
- Peak elevated total bilirubin levels ≥ 3 mg/dL

NOTE: all hepatitis C virus cases in each case classification category should be > 36 months of age, unless known to have been exposed non-perinatally.

Critical Reporting Elements and Comments:

- Specify the clinical form of the disease if known.

NOTE: An acute case of hepatitis C should be reported as a chronic case of hepatitis C if a positive NAAT for HCV RNA or a positive HCV antigen is reported 1 year or longer after acute case onset.

A confirmed acute case may not be reported as a probable chronic case (i.e., HCV antibody positive, but with an unknown HCV RNA NAAT or antigen status).

A chronic hepatitis C case that has already been reported in the past should not be reported again.

***Test conversion** refers to a documented lab result of—

1) hepatitis C negative antibody,
2) hepatitis C negative antigen, or
3) hepatitis C nucleic acid not detected, followed within 12 months by a positive result of any of these tests.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Hepatitis A
Hepatitis B
Hepatitis C

	Confirmed	Probable	Not a Case
Hepatitis A	◯		◯
Hepatitis B	◯	◯	◯
Hepatitis C	◯	◯	◯

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N
Symptomatic	☐	☐
Fever	☐	☐
Headache	☐	☐
Malaise	☐	☐
Anorexia	☐	☐
Nausea	☐	☐
Vomiting	☐	☐
Diarrhea	☐	☐
Abdominal pain	☐	☐
Jaundice	☐	☐
Elevated ALT	☐	☐

Onset date: ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Max Temp: _____°F/°C (☐ unk)

Specify the type of hepatitis:

☐ Acute

☐ Chronic

Date of diagnosis: ____/_____/_____
(If chronic)

Does case work in, live in, or attend a high transmission settin such as food handling, day care, school, group living, etc:

Y ☐ N ☐ If yes, where: _____

_____

_____

If case is asymptomatic, why was case tested?

_____

_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)
Is the case vaccinated?	☐	☐	**1st:** ____/_____/_____ **2nd:** ____/_____/_____ **3rd:**____/_____/_____

If not ever vaccinated, why?

☐ Religious Exemption ☐ Medical Contraindication ☐ Philosophical Objection

☐ Lab Evidence of Previous Disease ☐ MD Diagnosis of Previous Disease

☐ Under Age for Vaccination ☐ Parental Refusal ☐ Other: _____

☐ Unknown

LABORATORY RESULTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ **Antibody**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Antigen**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **PCR (DNA)**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Culture**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Screen**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Other** *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**

COMMENTS

(+) Hep A IgM without symptoms is NOT REPORTABLE

HBsAg = Hepatitis B surface antigen
HBc-IgM = Hepatitis B core antigen
HBeAg = Hepatitis B e antigen
PCR = Hepatitis nucleic acid (DNA or RNA)
anti-HCV = Hepatitis C antibody

TRAVEL HISTORY

In the 5 weeks before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Include any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Influenza-Associated Hospitalization

Name	COMMON NAME: Seasonal flu INCLUDES: People younger than 65 years of age who are admitted to the hospital because of influenza EXCLUDES: Non-hospitalized influenza cases and *Haemophilus influenza*
Reservoir & Transmission	Influenza A – humans and some animals (wild birds, poultry, pigs, horses, mink, and ferrets) Influenza B – humans, seals Routes of influenza virus transmission include inhalation of large droplets and close contact.
Incubation Period	Average 2 days (range 1–4 days)
Common Symptoms	Fever, chills, cough, sore throat, runny or stuffy nose, muscle or body aches, headache, and fatigue
Gold Standard Diagnostic Test	Rapid detection of influenza viruses is the reverse transcription polymerase chain reaction (RT-PCR) assay for the detection of virus-specific ribonucleic acid (RNA) sequences from throat, nasal, and nasopharyngeal secretions; tracheal aspirates; or bronchoalveolar lavage fluid. Culture
Risk Groups	All age groups are at risk during yearly seasonal influenza epidemics, but children younger than 2 years and adults older than 64 are at risk for complications.
Geographic Significance	Worldwide

What is influenza and influenza associated hospitalization?
Influenza, commonly known as seasonal flu, is an infectious viral illness caused by the influenza virus. Influenza is a single-stranded, helically shaped, RNA virus of the orthomyxovirus family. Three types of influenza virus are known to affect humans: A, B, and C. Influenza B more commonly affects children. Influenza C is rarely reported as a cause of human illness. As influenza C has not been associated with epidemic disease, this document will only address types A and B. Type A influenza has subtypes determined by the surface antigens hemagglutinin (HA) and neuraminidase (NA). There are 18 different H subtypes and 11 different N subtypes. Eight H subtypes (H1, H2, H3, H5, H6, H7, H9, H10) and six N subtypes (N1, N2, N6, N7, N8, and N9) have been detected in humans. Type B influenza is classified into two lineages: B/Yamagata and B/Victoria. Infection with influenza viruses can be asymptomatic or result in disease that ranges from mild to severe.

For purposes of Department of Defense (DoD) medical surveillance data collection, the guidelines in the Armed Forces Reportable Medical Events 2022 specific to reporting influenza associated hospitalization are as follows:

- Reportable cases include people younger than 65 years of age who are admitted to the hospital because of influenza.
- Reportable cases exclude all non-hospitalized influenza cases and *Haemophilus influenza.*
- A confirmed case of *Haemophilus influenza* is a case that meets the clinical description of acute viral disease of the respiratory tract characterized by fever, chills, cough, sore throat, runny or stuffy nose, muscle or body aches, headache, fatigue, and with ALL of the following:
    - Younger than 65 years of age, and

  - Any positive influenza laboratory test (example: culture, DFA, IFA, rapid, PCR), AND
  - Hospital admission date was ≤ 14 days after a positive influenza test, or
  - Hospital admission date was ≤ 3 days before a positive influenza test.
- Hospitalization is defined as an admission to an inpatient ward of a hospital, or a medical transfer or evacuation to a facility with a higher level of care. Patients admitted for observation and discharged the same day are considered hospitalized for this case definition. An overnight stay is not required. Emergency room or outpatient clinic visits that do not result in hospital admission are not considered hospitalizations.

What is the occurrence of influenza and influenza-associated hospitalizations?

- The first documented pandemic, or worldwide epidemic, that clearly fits the description of influenza was in 1580. The pandemic of "Spanish" influenza in 1918–1919 caused an estimated 21 million deaths worldwide. Influenza A and B viruses were first isolated in the 1930s and inactivated vaccines were first developed and used in the late 1930s and 1940s.
- In the Northern Hemisphere, influenza season can begin as early as October and last as late as April or May, while in the Southern Hemisphere, the season typically occurs during April–September. In the United States, flu season usually occurs in the fall and winter. While influenza viruses spread year-round, most flu activity peaks between December and February. Per CDC, 9.3 to 45 million people experience symptomatic illness annually, with an annual average of 37,463 influenza-associated deaths since 2010.
- The overall health impact (e.g., infections, hospitalizations, and deaths) of flu varies from season-to-season. CDC has estimated the burden of flu since 2010 using a mathematical model that is based on data collected through the Influenza Hospitalization Surveillance Network (FluSurv-NET), https://www.cdc.gov/flu/weekly/influenza-hospitalization-surveillance.htm, which is a network that covers approximately 9% of the U.S. population.
- CDC collects, compiles, and analyzes information on influenza activity year-round in the United States and produces FluView, a weekly surveillance report, and FluView Interactive, which allows for more in-depth exploration of influenza surveillance data. The Weekly U.S. Influenza Summary Update is updated weekly and year-round at https://www.cdc.gov/flu/fluvaxview/index.htm.

How is influenza transmitted?

- Influenza viruses spread from person-to-person, primarily through respiratory droplets (e.g., when an infected person coughs or sneezes near a susceptible person). Transmission generally occurs via large particle droplets that require close proximity (≤6 feet) between the source and the recipient, but airborne transmission via small particle aerosols can occur within confined air spaces. Indirect transmission occurs when a person touches their face after touching a virus-contaminated surface (fomite).
- Most adults ill with influenza shed the virus in the upper respiratory tract and are infectious from the day before symptom onset to approximately 5–7 days after symptom onset. Infectiousness is greatest within 3–4 days of illness onset and is correlated with fever. Children, immunocompromised people, and severely ill people might shed influenza virus for ≥10 days after symptom onset. Those who are asymptomatic can still shed the virus and infect others. Seasonal influenza viruses are rarely detected in blood or stool.

Who is at risk for influenza?

- Adults ≥65 years old
- Children <2 years old; although all children <5 years are considered at increased risk for serious influenza complications, the highest risk is for those <2

- Pregnant people and people ≤2 weeks post-partum
- People with certain medical conditions, including asthma, blood disorders, body mass index ≥40, chronic lung disease, endocrine disorders, heart disease, immunocompromise due to disease or medication, kidney disease, liver disorders, metabolic disorders, neurologic and neurodevelopment conditions, and history of stroke
- People who live in nursing homes and other long-term care facilities
- People from certain racial and ethnic minority groups are at increased risk for hospitalization with flu, including non-Hispanic Black persons, Hispanic or Latino persons, and American Indian or Alaska Native persons

What are the signs and symptoms of influenza?

- The incubation period for influenza is commonly 2 days but ranges from 1 to 4 days. Due to its short incubation period, influenza outbreaks may escalate very quickly, especially in highly susceptible populations. Influenza illness is characterized by the abrupt start of fever, sore throat, headache, myalgia, non-productive cough, and extreme fatigue, with major symptoms lasting an average of 2 to 3 days. Fever usually ranges between 100° and 104°F. Illness typically improves within a week, but cough and malaise may persist for 2 or more weeks.

What are the potential complications of influenza?

The most common complication of influenza is pneumonia but may include exacerbation of underlying chronic pulmonary and cardiopulmonary diseases, such as chronic obstructive pulmonary disease, asthma, and congestive heart failure and rarely, death.

How is influenza diagnosed?

- Influenza can be difficult to distinguish from respiratory illnesses caused by other pathogens based on signs and symptoms alone. The positive predictive value of clinical signs and symptoms for influenza-like illness (fever with either cough or sore throat) for laboratory-confirmed influenza virus infection is 30%–88%, depending on host factors (e.g., age, community influenza activity levels).
- Consider diagnostic testing for hospitalized patients with suspected influenza; patients for whom a diagnosis of influenza will inform clinical care decisions, including patients who do not improve on antiviral therapy and those with medical conditions that place them at increased risk for complications; and patients for whom results of influenza testing would affect infection control or management of close contacts, including other patients, such as in institutional outbreaks or other settings (e.g., cruise ships, tour groups).
- For clinicians seeking laboratory confirmation of influenza, the Infectious Diseases Society of America recommends the use of rapid molecular assays in outpatients and nucleic acid amplification tests (e.g., reverse transcription PCR [RT-PCR]), in hospitalized patients.
- Serology testing is no longer used for clinical diagnosis of influenza but is still used for research studies.
- Further details about diagnosis of influenza can be found on CDC's website, "Information for Clinicians on Influenza Virus Testing" at https://www.cdc.gov/flu/professionals/diagnosis/index.htm

How is influenza treated?

- Early antiviral treatment can shorten the duration of fever and other symptoms and reduce the risk for complications from influenza. Antiviral treatment is recommended as early as possible for any patient with confirmed or suspected influenza who is hospitalized; has

severe, complicated, or progressive illness; or who is at increased risk for influenza-associated complications. Treatment is most effective if it can be initiated ≤48 hours of symptom onset. Click on the link below for current annual influenza season for clinical practice regarding the use of influenza antiviral medications https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm.

- Influenza symptoms (e.g., pain and fever) can be controlled with medications such as aspirin, ibuprofen, or acetaminophen. Aspirin and salicylate-containing products should not be used for children or adolescents because it may increase the risk for developing Reye syndrome.

How can influenza be prevented?

- An annual seasonal flu vaccine is the best way to help reduce the risk of getting flu and any of its potentially serious complications. Vaccine composition is reviewed and updated each year since the influenza virus is constantly changing. Considerations include which influenza viruses are causing illness, the extent to which viruses are spreading, and how well the previous season's vaccine protects against those viruses. The annul recommendation can be found under the CDC website for Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP) https://www.cdc.gov/flu/professionals/acip/summary/summary-recommendations.htm.
- Educate healthcare personnel and the public in hand hygiene and other everyday preventive actions to stop the spread of respiratory viruses.

What are some Public Health considerations?

- When reporting varicella infections in the Disease Reporting System internet (DRSi)—
  - Specify the virus type (A or B) and subtype (example: H3N2, H1N1), if available.
  - Note the patient's influenza immunization history.
  - Report co-infections with other organisms, like SARS CoV-2, separately as individual RMEs.
- For the Army, Navy, and Air Force medical services to provide a medically ready force and ready medical force to Combatant Commands in both peacetime and wartime, the Defense Health Agency (DHA) has created a comprehensive annual Seasonal Influenza Resource Center for its military and Civilian healthcare personnel https://www.health.mil/Military-Health-Topics/Health-Readiness/Immunization-Healthcare/Vaccine-Preventable-Diseases/Influenza-Seasonal-Northern-Hemisphere/Influenza-Resource-Center.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

"Epidemiology and Prevention of Vaccine-Preventable Diseases - Influenza," Centers for Disease Control and Prevention (CDC), last reviewed August 18, 2021. https://www.cdc.gov/vaccines/pubs/pinkbook/flu.html#Clinical

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

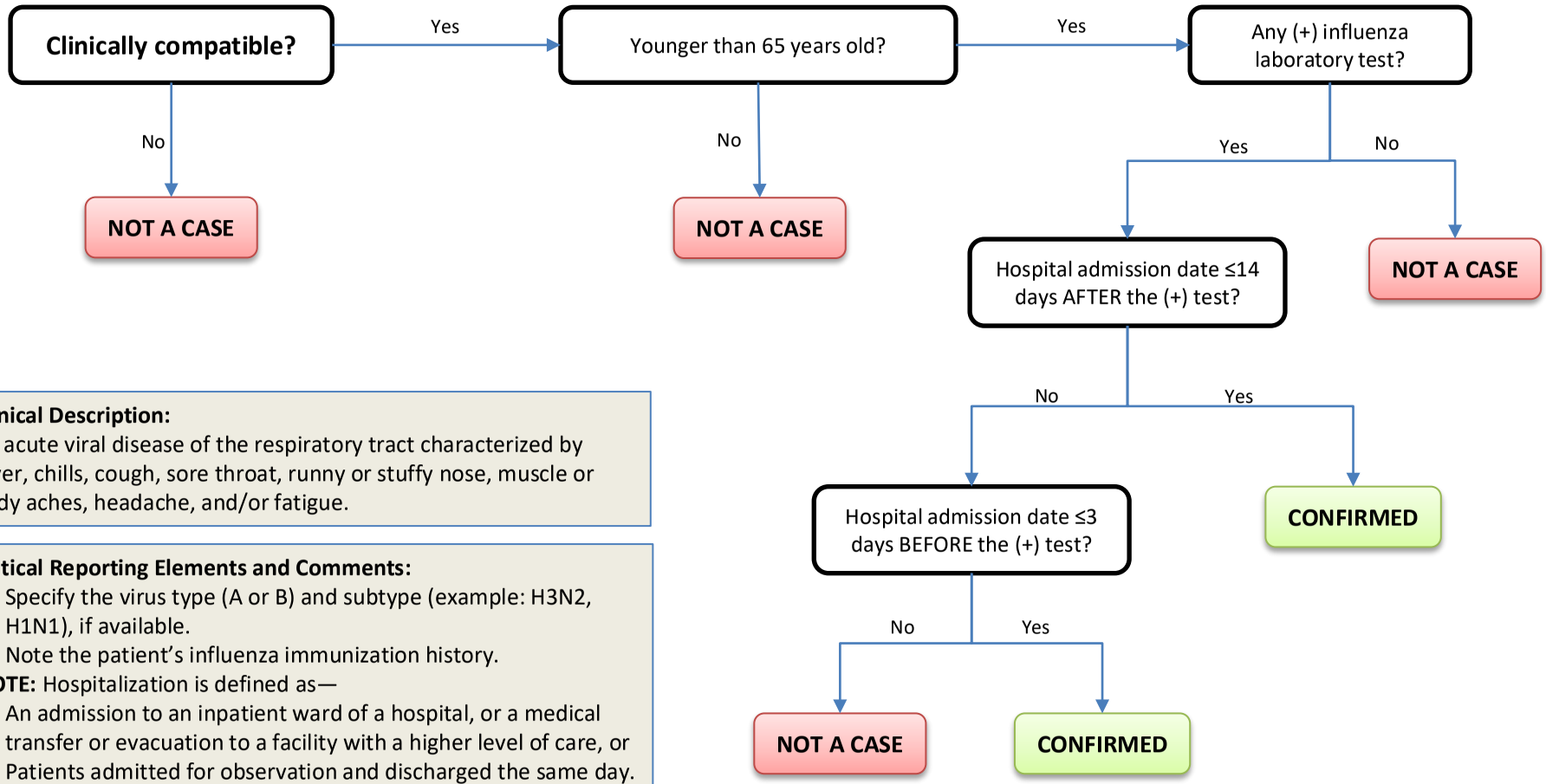
"Influenza (Flu)," Centers for Disease Control and Prevention, last reviewed November 21, 2023. https://www.cdc.gov/flu/index.htm

Influenza-Associated Hospitalization

COMMON NAME: Seasonal flu

INCLUDES: People younger than 65 years of age who are admitted to the hospital because of influenza.

EXCLUDES: Non-hospitalized influenza cases and *Haemophilus* influenza (see flowchart for *H. influenzae*).



Clinical Description:
An acute viral disease of the respiratory tract characterized by fever, chills, cough, sore throat, runny or stuffy nose, muscle or body aches, headache, and/or fatigue.

Critical Reporting Elements and Comments:

- Specify the virus type (A or B) and subtype (example: H3N2, H1N1), if available.
- Note the patient's influenza immunization history.

NOTE: Hospitalization is defined as—

- An admission to an inpatient ward of a hospital, or a medical transfer or evacuation to a facility with a higher level of care, or
- Patients admitted for observation and discharged the same day. An overnight stay is not required. ER or outpatient clinic visits that do not result in hospital admission are ***not*** considered hospitalizations.

Co-infections with other organisms, such as SARS-CoV-2, should be reported separately as individual RMEs.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Influenza-Associated Hospitalization

Confirmed ○ Not a Case ○

Army Disease Reporting System internet (ADRSi) link: https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized* Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

(*If this case was not hospitalized AND if this case is OLDER THAN 65 years old, the case is NOT reportable in DRSi)

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Specify the virus type: Unk ☐ Type A ☐ Type B ☐ **Specify Virus subtype (e.g., H1N1, H3N2):**_____

Vaccinated Y ☐ N ☐ **Date of vaccination:** ____/_____/_____ **Type:** ☐ Shot (TIV) ☐ Nasal Mist (LAIV)

LABORATORY RESULTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Rapid Test	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

COMMENTS

L-0

PUBLIC HEALTH REFERENCE SHEET
Lead Poisoning (Pediatric)

Name	Lead Includes: Children 6 years of age and under
Reservoir & Transmission	Homes built before 1978 (when lead-based paints were banned) probably contain lead-based paint. When the paint peels and cracks, it makes lead dust. Children can be exposed to lead when they swallow or breathe in lead dust. Certain water pipes may contain lead. Lead can be found in some products such as toys and jewelry. Lead is sometimes in candies or traditional home remedies. Certain jobs and hobbies involve working with lead-based products, such as stain glass work, and may cause parents to bring lead into the home. Children who live near airports may be exposed to lead in air and soil from aviation gas used in piston engine aircrafts.
Incubation Period	n/a
Common Symptoms	At low levels of exposure, children may be asymptomatic. High levels of lead exposure can produce a spectrum of illnesses across multiple body systems. Anemia, hypertension, renal impairment, immunotoxicity, and toxicity to the reproductive organs are possible; in severe cases, coma, convulsions, and death may occur. At low levels, cognitive ability may be permanently reduced. This may manifest in decreased intelligence quotient (IQ), decreased performance at school, and/or behavioral changes such as reduced attention span and increased antisocial behavior.
Gold Standard Diagnostic Test	A venous blood draw to test for blood lead reference value (BLRV) of 3.5 micrograms per deciliter (µg/dL)
Risk Groups	Children from low-income households and those who live in housing built before 1978, children less than 6 years old, immigrant and refugee children from less developed countries, adults working in industries or have hobbies that expose them to lead, pregnant women
Geographic Significance	Present worldwide, though the highest burden is in low- and middle-income countries

What is lead poisoning?
Lead poisoning or lead toxicity refers to exposures to lead that result in illness and require immediate medical attention. A confirmed case of lead poisoning is defined as being confirmed in children 6 years of age and under, with a venous blood lead reference value (BLRV) greater than or equal to 3.5 micrograms per deciliter (µg/dL).

How is lead poisoning transmitted?
Lead can be found throughout a child's environment:

- Homes built before 1978 (when lead-based paints were banned) probably contain lead-based paint. When the paint peels and cracks, it makes lead dust. Lead dust may be released during renovation or repainting projects in these older houses. Children can be exposed to lead when they swallow or breathe in lead dust.
- Certain water pipes may contain lead, usually within lead solder or lead-containing fixtures.
- Lead can be found in some products such as toys and jewelry.
- Lead is sometimes in candies or traditional home remedies.

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- Certain jobs and hobbies involve working with lead-based products, such as stain glass work; car battery industry; reloading firearm ammunition; and firing range or “shoot-house” exposures, which may cause parents or guardians to bring lead into the home.
- Children who live near airports may be exposed to lead in air and soil from aviation gas used in piston engine aircrafts.

The health effects of exposure are more harmful to children less than 6 years of age because their bodies and central nervous system are still developing and growing rapidly. Young children also tend to put their hands or other objects, which may be contaminated with lead dust, into their mouths; therefore, they are more likely to be exposed to lead than older children.

Who is at risk for lead poisoning?

All children who are at risk for lead exposure should be tested for lead poisoning. Some children are more likely to be exposed to lead than others:

- Children from low-income households and those who live in housing built before 1978 are at the greatest risk of lead exposure. Houses built before 1978 (before the use of lead in paint was banned) and houses in low-income areas (many of these homes were built before 1978) are more likely to contain lead-based paint and have pipes, faucets, and plumbing fixtures containing lead. Also, some African American persons are at a higher risk of lead exposure due to poor housing stock.
- Children less than 6 years old are at a higher risk of lead exposure. This is because their bodies are rapidly developing and more susceptible to taking in lead, if exposed. Young children also tend to put their hands or other objects into their mouths. This is why the most common source of lead exposure in young children is lead dust that they swallow after placing their lead-contaminated hands or other objects in their mouths.
- Immigrant and refugee children from less developed countries are at higher risk of being exposed to lead due to less strict rules protecting children from lead exposure, in their country of origin. Because of this, children who are immigrants, refugees, or recently adopted from less developed countries are also at risk for lead exposure.
- Pregnant women should know the risk of lead exposure because lead can pass to their fetus during pregnancy. Breastfeeding can also be a source of lead exposure to babies and children. Adults who are or have been exposed to lead can also pass lead to their babies when breastfeeding. Formula prepared using water contaminated with lead from leaded pipes and plumbing parts can also result in an infant being exposed to lead.
- Some adults, including U.S. Service members, work in industries or military occupations with lead materials or have hobbies that put them at risk for occupational and/or recreational exposures to lead. These adults may bring lead home with them and expose their families to lead without knowing. For example, a parent who works in battery manufacturing or renovation of older homes could bring home lead dust on their clothes, shoes, skin, hair, and hands. This dust can be tracked onto carpets, floors, furniture, and other surfaces that a child may touch. Adults who are exposed to lead in their workplace or from hobbies should take steps to keep them and their families safe from lead.

What are the signs and symptoms of lead poisoning?

Lead exposure in children is often difficult to see. Most children have no obvious immediate symptoms. Lead quickly enters the blood and can harm a child’s health. Once a child swallows lead, their blood lead level (BLL) rises. Once a child’s exposure to lead stops, the amount of lead in the blood decreases gradually. The child’s body releases some of the lead through urine, sweat, and feces. Lead is also stored in bones. It can take decades for lead stored in the bones to decrease. The presence of other underlying health conditions is possible.

PUBLIC HEALTH REFERENCE SHEET
Lead Poisoning (Pediatric)

Exposure to lead can seriously harm a child's health and cause well-documented adverse effects such as:

- Damage to the brain and nervous system
- Slowed growth and development
- Learning and behavior problems
- Hearing and speech problems

What are possible complications from lead poisoning?

- Lower IQ
- Decreased ability to pay attention
- Underperformance in school
- Evidence that childhood exposure to lead can cause long-term harm

How is lead poisoning diagnosed?

A child's BLL is measured in micrograms of lead per deciliter of blood (µg/dL). Healthcare providers may use a capillary or venous sample for initial BLL screening. If the capillary results are equal to or greater than CDC's Blood Lead Reference Value (BLRV), providers should collect a venous sample. If the initial screening test used a venous sample, the patient does not need another venous draw.

How is lead poisoning treated?

There is no cure for lead poisoning. That is why preventing exposure to lead, especially among children, is important. Finding and removing sources of lead from the child's environment is needed to prevent further exposure. Chelation therapy might be recommended for children with a BLL of 45 µg/dL or greater.

While there is no cure, parents or guardians can help reduce the harmful effects of lead exposure by talking to their primary care provider and getting connected to learning, nutritional, and behavioral programs as soon as possible. Providers should use the following information if the patient's BLLs are between 3.5 and 19 (µg/dL):

- Provide education about common sources of lead exposure and information on how to further prevent exposure.
- During well-baby and well-child visits, check development to make sure age-appropriate milestones are being met.
- During well-baby and well-child visits, discuss diet and nutrition with a focus on iron and calcium intake.
- Conduct follow-up blood lead testing at recommended intervals based on the child's age.
- Centers for Medicare and Medicaid Services requires all children enrolled in Medicaid to get tested for lead at ages 12 and 24 months, or age 24–72 months if they have never been screened.
- For children not enrolled in Medicaid, CDC recommends focusing screening efforts on high-risk neighborhoods and children. Identify risk for lead poisoning based on the age of housing and social and demographic risk factors.
- Public health personnel and healthcare workers should use local data to develop screening plans that are responsive to local conditions. In the absence of such plans, CDC recommends universal blood lead testing.
- Report the test result to your state or local health department.
- Obtain an environmental exposure history to identify potential sources of lead.

Last Updated October 1, 2023

- Arrange for an environmental investigation of the home to identify potential sources of lead, as required.
- During an environmental investigation, professionals check the child's environment for possible causes of lead exposure and recommend ways to prevent further lead exposure.
- BLLs < 5 µg/dL may not trigger a Department of Housing and Urban Development (HUD) environmental investigation when the housing is covered by the HUD's Lead Safe Housing Rule. Additionally, environmental investigations for BLLs that are 3.5–19 µg/dL vary based on jurisdictional requirements and available resources.
- Ensure the child does not have iron deficiency using testing and treatment. Follow testing and treatment guidelines from the American Academy of Pediatrics (AAP), e.g., Bright Futures materials and tools (https://www.aap.org/en/practice-management/bright-futures/bright-futures-materials-and-tools/).
- Discuss the child's diet and nutrition with a focus on calcium and iron intake. Refer caregivers to supportive services, as needed (e.g., Special Supplemental Nutrition Program for Women, Infants, and Children).
- Check the child's development to ensure appropriate milestones are being met per AAP guidelines. Refer caregivers to supportive services, as needed (e.g., developmental specialists, Early Intervention Program).
- Provide follow-up BLL testing at recommended intervals.
- If indicated, consider BLL testing for older children and adults in the same household.

How can lead poisoning be prevented?

The most important step that parents, guardians, caregivers, healthcare providers, and public health professionals can take is to prevent lead exposure before it occurs. CDC supports primary and secondary lead exposure prevention. Primary prevention is the removal of lead hazards from the environment before a child is lead exposed. It is the most effective way to ensure that children do not experience harmful long-term effects of lead exposure. Secondary prevention includes blood lead testing and follow-up care and referral. It remains an essential safety net for children who may already be exposed to lead.

Protecting children from exposure to lead is important to lifelong good health. No safe BLL in children has been identified. Even low levels of lead in blood have been shown to affect learning, ability to pay attention, and academic achievement. While the effects of lead exposure may be permanent, if caught early, parents can do the following to prevent further exposure and reduce damage to their child's health:

- Get a blood test. Parents and guardians can talk to their child's healthcare provider about getting a blood lead test. A blood test is the best way to determine if a child has been exposed to lead. Based on blood lead test results, healthcare providers can recommend follow-up actions and care.
- Get the child's home checked. Have the home checked by a licensed lead inspector if they live in a home or building built before 1978. Those who rent should ask their landlord to have their home checked. Visit the Environmental Protection Agency's (EPA) web page to find a certified inspector or risk assessor.
- Hire trained contractors. When planning renovations, hire contractors who are trained in lead-safe practices. Visit EPA's web page to find a certified contractor.
- Regularly wet-mop floors, windows, and windowsills. Household dust can be a major source of lead in homes and buildings built before 1978.
- Leave shoes by the door or outside. This is especially important when someone works with lead or has a hobby that involves lead, such as construction or shooting firearms.

- Shower and change clothes and shoes after working around lead-based products. This can keep lead dust from being tracked through the home and prevent families from being exposed.
- Protect soil. Cover bare soil with grass, mulch, or wood chips and prevent children from playing in bare soil that may be contaminated with lead. See the Lead in soil web page for more information.
- Avoid certain children's products and toys. Some toys, especially imported toys, antique toys, and toy jewelry may contain lead. Visit the Consumer Product Safety Commission's (CPSC) web page https://www.cpsc.gov/Recalls for photos and descriptions of currently recalled toys.

What are some public health considerations?

- Report cases once per person per calendar year. Any elevated lead test result that is not from venous blood (i.e., capillary blood [which includes finger and heel sticks and urine]) does not meet this case definition and should not be reported.
- Document the blood lead test results (µg/dL).
- Document the source of exposure, if known.
- Document whether the child lives in on- or off-post/base housing.
- Document whether the child attends daycare or school on a military installation.
- Document whether the child has recently had a significant extended stay at another residence (e.g., grandparents, other relatives, friends, etc.), summer camp, etc.
- Healthcare providers should test asymptomatic children for elevated blood lead concentrations according to Federal, local, and State requirements. Immigrant, refugee, and internationally adopted children also should be tested for blood lead concentrations when they arrive in the United States because of their increased risk. Blood lead tests do not need to be duplicated, but the pediatrician or other primary care provider should attempt to verify that screening was performed elsewhere and determine the result before testing is deferred during the office visit.

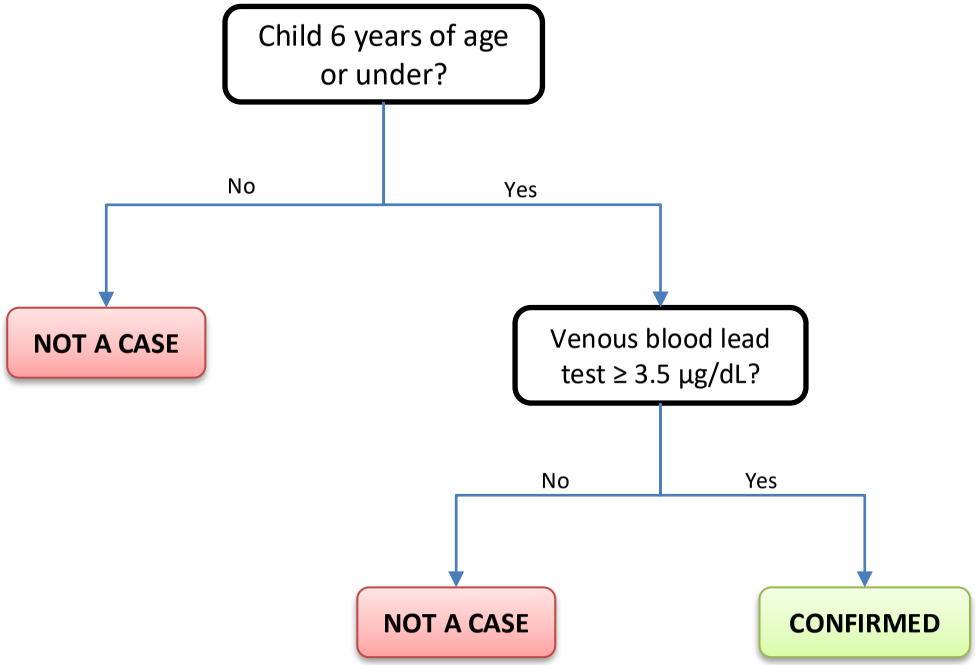
References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

"Childhood Lead Poisoning Prevention," Centers for Disease Control and Prevention (CDC), last reviewed September 20, 2023. https://www.cdc.gov/nceh/lead/default.htm

Lead Poisoning (Pediatric)

INCLUDES: Children 6 years of age and under



Clinical Description:
At low levels of exposure, children may be asymptomatic. High levels of lead exposure can produce a spectrum of illnesses across multiple body systems. Anemia, hypertension, renal impairment, immunotoxicity, and toxicity to the reproductive organs are possible; in severe cases, coma, convulsions, and death may occur. At low levels, cognitive ability may be permanently reduced. This may manifest in decreased intelligence quotient (IQ), decreased performance at school, and/or behavioral changes such as reduced attention span and increased antisocial behavior. Lead poisoning in children can present in many ways depending on a child's environment, habits, nutritional status, and level of exposure.

Critical Reporting Elements and Comments:
- Document the blood lead test results (µg/dL).
- Document the source of exposure, if known.
- Document whether the child lives in on- or off-post/base housing.
- Document whether the child attends daycare or school on a military installation.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

LEAD POISONING

Confirmed ○ Probable ○ Suspect ○

POC: _____

(_____) - _____ - _____

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.
Outbreak investigations must be reported immediately to DRSi through the outbreak module at https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____ **Location:** _____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Abdominal pain	☐	☐	**Venous Blood Lead Level (positive if greater or equal to 3.5 uq/dl)?** _____
Constipation	☐	☐	*Note: Pediatric lead poisoning is only reportable in children ages 6 years and under.*
Nausea	☐	☐	
Vomiting	☐	☐	
Fatigue	☐	☐	
Loss of appetite	☐	☐	
Irritability	☐	☐	
Headache	☐	☐	
Insomnia	☐	☐	
Memory loss	☐	☐	
Learning disability	☐	☐	
Neurological changes	☐	☐	
Slow growth	☐	☐	

Source or cause of exposure

	Y	N
Is the likely source or cause of exposure known?	☐	☐

If yes, describe the source or cause:_____

_____

_____

_____

_____

Housing, childcare and/or school location

Does the child live on or off a military installation?

☐ **On a military installation**

☐ **Off a military installation**

☐ **Unknown**

Does the child attend daycare or school on a military installation?

☐ **On a military installation**

☐ **Off a military installation**

PUBLIC HEALTH REFERENCE SHEET
Legionellosis

Name	*Legionella* species
Reservoir & Transmission	Man-made water supplies that aerosolize water (e.g., showers, air conditioning cooling towers, whirlpool spas, and decorative fountains) Airborne transmission
Incubation Period	Legionnaires' disease: 2–14 days (often 5–6 days) Pontiac fever: 5–72 hours (often 24–48 hours)
Common Symptoms	Legionnaires' disease: fever, myalgia, cough, and clinical or radiographic pneumonia Pontiac fever: milder illness without pneumonia characterized by dry cough or sore throat, fever, chills, fatigue, headache, myalgia
Gold Standard Diagnostic Test	Antigen testing, culture
Risk Groups	Older age (≥ 50), cigarette smoking, diabetes mellitus, chronic lung disease, renal disease, or immunocompromised groups
Geographic Significance	Worldwide

What is legionellosis?
Bacteria of the genus *Legionella* cause Legionnaires' disease (LD) and Pontiac fever (PF) and more rarely, Extrapulmonary Legionellosis (XPL), collectively referred to as legionellosis.

What is the occurrence of legionellosis?
There are at least 60 different species of *Legionella*, most of which are considered to be pathogenic. However, the majority of disease is caused by *Legionella pneumophila*, particularly serogroup 1. *Legionella* occurs naturally in freshwater environments, but generally does not cause disease. In human-made water systems, *Legionella* can grow and be transmitted to via aerosolization. Outbreaks are commonly associated with buildings or structures that have complex water systems, such as hospitals, long-term care facilities, hotels, resorts, and cruise ships. Outbreaks occur when two or more people are exposed to *Legionella* in the same place and get sick at about the same time. The most likely sources of infection include water used for showering, hot tubs, decorative fountains, and cooling towers (i.e., structures that contain water and a fan as part of centralized air-cooling systems for a building or industrial processes).

How is legionellosis transmitted?
Legionella is transmitted via inhalation of aerosolized water containing the bacteria. Less commonly, *Legionella* can also be transmitted via aspiration of drinking water. A single episode of possible person-to-person transmission of Legionnaires' disease has been reported.

Who is at risk for legionellosis?
- Age ≥50 years
- Smoking (current or historical)
- Chronic lung disease (such as, emphysema or COPD)
- Immune system disorders due to disease or medication
- Systemic malignancy
- Underlying illness, such as diabetes, renal failure, or hepatic failure
- Recent travel with an overnight stay outside of the home
- Recent care at a healthcare facility
- Exposure to hot tubs

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Legionellosis

What are the signs and symptoms of legionellosis?
LD is very similar to other types of pneumonia with clinical symptoms that must include acute onset of lower respiratory illness with fever and/or cough, and may include myalgia, shortness of breath, malaise, chest discomfort, confusion, nausea, diarrhea, or abdominal pain. Headache may also occur. Cough may be nonproductive. Symptoms usually begin 2 to 14 days after being exposed to the bacteria, but it can take longer.

PF is a milder illness without pneumonia, compared to LD. Symptoms may vary but must include acute symptom onset of one or more of the following: fever, chills, myalgia, malaise, fatigue, headaches, nausea, and/or vomiting. Symptoms begin between 5 to 72 hours after being exposed to the bacteria and usually last less than a week.

What are potential complications of legionellosis?
Extrapulmonary Legionellosis (XPL) can cause disease at sites outside of the lungs (e.g., associated with endocarditis, wound infection, joint infection, graft infection).

How is legionellosis diagnosed?
Radiographic chest imaging findings are variable and may show patchy or focal areas of consolidation or bilateral involvement.

LD: Diagnosis is by culture of a lower respiratory secretions (e.g., sputum, bronchoalveolar lavage) on selected media. *Legionella* DNA is detected in respiratory samples by polymerase chain reaction (PCR), *L. pneumophila* antigens in the urine, or measure a four-fold rise in immunofluorescent antibody titer to *L. pneumophila* serogroup 1. Serological assays can be nonspecific and are not recommended in most situations. Best practice is to obtain both sputum for culture and urine for the urinary antigen test (UAT) concurrently. Sputum should be obtained prior to antibiotic administration, but antibiotic treatment should not be delayed. The UAT can detect *Legionella* infections in some cases for days to weeks after treatment.

PF: Diagnosis is by identifying symptoms consistent with the disease in the appropriate epidemiological setting. If disease is due to *L. pneumophila,* urine antigen and serological testing may be useful to confirm the diagnosis, but test sensitivity is low.

XPL: Laboratory evidence from an extrapulmonary site includes culture; nucleic acid (DNA) through PCR, sequencing, or NAAT; antigen from urine; or at least a four-fold increase of antibody titer.

How is legionellosis treated?
LD: Treatment with antibiotics is needed, and most cases can be treated successfully.

PF: PF is a self-limited illness that does not benefit from antibiotic treatment. Patients usually recover within 1 week.

How can legionellosis be prevented?
A vaccine is not available and antibiotic prophylaxis is not effective. Minimizing *Legionella* growth in complex building water systems and devices is key to preventing infection. Timely identification and reporting of legionellosis cases allow public health officials to quickly identify and stop potential clusters and outbreaks by linking new cases to previously reported ones.

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PUBLIC HEALTH REFERENCE SHEET
Legionellosis

What are some public health considerations?
Responding to healthcare-associated cases and outbreaks of Legionnaires' disease depends on several factors that include but are not limited to:

- Type and size of the healthcare facility
- Existing capacity of the facility and health department
- Number of cases
- Water management program performance
- Routine environmental sampling results

Testing for healthcare-associated Legionnaires' disease is especially important if any of the following are identified in a healthcare facility:

- Patients with healthcare-associated LD diagnosed in the past 12 months
- Positive environmental tests for *Legionella*
- Current changes in water quality that may lead to *Legionella* growth (such as, low chlorine levels or nearby construction)

Case report form and instructions are available through the CDC at:
https://www.cdc.gov/legionella/health-depts/surv-reporting/form-instructions.html

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Legionella," Centers for Disease Control and Prevention (CDC), last reviewed March 25, 2021. https://www.cdc.gov/legionella/

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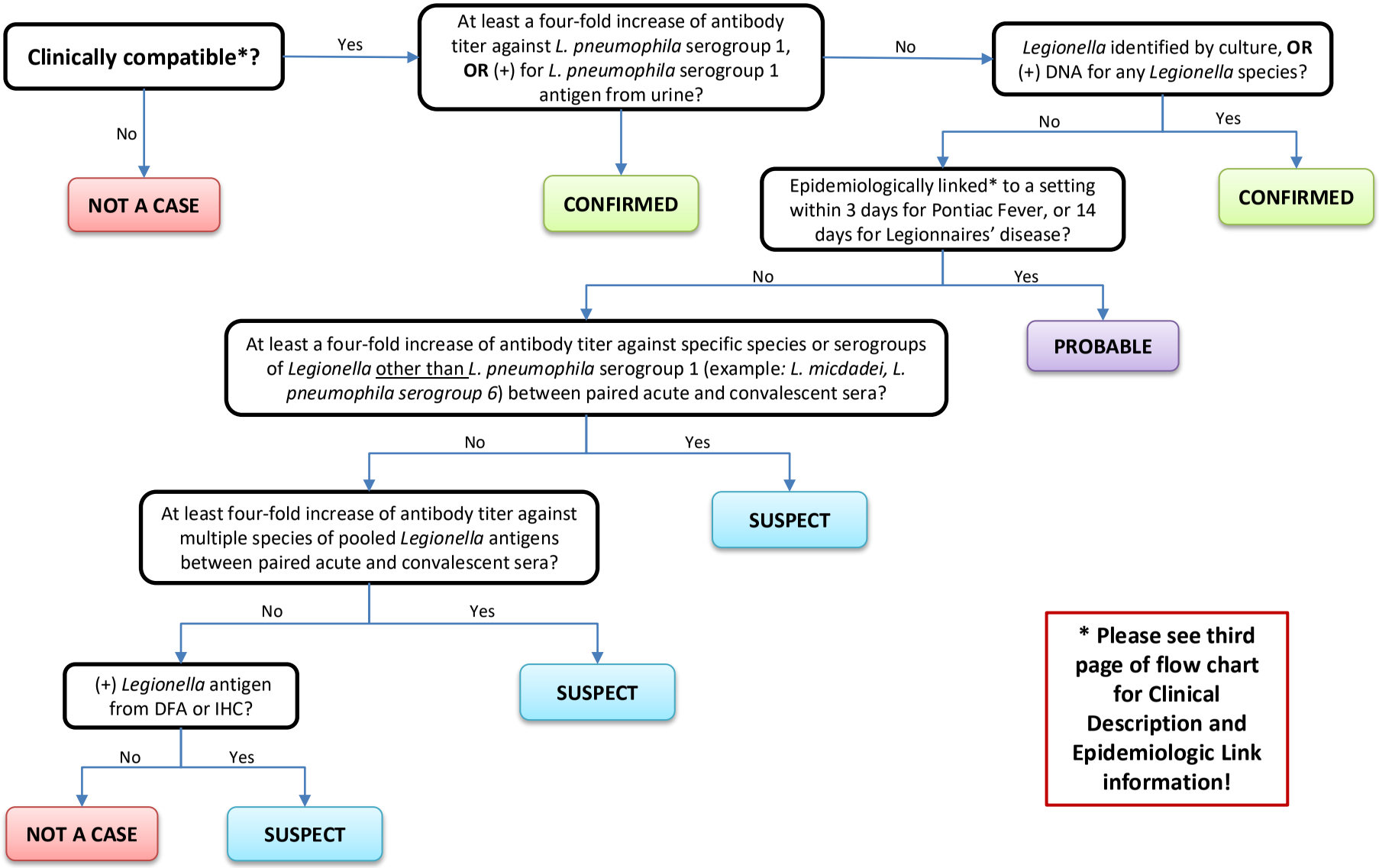
Legionellosis

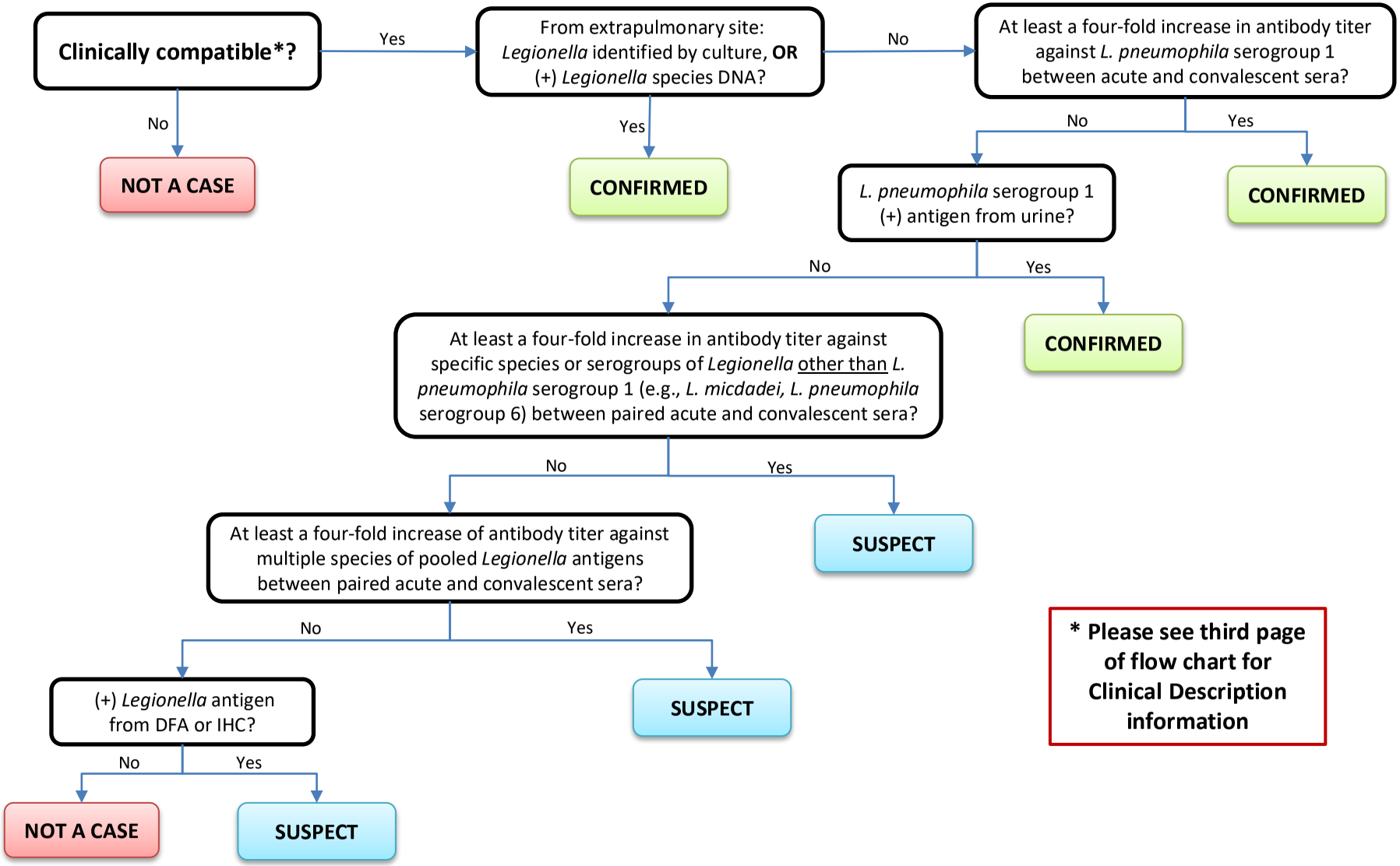
Legionnaire's Disease and Pontiac Fever



*** Please see third page of flow chart for Clinical Description and Epidemiologic Link information!**

Legionellosis

Extrapulmonary Legionnaires' Disease



*** Please see third page of flow chart for Clinical Description information**

Legionellosis

Clinical Descriptions, Critical Reporting Elements, and Epidemiologic Linkage

Clinical Description
Legionellosis is associated with three clinically and epidemiologically distinct illnesses.

Legionnaires' disease (LD): An illness that presents as pneumonia with clinically compatible evidence defined as ONE of the following:
- A clinical or radiographic diagnosis of pneumonia in the medical record, OR
- Clinical symptoms consistent with a diagnosis of pneumonia that must include acute onset of lower respiratory illness with fever and/or cough, and may include myalgia, shortness of breath, malaise, chest discomfort, confusion, nausea, diarrhea, or abdominal pain.

Pontiac fever (PF): A milder illness without pneumonia. Symptoms may vary but must include acute symptom onset of one or more of the following: fever, chills, myalgia, malaise, fatigue, headaches, nausea, and/or vomiting.

Extrapulmonary Legionellosis (XPL): Legionella can cause disease at sites outside the lungs (e.g., associated with endocarditis, wound infection, joint infection, graft infection).

Critical Reporting Elements:
- Specify the clinical form of the disease.
- Document relevant travel and deployment history occurring within the incubation period.
  - The incubation period is 2-14 days for Legionnaires' Disease (often 5-6 days).
  - The incubation period is 5-72 hours for Pontiac Fever (often 24-48 hours).

Epidemiological linkage
This includes the following prior to symptom onset:
- Exposure to a setting with a confirmed source of Legionella (e.g., positive environmental sampling result associated with a cruise ship, public accommodation, cooling tower, etc.), or
- Exposure to a setting with a suspected source of Legionella that is associated with at least one confirmed case.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Legionellosis

Confirmed ○ Probable ○ Suspect ○ Not a Case ○

https://drsi.health.mil/ADRSi

☐ Legionnaires' disease

☐ Pontiac fever

☐ Extrapulmonary Legionnaires' disease

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk) **Was the case diagnosed with Legionellosis?** ☐ Y ☐ N
Mylagia	☐	☐	***Describe any other symptoms below:***
Cough	☐	☐	
Sore throat	☐	☐	
Chills	☐	☐	
Fatigue	☐	☐	
Headache	☐	☐	
Clinical pneumonia	☐	☐	
Other *(describe)*	☐	☐	

Did the case have any underlying causes or prior illness? ☐ Y ☐ N ☐ Unk

If yes, describe: _____

Is this case part of an outbreak? ☐ Y ☐ N ☐ Unk

If yes describe: _____

DRSi outbreak report number: _____

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test (type of test performed)	Collection Date	Source (Circle Type)	Result	
☐ **Antibody**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **Antigen**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **PCR (DNA)**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **Culture**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **Convalescent sera**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **Other** *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

(If yes) **Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: Legionnaires' Disease = 2–14 days; most often 5–6 days
Pontiac fever = 5–72 hours; most often 24–48 hours

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Additional comments:

PUBLIC HEALTH REFERENCE SHEET
Leishmaniasis

Name	*Leishmania* species of parasites
Reservoir & Transmission	Humans, wild rodents, hyraxes, edentates, marsupials, domestic dogs Transmitted through bite of female sand flies
Incubation Period	At least 1 week to several months
Common Symptoms	Cutaneous, Mucosal, or Mucocutaneous: lesions, papules, nodules at site of inoculation, indolent ulcer, swollen glands near the sores Visceral: persistent irregular fever, weight loss, hepatosplenomegaly, lymphadenopathy, pancytopenia
Gold Standard Diagnostic Test	Microscopic identification
Risk Groups	Individuals in endemic areas
Geographic Significance	Most common in areas of South and Central America, parts of Mexico, Southern Europe, Asia, the Middle East, and Africa

What is Leishmaniasis?
Leishmaniasis is a parasitic disease caused by *Leishmania* parasites that are transmitted by the bite of infected sand flies. It is classified as a neglected tropical disease (NTD). The most common forms are cutaneous, mucosal, and mucocutaneous Leishmaniasis, which cause skin sores. Visceral Leishmaniasis, also called kala-azar, affects the internal organs (e.g., spleen, liver, and bone marrow).

What is the occurrence of Leishmaniasis?
Leishmania parasites are found in parts of the tropics, subtropics, and southern Europe. Overall, Leishmaniasis is found in regions of more than 90 countries. It is not found in Chile or Uruguay. U.S. military personnel have become infected in countries, such as Iraq and Afghanistan. The cases of Leishmaniasis evaluated in the United States reflect travel and immigration patterns. Occasional cases of cutaneous Leishmaniasis have been acquired in Texas and Oklahoma. No cases of visceral Leishmaniasis are known to have been acquired in the United States. Globally, the annual estimates range from 700,000 to 1.2 million new cases of cutaneous Leishmaniasis, and less than 100,000 new cases of visceral Leishmaniasis.

How are *Leishmania* parasites transmitted?
Leishmania parasites are spread by the bite of infected female phlebotomine sand flies. Sand flies are soundless, small (one-third the size of typical mosquitos), and the bite is often painless. Sand flies usually are most active from dusk to dawn. Although sand flies are less prevalent during the hottest time of the day, they may bite if they are disturbed from resting on the trunk of a tree. Some species of *Leishmania* parasites also may be spread via contaminated needles or blood transfusions. Congenital transmission has been reported.

Who is at risk for Leishmaniasis?
People of all ages are at risk for infection if they live or travel where leishmaniasis is found. Leishmaniasis is more common in rural than in urban areas. People at increased risk for infection (especially with the cutaneous form) include adventure travelers, ecotourists, Peace Corps volunteers, missionaries, Service members, ornithologists, and those who conduct research or are active outdoors at dawn or dusk.

What are the signs and symptoms of Leishmaniasis?
Some people are asymptomatic.

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PUBLIC HEALTH REFERENCE SHEET
Leishmaniasis

Cutaneous: This illness is characterized by one or more lesions that develop on uncovered parts of the body within a few weeks or months of the sand fly bite. The face, neck, arms, and legs are most common. The sores can change in size and appearance over time. The sores may start out as papules or nodules at the site of inoculation, become superficial and usually painless ulcers that may be covered by scab or crust and leave a depressed scar. Certain strains can disseminate and cause disfiguring mucosal lesions. Some people develop swollen glands near the sores. Some people have had cutaneous leishmaniasis more than once.

Visceral: This is a chronic illness of people who become sick within months or as long as years after the sand fly bite. Illness is characterized by persistent irregular fever, weight loss, hepatosplenomegaly, lymphadenopathy, and pancytopenia.

What are potential complications of Leishmaniasis?
Mucosal, or Mucocutaneous: Some (not all) types of the parasite found in parts of Latin America can spread from the skin and cause sores in the mucous membranes of the nose, mouth, or throat. Mucosal Leishmaniasis might not be noticed until years after the original sores healed. The best way to prevent mucosal Leishmaniasis is to ensure adequate treatment of the cutaneous infection.

How is Leishmaniasis diagnosed?
Laboratory methods include microscopic identification; culture; DNA detection; or antibody from serum. Some methods are available only in reference laboratories. Microscopic identification of *Leishmania* is conducted from tissue specimens (e.g., skin sores for cutaneous Leishmaniasis; or bone marrow, spleen, liver, lymph node or blood for visceral Leishmaniasis). *Leishmania* DNA can be detected by PCR, sequencing, or nucleic acid amplification testing (NAAT) (e.g., lesion biopsy or aspirate for cutaneous; or bone marrow, spleen, liver, lymph node of blood for visceral Leishmaniasis). Blood tests that detect antibody to the parasite can be helpful for cases of visceral Leishmaniasis. Reinfection is possible for cases of cutaneous Leishmaniasis.

How is Leishmaniasis treated?
The CDC offers consultation to healthcare providers in the absence of diagnostic testing. Healthcare providers may contact the CDC's Parasitic Diseases Hotline at 404-718-4745, or e-mail parasites@cdc.gov. The relative merits of various treatment approaches/regimens can be discussed with CDC staff. In the United States, special considerations apply regarding the availability of particular medications to treat leishmaniasis.

Cutaneous, Mucosal, or Mucocutaneous: The skin sores of cutaneous Leishmaniasis usually heal without treatment. However, healing of the skin can take months or even years, and the sores can leave disfiguring scars.

Visceral: If not treated, severe (advanced) cases of visceral Leishmaniasis typically are fatal.

How can Leishmaniasis be prevented?
No vaccines or drugs are available to prevent infection. The best way to prevent infection is to use preventive measures to decrease the risk of being bitten by sand fly bites.

- Avoid outdoor activities from dusk to dawn when sand flies generally are the most active.
- When outdoors (or in unprotected living areas)—
    - Minimize the amount of exposed skin. To the extent that is tolerable in the climate, wear long-sleeved shirts tucked into long pants, and wear socks.

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    - Apply insect repellent to exposed skin and under the ends of sleeves and pant legs. The most effective repellents generally are those that contain the chemical DEET (N,N-diethylmetatoluamide).
- When indoors:
    - Stay in well-screened or air-conditioned areas as sand flies are much smaller than mosquitoes and can get through smaller holes.
    - Spray living/sleeping areas with an insecticide.
    - If not sleeping in a well-screened or air-conditioned area, use a bed net and tuck it under the mattress. If possible, use a bed net that has been soaked in or sprayed with a pyrethroid-containing insecticide. The same treatment can be applied to screens, curtains, sheets, and clothing. Clothing should be retreated after five washings.
    - Bed nets, repellents, and insecticides should be purchased before traveling. Bed nets and clothing that already have been treated with a pyrethroid-containing insecticide are commercially available.

What are some public health considerations?

- Individuals with a history of Leishmaniasis may be disqualified from donating blood.
- Specify the clinical form of the disease.
- Document relevant travel and deployment history occurring within the incubation period (at least 1 week to several months).
- Identify potential sources of exposure.

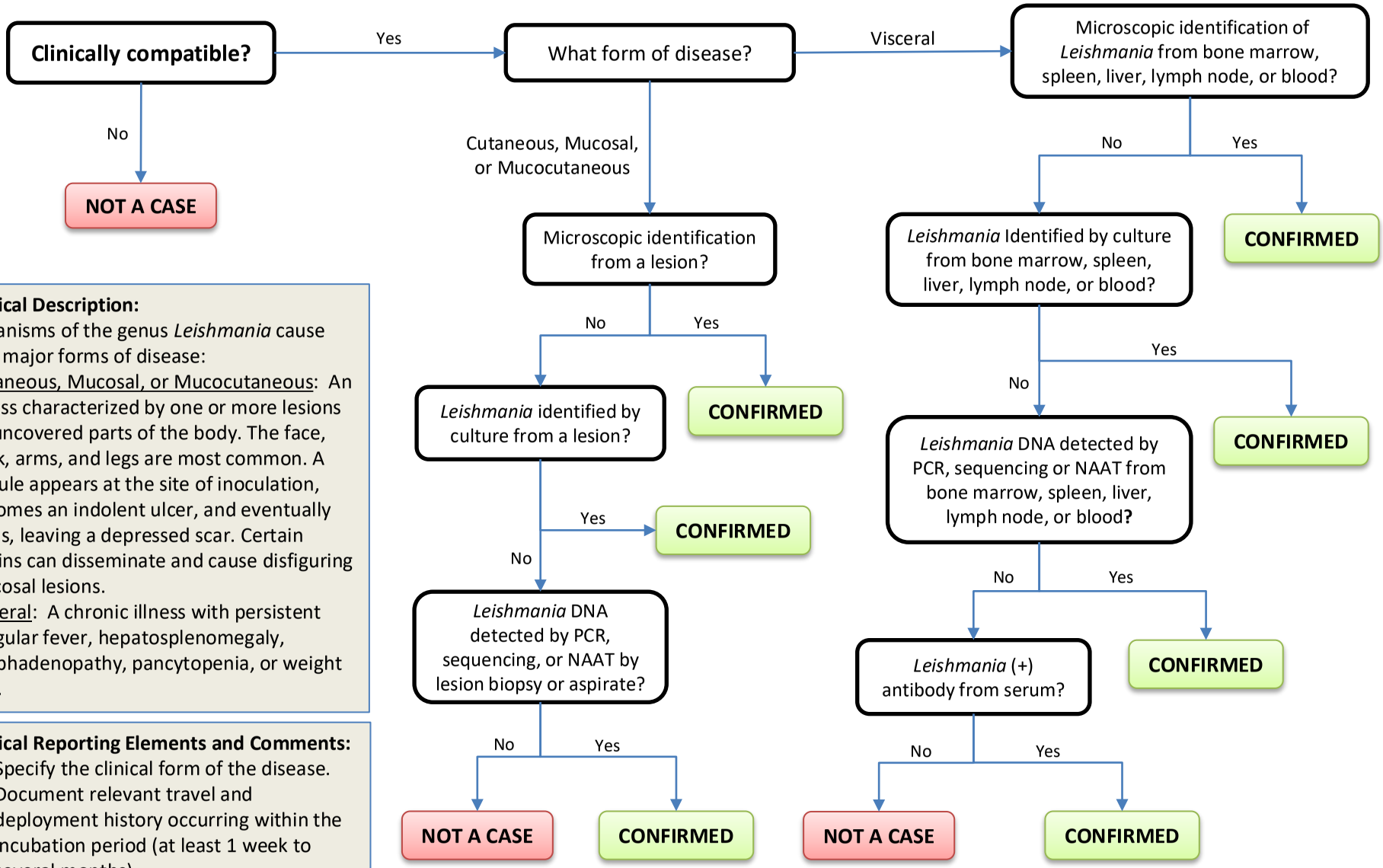
References

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. Control of Communicable Diseases Manual. 21st Edition. Washington DC: APHA Press.

"Leishmaniasis," Centers for Disease Control and Prevention (CDC), last reviewed June 1, 2023. https://www.cdc.gov/parasites/leishmaniasis/

Leishmaniasis



Clinical Description:
Organisms of the genus *Leishmania* cause two major forms of disease:
Cutaneous, Mucosal, or Mucocutaneous: An illness characterized by one or more lesions on uncovered parts of the body. The face, neck, arms, and legs are most common. A nodule appears at the site of inoculation, becomes an indolent ulcer, and eventually heals, leaving a depressed scar. Certain strains can disseminate and cause disfiguring mucosal lesions.
Visceral: A chronic illness with persistent irregular fever, hepatosplenomegaly, lymphadenopathy, pancytopenia, or weight loss.

Critical Reporting Elements and Comments:
- Specify the clinical form of the disease.
- Document relevant travel and deployment history occurring within the incubation period (at least 1 week to several months).

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

☐ Cutaneous, Mucosal, & Mucocutaneous

☐ Visceral

Leishmaniasis

Confirmed ◯ Not a Case ◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N		
Hospitalized	☐	☐	**Admit date:** ____/_____/_____	**Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____	**Cause of death:** _____

	Y	N			
Symptomatic	☐	☐	**Onset date:** ____/_____/_____	**Clinic date:** _____/_____/_____	**Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)		
Lesions	☐	☐	*Describe lesions:*		
Hepatosplenomegaly	☐	☐			
Lymphadenopathy	☐	☐			
Pancytopenia	☐	☐			

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case..... *Incubation period: at least 7 days, up to several months

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends

☐ TDY ☐ Business (non-DoD)

☐ Vacation ☐ Other: _____

List locations traveled: _____

LABORATORY RESULTS

	Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐	**Antibody**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐	**Microscopic ID**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐	**PCR (DNA)**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐	**Culture**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐	**Other** *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**

COMMENTS

PUBLIC HEALTH REFERENCE SHEET
Leprosy

Name	*Mycobacterium leprae*
Reservoir & Transmission	Humans and armadillos Close contact, through nasal mucosa, possibly respiratory secretions
Incubation Period	Average between 3–10 years; range of a few weeks to 30 years
Common Symptoms	Discolored patches of skin, nodules, painless ulcers on soles of feet, painless swelling on face, numbness, muscle weakness, enlarged nerves
Gold Standard Diagnostic Test	Microscopic identification from skin biopsy
Risk Groups	Living in endemic areas, in close contact with multibacillary cases
Geographic Significance	India, Brazil, Indonesia, Africa, Southeast Asia

What is leprosy?

Hansen's disease, also known as leprosy, is an infection caused by the slow-growing bacteria, *Mycobacterium leprae*. It may take up to 20 years to develop signs of the infection, which can affect the nerves, skin, eyes, and lining of the nose. With early diagnosis and treatment, the disease can be cured. People with leprosy can continue to work and lead an active life during and after treatment. There are four classifications of the disease (described below), which are assigned after laboratory confirmation.

- Tuberculoid (paucibacillary (PB)): Considered a medical emergency, PB is an illness characterized by one or a few well-demarcated, hypopigmented, and hypoesthetic or anesthetic skin lesions; frequently with active, spreading edges and a clearing center; and peripheral nerve swelling or thickening also may occur. The body's immune response may also result in swelling of the peripheral nerves; these enlarged nerves may be palpated under the skin and may or may not be tender to the touch.
- Lepromatous (multibacillary (MB)): Considered a medical emergency, MB is an illness characterized by a number of erythematous papules and nodules or an infiltration of the face, hands, and feet, with lesions in a bilateral and symmetrical distribution that progress to thickening of the skin; possibly reduced sensation with observed thickening of the peripheral nerves under microscopic examination; and the potential to involve other organs, the eyes, nose, testes, and bone. Frequent involvement of the nasal mucosa results in nasal congestion and epistaxis. The nodular form of this condition is the most advanced form of the disease. Ulcerated nodules contain large numbers of *M. leprae* acid-fast bacilli packed in macrophages that appear as large foamy cells.
- Borderline (dimorphous): The most common form and of intermediate severity compared to PB and MB, in borderline disease the skin lesions seem to be of the tuberculoid type, but are more numerous, and may be found anywhere on the body. Peripheral nerves are affected with ensuing weakness and anesthesia.
- Indeterminate: An illness characterized by early lesions, usually hypopigmented macules, without developed tuberculoid or lepromatous features but with definite identification of acid-fast bacilli in Fite-stained sections.

What is the occurrence of leprosy?

In the U.S., leprosy is very rare, with approximately 150 cases reported each year, and most became infected in a country where it is more common. Globally, about 250,000 cases are reported each year and up to 2 million are permanently disabled due to leprosy. In 2015, for the distribution of new leprosy cases by country among 136 countries that reported to the World

PUBLIC HEALTH REFERENCE SHEET
Leprosy

Health Organization (WHO), the majority with >10,000 cases each were India, Brazil, and Indonesia. Between 1,000 and 10,000 cases were reported from Africa: The Democratic Republic of Congo, Ethiopia, Madagascar, Mozambique, Nigeria, and the United Republic of Tanzania; Southeast Asia: Bangladesh, Myanmar, Nepal, and Sri Lanka; and the Philippines.

How is leprosy transmitted?
Leprosy is not easily transmitted; it is not transmitted through casual contact (shaking hands, hugging, sitting next to each other), sexual contact, or mother to unborn baby during pregnancy. The bacterium may be transmitted through airborne droplets from nasal mucosa, possibly through respiratory secretions. Prolonged, close contact with someone with untreated leprosy over many months is needed to become infected. Most (95%) of the human population is naturally immune and thus not susceptible to infection with *M. leprae*. Once multidrug therapy is started, the person can no longer spread the disease to other people. Indirect transmission is unlikely, although the bacillus can survive up to 7 days in dried nasal secretions.

In the southern U.S., some armadillos are naturally infected with the bacteria that cause leprosy in people, thus transmission is possible. However, the risk is very low and most people who come into contact with armadillos are unlikely to contract leprosy.

Who is at risk for leprosy?
Persons at highest risk are those living in endemic areas or in close contact with a person who is infected but not being treated. Overall, the risk of contracting leprosy is very low. The disease is rarely seen in children younger than 3 years of age.

What are the signs and symptoms of leprosy?
In general, symptoms mainly affect the skin (e.g., raised or flat lesions), mucous membranes (e.g., nosebleeds), and nerves (thickened peripheral nerves). The first signs of leprosy are usually pale or slightly red areas or a rash on the trunk or extremities. Frequently, but not always, there is an associated decrease in light touch sensation in the area of the rash. There may also be a loss of feeling in the hands or feet and this change in sensation is a valuable clue to diagnosis. Nasal congestion may be a sign of infection, but infection is more often associated with changes of the skin on the face, such as thinning of the eyebrows or eyelashes. Symptoms caused by damage to the nerves are numbness or loss of sensation in the affected areas of the skin, muscle weakness or paralysis (especially in the hands and feet), enlarged nerves (especially those around the elbow and knee and in the sides of the neck), and eye problems that may lead to blindness (when facial nerves are affected). When loss of sensation occurs, injuries such as burns may go unnoticed.

What are potential complications of leprosy?
Complications may include painful or tender nerves, redness and pain around the affected area, and burning sensation in the skin. If left untreated, the signs of advanced leprosy can include:

- Crippling of hands and feet
- Paralysis
- Blindness
- Shortening of toes and fingers due to reabsorption
- Chronic non-healing ulcers on the bottoms of the feet
- Loss of eyebrows
- Saddle-nose deformity from damage to the nasal septum

PUBLIC HEALTH REFERENCE SHEET
Leprosy

How is leprosy diagnosed?
Clinical assessment is confirmed with skin or nerve biopsy and acid-fast staining. There are no serological or skin tests for leprosy.

How is leprosy treated?
Leprosy is effectively treated and can be cured with a multidrug therapy using a combination of antibiotics depending on the form of the disease.

- Tuberculoid (paucibacillary (PB)): concurrently with daily dapsone and monthly rifampin.
- Lepromatous (multibacillary (MB)): daily clofazimine is added to daily dapsone and monthly rifampin.

Other antibiotics, such as clarithromycin, ofloxacin, levofloxacin, and minocycline also work well against *M. leprae*. Combination therapy helps prevent the development of antibiotic resistance, which may otherwise occur due to length of the treatment (between 1 to 2 years).

How can leprosy be prevented?
- For general health reasons, avoid contact with armadillos.
- Household contacts of people with leprosy should have a thorough physical examination annually for 5 years.

What are some public health considerations?
- Document the clinical form of the disease.
- Document the source of infection if known.
- Information about the National Hansen's Disease Program is available at http://www.hrsa.gov/hansensdisease.

References

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. Control of Communicable Diseases Manual. 21st Edition. Washington DC: APHA Press.

"Leprosy," Centers for Disease Control and Prevention (CDC), last reviewed August 2, 2023. https://www.cdc.gov/leprosy/

Last Updated September 1, 2023

Leprosy

COMMON NAME: Hansen's disease

Clinical Description:
A chronic bacterial disease characterized by the involvement of primarily skin as well as peripheral nerves and the mucosa of the upper airway. The following characteristics are typical of the major forms of the disease, though these classifications are assigned after a case has been laboratory confirmed.

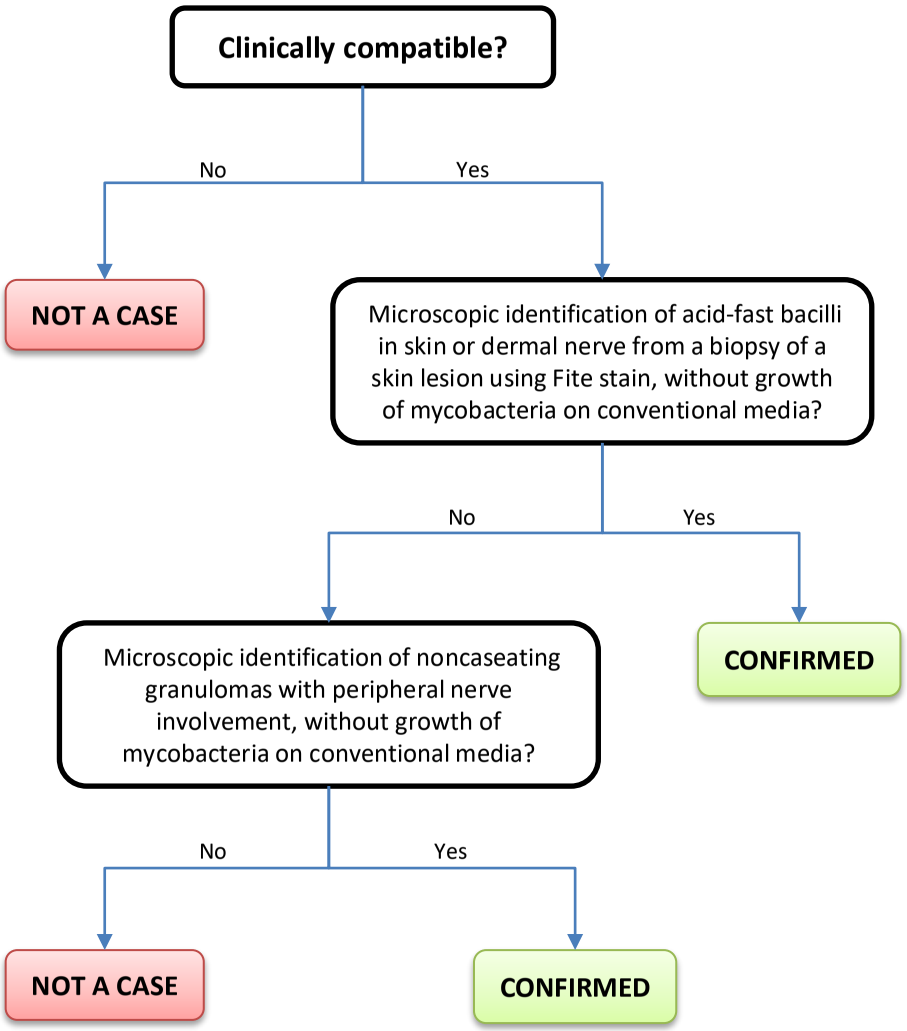
Tuberculoid: An illness characterized by one or a few well-demarcated, hypopigmented, and hypoesthetic or anesthetic skin lesions; frequently with active, spreading edges and a clearing center; peripheral nerve swelling or thickening also may occur.

Lepromatous: An illness characterized by a number of erythematous papules and nodules or an infiltration of the face, hands, and feet with lesions in a bilateral and symmetrical distribution that progress to thickening of the skin, possibly with reduced sensation.

Borderline (dimorphous): An illness characterized by skin lesions characteristic of both the tuberculoid and lepromatous forms.

Indeterminate: An illness characterized by early lesions, usually hypopigmented macules, without developed tuberculoid or lepromatous features, but with definite identification of acid-fast bacilli in Fite-stained sections.

Required Comments to Document:
- Document the clinical form of the disease.
- Document the source of infection, if known.



INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Leprosy

Confirmed ◯ Not a Case ◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Specify the type of Leprosy

Tuberculoid

	Y	N
Well-demarcated, hypopigmented, and hypoesthetic/anesthetic skin lesions	☐	☐
Skin lesions have active, spreading edges and a clearing center	☐	☐
Peripheral nerve swelling/thickening	☐	☐
Other features *(describe below)*	☐	☐

Lepromatous

	Y	N
Erythematous papules and nodules	☐	☐
Infiltration of the face, hands, and feet with lesions in a bilateral and symmetrical distribution	☐	☐
Thickening of skin with reduced sensation	☐	☐
Other features *(describe below)*	☐	☐

Borderline (dimorphous)

	Y	N
Skin lesions characteristic of both the tuberculoid and lepromatous forms	☐	☐

Indeterminate

	Y	N
Early lesions, usually hypopigmented macules, without developed tuberculoid/lepromatous features but with definite identification of acid-fast bicilli in Fite stained sections	☐	☐

TREATMENT

Treated with antibiotics? ☐ Y ☐ N

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation period: Average is between 3 and 10 years; range can vary from a few weeks to 30 years

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Describe any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Leptospirosis

Name	*Leptospira interrogans* (Weil's disease)
Reservoir & Transmission	Wild and domestic animals (rats, cattle, swine, raccoons, dog, cats) Skin or mucous membrane contact with contaminated substance; Consuming water or food contaminated with urine of infected animals; Inhalation of droplet aerosols of contaminated fluids
Incubation Period	Usually 5–14 days with a range of 2–30 days
Common Symptoms	Myalgia, headache, jaundice conjunctival suffusion without purulent discharge, rash, aseptic meningitis, GI symptoms, pulmonary complications, cardiac arrhythmias, renal insufficiency, hemorrhage, acute renal failure
Gold Standard Diagnostic Test	Microscopic agglutination test (MAT)
Risk Groups	Children and adults where infection is endemic in animal reservoirs; Agricultural workers, fish workers, miners, veterinarians, dairy workers, sewer workers
Geographic Significance	Worldwide, particularly tropical and subtropical regions

What is leptospirosis?
Leptospirosis, also known as Weil's disease, is caused by *Leptospira* species, which is an obligate aerobic, gram-negative spirochete bacterium that affects humans and animals.

What is the occurrence of leptospirosis?
Regions with the highest estimated morbidity and mortality include parts of sub-Saharan Africa, parts of Latin America, the Caribbean, South and Southeast Asia, and Oceania. The estimated worldwide annual incidence of leptospirosis is >1 million cases, most commonly in adult males, and resulting in approximately 59,000 deaths. Outbreaks can occur after heavy rainfall or flooding in endemic areas, especially in urban areas where housing conditions and sanitation are poor and rodent infestation is common. Outbreaks of leptospirosis have occurred after flooding in Florida, Hawaii, Puerto Rico, and the U.S. Virgin Islands.

How is leptospirosis transmitted?
Leptospira are spread through the urine of infected animals, which can get into water or soil and survive for weeks to months. Rodents are an important reservoir for *Leptospira*, but most mammals (e.g., dogs, horses, cattle, and swine) and many wildlife species (e.g., raccoons, opossums, buffaloes, sheep, and goats) can be infected and shed the bacteria in their urine. Infected animals, even if asymptomatic, may continue to excrete the bacteria into the environment, continuously or occasionally, for a few months or up to several years. Humans can be infected by direct contact with urine or reproductive fluids from infected animals, through contact with urine-contaminated freshwater sources or wet soil, or by consuming contaminated food or water. Infection rarely occurs through animal bites or human-to-human contact. *Leptospira* can enter the body through skin or mucous membranes (eyes, nose, or mouth), especially if the skin is broken from a cut or scratch or macerated from prolonged water exposure. Outbreaks of Leptospirosis are usually caused by exposure to contaminated water, such as floodwaters. Person-to-person transmission is rare.

Who is at risk for leptospirosis?
Leptospirosis most often affects humanitarian aid workers at sites of hurricanes or floods; military personnel during training and operations in endemic areas; adventure tourists; outdoor

athletes; or anyone exposed to floodwater, contaminated freshwater (rivers and streams), soil, or mud. Individuals are at risk when working directly with animals in endemic areas, especially when exposed to their body fluids, and visiting or residing in areas with rodent infestation. Activities that increase risk of leptospirosis include drinking from potentially contaminated water sources, including floodwater, streams, rivers, or unsafe tap water; bathing or wading in floodwater or contaminated fresh water, especially with an open wound or scratch; prolonged exposure to contaminated water; and eating food that has been exposed to contaminated water or potentially urinated on by rodents.

What are the signs and symptoms of leptospirosis?

In humans, most infections are asymptomatic. Clinical illness can present as a self-limiting acute febrile illness, estimated to occur in ~90% of clinical infections, or as a severe, potentially fatal illness with multiorgan dysfunction in 5%–10% of patients. Leptospirosis can cause a wide range of symptoms, including high fever, headache, chills, muscle aches, nausea, vomiting, cough, jaundice, red eyes, abdominal pain, diarrhea, and rash. The time between a person's exposure to a contaminated source and becoming sick is 2 days to 4 weeks. The illness lasts from a few days to 3 weeks or longer. Without treatment, recovery may take several months.

What are potential complications of leptospirosis?

In patients who progress to severe disease, the illness can be biphasic, with a temporary decrease in fever between phases. Though distinction between phases might not be apparent, the acute, or bacteremic, phase occurs during the first 7–14 days of illness; this phase is characterized by the abrupt onset of high fever; myalgias (calves and lumbar region); headache (retroorbital and frontal); chills; conjunctival suffusion, characteristic of leptospirosis but not occurring in all cases; nausea; vomiting; diarrhea; abdominal pain; cough; and rarely, a skin rash. A second, or immune, phase occurs days to 1–2 weeks later in conjunction with the development of the antibody response and presence of leptospires in the urine. If clinically apparent, the immune phase is characterized by prolonged fever with both focal and systemic manifestations that do not respond to antibiotics. Clinical findings can include cardiac arrhythmias, hemodynamic collapse, hemorrhage, jaundice, liver failure, aseptic meningitis, pulmonary insufficiency, and renal failure. The classically described syndrome, Weil's disease, consists of renal and liver failure. Leptospirosis can lead to meningitis, respiratory distress, and death. Severe pulmonary hemorrhagic syndrome is a rare but severe form of leptospirosis that can have a case-fatality ratio of >50%. Poor prognostic indicators include older age, development of altered mental status, respiratory insufficiency, or oliguria.

How is Leptospirosis diagnosed?

Antibodies for leptospirosis develop between 3 and 10 days after symptom onset, thus any serologic test must be interpreted accordingly. Negative serologic test results from samples collected in the first week of illness do not rule out disease. Serologic testing should be repeated on a convalescent sample collected 7–14 days after the first. Due to the transience of leptospires in body fluids, a negative PCR test does not rule out leptospirosis. The following recommended specimens are based on collection timing: Acute illness (first week): whole blood and serum; convalescent illness (after first week): serum +/- urine. Confirmatory diagnostic tests available through the CDC include microscopic agglutination test (MAT) serologic testing, and polymerase chain reaction (PCR) of whole blood, urine, or cerebrospinal fluid from a patient with signs of meningitis. Contact the CDC's Bacterial Special Pathogens Branch (bspb@cdc.gov) for identification and genotyping, molecular detection, or serology. Information about laboratory submission is at: https://www.cdc.gov/ncezid/dhcpp/bacterial_special/labsubmission.html.

PUBLIC HEALTH REFERENCE SHEET
Leptospirosis

How is Leptospirosis treated?

In patients with a high clinical suspicion of leptospirosis, initiate antibiotic treatment as soon as possible without waiting for laboratory results. Early treatment can be effective in decreasing the severity and duration of infection. For patients with mild symptoms, doxycycline is preferred if not contraindicated. Alternative treatment options include azithromycin, ampicillin, or amoxicillin. For patients with severe leptospirosis, intravenous penicillin is the drug of choice; ceftriaxone and cefotaxime are alternative antimicrobial agents. As with other spirochetal diseases, antibiotic treatment of patients with leptospirosis might cause a Jarisch-Herxheimer reaction; the reaction is rarely fatal. Patients with severe leptospirosis might require hospitalization and supportive therapy, including intravenous hydration and electrolyte supplementation, dialysis in cases of oliguric renal failure, and mechanical ventilation in cases of respiratory failure.

How can leptospirosis be prevented?

Avoid exposure to potentially contaminated bodies of freshwater, flood waters, potentially infected animals or their body fluids, and areas with rodent infestation. Use personal protective equipment to include clothing or footwear when potentially exposed to contaminated water or soil. Boil or chemically treat potentially contaminated drinking water. Limited studies have shown that chemoprophylaxis with doxycycline (200 mg orally, weekly) begun 1–2 days before and continuing through the period of exposure may be effective in preventing clinical disease in adults and could be considered for people at high risk and with short-term exposures. No human vaccine is available in the United States.

What are some public health considerations?

- Document relevant travel and deployment history occurring within the incubation period.
- Document circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Report probable and confirmed cases. A CDC case report form is available at: https://www.cdc.gov/leptospirosis/health_care_workers/index.html

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

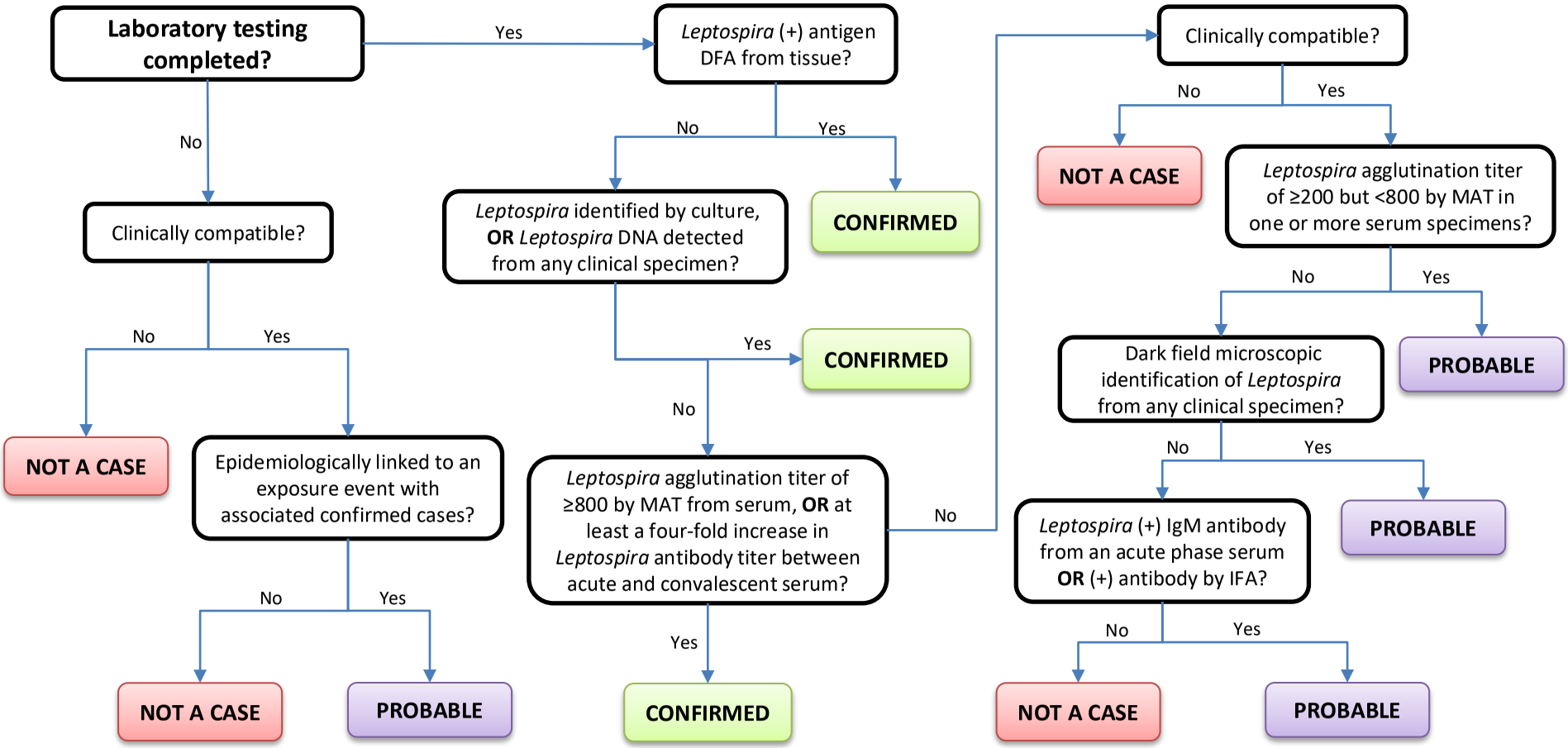
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Leptospirosis," Centers for Disease Control and Prevention (CDC), last reviewed August 30, 2023. https://www.cdc.gov/leptospirosis/index.html

Last Updated September 1, 2023

Leptospirosis

COMMON NAME: Weil's disease



Clinical Description:

An illness characterized by history of fever within the past 2 weeks, as well as—

- At least two of the following: Myalgia, headache, jaundice, conjunctival suffusion without purulent discharge, or rash; OR
- At least one of the following: aseptic meningitis, GI symptoms, pulmonary complications, cardiac arrhythmias, ECG abnormalities, renal insufficiency, hemorrhage, or jaundice with acute renal failure.

Critical Reporting Elements and Comments:

- Document relevant travel and deployment history occurring within the incubation period (2–30 days, typically 5–14 days).
- Document circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Leptospirosis

Confirmed ○ Probable ○ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:**_____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Myalgia	☐	☐	
Headache	☐	☐	*Describe rash and/or any other symptoms below:*
Jaundice	☐	☐	
Hemorrhage	☐	☐	
Rash *(describe)*	☐	☐	
Complications*	☐	☐	
Other *(describe)*	☐	☐	

***Complications**

- ☐ **Conjunctival suffusion**
- ☐ **Thrombocytopneia**
- ☐ **Aseptic meningitis**
- ☐ **Hepatitis**
- ☐ **Pulmonary complications**
- ☐ **Cardiac involvement**
- ☐ **Renal insufficiency/failure**
- ☐ **Gastrointestinal involvement**

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ MAT	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe in comments*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: 2–30 days, typically 5–14 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Exposures in the 30 days prior to illness onset, specify if the patient had:

Animal Contact

- ☐ Farm livestock — Where: _____
- ☐ Wildlife — Where: _____
- ☐ Rodents — Where: _____
- ☐ Dogs — Where: _____
- ☐ Other: _____ — Where: _____
- ☐ No known contact — Where: _____
- ☐ Unknown

Water Contact

- ☐ Standing fresh water (e.g. lake, pond) — Where: _____
- ☐ River/stream — Where: _____
- ☐ Wet soil — Where: _____
- ☐ Flood water, run-off — Where: _____
- ☐ Sewage — Where: _____
- ☐ Other: _____ — Where: _____
- ☐ No known contact — Where: _____
- ☐ Unknown

Did the case stay in housing with evidence of rodents? Y ☐ N ☐ Unk ☐

Was there heavy rainfall near the case's place of residence, work site, activities, or travel? Y ☐ N ☐ Unk ☐

Was there flooding near the case's place of residence, work sites, activities, or travel? Y ☐ N ☐ Unk ☐

Did the case have similar exposures as another contact diagnosed with leptospirosis in the 30 day period? Y ☐ N ☐ Unk ☐

PUBLIC HEALTH REFERENCE SHEET
Listeriosis

Name	*Listeria monocytogenes*
Reservoir & Transmission	Domestic and wild animals, fowl, humans Commonly foodborne transmission; can be acquired in utero
Incubation Period	2–3 weeks on average, up to 70 days
Common Symptoms	Invasive listeriosis: • Systemic illness: Manifests most commonly as bacteremia or central nervous system infection. Other manifestations can include pneumonia, peritonitis, endocarditis, and focal infections of joints and bones. • Maternal listeriosis: Generally classified as illness occurring in a pregnant woman or in an infant age ≤28 days. Listeriosis may result in miscarriage/pregnancy loss, pre-term labor, or neonatal infection, while causing minimal or no systemic symptoms in the mother. • Neonatal listeriosis: Commonly manifests as bacteremia, central nervous system infection, and pneumonia, and is associated with high fatality rates. Transmission of listeria from mother to baby transplacentally or during delivery is almost always the source of early-onset neonatal infections (diagnosed between birth and 6 days), and the most likely source of late-onset neonatal listeriosis (diagnosed between 7–28 days). Non-invasive Listeria infections: • Infection manifesting commonly as gastroenteritis with fever, urinary tract infection, or wound infection.
Gold Standard Diagnostic Test	*L. monocytogenes* identified by culture from specimens obtained from a normally sterile site (example: CSF, blood, joint fluid, pleural fluid, pericardial fluid, etc.)
Risk Groups	Pregnant women, immunocompromised, older adults, persons who take corticosteroids
Geographic Significance	Worldwide

What is listeriosis?

Listeriosis is a serious infection usually caused by eating food contaminated with the bacterium *Listeria monocytogenes.* Listeriosis may present as non-invasive or invasive illness. *Listeria monocytogenes* is a facultatively anaerobic, rod-shaped, gram-positive bacterium that can be readily isolated in standard bacterial culture of normally sterile body sites. It is widespread in the environment and can be isolated from soil, water, and decaying vegetation.

What is the occurrence of listeriosis?

The annual incidence of laboratory-confirmed listeriosis in the United States is about 0.24 cases per 100,000 population, based on active surveillance by The Foodborne Diseases Active Surveillance Network (FoodNet) https://www.cdc.gov/foodnet/about.html. Approximately 800 laboratory-confirmed cases are reported annually to CDC's National Notifiable Disease Surveillance System. However, many cases are not detected or reported. CDC estimates that listeria is the third leading cause of death from foodborne illness or food poisoning in the United States. An estimated 1,600 people get sick from listeria each year, and about 260 people die.

How is listeriosis transmitted?

PUBLIC HEALTH REFERENCE SHEET
Listeriosis

Listeriosis is usually acquired through foodborne transmission, except for fetal and neonatal infection, which is usually acquired in utero. A maternal source of listeriosis should be considered when a neonate is diagnosed with listeriosis within 28 days of birth. Cutaneous infections have been reported very rarely among veterinarians and farmers following direct animal contact, particularly involving livestock products of conception.

Who is at risk for listeriosis?
Listeria is most likely to sicken pregnant women and their newborns, adults aged 65 or older, and people with weakened immune systems. Other people can be infected with listeria, but they rarely become seriously ill.

What are the signs and symptoms of listeriosis?
The clinical features of listeriosis depend on the patient. In older adults and people with immunocompromising conditions, the most common clinical presentations are invasive infections, such as sepsis, meningitis, and meningoencephalitis. People can also experience focal infections, including septic arthritis, osteomyelitis, prosthetic graft infections, and infections of sites inside the chest and abdomen or of the skin and eye. Less commonly, otherwise healthy young people may also develop invasive listeriosis.

- Listeriosis during pregnancy is typically a relatively mild “flu-like” illness. Some pregnant women with listeria infection have no symptoms. Although severe disease in the mother is rare, infection during pregnancy can result in miscarriage, stillbirth, preterm labor, and sepsis or meningitis in the neonate.
    - Some neonates with listeriosis develop granulomatosis infantiseptica, a severe disorder involving the internal organs and skin.
    - Neonatal listeriosis is classified as early (within 6 days of birth) or late onset (7–28 days after birth).
    - Early-onset neonatal listeriosis is usually acquired through transplacental transmission.
    - The sources of late-onset listeriosis are less clear; they may involve exposure during delivery or nosocomial exposure.
- People with normal immune systems rarely develop invasive infection. However, they may experience a self-limited acute febrile gastroenteritis following high-dose listeria exposure. Because listeria cannot be detected by routine stool culture, febrile gastroenteritis from listeria infection is rarely diagnosed outside of outbreak settings.

What are potential complications of listeriosis?
CDC estimates that listeriosis is the third leading cause of death from foodborne illness with about 260 deaths per year. Nearly everyone with listeriosis is hospitalized. The case-fatality rate is about 20%. Nearly one-quarter of pregnancy-associated cases result in fetal loss or death of the newborn.

How is listeriosis diagnosed?
Listeriosis is suspected when *L. monocytogenes* is identified by culture from a non-sterile clinical specimen (e.g., stool, urine, wound); probable when identified by a method other than culture (e.g., EIA, PCR) obtained from a normally sterile site (e.g., cerebral spinal fluid, blood, joint fluid, pleural fluid, pericardial fluid), and confirmed when identified by culture from specimens obtained from a normally sterile site.

Last Updated November 28, 2023

PUBLIC HEALTH REFERENCE SHEET
Listeriosis

How is listeriosis treated?

Listeriosis is treated with intravenous penicillin or ampicillin alone or together with an aminoglycoside. For penicillin allergic patients, trimethoprim-sulfamethoxazole or erythromycin is preferred. There is little scientific evidence available to inform decisions regarding management of people at elevated risk of invasive listeriosis who have been exposed to *L. monocytogenes* and who are either asymptomatic or have mild symptoms that could be consistent with early listeria infection. CDC lists a framework for assessment and medical treatment of high-risk people (pregnant women, older adults, and people with weakened immune systems) who may have been exposed to *L. monocytogenes* by eating contaminated foods at https://www.cdc.gov/listeria/technical.html#patient-mgmt.

How can listeriosis be prevented?

- *Listeria monocytogenes* is a hardy organism that can withstand a wide range of conditions including freezing, drying, heat, and relatively high levels of acid, salinity, and alcohol. Unlike most foodborne pathogens, this organism can grow at standard refrigerator temperature (40°F), which makes it a particular problem in ready-to-eat foods that are not cooked before eating. If a facility has *L. monocytogenes*, the germs can spread to food that touches contaminated equipment or surfaces. Listeria can also spread from contaminated food to surfaces. It can even grow on foods kept in the refrigerator. The good news is that listeria is easily killed by heating food to a high enough temperature.
- People at high risk for listeria infection and those who prepare food for them should know which foods are more likely to be contaminated with listeria and choose safer food options. Those foods include soft cheeses, such as queso fresco and brie; meats, cheeses, and salads from the deli; deli meats; cold cuts; hot dogs and fermented or dry sausages; cold-smoked fish; sprouts; melons; and unpasteurized milk products or milk.
- As a healthcare professional, ensure to stay up-to-date on foodborne outbreaks and food recalls. Educate people to visit FoodSafety.gov for the latest information on preventing foodborne illnesses.

What are some public health considerations?

- When reporting listeriosis infections in the Disease Reporting System internet (DRSi) document source of infection, if known.
- Miscarriage/pregnancy loss is considered a maternal outcome and should be reported as a single case in the mother. Cases in neonates and mothers should be reported separately when each meets the case definition. A case in a neonate should be reported if liveborn.

References:

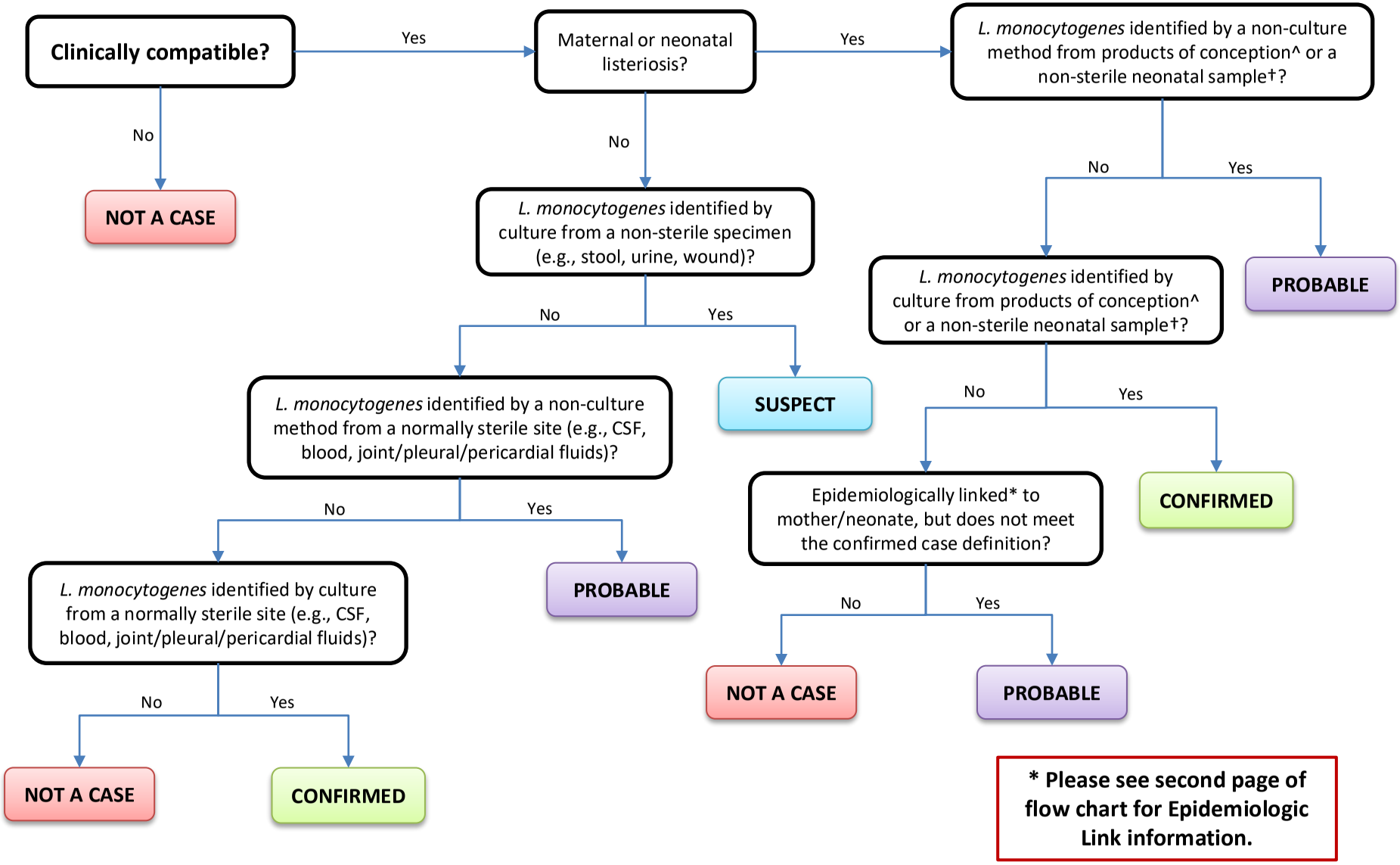
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Listeria," Centers for Disease Control and Prevention (CDC), last reviewed November 20, 2023. https://www.cdc.gov/listeria/index.html

Last Updated November 28, 2023

Listeriosis



Listeriosis

Clinical Description, Critical Reporting Elements, and Comments

Clinical Description:
Listeriosis is an illness that may present as either invasive or non-invasive illness.

Invasive listeriosis:

Systemic illness: Manifests most commonly as bacteremia or central nervous system infection. Other manifestations can include pneumonia, peritonitis, endocarditis, or focal infections of joints and bones.

Maternal listeriosis: Generally classified as illness occurring in a pregnant woman or in an infant age less than or equal to 28 days. Listeriosis may result in miscarriage/pregnancy loss, pre-term labor, or neonatal infection, while causing minimal or no systemic symptoms in the mother.

Neonatal listeriosis: Commonly manifests as bacteremia, central nervous system infection, and pneumonia, and is associated with high fatality rates. Transmission of Listeria from mother to baby transplacentally or during delivery is almost always the source of early-onset neonatal infections (diagnosed between birth and 6 days), and the most likely source of late-onset neonatal listeriosis (diagnosed between 7–28 days).

Non-invasive listeriosis:
An infection that manifests commonly as gastroenteritis.

^ Products of conception include the following: chorionic villi, placenta, fetal tissue, umbilical cord blood, amniotic fluid. These are collected at the time of delivery.
† Non-sterile neonatal samples include the following: meconium, tracheal aspirate, but *not* products of conception. These samples must be collected within 48 hours of delivery.

*** Epidemiologic linkage** for probable maternal and neonatal cases is demonstrated if the following criteria are met:
Maternal epi-link:
- A mother who does not meet the confirmed case classification, but who—
    - Gave birth to a neonate who meets the confirmed or probable case classification, AND
    - A neonatal specimen was collected within 28 days of birth.

Neonatal epi-link:
- Neonate(s) who do not meet the confirmed case classification, but—
    - Whose mother meets the confirmed or probable case classification, or
    - A neonate who meets the clinical description as described above whose mother has a positive culture or positive test than culture (example: EIA, PCR) from a normally sterile site (e.g., blood or cerebrospinal fluid; or less commonly: pleural, peritoneal, pericardial, hepatobiliary, or vitreous fluid; orthopedic site such as bone, bone marrow, or joint; or other sterile sites including organs such as spleen, liver, and heart, etc.).

Critical Reporting Elements and Comments:
- Document the source of infection, if known.

NOTE: Miscarriage/pregnancy loss is considered a maternal outcome and should be reported as a single case in the mother. Cases in neonates and mothers should be reported separately when each meets the case definition. A case in a neonate should be reported if liveborn.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Listeriosis

Confirmed ◯ Probable ◯ Suspect ◯ Not a Case

Army Disease Reporting System internet (ADRSi) link: https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____ **Location:** _____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Headache	☐	☐	*Describe any other symptoms below:*
Stiff neck	☐	☐	
Confusion	☐	☐	
Loss of balance	☐	☐	
Convulsions	☐	☐	
Muscle aches	☐	☐	
Other (describe)	☐	☐	

Any pre-existing medical conditions?

☐ **Immunocompromised** ☐ **On dialysis** ☐ **Cancer** ☐ **Pregnant** ☐ **Other:** _____

What is the source of this infection:

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	**Collection Date**	**Source** *Circle Type*	**Result**		**COMMENTS**
☐ **Antibody**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**	***(+) antibody is NOT reportable to DRSi***
☐ **Antigen**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**	
☐ **PCR (DNA)**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**	***(+) PCR is NOT reportable to DRSi***
☐ **Culture**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**	
☐ **Screen**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**	
☐ **Other** ***Describe below***	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**	

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*__Incubation Period__ = Variable, Commonly 2–3 weeks on average, up to 70 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Describe any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Lyme Disease

Name	*Borrelia burgdorferi* and rarely *Borrelia mayonii*
Reservoir & Transmission	Ixodid ticks and wild rodents Tickborne transmission: bite from blacklegged ticks: *Ixodes scapularis* and *Ixodes pacificus*
Incubation Period	30 to 32 days after exposure to tick habitat or tick bite
Common Symptoms	Erythema migrans (EM) is a "bulls-eye" rash that typically begins as a red macule or papule and expands over a period of days to weeks to form a large round lesion, often with partial central clearing. A single primary lesion must reach greater than or equal to 5 cm in size across its largest diameter. EM is often accompanied by fatigue, fever, headache, mildly stiff neck, arthralgia, or myalgia. Late clinical manifestations (LM) include involvement of the musculoskeletal system, nervous system, or cardiovascular system
Gold Standard Diagnostic Test	Presentation of EM with or without knowledge of a tick bite with 2-tiered serological testing
Risk Groups	All persons susceptible
Geographic Significance	North America, Europe, and Northern Asia

What is Lyme disease?
Lyme disease is a tickborne illness caused by the bacterium *Borrelia burgdorferi* and rarely *Borrelia mayonii*.

How is Lyme disease transmitted?
The Lyme disease is transmitted through the bite of infected ticks. The blacklegged tick (or deer tick, *Ixodes scapularis*) spreads the disease in the northeastern, mid-Atlantic, and north-central United States. The western blacklegged tick (*Ixodes pacificus*) spreads the disease on the Pacific Coast.

Most humans are infected through the bites of immature ticks called nymphs. Nymphs are tiny (less than 2 mm) and difficult to see; they feed during the spring and summer months. Adult *Ixodes* ticks, most active during the cooler months of the year, can also transmit Lyme disease bacteria; however, they are much larger and more easily discovered and removed before transmitting the bacteria. Ticks can attach to any part of the human body but often cling to hard-to-see areas, such as the groin, armpits, and scalp. In most cases, the tick must be attached for 36 to 48 hours or more before the Lyme disease bacterium can be transmitted.

What are the signs and symptoms of Lyme disease?
Untreated Lyme disease can produce a wide range of symptoms, depending on the stage of infection. These include fever, rash, facial paralysis, and arthritis.

Early signs and symptoms (3 to 30 days after tick bite) include: Fever, chills, headache, fatigue, muscle and joint aches, or swollen lymph nodes.

An Erythema migrans (EM) rash:
- Occurs in approximately 70% to 80% of infected persons.
- Begins at the site of a tick bite after a delay of 3 to 32 days (average of 7 days).
- May appear on any area of the body.

Last Updated September 1, 2023

- May feel warm to the touch but is rarely itchy or painful.
- Expands gradually over a period of days reaching up to 12 inches or more across.
- Sometimes clears as it enlarges, resulting in a target or bull's-eye appearance.

Late clinical manifestations (LM) (days to months after a tick bite) include:

- Severe headaches and neck stiffness
- Additional EM rashes on other areas of the body
- Arthritis with severe joint pain and swelling, particularly the knees and other large joints
- Facial palsy
- Intermittent pain in tendons, muscles, joints, and bones
- Heart palpitations or an irregular heartbeat
- Episodes of dizziness or shortness of breath
- Inflammation of the brain and spinal cord
- Nerve pain
- Shooting pain, numbness, or tingling of hands or feet
- Problems with short-term memory

How is Lyme disease diagnosed?

Lyme disease is diagnosed based on signs and symptoms, a history of possible exposure to infected blacklegged ticks, and 2-tiered serologic testing. First, an enzyme immunoassay (EIA) or immunofluorescence assay (IFA) is used. If the first test is negative, then no further testing of the specimen is recommended. If the first test is positive, indeterminate, or equivocal, then a second EIA or a western immunoblot assay is used. Results are positive if both the first and second test are positive. Key points to remember include:

- Most Lyme disease tests are designed to detect antibodies made by the body in response to infection.
- Antibodies can take several weeks to develop, so patients may test negative if infected only recently.
- Antibodies normally persist in the blood for months or even years after the infection is gone; therefore, the test cannot be used to determine cure.
- Infection with other diseases, including some tickborne diseases or some viral, bacterial, or autoimmune diseases, can result in false positive test results.
- Some tests give results for two types of antibodies: IgM and IgG. Positive IgM results should be disregarded if the patient has been ill for more than 30 days.

How is Lyme disease treated?

Early diagnosis and proper antibiotic treatment can help prevent late clinical manifestations of Lyme disease. Patients treated with appropriate antibiotics in the early stages of Lyme disease usually recover rapidly and completely. Consult an infectious disease specialist regarding individual patient treatment decisions.

There are treatment regimens for the following four manifestations of Lyme disease:

- Erythema migrans (EM) rash: The most common manifestation of early Lyme disease may include doxycycline, amoxicillin, or cefuroxime.
- Neurologic Lyme disease: Facial palsy is treated with oral antibiotics. Lyme meningitis or radiculoneuritis can be treated with oral or intravenous antibiotics, depending on severity.
- Lyme carditis: "heart block" can be treated with oral or intravenous (IV) antibiotics, depending on severity.

- Lyme arthritis: Inflammation of the joints should be treated with a 4-week course of oral antibiotics: doxycycline, amoxicillin, or cefuroxime. Persistent joint inflammation and pain may require a second course of antibiotics, and in some cases, joint swelling and pain persist or recur.

How can Lyme disease be prevented?

Tick exposure can occur year-round but are most active during warmer months.

- Avoid direct contact with ticks in wooded and bushy areas with tall grass.
- Treat clothing and gear with products containing 0.5% permethrin or clothing can be sent for treatment to specific facilities that provide such service.
- Use U.S. Environmental Protection Agency (EPA)-registered insect repellents external icon containing DEET, picaridin, IR3535, Oil of Lemon Eucalyptus (OLE), para-menthane-diol (PMD), or 2-undecanone.
- Check clothing for ticks. Tumble dry clothes in a dryer on high heat for 10 minutes.
- Check gear and pets for ticks.
- Check entire body for ticks, to include in and around the hair, ears, under arms, inside belly button, around waist, between legs, and behind knees.
- Shower within 2 hours of possible contact with ticks.

How can a tick be removed from the skin?

Several tick removal devices are commercially available. A fine-tipped tweezer can effectively remove a tick.

1. Use a clean, fine-tipped tweezers to grasp the tick as close to the skin's surface as possible.
2. Pull upward with steady, even pressure. Do not twist or jerk the tick which can cause the mouthparts to break off and remain in the skin. If this happens, remove the mouthparts with tweezers. If the mouth cannot be removed easily with tweezers, leave it alone and let the skin heal.
3. After removing the tick, thoroughly clean the bite area and hands with rubbing alcohol, or soap and water.

Dispose of a live tick by submersing it in alcohol, placing it in a sealed bag/container, wrapping it tightly in tape, or flushing it down the toilet. Never crush a tick.
Visualization of this process can be found at: https://www.cdc.gov/lyme/removal/index.html.

What is the human tick test kit program?

MilTICK is a free tick testing and identification service available for ticks removed from Department of Defense (DoD) personnel and their dependents. For more information about services provided, including identifying tick species; assessed for how long the tick has been attached; and testing the tick for human pathogens, and contact information, go to: https://ph.health.mil/topics/envirohealth/epm/Pages/HumanTickTestKitProgram.aspx.

What are some public health considerations?

- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

PUBLIC HEALTH REFERENCE SHEET
Lyme Disease

References:

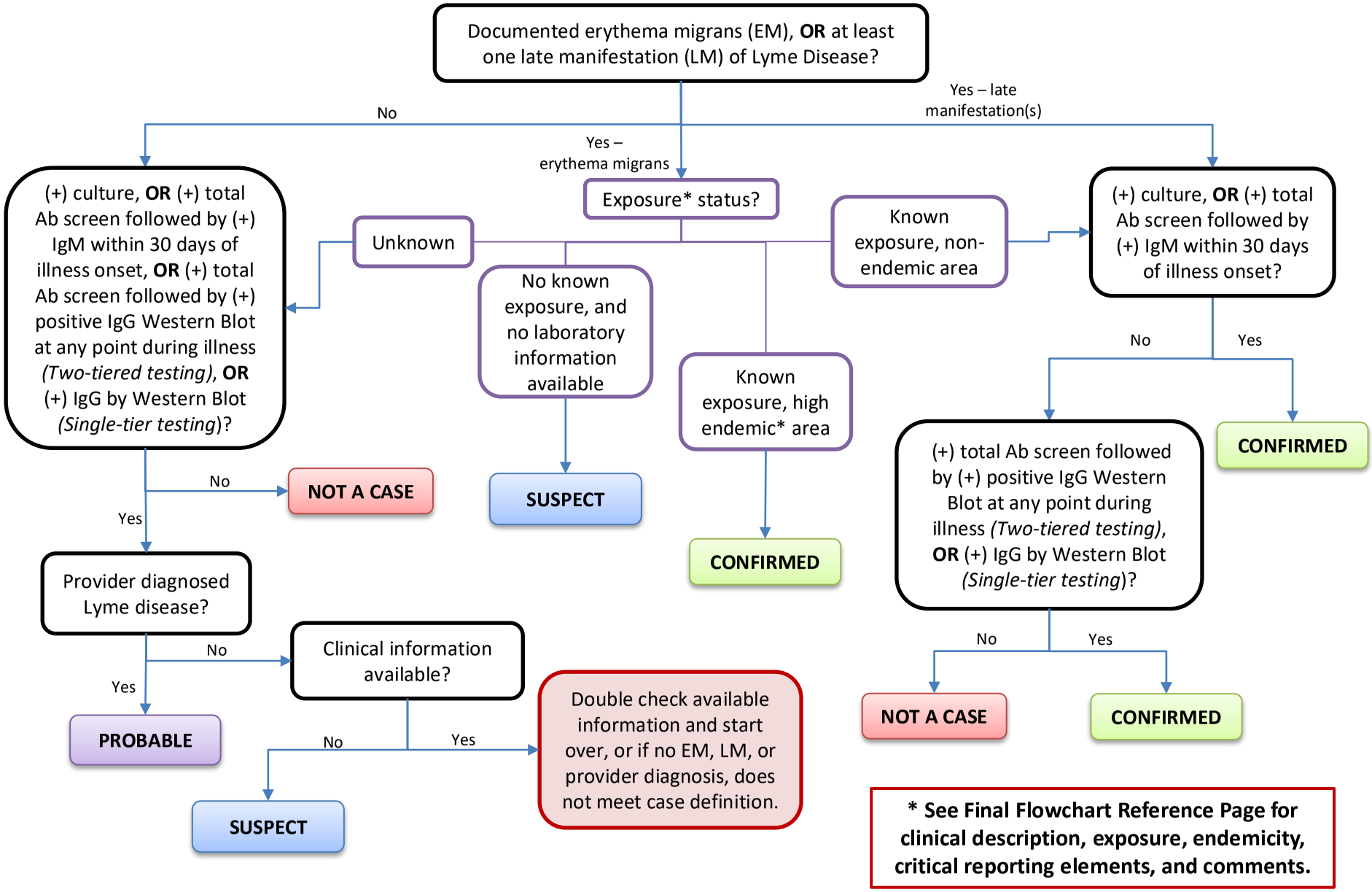
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

"Lyme Disease," Centers for Disease Control and Prevention, last reviewed January 19, 2022. https://www.cdc.gov/lyme/

Last Updated September 1, 2023

Lyme Disease



*** See Final Flowchart Reference Page for clinical description, exposure, endemicity, critical reporting elements, and comments.**

Lyme Disease

Clinical Description, Exposure, Endemicity, Critical Reporting Elements, and Comments

Clinical Description:
Lyme disease is a systemic, tick-borne disease with protean manifestations, including dermatologic, rheumatologic, neurologic, and/or cardiac abnormalities.

Erythema migrans (EM) is the most common clinical marker for Lyme disease. Also known as the "bulls-eye rash," this is the initial skin lesion that occurs in 60%–80% of patients. EM typically begins as a red macule or papule and expands over a period of days to weeks to form a large round lesion, often with partial central clearing. A single primary lesion must reach greater than or equal to 5 cm in size across its largest diameter. Secondary lesions also may occur. Annular erythematous lesions occurring within several hours of a tick bite represent hypersensitivity reactions and do not qualify as EM. For most patients, the expanding EM lesion is accompanied by other acute symptoms, particularly fatigue, fever, headache, mildly stiff neck, arthralgia, or myalgia. These symptoms are typically intermittent.

Late clinical manifestations of the Lyme disease may include the following: severe headaches and neck stiffness, additional EM Rashes to the body, arthritis with severe joint pain and swelling (particularly to the knees and other large joints), facial palsy (loss of muscle tone or droop on one or both sides of the face), intermittent pain in tendons, muscles, joints, and bones, heart palpitations or an irregular heartbeat, episodes of dizziness or short breath, inflammation of the brain and spinal cord, nerve pain, shooting paints, numbness, or tingling in the hands or feet, and problems with short-term memory.

Exposure is defined as having been (≤30 days before onset of EM) in wooded, brushy, or grassy areas in a county in which Lyme disease is endemic. History of tick bite is **not** required.

Endemicity is defined as a county in which at least 2 confirmed cases have been acquired or in which established populations of a known tick vector are infected with *B. burgdorferi.*

Critical Reporting Elements and Comments:
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

☐ Ehrlichiosis/Anaplasmoisis	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Lyme Disease	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Powassan Virus	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Tick-Borne Encephalitis	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Spotted Fever Rickettsiosis	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐ unk)

Rash Y ☐ N ☐ **Describe rash:**

Chills/sweats Y ☐ N ☐

Headache Y ☐ N ☐

Myalgia Y ☐ N ☐

Arthralgia Y ☐ N ☐

Other symptoms Y ☐ N ☐

Complications* Y ☐ N ☐

LYME ONLY LATE MANIFESTATIONS:

Arthritis & joint swelling Y ☐ N ☐

Lymphocytic meningitis Y ☐ N ☐

Bell's palsy Y ☐ N ☐

Radiculoneuropathy Y ☐ N ☐

Encephalomyelitis Y ☐ N ☐

2nd/3rd heart block Y ☐ N ☐

PLEASE SEE LABORATORY VALUES AND EXPOSURE HISTORY ON BACK OF PAGE

TICK-BORNE ENCEPHALITIS ONLY

History of TBE vaccination Y ☐ N ☐

Vaccination date: _____/_____/_____

Exposure to raw/ unpasteurized dairy? Y ☐ N ☐

Date of exposure: _____/_____/_____

*Describe complications:

☐ Encephalitis/meningitis

☐ Seizure(s)

☐ Heart failure

☐ Renal failure

☐ Other *(describe above)*

DIAGNOSIS

Did provider diagnose this current illness as a tick-borne disease?

☐ Yes (mark all that apply)

- ☐ Anaplasmosis
- ☐ Ehrlichiosis
- ☐ Lyme Disease
- ☐ Powassan V.
- ☐ Spotted Fever Rickettsiosis
- ☐ Tick-borne Encephalitis
- ☐ "tick-borne illness"
- ☐ Other: _____

☐ No, NOT a tick-borne illness

Describe: _____

BLOOD VALUES

DATE

Anemia Y ☐ N ☐ **Lowest Hgb:** _____ **Hct:** _____

Leukopenia Y ☐ N ☐ **Lowest WBC:**_____

Thrombocytopenia Y ☐ N ☐ **Lowest PLT:** _____

Elevated liver enzymes Y ☐ N ☐ **Highest ALP:** _____ **ALT:**_____ **AST:**_____

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test *(type of test performed)*	Pathogen *(specify if Lyme, HA, PV, etc)*	Collection Date	Source *(CSF, Serum, etc)*	Result *(Describe result)*
☐ **Antibody** *Western blot or acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

Additional labs (if case has co-infection)

☐ **Antibody** *Western blot or acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

EXPOSURE HISTORY

In the 3-30 days before illness onset, did the case.....

1. **Have a known tick bite?*** **Y** ☐ **N** ☐ **Unk** ☐ **Details and date:** _____
2. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐ **Location and dates:** _____
   - **If yes, was travel duty-related?** **Y** ☐ **N** ☐ **Unk** ☐ **Location and dates:** _____
3. **Engage in outdoor activities?** **Y** ☐ **N** ☐ **Unk** ☐ **Location and dates:** _____
   - **Habitat (wooded, brushy, grassy, etc):** _____
   - **Activity (PT, jogging, camping, etc):** _____
4. **Use tick repellent?** **Y** ☐ **N** ☐ **Unk** ☐ **Type (Permethrin, DEET, etc):** _____

***Note: A tick bite that occurred outside of the 32-day incubation period is not applicable.**

PUBLIC HEALTH REFERENCE SHEET
Malaria

Name	*Plasmodium falciparum, P. vivax, P. ovale,* and *P. malariae.*
Reservoir & Transmission	Humans and some primate and non-human primate species Transmitted via the bite of an infected female *Anopheles* sp. mosquito
Incubation Period	*P. falciparum*: 9–14 days *P. vivax* & P. ovale*: 12–18 days *P. malariae*: 18–40 days Note: *Some *P. vivax* strains in temperate areas have an incubation period of 6–12 months.
Common Symptoms	Fever, chills, sweats, headaches, muscle pains, nausea, vomiting, and fatigue
Gold Standard Diagnostic Test	Thick and thin blood smear
Risk Groups	Those in rural populations in malaria-endemic areas without mosquito protection (bed nets, window screens, etc.), travelers from non-endemic areas that do not use mosquito protection, agricultural workers, farmers
Geographic Significance	South America, Caribbean, much of Sub-Saharan Africa, and parts of Asia

What is malaria?
Malaria is caused by a parasite of the genus *Plasmodium* that commonly infects the *Anopheles* species of mosquito, which feeds on humans. Four kinds of malaria parasites infect humans: *P. falciparum*, *P. vivax*, *P. ovale*, and *P. malariae*. In addition, *P. knowlesi*, a type of malaria that naturally infects macaques in Southeast Asia, also infects humans and causes malaria that is transmitted from animal-to-human ("zoonotic" malaria). *P. falciparum* is most likely to result in severe infections and may be fatal if not promptly treated.

What is the occurrence of malaria?
About 2,000 cases of malaria are diagnosed in the United States annually, mostly in returned travelers. Malaria is typically found in tropical and subtropical countries where the parasites in the *Anopheles* mosquito thrive. Malaria occurs in more than 100 countries and territories. About half of the world's population is at risk. Large areas of Africa and South Asia and parts of Central and South America, the Caribbean, Southeast Asia, the Middle East, and Oceania are considered malaria-prone areas. Yet, malaria does not occur in all warm climates. For example, malaria has been eliminated in some countries with warm climates, while a few other countries have no malaria because *Anopheles* mosquitoes are not found there.

How is malaria transmitted?
People most commonly contract malaria by being bitten by an infected female *Anopheles* mosquito. Because the malaria parasite is found in red blood cells of an infected person, malaria can also be transmitted through blood transfusion, organ transplant, or contaminated shared needles or syringes. Malaria may also be transmitted from a mother to her unborn infant before or during delivery ("congenital" malaria). Malaria is not spread from person-to-person like a cold or the flu, and it cannot be sexually transmitted. Malaria does not transmit through casual contact with malaria-infected people. However, humans infected with malaria can transmit malaria to a feeding female *Anopheles* mosquito. Only *Anopheles* mosquitoes can transmit malaria after a previous blood meal is taken from an infected person. When a mosquito bites an infected person, a small amount of blood is taken that contains microscopic malaria parasites.

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About a week later, when the mosquito takes its next blood meal, these parasites mix with the mosquito's saliva and enter the bitten person.

Who is at risk for malaria?

Anyone can get malaria, but most cases occur in people who live in countries with malaria transmission. People from countries without malaria can become infected with the disease during travel to countries with malaria, especially if they do not take appropriate malaria chemoprophylaxis, or rarely through a blood transfusion. Individuals from malaria-endemic areas may have acquired immunity or partial immunity, which can wane after leaving that area. Also, an infected mother can transmit malaria to her infant before or during delivery.

Plasmodium falciparum is the type of malaria that most often causes severe and life-threatening malaria; this parasite is very common in many countries in Sub-Saharan Africa. People who are most exposed to the bites of mosquitoes infected with *P. falciparum* are most at risk of dying from malaria. People who have little or no immunity to malaria (e.g., young children, pregnant women, or prone travelers) maintain a greater chance of illness or death. People living in impoverished rural areas and lack access to health care are at an increased risk for malaria. As a result of all these factors, an estimated 90% of deaths due to malaria occur in Africa south of the Sahara; most of these deaths occur in children under 5 years of age.

“The risk for a traveler contracting malaria differs substantially from region to region and from traveler to traveler, even within a single country, based upon travelers’ behaviors and circumstances. There is no accepted method of quantifying the risk and no numerical value for a risk threshold beyond which chemoprophylaxis is or is not recommended.” Refer to the CDC malaria risk assessment for travelers:
https://www.cdc.gov/malaria/travelers/risk_assessment.html

What are the signs and symptoms of malaria?

Malaria symptoms range from mild illness to severe disease and may be fatal. Early symptoms include fever, chills, sweats, headache, muscle aches, fatigue, nausea, vomiting, and diarrhea. Patients typically have all symptoms, but the absence of one does not rule-out malaria or lessen clinical suspicion. Malaria may cause anemia and jaundice because of red blood cell loss. If not promptly treated, the infection can become severe and may cause kidney failure, seizures, mental confusion, respiratory distress, coma, or death.

Following the infective bite by the *Anopheles* mosquito, the incubation period in most cases varies from 7 to 30 days. *P. falciparum* has a shorter incubation period, and *P. malariae* has a longer incubation period.

Antimalarial drugs taken for prophylaxis by travelers can delay the appearance of malaria symptoms by weeks or months, long after the traveler has left the malaria-endemic area. This can happen particularly with *P. vivax* and *P. ovale*, both of which can produce dormant liver stage parasites; the liver stages may reactivate and cause disease months after the infective mosquito bite.

PUBLIC HEALTH REFERENCE SHEET
Malaria

What are potential complications of malaria?

Severe malaria is a medical emergency and should be treated urgently and aggressively.

Severe malaria occurs when infections are complicated by organ failure or abnormalities in the blood or metabolism. Persons with severe malaria may experience confusion, coma, neurologic focal signs, severe anemia, and respiratory difficulties. Just one of these symptoms in a patient with malaria would indicate severe malaria, possibly life-threatening, and co-existing clinical signs/symptoms could indicate a higher degree of severity.

The manifestations of severe malaria include:

- Cerebral malaria with abnormal behavior, impairment of consciousness, seizures, coma, or other neurologic abnormalities
- Severe anemia due to hemolysis
- Hemoglobinuria due to hemolysis
- Acute respiratory distress syndrome (ARDS), which may occur even after the parasite counts have decreased in response to treatment
- Abnormalities in blood coagulation
- Low blood pressure caused by cardiovascular collapse
- Acute kidney failure
- Hyperparasitemia (more than 5% of the red blood cells are infected by malaria parasites)
- Metabolic acidosis often in association with hypoglycemia
- Hypoglycemia may also occur in pregnant women with uncomplicated malaria, or after treatment with quinine.

Other manifestations of malaria include:

- Neurologic defects may occasionally persist following cerebral malaria, especially in children. Such defects include trouble with movements (ataxia), palsies, speech difficulties, deafness, and/or blindness.
- Recurrent infections with *P. falciparum* may result in severe anemia. This occurs especially in young children in tropical Africa with frequent infections that are inadequately treated.
- Malaria during pregnancy (especially *P. falciparum*) may cause severe disease in the mother and may lead to premature delivery or delivery of a low-birth-weight baby.
- On rare occasions, *P. vivax* malaria can cause rupture of the spleen.
- Nephrotic syndrome (a chronic, severe kidney disease) can result from chronic or repeated infections with *P. malariae*.
- Hyperreactive malarial splenomegaly (also called “tropical splenomegaly syndrome”) occurs infrequently and is attributed to an abnormal immune response to repeated malarial infections. The disease is marked by a very enlarged spleen and liver, abnormal immunologic findings, anemia, and a susceptibility to other infections (such as skin or respiratory infections).

How is malaria diagnosed?

Laboratory diagnosis of malaria is confirmed through microscopic examination of thick and thin blood smears for the presence of malaria parasites. If there is any suspicion of malaria (for example, if the patient has recently traveled in a country where malaria transmission occurs), the test should be performed without delay; this may require three sets of serial blood smear examinations, as initial blood smears may be negative. Antigen detection tests called rapid diagnostic tests (RDT) can determine that the patient has malaria; however, these are less sensitive than microscopy and cannot confirm each specific species of the malaria parasite or

the parasite density. Parasite nucleic acid detection using polymerase chain reaction (PCR) is more sensitive and specific than microscopy, but results are often not available quickly enough for routine diagnosis. PCR is a very useful tool for confirmation of species and detection of mutations associated with drug resistance.

How is malaria treated?

Malaria can rapidly become a severe and life-threatening disease; once the diagnosis is made, treatment must be initiated immediately. Malaria treatment tables are available through the CDC website at https://www.cdc.gov/malaria/diagnosis_treatment/clinicians1.html#general and the CDC Malaria Hotline at 770-488-7188. The type of medication and length of treatment depends on the type of malaria, where (geographic location) the person was infected, and how sick they are when treatment starts. Other important factors are age and whether the person is pregnant.

In *P. vivax* and *P. ovale* infections, patients having recovered from the first episode of illness may suffer several relapses after months or even years without symptoms. Relapses occur because *P. vivax* and *P. ovale* have dormant liver stage parasites ("hypnozoites") that may reactivate. Treatment is available to reduce the risk of relapses.

How can malaria be prevented?

Consult with a travel or tropical medicine specialist for guidance when assessing the factors to determine the best prevention strategy for the individual traveler. Depending on level of risk, it may be appropriate to recommend no specific interventions, mosquito avoidance measures only, or mosquito avoidance measures plus chemoprophylaxis. Refer to the CDC's malaria risk assessment for travelers at https://www.cdc.gov/malaria/travelers/risk_assessment.html.

Individual prevention strategies include:

- Avoid areas with high mosquito activity, especially during late evening and at night.
- Use an Environmental Protection Agency (EPA) registered bug spray.
- Wear loose-fitting, long-sleeved shirts and pants.
- Keep windows and doors closed or covered with screens.
- Empty standing water to prevent mosquitoes from laying eggs.

What are some public health considerations?

- Specify the species if known.
- Document relevant travel and deployment history occurring within the incubation period (incubation time range varies depending on species).
- Document chemoprophylaxis regimen.
- Report dual infections of different *Plasmodium* species separately.

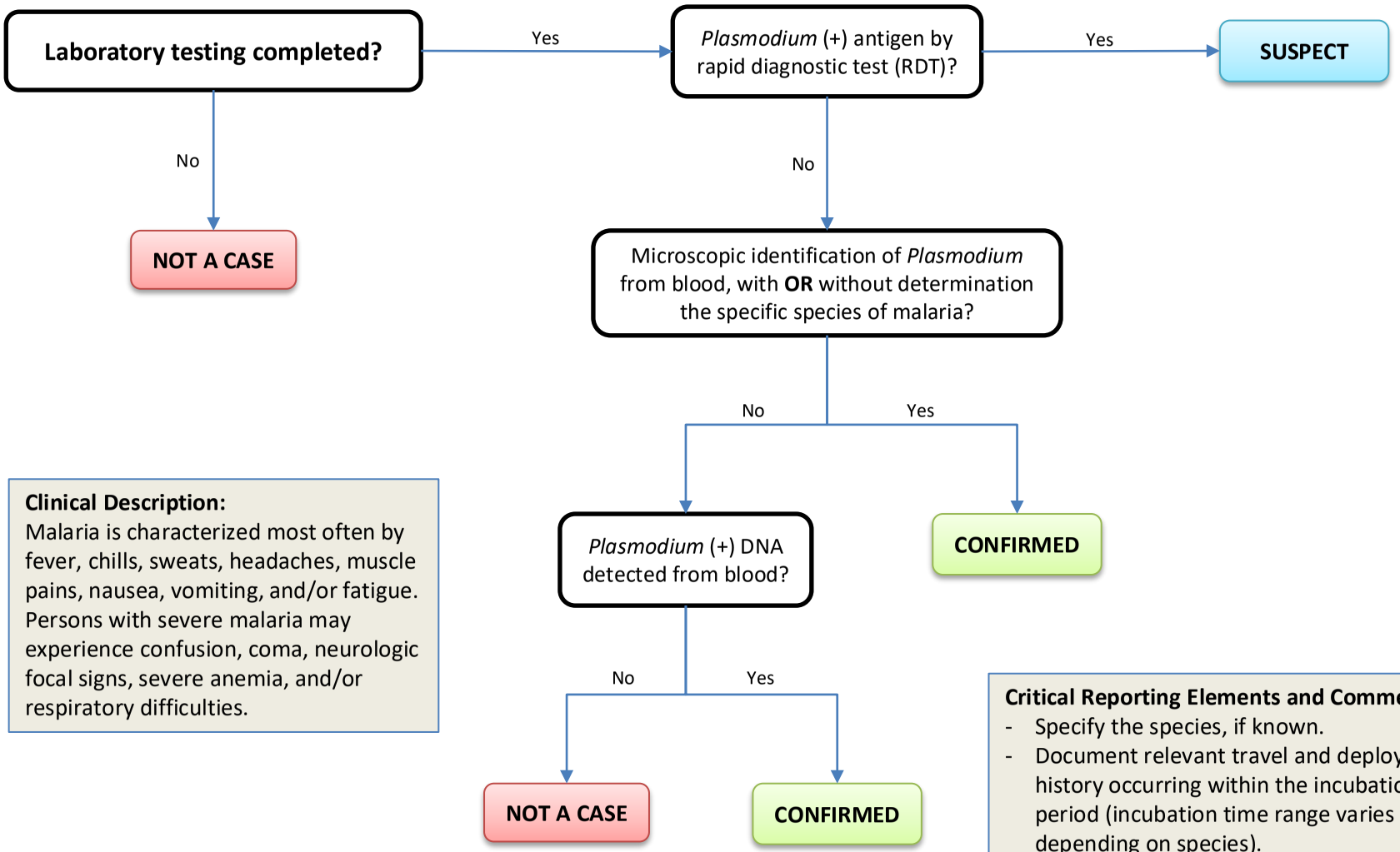
References

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Malaria," Centers for Disease Control and Prevention (CDC), last reviewed August 21, 2023. https://www.cdc.gov/parasites/malaria/

Malaria



Clinical Description:
Malaria is characterized most often by fever, chills, sweats, headaches, muscle pains, nausea, vomiting, and/or fatigue. Persons with severe malaria may experience confusion, coma, neurologic focal signs, severe anemia, and/or respiratory difficulties.

Critical Reporting Elements and Comments:
- Specify the species, if known.
- Document relevant travel and deployment history occurring within the incubation period (incubation time range varies depending on species).
- Document chemoprophylaxis regimen.
- Report dual infections of different *Plasmodium* species separately.

MOSQUITO-BORNE INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

☐ Arboviral Disease:_____ *Please specify*	◯ Confirmed	◯ Probable	◯ Not a case
☐ Chikungunya Virus	◯ Confirmed	◯ Probable	◯ Not a case
☐ Dengue Virus	◯ Confirmed	◯ Probable	◯ Not a case
☐ Malaria	◯ Confirmed	◯ Suspect	◯ Not a case
☐ Zika Virus	◯ Confirmed	◯ Probable	◯ Not a case

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.
Outbreak investigations must be reported immediately to DRSi through the outbreak module at https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ PARENT/GUARDIAN: _____

DOB: _____/_____/_____ AGE: _____ FMP: _____ SEX: ☐ M ☐ F ☐ Unk RACE: _____

UNIT: _____ SERVICE:_____ RANK: _____ DUTY STATUS:_____

ADDRESS: *(Street)*_____ DoD ID:_____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ Clinic/Hospital:_____

Hospitalized Y ☐ N ☐ Admit Date: _____/_____/_____ Discharge date: _____/_____/_____

Deceased Y ☐ N ☐ Date of death: _____/_____/_____ Cause of death:_____

Symptomatic	Y ☐	N ☐	Onset Date: _____/_____/_____ Clinic Date: _____/_____/_____ Diagnosis Date: _____/_____/_____
Fever	Y ☐	N ☐	Max Temp: _____°F/°C (☐ unk)
Rash	Y ☐	N ☐	
Chills/sweats	Y ☐	N ☐	
Arthralgia	Y ☐	N ☐	
Myalgia	Y ☐	N ☐	
Nausea/vomiting	Y ☐	N ☐	
Headache	Y ☐	N ☐	
Fatigue	Y ☐	N ☐	
Conjunctivitis	Y ☐	N ☐	
Joint swelling	Y ☐	N ☐	
Neurological symptoms	Y ☐	N ☐	
Complications*	Y ☐	N ☐	

MEDICAL HISTORY

(Provide dates and all known details for each question)

History of mosquito-borne illness? Y ☐ N ☐ Describe:_____

Immune suppression? Y ☐ N ☐ Describe:_____

Underlying illness? Y ☐ N ☐ Describe:_____

Transfusion or transplant <30 days before onset? Y ☐ N ☐ Describe:_____

Describe any other pertinent medical information:

CHEMOPROPHYLAXIS

Was chemoprophylaxis taken? Y ☐ N ☐

If yes, please indicate:

Chloroquine ☐ Doxycycline ☐

Mefloquine ☐ Malarone ☐

Started: ____/____/____ Ended: ____/____/____

IF PREGNANT:

Is case pregnant? Y ☐ N ☐

Trimester: _____

Pregnancy complications? Y ☐ N ☐

Describe:_____

Evidence of microcephaly or Guillain-Barre syndrome?*(Zika)* Y ☐ N ☐

*IF COMPLICATIONS:

(check all that apply and describe below)

☐ Encephalitis/meningitis
☐ Acute flaccid paralysis
☐ Lymphopenia
☐ Leukopenia
☐ Severe plasma leakage
☐ Severe organ involvement
☐ Severe bleeding
☐ Coma

DIAGNOSIS

Did provider diagnose this current illness as a mosquito-borne disease?

☐ Yes (mark all that apply)

☐ Chikungunya V. ☐ Dengue V.

☐ Malaria ☐ Zika V.

☐ "mosquito-borne illness"

☐ Other: _____

☐ No, NOT a mosquito-borne illness

Describe: _____

MALARIA ONLY

Specify malaria species:

☐ Falciparum ☐ Vivax

☐ Malariae ☐ Ovale

☐ Unspecified ☐ Other:_____

Arboviral Disease incubation periods for mosquito-borne diseases are:

- **West Nile fever - most often 2–6 days, ranges up to 2–14 days, up to 21 days for immunocompromised**
- **West Nile encephalitis - most often 2–6 days, ranges up to 2–14 days,**
- **Japanese encephalitis (JE) - 5–15 days**
- **Western Equine encephalitis (WEE) - 5–15 days**
- **Eastern Equine encephalitis (EEE) - 4–10 days**
- **St. Louis encephalitis (SLE) - 5–15 days**
- **California encephalitis (CE) - 3–7 days**

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test	Pathogen	Collection Date	Source	Result
	(type of test performed)	*(Specify if Dengue, CHIK, etc)*		*(CSF, Serum, etc)*	*(Ex: IgM positive, IgG negative)*
☐ **Antibody** *Acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

Additional labs (if case has co-infection)

☐ **Antibody** *Acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

TRAVEL HISTORY

In the 3 months before illness onset (when symptoms started), did the case....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Measles (Rubeola)

Name	Measles virus, a member of the genus *Morbillivirus* in the Paramyxoviridae family.
Reservoir & Transmission	Humans are the only natural host. Airborne by droplet spread, direct contact with nasal or throat secretions; less commonly by articles freshly soiled with nose and throat secretions. The period of communicability extends from 4 days before rash to 4 days after rash appearance. It is minimal after the second day of rash.
Incubation Period	From exposure to rash onset averages 14 days, with a range of 7–21 days.
Common Symptoms	Begins with high fever, cough, runny nose (coryza), and red, watery eyes (conjunctivitis). Two to three days later, tiny white spots (Koplik spots) may appear inside the mouth. Three to five days after symptoms begin, a rash breaks out.
Gold Standard Diagnostic Test	A four-fold rise in titer as measured in a measles virus plaque reduction neutralization test (PRN or PRNT) between acute and convalescent serum samples.
Risk Groups	For serious illness and complications: infants and children aged <5 years, adults aged >20 years, pregnant women, and people with compromised immune systems.
Geographic Significance	Still common in many developed and developing countries and travel in densely populated areas.

What is measles?
Measles, also known as Rubeola, is a highly contagious acute viral respiratory illness that is caused by a single-stranded, enveloped RNA virus with 1 serotype. It is classified as a member of the genus Morbillivirus in the Paramyxoviridae family.

What is the occurrence of measles?
Measles remains a common disease in many parts of the world, including Europe, the Middle East, Asia, and Africa. Each year, an estimated 142,000 people die from measles. Outbreaks in countries to which people travel can directly contribute to an increase in measles cases. In the U.S., measles importations have come from countries, including the Philippines, Ukraine, Israel, Thailand, Vietnam, England, France, Germany, and India. In the decade before the live measles vaccine was licensed in 1963, an average of 549,000 measles cases and 495 measles deaths were reported annually in the U.S. In 2000, measles was declared eliminated from the U.S. based on the absence of endemic measles virus transmission in a defined geographic area, such as a country, for 12 months or longer in the presence of a well-performing surveillance system. Since 2000, the annual number of cases in the U.S. ranged from a low of 37 in 2004 to a high of 1,282 in 2019, and most cases have been among people who are not vaccinated against measles.

How is measles transmitted?
Measles is transmitted by direct contact with infectious droplets or spread airborne when an infected person breathes, coughs, or sneezes. Measles virus can remain infectious in the air for up to 2 hours after an infected person leaves an area. Measles is one of the most contagious of all infectious diseases; approximately 9 out of 10 susceptible persons with close contact to a

measles patient will develop measles. Patients are considered contagious from 4 days before to 4 days after the rash appears.

Who is at risk for measles?
Individuals who are not immunized are at risk for measles. People at high risk for severe illness and complications from measles include:

- Infants and children aged <5 years
- Adults aged >20 years
- Pregnant women
- People with compromised immune systems, such as from leukemia or HIV infection

What are the signs and symptoms of measles?
Measles is characterized by a prodrome of fever (up to 105°F), malaise, cough, coryza (acute inflammation of mucous membrane inside the nose), and conjunctivitis, a pathognomonic enanthema (Koplik spots), followed by a maculopapular rash. The rash usually appears about 14 days after a person is exposed. The rash spreads from the head to the trunk to the lower extremities. Immunocompromised patients may not develop the rash.

What are potential complications from measles?
Common complications from measles include otitis media (1 out of 10), diarrhea (1 out of 10). Even in previously healthy children, measles can cause serious illness requiring hospitalization.

- One out of every 20 children with measles will develop pneumonia
- One out of every 1,000 measles cases will develop acute encephalitis, that can lead to convulsions and leave the child deaf or with intellectual disability.
- One to three of every 1,000 children who become infected with measles will die from respiratory and neurologic complications.
- Pregnant women who have not had the MMR vaccine may give birth prematurely or have a low-birth-weight baby.
- Subacute sclerosing panencephalitis (SSPE) is a very rare, but fatal degenerative disease of the central nervous system characterized by behavioral and intellectual deterioration and seizures that generally develop 7 to 10 years after measles infection.

How is measles diagnosed?
Consider measles in patients presenting with febrile rash illness and clinically compatible measles symptoms, especially if the person recently traveled internationally or was exposed to a person with febrile rash illness.

Laboratory confirmation is essential for all sporadic measles cases and all outbreaks. Detection of measles-specific IgM antibody and measles RNA by real-time polymerase chain reaction (RT-PCR) are the most common methods for confirming measles infection. Obtain both a serum sample and a throat swab (or nasopharyngeal swab) from patients suspected to have measles. Collecting both respiratory and urine samples can increase the likelihood of detecting measles virus. Molecular analysis can also be conducted to determine the genotype of the measles virus. Genotyping is used to map the transmission pathways of measles virus and link or unlink cases. Genotyping is the only way to distinguish between wild-type measles virus infection and a rash caused by a recent measles vaccination.

PUBLIC HEALTH REFERENCE SHEET
Measles (Rubeola)

How is measles treated?

Isolate infected individuals for four days after they develop a rash. In healthcare settings, use airborne infection control precautions (N95 respirator and a single-patient isolation room). There is no specific antiviral therapy for measles. Medical care is supportive and to help relieve symptoms and address complications such as bacterial infections.

Severe measles cases among children, such as those who are hospitalized, should be treated with vitamin A. Vitamin A should be administered immediately upon diagnosis and repeated the next day. The recommended age-specific daily doses are:

- 50,000 IU for infants younger than 6 months of age
- 100,000 IU for infants 6–11 months of age
- 200,000 IU for children 12 months of age and older

Lifelong immunity to measles is typically attained after natural measles infection or completed vaccination. Acceptable presumptive evidence of immunity against measles includes at least one of the following:

- Written documentation of adequate vaccination:
    - One or more doses of a measles-containing vaccine administered on or after the first birthday for preschool-age children and adults not at high risk
    - Two doses of measles-containing vaccine for school-age children and adults at high risk, including college students, healthcare personnel, and international travelers
    - Some adults who received the measles vaccine between 1963 and 1967 may not be protected from the virus due to an ineffective version of the measles vaccine available at that time
- Laboratory evidence of immunity
- Laboratory confirmation of measles
- Birth before 1957

Do not accept verbal reports of vaccination without written documentation as presumptive evidence of immunity.

How can measles be prevented?

Measles can be prevented with measles-containing vaccine, which is primarily administered as the combination measles-mumps-rubella (MMR) vaccine. The combination measles-mumps-rubella-varicella (MMRV) vaccine can be used for children aged 12 months through 12 years for protection against measles, mumps, rubella, and varicella. Single-antigen measles vaccine is not available. One dose of MMR vaccine is approximately 93% effective at preventing measles; two doses are approximately 97% effective. Almost everyone who does not respond to the measles component of the first dose of MMR vaccine at age 12 months or older will respond to the second dose.

People exposed to measles who cannot readily show evidence of immunity against measles should be offered post-exposure prophylaxis (PEP) or be excluded from the setting (school, hospital, childcare). MMR vaccine, if administered within 72 hours of initial measles exposure, or immunoglobulin (IG), if administered within six days of exposure, may provide some protection, or modify the clinical course of disease. People who receive MMR vaccine or IG as PEP should be monitored for signs and symptoms consistent with measles for at least one incubation period.

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PUBLIC HEALTH REFERENCE SHEET
Measles (Rubeola)

If MMR vaccine is not administered within 72 hours of exposure as PEP, MMR vaccine should still be offered at any interval following exposure to the disease to offer protection from future exposures.

If many measles cases are occurring amongst infants younger than 12 months of age, measles vaccination of infants as young as 6 months of age may be used as an outbreak control measures. Children vaccinated before their first birthday should be revaccinated when they are 12 through 15 months old and again when they are 4 through 6 years of age.

People who are at risk for severe illness and complications from measles, such as infants younger than 12 months of age, pregnant women without evidence of measles immunity, and people with severely compromised immune systems, should receive IG. Intramuscular IG (IMIG) should be given to all infants younger than 12 months of age who have been exposed to measles. For infants aged 6 through 11 months, MMR vaccine can be given in place of IG, if administered within 72 hours of exposure. Because pregnant women might be at higher risk for severe measles and complications, intravenous IG (IVIG) should be administered to pregnant women without evidence of measles immunity who have been exposed to measles. People with compromised immune systems who are exposed to measles should receive IVIG regardless of immunologic or vaccination status because they might not be protected by MMR vaccine.

IG should not be used to control measles outbreaks, but rather to reduce the risk for infection and complications in the people receiving it. IMIG can be given to those who do not have evidence of immunity against measles, but priority should be given to people exposed in settings with intense, prolonged, close contact, such as household, daycare, or classroom where the risk of transmission is highest.

Except in healthcare settings, unvaccinated people who receive their first dose of MMR vaccine within 72 hours after exposure may return to childcare, school, or work. After receipt of IG, people cannot return to healthcare settings. In other settings, such as childcare, school, or work, factors such as immune status, intense or prolonged contact, and presence of populations at risk, should be taken into consideration before allowing people to return. These factors may decrease the effectiveness of IG or increase the risk of disease and complications depending on the setting to which they are returning.

What are some public health considerations?

- Report suspected measles cases to their local health department within 24 hours.
- Document relevant travel and deployment history occurring within the incubation period.
- Note the patient's measles immunization history.
- Susceptible healthcare workers should be excluded from work beginning 5 days through the 21st day following exposure, regardless of post-exposure vaccine or IG.
- A healthcare worker who develops measles symptoms after exposure should be excluded from work until 4 days after rash onset, or until measles is ruled out.

References

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Measles (Rubeola)

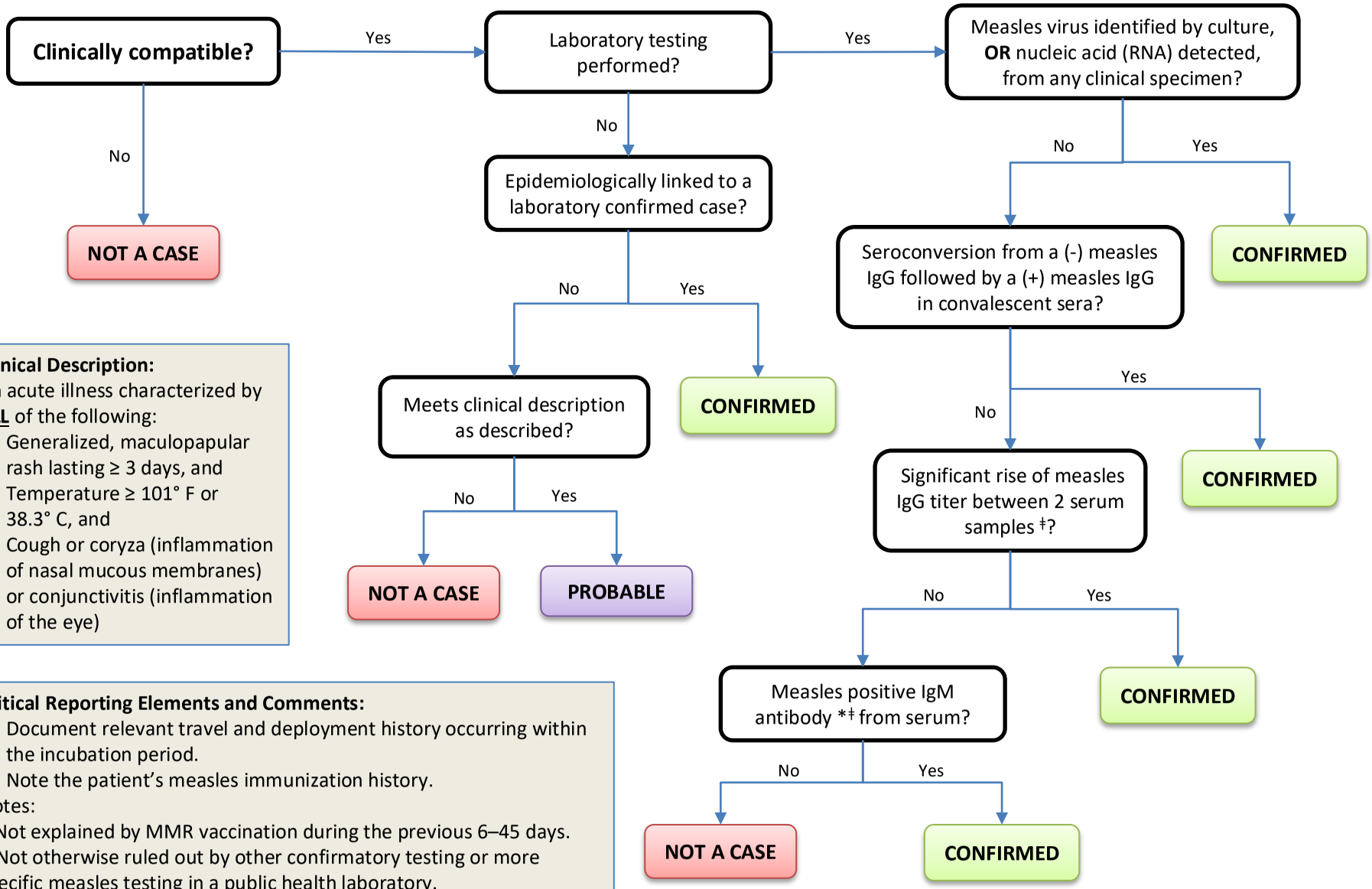
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Measles," Centers for Disease Control and Prevention (CDC), last reviewed November 5, 2020. https://www.cdc.gov/measles/

Last Updated September 1, 2023

Measles

COMMON NAME: Rubeola



Clinical Description:
An acute illness characterized by **ALL** of the following:
- Generalized, maculopapular rash lasting ≥ 3 days, and
- Temperature ≥ 101° F or 38.3° C, and
- Cough or coryza (inflammation of nasal mucous membranes) or conjunctivitis (inflammation of the eye)

Critical Reporting Elements and Comments:
- Document relevant travel and deployment history occurring within the incubation period.
- Note the patient's measles immunization history.

Notes:
* Not explained by MMR vaccination during the previous 6–45 days.
‡ Not otherwise ruled out by other confirmatory testing or more specific measles testing in a public health laboratory.

INVESTIGATION WORKSHEET

Defense Health Agency ®

Measles

Confirmed ○ Probable ○ Not a Case

☐ Entered in DRSi?

☐ Reported to health dept?

https://drsi.health.mil/ADRSi

POC: _____

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

(_____) - _____ - _____

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)
Rash*	☐	☐	
Cough/coryza	☐	☐	
Conjunctivitis	☐	☐	
Other *(describe)*	☐	☐	

Epidemiologic Link	Y	N
Is the case epidemiologically linked to another laboratory-confirmed case of Measles?	☐	☐
Is this case part of a larger group/community outbreak?	☐	☐

***If the case has a rash, describe:**

Rash onset: _____/_____/_____

Rash duration: _____

Describe rash:_____

_____

_____

_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)
Is the case vaccinated?	☐	☐	____/_____/_____ **2nd:** ____/_____/_____ **3rd:**____/_____/_____

If not ever vaccinated, why?

☐ **Religious Exemption** ☐ **Medical Contraindication** ☐ **Philosophical Objection**

☐ **Lab Evidence of Previous Disease** ☐ **MD Diagnosis of Previous Disease**

☐ **Under Age for Vaccination** ☐ **Parental Refusal** ☐ **Other:** _____

☐ **Unknown**

LABORATORY RESULTS

COMMENTS

Test (type of test performed)	Collection Date	Source (Circle Type)	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation period: From exposure to rash onset averages 14 days with a range of 7–21 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Include any other pertinent information below:

PUBLIC HEALTH REFERENCE SHEET
Meningococcal Disease

Name	Causative agent *Neisseria meningitidis* EXCLUDES: Viral/aseptic meningitis
Reservoir & Transmission	Humans People spread meningococcal bacteria to others by exchanging respiratory and throat secretions during close or lengthy contact. People with meningococcal disease and those who carry the bacteria asymptomatically in the nasopharynx can spread the bacteria.
Incubation Period	3–4 days, with a range of 2–10 days
Common Symptoms	Fever, headache, and stiff neck in meningococcal meningitis cases, and sepsis and rash in meningococcemia. Meningococcal disease manifests most commonly as meningitis and/or meningococcemia that may progress rapidly to purpura fulminans (i.e., a hemorrhagic condition and clotting disorder which manifests as blood spots, bruising and discoloration of the skin), shock, and death.
Gold Standard Diagnostic Test	Gram stain of cerebrospinal fluid (CSF)
Risk Groups	Anyone can contract meningococcal disease, but risk is highest in infants, teens, and young adults; those that spend time in large groups (e.g., college campuses, new military recruits); people with certain medical conditions; people who receive complement inhibitors; and people traveling to a country where meningococcal disease is epidemic or highly endemic.
Geographic Significance	Worldwide, but greatest incidence occurs in the meningitis belt of Africa

What is meningococcal disease?
Meningococcal disease can refer to any illness caused by the bacteria *Neisseria meningitidis,* also known as meningococcus. These illnesses include infections in the lining of the brain and spinal cord (meningitis), bloodstream (bacteremia or septicemia), and can be fatal.

There are multiple serogroups of *N. meningitidis*. Serogroups B, C, and Y cause the majority of disease in the United States. Serogroup W and nongroupable strains cause a small portion of disease.

What is the occurrence of meningococcal disease?
N. meningitidis is found worldwide, but incidence is greatest in the meningitis belt (stretching from Senegal in the west to Ethiopia in the east) of sub-Saharan Africa. Meningococcal disease is hyperendemic in this region, and periodic epidemics during the dry season (December–June) reach an incidence of up to 1,000 cases per 100,000 population. By contrast, rates of disease in Australia, Europe, South America, and the United States range from 0.10 to 2.4 cases per 100,000 population per year (CDC, 2023). In the U.S., outbreaks are rare, and rates of meningococcal disease have declined since the 1990s. In 2019, about 375 total cases of meningococcal disease were reported. Meningococcal disease incidence historically had a cyclical pattern, with peaks in incidence occurring every 7–10 years and a seasonal pattern with peak incidence in late winter and early spring. Outbreaks typically occur in schools, colleges, communal living, and prisons.

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Meningococcal Disease

How is meningococcal disease transmitted?

Meningococci spread through respiratory secretions and require close contact for transmission. Both asymptomatic carriers and people with overt meningococcal disease can be sources of infection. Asymptomatic carriage is transient and typically affects approximately 5% to 10% of the population at any given time.

Who is at risk for meningococcal disease?

- Household or close contacts of case patients at highest risk for developing meningococcal disease
- Infants less than 1 year old, adolescents and young adults 16 through 23 years old, and adults over 85 years of age have higher rates of disease than other age groups
- People with certain medical conditions such as functional or anatomic asplenia, persistent complement component deficiencies (e.g., C3, C5-9, properdin, factor H, factor D) and HIV infection
- People who receive complement inhibitors (e.g., eculizumab and ravulizumab)
- Microbiologists who are routinely exposed to isolates of *N. meningitidis*
- People identified as being at increased risk because of an outbreak of meningococcal disease
- People traveling to a country where meningococcal disease is epidemic or highly endemic
- First-year college students who live in residence halls
- Military recruits

What are the signs and symptoms of meningococcal disease?

- Per CDC, meningococcal disease generally occurs 1–10 days after exposure and presents as meningitis in approximately 50% of cases in the United States. Meningococcal meningitis is characterized by sudden onset of headache, fever, and neck stiffness, sometimes accompanied by nausea, vomiting, photophobia, or altered mental status. Meningococcal disease progresses rapidly and has a case-fatality rate of 10%–15%, even with antimicrobial drug treatment. Without rapid treatment, fatality rates can be much higher.
- Approximately 30% of people with meningococcal disease are present with meningococcal sepsis, known as meningococcemia. Symptoms of meningococcemia can include abrupt onset of fever, chills, vomiting, diarrhea, and a petechial or purpuric rash, which can progress to purpura fulminans. Meningococcemia often involves hypotension, acute adrenal hemorrhage, and multiorgan failure. An additional 15% of meningococcal disease cases in the United States, primarily among adults >65 years of age, present as bacteremic pneumonia.
- Among infants and children aged <2 years, meningococcal disease can have nonspecific symptoms. Neck stiffness, usually seen in people with meningitis, might be absent in this age group.

What are potential complications of meningococcal disease?

About 10 to 15 in 100 people with meningococcal disease will die. Up to 1 in 5 survivors will have long-term disabilities, such as loss of limb(s), deafness, nervous system problems, and brain damage (CDC, 2023).

How is meningococcal disease diagnosed?

Early diagnosis and treatment are critical. If bacterial meningitis is suspected, collect blood for culture immediately and perform a lumbar puncture (LP) to collect cerebrospinal fluid (CSF) for microscopic examination and Gram stain. In general, diagnosis is made by isolating *N. meningitidis* from a normally sterile body site (e.g., blood, CSF) either by culture or by PCR

detection of *N. meningitidis*–specific nucleic acid. State health departments can provide diagnostic and testing support, if needed. Signs and symptoms of meningococcal meningitis are like those of other causes of bacterial meningitis (e.g., Haemophilus influenzae, Streptococcus pneumoniae). Proper treatment and prophylaxis depend on correctly identifying the causative organism.

How is meningococcal disease treated?

- Meningococcal disease can be rapidly fatal and should always be viewed as a medical emergency. As soon as disease is suspected and blood cultures and CSF have been collected, deliver appropriate treatment; if the LP is to be delayed for any reason (e.g., imaging studies of the head prior to LP), administer antimicrobial drugs immediately after collecting blood cultures. Begin empiric antimicrobial drug treatment early and prior to receiving diagnostic test results.
- Third-generation cephalosporins are recommended for empiric treatment. Although ampicillin or penicillin also can be used for treatment, determine meningococcal isolate susceptibility before switching to one of these antibiotics; recent reports indicate emerging penicillin resistance among meningococcal isolates in the United States. If a patient presents with suspected bacterial meningitis of uncertain etiology, some treatment algorithms recommend empiric use of dexamethasone as well as an antimicrobial drug until a bacterial etiology is established; if meningococcal meningitis is confirmed or suspected, steroids can be discontinued (CDC, 2023).
- Due to increased reports of ciprofloxacin-resistant, β-lactamase-producing *N. meningitidis* serogroup Y cases since June 2020 in the United States, clinicians and public health staff should—
    - Consider antimicrobial susceptibility testing on meningococcal isolates to inform prophylaxis decisions if their state has reported a case of meningococcal disease caused by ciprofloxacin-resistant strains within the past 2 years.
    - Update prophylaxis practices around *N. meningitidis* cases as needed based on detection of ciprofloxacin-resistance cases. View CDC guidance on changing prophylaxis antibiotics in areas with ciprofloxacin resistance. https://www.cdc.gov/meningococcal/outbreaks/changing-prophylaxis-antibiotics.html

How can meningococcal disease be prevented?

- CDC recommends meningococcal vaccination for all preteens and teens. CDC also recommends clinicians vaccinate children and adults who are at increased risk for meningococcal disease. See Meningococcal Vaccination: Information for Healthcare Professionals https://www.cdc.gov/vaccines/vpd/mening/hcp/index.html for information on all meningococcal vaccine recommendations by vaccine, age, and indication.
- CDC also recommends chemoprophylaxis for close contacts of patients with meningococcal disease, regardless of immunization status. See the “Chemoprophylaxis” section of the meningococcal chapter in the Manual for the Surveillance of Vaccine-Preventable Diseases https://www.cdc.gov/vaccines/pubs/surv-manual/chpt08-mening.html for additional guidance.
- Travelers should receive vaccines 7–10 days before travel to enable time for protective antibody levels to develop. All meningococcal vaccines are inactivated and can be given to people who are immunosuppressed.

What are some Public Health considerations?

- One case of meningococcal disease may warrant an outbreak investigation. Notify your Defense Center for Public Health immediately.

PUBLIC HEALTH REFERENCE SHEET
Meningococcal Disease

- When reporting meningococcal disease in the Disease Reporting System internet (DRSi)—
    - Specify the serogroup (A, B, C, Y, Z, W135), if known.
    - Note the patient's meningococcal immunization history.
    - Specify the clinical form of the disease.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

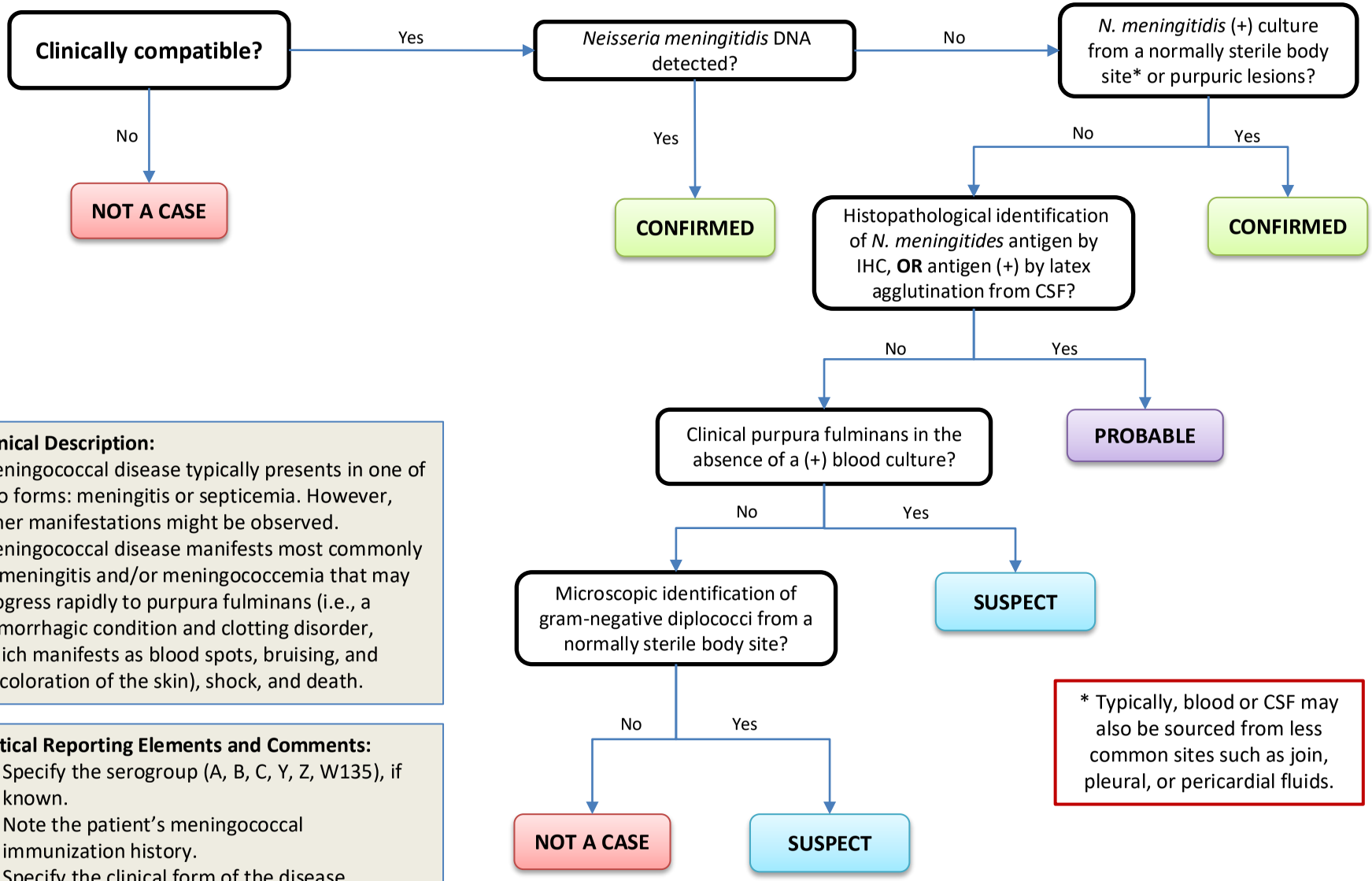
McNamara, Lucy and Blain, Amy. "Meningococcal Disease." CDC Yellow Book 2024: Travel-Associated Infections & Diseases. Centers for Disease Control and Prevention, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/meningococcal-disease

"Meningococcal Disease," Centers for Disease Control and Prevention (CDC), last reviewed February 7, 2022. https://www.cdc.gov/meningococcal/clinical-info.html

Last Updated October 1, 2023

Meningococcal Disease

EXCLUDES: viral/aseptic meningitis



Clinical Description:
Meningococcal disease typically presents in one of two forms: meningitis or septicemia. However, other manifestations might be observed. Meningococcal disease manifests most commonly as meningitis and/or meningococcemia that may progress rapidly to purpura fulminans (i.e., a hemorrhagic condition and clotting disorder, which manifests as blood spots, bruising, and discoloration of the skin), shock, and death.

Critical Reporting Elements and Comments:
- Specify the serogroup (A, B, C, Y, Z, W135), if known.
- Note the patient's meningococcal immunization history.
- Specify the clinical form of the disease.

* Typically, blood or CSF may also be sourced from less common sites such as join, pleural, or pericardial fluids.

INVESTIGATION WORKSHEET

Defense Health Agency ®

Meningococcal Disease

Confirmed ○ Probable ○ Suspect ○ Not a Case

☐ Entered in DRSi?

☐ Reported to health dept?

https://drsi.health.mil/ADRSi

POC: _____

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

(_____) - _____ - _____

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N			
Hospitalized	☐	☐	**Admit date:** ____/_____/_____	**Discharge date:** ____/_____/_____	**Location:** _____
Deceased	☐	☐	**Date of death:** ____/_____/_____	**Cause of death:** _____	

Vaccinated Y ☐ N ☐ **Date of vaccination:** ____/_____/_____ **Type:** ☐ Meningococcal conjugate ☐ Nasal mist

	Y	N			
Symptomatic	☐	☐	**Onset date:** ____/_____/_____	**Clinic date:** _____/_____/_____	**Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)		
Headache	☐	☐			
Stiff neck	☐	☐			
Nausea	☐	☐			
Vomiting	☐	☐			
Photophobia	☐	☐			
Altered Mental Status	☐	☐			

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

(If yes) **Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation period: 3–4 days, with a range of 2–10 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Mumps

Name	Mumps virus (*Rubulavirus*)
Reservoir & Transmission	Humans Droplet transmission
Incubation Period	16–18 days on average (range of 12–25 days)
Common Symptoms	Acute swelling of parotid or other salivary glands lasting at least 2 days, fever, headache, muscle aches, tiredness, loss of appetite
Gold Standard Diagnostic Test	Real-time reverse transcription polymerase chain reaction (rRT-PCR)
Risk Groups	Non-immunized individuals
Geographic Significance	Worldwide

What is mumps?
Mumps is a contagious viral illness caused by paramyxovirus, of genus *Rubulavirus*.

How is mumps transmitted?
The mumps virus replicates in the upper respiratory tract and spreads from person-to-person through direct contact with respiratory droplets, or saliva or mucus from the mouth, nose, or throat of an infected person, usually when the person coughs, sneezes, or talks. The virus may also be spread indirectly when someone with mumps touches items or surfaces without washing their hands and then someone else touches the same surface and rubs their mouth or nose. The infectious period is considered from 2 days before to 5 days after parotitis onset, although the virus has been isolated from saliva as early as 7 days prior to and up to 9 days after parotitis onset. Mumps virus has also been isolated up to 14 days in urine and semen.

Who is at risk for mumps?
Mumps can occur in a person who is fully vaccinated, but vaccinated patients are less likely to present severe symptoms or complications than under- or unvaccinated cases. People who have had mumps are usually protected for life against another mumps infection. However, second occurrences of mumps do rarely occur.

What are the signs and symptoms of mumps?
The incubation period of mumps is usually 16–18 days but can range from 12 to 25 days. Mumps usually involves pain, tenderness, and swelling in one or both parotid salivary glands (parotitis). Swelling is first visible in front of the lower part of the ear. It then extends downward and forward as fluid builds up in the skin and soft tissue of the face and neck. Swelling usually peaks in 1 to 3 days and then subsides during the next week.

Nonspecific prodromal symptoms may precede parotitis by several days, including low-grade fever which may last 3 to 4 days, myalgia, anorexia, malaise, or headache. Parotitis usually lasts an average of 5 days, and most cases resolve after 10 days. Mumps infection may also present only with nonspecific or primarily respiratory symptoms or may be asymptomatic.

What are possible complications from mumps?
Especially in adults, complications can include inflammation of the testicles (orchitis) in males who have reached puberty; inflammation of the ovaries (oophoritis) and/or breast tissue (mastitis); inflammation in the pancreas (pancreatitis); inflammation of the brain (encephalitis);

inflammation of the tissue covering the brain and spinal cord (meningitis); or deafness. Death from mumps is exceedingly rare.

How is mumps diagnosed?
Mumps is diagnosed by a combination of symptoms, physical signs, and laboratory confirmation of the virus, as not all cases develop characteristic parotitis and not all cases of parotitis are caused by mumps.

Mumps should be suspected in all patients with parotitis or mumps complications, regardless of age, vaccination status, and travel history.

If it has been <3 days since symptom onset, collect a buccal swab specimen for detection of viral RNA by real-time (rRT-PCR). If it has been >3 days since symptom onset, collect a buccal swab specimen for rRT-PCR and a serum specimen for IgM detection.

A patient's vaccination status and timing of specimen collection are important for interpreting laboratory results. A negative test result does not rule out mumps infection.

How is mumps treated?
There is no cure. Supportive treatment includes bed rest, hydration, and fever reduction.

How can mumps be prevented?
Mumps can be prevented with the combination measles-mumps-rubella (MMR) and measles-mumps-rubella-varicella (MMRV) vaccines.

The MMR vaccine is very safe and effective. Two doses are 88% (range: 32−95%) effective; one dose is 78% (range: 49%−91%) effective.

Children who are 12 months through 12 years of age may receive MMRV vaccine, which protects against measles, mumps, rubella, and varicella (chickenpox).

People identified by public health authorities as being part of a group at increased risk for acquiring mumps because of a mumps outbreak should receive a third dose of MMRV vaccine to improve protection against mumps disease and mumps-related complications.

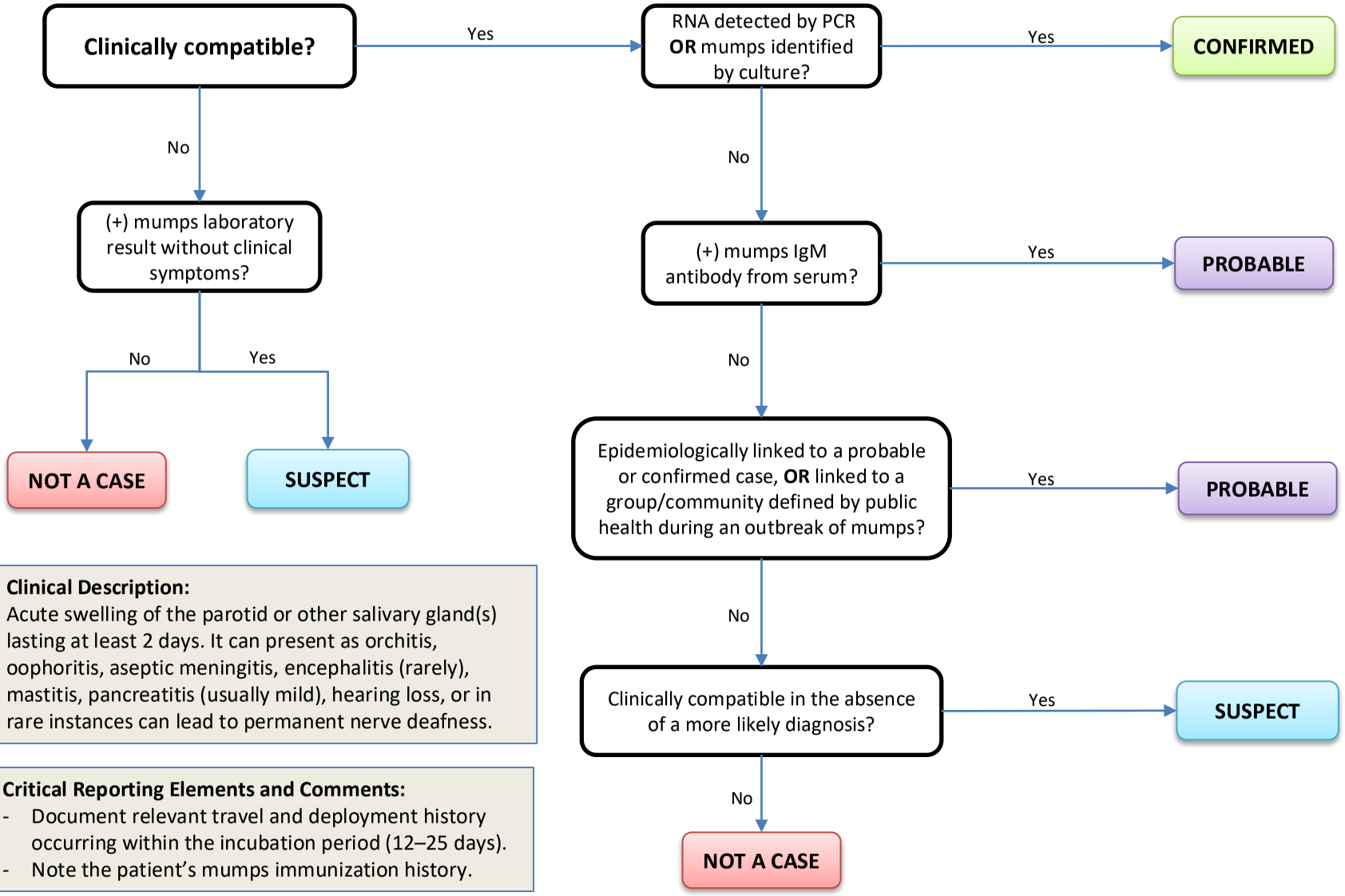
What are some public health considerations?
- Document relevant travel and deployment history occurring within the incubation period.
- Note the patient's mumps immunization history.
- The CDC recommends isolating mumps patients for 5 days after their glands begin to swell.

References:
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

"Mumps," Centers for Disease Control and Prevention, last reviewed March 8, 2021. https://www.cdc.gov/mumps/

Mumps



Clinical Description:
Acute swelling of the parotid or other salivary gland(s) lasting at least 2 days. It can present as orchitis, oophoritis, aseptic meningitis, encephalitis (rarely), mastitis, pancreatitis (usually mild), hearing loss, or in rare instances can lead to permanent nerve deafness.

Critical Reporting Elements and Comments:
- Document relevant travel and deployment history occurring within the incubation period (12–25 days).
- Note the patient's mumps immunization history.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Mumps

Confirmed ◯ Probable ◯ Suspect ◯ Not a Case ◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:** _____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)
Headache	☐	☐	
Myalgia	☐	☐	
Fatigue	☐	☐	
Loss of appetite	☐	☐	
Swollen glands	☐	☐	
Swollen testicles	☐	☐	
Complications*	☐	☐	

Epidemiologic Link

	Y	N
Is the case epidemiologically linked to another confirmed to a probable/confirmed case of Mumps?	☐	☐
Is this case part of a larger group/community outbreak?	☐	☐

***Did the case experience any of the following:**

- ☐ **Orchitis**
- ☐ **Mastitis**
- ☐ **Oophortitis**
- ☐ **Pancreatitis**
- ☐ **Aseptic meningitis**
- ☐ **Hearing loss**
- ☐ **Encephalitis**
- ☐ **Permanent nerve damage**

*Describe:*_____

_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)
Is the case vaccinated?	☐	☐	**1st:** ____/_____/_____ **2nd:** ____/_____/_____ **3rd:**____/_____/_____

If not ever vaccinated, why?

- ☐ **Religious Exemption**
- ☐ **Medical Contraindication**
- ☐ **Philosophical Objection**
- ☐ **Lab Evidence of Previous Disease**
- ☐ **MD Diagnosis of Previous Disease**
- ☐ **Under Age for Vaccination**
- ☐ **Parental Refusal**
- ☐ **Other:** _____
- ☐ **Unknown**

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation period: Usually 16–18 days; can range from 12 to 25 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Include any other pertinent information below:

PUBLIC HEALTH REFERENCE SHEET
Norovirus

Name	Norovirus
Reservoir & Transmission	Humans Fecal-oral route, including direct person-to-person contact and indirect transmission through contaminated food, water, or environmental surfaces
Incubation Period	10–50 hours
Common Symptoms	Nausea, vomiting, diarrhea, abdominal pain, headache, myalgia, malaise, low-grade fever
Gold Standard Diagnostic Test	PCR
Risk Groups	Older adults (>65 years), young children (<5 years), and immunocompromised individuals
Geographic Significance	Worldwide

What is norovirus?
Norovirus is highly contagious. They are a group on non-enveloped, single stranded RNA viruses that cause acute gastroenteritis.

What are the signs and symptoms of norovirus?
Typical symptoms of norovirus include acute onset of vomiting; watery, non-bloody diarrhea with abdominal cramps; and nausea. Some people may have low-grade fever, headaches, and myalgia. Symptoms of gastroenteritis usually develop around 12 to 48 hours after being exposed to norovirus. Gastroenteritis usually last 24 to 72 hours. Individuals usually recover completely without any serious long-term problems. However, norovirus can be serious, especially for young children, older adults, and the immunocompromised.

Some individuals who get a norovirus infection may not have symptoms, but they may still shed the virus in their stool.

How is norovirus transmitted?
Primarily, noroviruses are transmitted through close personal contact with an infected person, or through the fecal-oral route when a person consumes contaminated food or water. A person with norovirus infection can shed billions of norovirus particles. But it only takes as few as 18 viral particles to infect another person.

How serious is norovirus?
Most individuals get better within 1 to 3 days and have no long-term health effects related to their illness. Sometimes, however, those who are unable to drink enough liquids and become dehydrated and may need medical treatment.

Who is at risk for norovirus?
Anyone can get norovirus. There are many different strains of norovirus, which makes it difficult for a person's body to develop long-lasting immunity. Therefore, norovirus illness can recur throughout a person's lifetime. Norovirus can be serious, especially for young children, older adults, and the immunocompromised.

How is norovirus treated?

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Norovirus

Treatment is supportive care, primarily for dehydration. Sports drinks and other drinks without caffeine or alcohol can help with mild dehydration. But these drinks may not replace important nutrients and minerals. There is no specific medication to treat individuals with norovirus illness. Norovirus infection cannot be treated with antibiotics because it is a viral (not a bacterial) infection.

How can norovirus be prevented?

The most important precaution is careful handwashing after each toilet visit and before preparing and/or eating food. Careful food handling and cleaning of surfaces and materials contaminated with the virus are also important precautions. Wash clothing and linens that may be contaminated with vomit or stool thoroughly. Occupations that involve food preparation, providing healthcare or childcare, or in school settings should be restricted for at least 2 days after symptoms stop. Many local and state health departments require that food workers and food preparers with norovirus illness not work until at least 48 hours after symptoms stop.

What are some public health considerations?

- Document the source of infection, if known.
- Document If the case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

References:

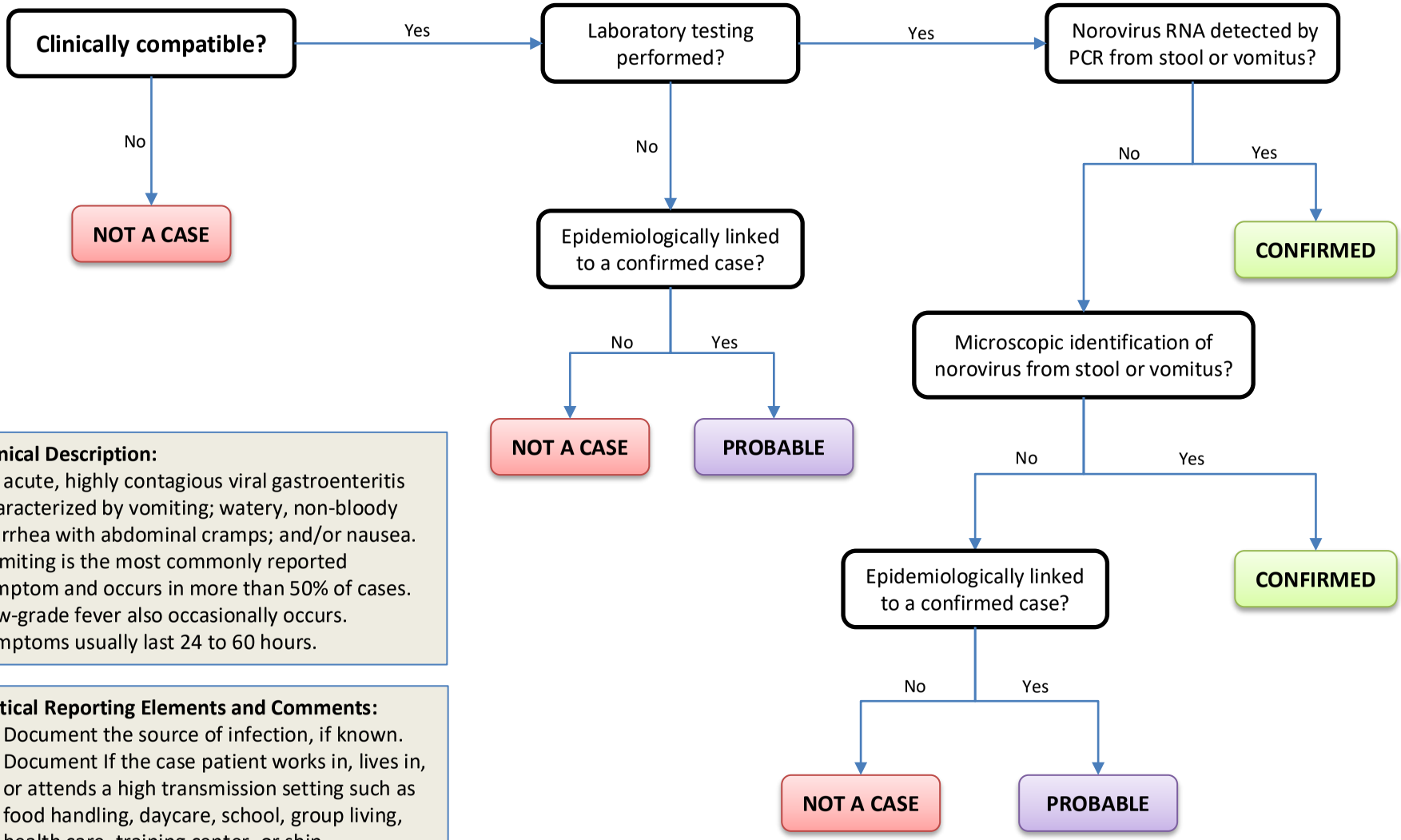
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

"Norovirus," Centers for Disease Control and Prevention (CDC), last reviewed February 23, 2023. https://www.cdc.gov/norovirus/

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

Last Updated September 1, 2023

Norovirus Infection



Clinical Description:
An acute, highly contagious viral gastroenteritis characterized by vomiting; watery, non-bloody diarrhea with abdominal cramps; and/or nausea. Vomiting is the most commonly reported symptom and occurs in more than 50% of cases. Low-grade fever also occasionally occurs. Symptoms usually last 24 to 60 hours.

Critical Reporting Elements and Comments:
- Document the source of infection, if known.
- Document If the case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

GASTROINTESTINAL INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

This form can be used for the following reportable medical events:

☐ **Campylobacter** ☐ **Salmonella (non-Typhi)**

☐ **Cryptosporidium** ☐ **Shiga-toxin producing E. coli**

☐ **Norovirus** ☐ **Shigella**

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk) **Duration of symptoms:** _____ ☐ **Still ill**

Diarrhea Y ☐ N ☐ *Describe any other symptoms or pertinent clinical information:*

Bloody diarrhea Y ☐ N ☐

Abdominal cramps Y ☐ N ☐

Vomiting Y ☐ N ☐

Nausea Y ☐ N ☐

Chills Y ☐ N ☐

Muscle aches Y ☐ N ☐

Other (describe): Y ☐ N ☐

Laboratory results:

Test type: **Culture** ☐ **PCR** ☐ **Antibody** ☐ **Other** ☐

Collection Date: ____/____/____ **Result date:** ____/_____/_____

Result: **Positive** ☐ **Negative** ☐ **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ **Unk** ☐

Details: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

CONTACTS

List all household contacts, ill or not ill, and any close contacts regardless of where they live (i.e., caregivers, partners, etc). Indicate for all contacts if high risk; if symptomatic, give onset date and testing information. List additional contacts on the last page of this form if needed.

Name/Contact	Age	Relationship to case	Symptoms		Onset Date	Lab testing	High Risk		
			Yes	No		Y/N, coll. date, result	Day care	Health care	Food Svc.

ENVIRONMENTAL EXPOSURES

In the 7 days before illness onset, from _____/_____/_____ to _____/_____/_____ did [you/your child]:

WATER-RELATED EXPOSURES	YES	NO	UNK	*If yes, details:*
1. Stay in a home with a septic system?				
2. Primarily use water from a well for drinking water?				*Treatment:*
3. Primarily drink bottled water?				*Brand(s):*
4. Drink any untreated water (pond, lake, etc)?				
5. Swim or wade in untreated water?				*Where?*
6. Swim or wade in treated water (pool, hot tub, etc)?				*Where?*
ANIMAL CONTACT	YES	NO	UNK	*If yes, details:*
1. Have contact with an animal?				
If yes, did [you/your child] have contact with a:				
a. Dog				
b. Cat				
c. Other pet mammal				*Specify:*
d. Reptile or amphibian				*Specify:*
e. Live poultry				
f. Pet bird				
g. Cattle, goat, or sheep				*Specify:*
h. Pig				
i. Other animal				*Specify:*
j. Pet with diarrhea				
2. Visit, work, or live on a farm, ranch, or petting zoo?				*Specify:*
3. Have exposure to a daycare or nursery?				*Where?*
4. Have a household or close contact with diarrhea?				*Who?*
5. Work in a restaurant or prepare food for others?				*Specify:*

FOOD HISTORIES

(For all cases, complete for the 7 days before illness. If case was asymptomatic or the onset is unknown, complete for the 7 days before collection. List ALL ingredients in each meal.)

Start with most recent date and move back

Date							
Morning/breakfast							
Afternoon/lunch							
Evening/dinner							
Snacks/other							

FOOD SOURCES

In the 7 days before illness, from _____/_____/_____ to _____/_____/_____, did [you/your child]:	YES	NO	UNK
1. Attend any events where food was served? (if yes, list below)			

Event	Date	Location	Foods Eaten
a.			
b.			
c.			

2. Eat at any restaurants? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

3. Eat food purchased from a farm or farm stand? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			

4. List all stores where food eaten in the days prior to illness were purchased (e.g. grocery stores, ethnic markets).

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

Also complete food exposure questions for ALL Campylobacter, non-Typhi Salmonella, and STEC cases

Notes and Summary of Investigation

List actions taken on cases and contacts and outcome:

FOOD EXPOSURES

[Instructions: Complete for all Campylobacter, non-Typhi Salmonella, and STEC cases. For all questions, ask for the 7-day period prior to onset of illness or, if unknown or asymptomatic, in the 7 days prior to collection date. For questions answered YES, use the space on the right to provide additional details, such as the specific type of food and where the food was purchased or eaten. Be specific.]

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household HANDLE any:	YES	NO	UNK	*If yes: provide specific details*
1. Raw beef?				
2. Raw poultry?				
3. Raw seafood?				
In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
MEAT PRODUCTS				
1. Chicken or foods containing chicken?				
If yes: a. Chicken prepared outside the home?				*Where?*
If yes: b. Chicken at home that was bought fresh?				*Which part(s):*
If yes: c. Chicken at home that was bought frozen?				*Which part(s):*
If yes: d. Frozen chicken that was stuffed or filled?				
If yes: e. Ground chicken?				
2. Turkey or foods containing turkey?				
if yes: a. Turkey prepared outside the home?				*Where?*
if yes: b. Ground turkey?				
3. Other poultry (e.g. Cornish hen, quail, etc)?				*Specify:*
4. Beef or foods containing beef?				
if yes: a. Beef prepared outside the home?				*Where?*
if yes: b. Ground beef?				
if yes: > Undercooked or raw ground beef?				
5. Pork or foods containing pork?				
6. Lamb or mutton?				
7. Liver?				
if yes a. Undercooked or raw liver?				
if yes b. Liver pate?				
8. Deli meat (e.g. ham, roast beef, salami)?				*Specify:*
9. Other meat (e.g. venison, goat)?				*Specify:*
FISH AND SEAFOOD				
10. Fish or fish products?				
if yes a. Fish prepared outside the home?				*Where?*
if yes b. Undercooked or raw fish (e.g. sushi)?				
11. Seafood (e.g. crab, shrimp, oysters, clams)?				*Specify:*
if yes a. Seafood prepared outside the home?				*Where?*
if yes b. Undercooked or raw seafood?				*Which?*

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
FROZEN FOODS				
12. Frozen meals (e.g. pizza, soup, entrée)?				*Specify:*
DAIRY PRODUCTS				
13. Dairy products (e.g. milk, yogurt, cheese, cream)?				
a. Pasteurized cow's or goat's milk?				
if yes b. Unpasteurized milk?				*From where?*
c. Soft cheese (e.g. queso fresco)?				
if yes >Unpasteurized soft cheese?				*From where?*
if yes d. Any other raw or unpasteurized dairy products?				*From where?*
14. Eggs?				
a. Eggs made outside the home?				*Where?*
if yes b. Eggs that were runny, raw, or uncooked foods made with raw eggs?				*From where?*
FRESH FRUITS AND VEGETABLES				
15. Fresh cantaloupe?				
16. Fresh watermelon?				
17. Fresh (unfrozen) berries?				*Specify:*
18. Other fresh fruit eaten raw?				*Specify:*
19. Unpasteurized, not from concentrate juice (sold at an orchard or farm, or commercially with label)?				*From where?*
20. Fresh green onion or scallions?				
21. Fresh cucumber?				
22. Fresh, raw tomatoes?				*Type(s) & from where?*
23. Fresh peppers (e.g. bell, hot, sweet)?				*Specify:*
24. Fresh, raw lettuce?				*Specify loose ( ) or pre-packaged ( )*
25. Fresh (unfrozen), raw spinach?				*Specify loose ( ) or pre-packaged ( )*
26. Sprouts?				*Specify:*
27. Other fresh vegetables eaten raw?				*Specify:*
28. Fresh (not dried) herbs (e.g. basil, cilantro)?				*Specify:*
29. Nuts or seeds?				*Specify:*

Any other comments, notes, or contacts:

PUBLIC HEALTH REFERENCE SHEET
Novel and Variant Influenza

Name	Non-seasonal influenza A viruses
Reservoir & Transmission	Aquatic birds, domestic poultry, cattle, other mammals Human contact with infected animals; droplets
Incubation Period	Depends on type, but less than 7 days
Common Symptoms	Acute respiratory illness with fever and often indistinguishable from seasonal influenza
Gold Standard Diagnostic Test	RNA identification or RT-PCR are best for initial diagnosis. Culture is confirmatory but can delay diagnosis and identification of an outbreak.
Risk Groups	Occupations with or near birds or other animals associated with influenza A
Geographic Significance	Most common among poultry in Bangladesh, China, Egypt, India, Indonesia, and Vietnam

What is novel and variant influenza?
Novel and variant influenza is an acute respiratory illness with fever often indistinguishable from seasonal influenza. This case definition includes non-seasonal influenza A viruses. Influenza A viruses are divided into subtypes based on two proteins ("spike" proteins) on the surface of the virus: hemagglutinin (HA) and neuraminidase (NA). There are 18 known HA subtypes and 11 known NA subtypes. Many different combinations of HA and NA proteins are possible. For example, an "H7N2 virus" designates an influenza A virus subtype that has an HA 7 protein and an NA 2 protein. Similarly, an "H5N1" virus has an HA 5 protein and an NA 1 protein.

Novel and variant influenzas are not expected during the influenza season and are distinct from viruses typically seen in humans during the influenza season. Novel and variant influenza infections can progress to a pandemic when they gain the ability to spread easily from person-to-person and cause serious illness in humans. Whereas seasonal influenza includes influenza strains that are expected or commonly seen in humans during the influenza season (e.g., Influenza A H1N1 and H3N2, Influenza B).

What is the occurrence of novel and variant influenza?
Sporadic infections and localized outbreaks among people with variant influenza viruses may occur. All influenza viruses have the capacity to change, and it's possible that variant viruses may change such that they gain the ability to infect people easily and spread easily from person-to-person. The CDC closely monitors for variant influenza virus infections and reports cases in FluView (https://www.cdc.gov/flu/weekly/fluactivitysurv.htm) and in the Novel Influenza A Virus Infections https://gis.cdc.gov/grasp/fluview/Novel_Influenza.html) section of FluView Interactive (https://www.cdc.gov/flu/weekly/fluviewinteractive.htm).

How is novel and variant influenza transmitted?
Human infections with variant flu viruses most commonly occur in people exposed to infected animals. Transmission to humans may be from droplet exposure or human contact with surfaces that has virus on it and then touching their nose or mouth. There are documented cases of limited spread of variant flu viruses from person-to-person.

Domestic poultry are likely the main source of human infections. Aquatic birds are natural reservoirs of influenza A subtypes. All known subtypes of influenza A viruses can infect birds, except subtypes H17N10 and H18N11, which have only been found in bats. Only two influenza

PUBLIC HEALTH REFERENCE SHEET
Novel and Variant Influenza

A virus subtypes (i.e., H1N1 and H3N2) are currently in general circulation among people. For some avian influenza viruses and particularly A (H5N1), the range of mammals that can be infected with avian influenza viruses from aquatic birds has been wide (including pigs, whales, seals, horses, ferrets, cats, dogs, and tigers). Swine influenza viruses are endemic in pigs. Influenza infections are also known to occur in other animals besides birds and pigs, including horses and dogs. However, except for pigs, influenza viruses have not been shown to transmit from these mammals to humans.

Who is at risk for novel and variant influenza?
Individuals who travel to an area with known cases and have exposure to animals known to transmit novel or variant influenza (e.g., birds or pigs) may result in a probable case. Past variant flu infections have occurred among children and adults exposed to infected pigs at agricultural fairs, among people who raise pigs, and among swine workers. The groups of people at higher risk of developing serious variant flu complications are considered the same groups at higher risk for serious seasonal flu complications. These groups include children younger than 5 years, people 65 years and older, pregnant people, and people with certain chronic health conditions (e.g., asthma, diabetes, heart disease, weakened immune systems, and neurological or neurodevelopmental conditions).

What are the signs and symptoms of novel and variant influenza?
Suspicion of a human infection with zoonotic influenza A infection is heightened if illness has occurred after exposure to birds, pigs, or other animals that may be infected with influenza or exposure to their environments. For an influenza A (H5N1) infection associated with poultry exposure, incubation can be 7 days or less, and often 2–5 days. For infections with influenza viruses normally circulating in swine, an incubation of 2–7 days has been reported.
Symptoms include:

- Fever
- Cough
- Dyspnea
- Severe pneumonia
- Sore throat and coryza (present only sometimes)

What are potential complications of novel and variant influenza?
Like human seasonal flu viruses, infections with variant flu viruses can sometimes cause severe disease, even in healthy people. Complications such as pneumonia may require hospitalization and sometimes result in death.

How can novel and variant influenza be treated?
In the U.S., there are four different antiviral drugs that are recommended for the treatment of flu: oseltamivir, peramivir, zanamivir, and baloxavir.

How can novel and variant influenza be prevented?
Human seasonal flu vaccines are generally not expected to protect people from variant flu. General precautions include washing hands with soap and water after visiting areas with animals, and no eating, drinking, or putting items in one's mouth while in animal areas.

What are some public health considerations?

- Reporting includes hospitalized and non-hospitalized cases; this excludes seasonal influenza or influenza caused by current circulating influenza H1 and H3 viruses.

Last Updated September 1, 2023

- Document relevant travel and deployment history occurring within the incubation period (estimated to be 2–10 days).
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Document if the case patient works in, lives in, or attends a high-transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.
- **NOTE:** Influenza A (H1N1)pdm09 is no longer reportable as novel influenza.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

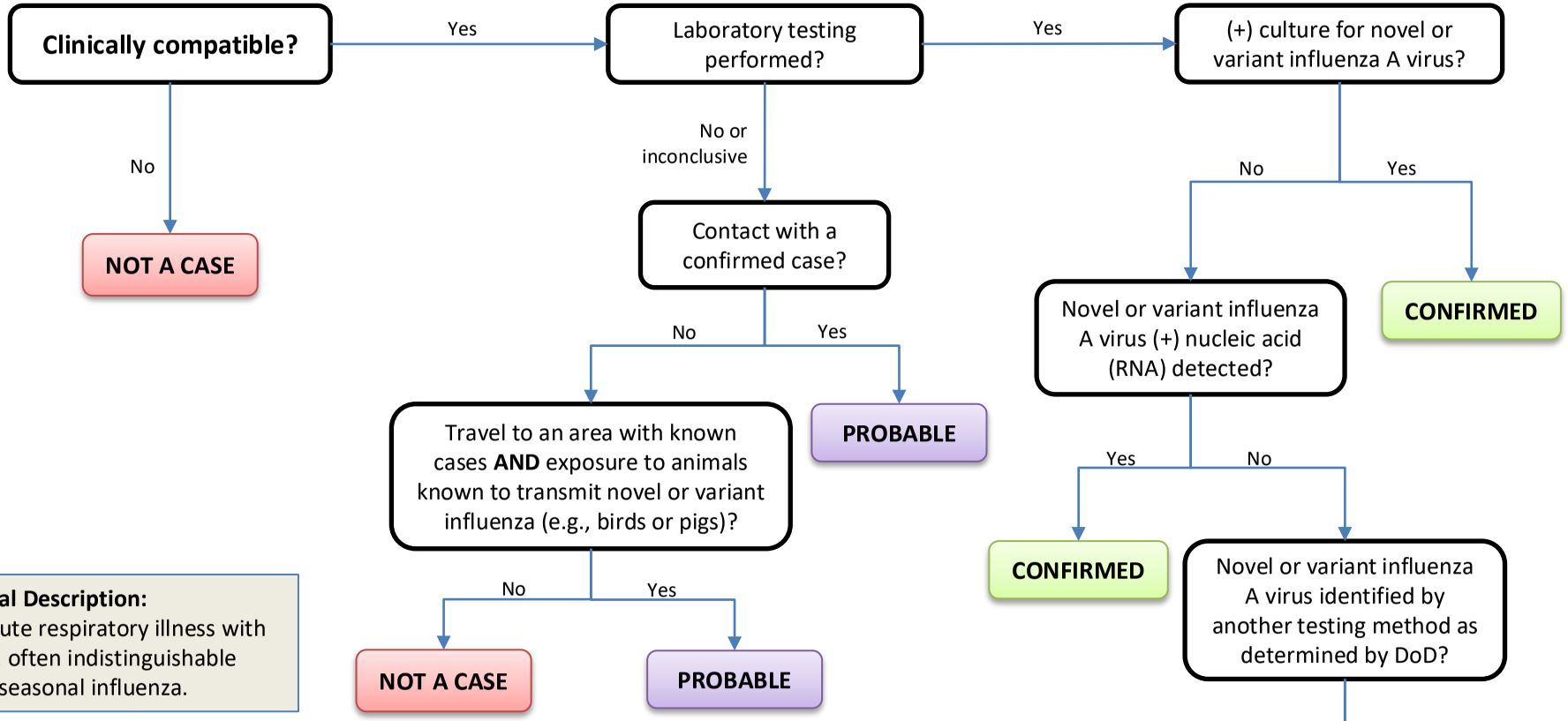
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Variant Influenza Viruses," Centers for Disease Control and Prevention (CDC), last reviewed May 15, 2023. https://www.cdc.gov/flu/swineflu/variant.htm https://www.cdc.gov/flu/avianflu/avian-in-humans.htm

Novel and Variant Influenza

INCLUDES: Hospitalized and non-hospitalized cases

EXCLUDES: Seasonal influenza or influenza caused by current circulating influenza H1 and H3 viruses



Clinical Description:
An acute respiratory illness with fever, often indistinguishable from seasonal influenza.

Critical Reporting Elements and Notes:

- Document relevant travel and deployment history occurring within the incubation period (estimated to be 2–10 days).
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Document if the case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

NOTE: Influenza A (H1N1)pdm09 is no longer reportable as novel influenza.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Novel and Variant Influenza

Confirmed ◯ Probable ◯ Not a Case

https://drsi.health.mil/ADRSi/

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ **PHONE:** (_____) - _____ - _____ *(h)*

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N		
Hospitalized	☐	☐	**Admit date:** ____/_____/_____	**Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____	**Cause of death:** _____

	Y	N			
Symptomatic	☐	☐	**Onset date:** ____/_____/_____	**Clinic date:** _____/_____/_____	**Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)		
Flu-like symptoms	☐	☐			

Does case work in, live in, or attend a high-transmission setting such as food handling, daycare, school, group living, etc:

Y ☐ N ☐ *If yes, where:*

Epidemiological Link

	Y	N
Is this case a contact of a confirmed case of novel or variant influenza?	☐	☐
Was this case exposed to animals known to transmit novel or variant influenza (e.g., wild birds, poultry, swine)?	☐	☐

If yes, describe what: _____

TRAVEL HISTORY

In the 4 days before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did this case travel to an area with known cases of novel or variant influenza?** Y ☐ N ☐ Unk ☐

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ **Antibody**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Antigen**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **PCR (DNA)**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Culture**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Screen**	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**
☐ **Other** ***Describe below***	_____/_____/_____	Serum CSF Urine Other	☐ **Positive**	☐ **Negative**

Include any other relevant information below:

P-S

PUBLIC HEALTH REFERENCE SHEET
Pertussis (Whooping Cough)

Name	*Bordetella pertussis*
Reservoir & Transmission	Humans Droplet transmission
Incubation Period	9–10 days on average with a range of 6–20 days.
Common Symptoms	Paroxysms of coughing or inspiratory “whoop”, post-tussive vomiting, apnea with or without cyanosis
Gold Standard Diagnostic Test	Culture, PCR
Risk Groups	Infants, non-immunized individuals
Geographic Significance	Worldwide

What is pertussis?
Pertussis, commonly known as whooping cough, is an acute infectious respiratory disease caused by *Bordetella pertussis* bacteria. The bacteria release toxins, which damage and paralyze the cilia that line part of the upper respiratory system, and cause airways to swell. Since *B. pertussis* are changing at a genetic level, public health continues to evaluate the impact of molecular changes.

What is the occurrence of pertussis?
In the 20th century, pertussis was one of the most common childhood diseases and a major cause of U.S. childhood mortality. Before the availability of a pertussis vaccine in the 1940s, more than 200,000 cases of pertussis were reported annually. Since widespread use of the vaccine began, incidence has decreased compared with the pre-vaccine era; however, since the COVID-19 pandemic in 2020, there has been an increase in the number of reported cases.

How is pertussis transmitted?
Pertussis is a human disease; no animal or insect source or vector is known to exist. Pertussis spreads from person-to-person by coughing and sneezing while in close contact with others. Infants may contract pertussis from siblings, parents, or caregivers who might not know that they are infectious. The most infectious time is up to 2 weeks after the cough begins.

Who is at risk for pertussis?
Unvaccinated or incompletely vaccinated infants younger than 12 months of age have the highest risk for severe complications and death. Some observational studies suggest that pertussis infection can provide immunity for 4 to 20 years.

What are the signs and symptoms of pertussis?
Pertussis symptoms usually develop within 5 to 10 days and up to 21 days after exposure. The three stages to the clinical course of pertussis are catarrhal, paroxysmal, and convalescent.

Stage 1, catarrhal lasts approximately 1–2 weeks and is characterized by inflammation of the mucous membranes (especially the nose (coryza)), low-grade fever, mild or occasional cough which becomes more severe, and apnea in infants. In infants, apnea may be the only symptom, and the cough may be minimal or absent.

Stage 2, paroxysmal lasts approximately 1–6 weeks, may extend up to 10 weeks, and is characterized by the traditional symptoms of pertussis to include paroxysms (fits) of many, uncontrollable, rapid coughs followed by a high-pitched “whoop” sound due to rapid inspiration;

vomiting during or after coughing fits; and exhaustion after cough fits. Paroxysms of cough, which may occur more at night, usually increase in frequency and severity as the illness progresses.

Stage 3, convalescent lasts from weeks to months and is characterized by less persistent, paroxysmal coughs that resolve in 2–3 weeks. After paroxysms subside, a nonparoxysmal cough can continue for 2 to 6 weeks or longer.

What are potential complications of pertussis?
About one-third of infants less than 1 year old who get pertussis need to be hospitalized, and among those, 1% of the infants will die. Teens and adults can develop pneumonia, and the severe cough can cause problems such as rib fracture or loss of bladder control. Paroxysms often recur with subsequent respiratory infections for many months after the onset of pertussis.

How is pertussis diagnosed?
Culture of nasopharynegeal swab or aspirate specimen is the gold standard to confirm *Bordetella pertussis* because it is the only 100% specific method for identification. Culture is used during the first 2 weeks of illness following cough onset. Culture takes up to 7 days to obtain results but has better specificity than polymerase chain reaction (PCR). PCR is used up to 4 weeks following onset of cough. PCR is a rapid test and has excellent sensitivity; however, since PCR tests vary in specificity, results should be interpreted along with the clinical symptoms and epidemiological information.

The same nasopharynegeal swab or aspirate specimen can be used both for culture and PCR. In an outbreak situation, at least one case should be confirmed by culture.

A serologic assay used 2 to 8 weeks following cough onset, when antibody titers are at their highest, may be useful for confirming diagnosis during a suspected pertussis outbreak. Serologic tests are more useful for diagnosis in later phases of the disease, and testing may be performed on specimens collected up to 12 weeks following cough onset.

How is pertussis treated?
Isolate known cases, especially from infants, young children, and unvaccinated persons, until treated. Treatment with antibiotics is ideal during the first 1 to 2 weeks before coughing paroxysms occur. Early treatment is most effective for reducing symptoms' severity and may shorten the amount of time someone is contagious. Treatment after 3 weeks of illness is less effective as antibiotics will not alter the course of the illness or prevent transmission. Strongly consider treating prior to test results if any of the following are present:

- Clinical history is strongly suggestive of pertussis.
- The person is at risk for severe or complicated disease (e.g., infants).
- The person has or will soon have routine contact with someone that is considered at high risk of serious disease (e.g., pregnant women).

Macrolides are the recommended antimicrobial agents for treatment or chemoprophylaxis of pertussis. In infants 1 month of age and older, macrolides erythromycin, clarithromycin, and azithromycin are preferred for the treatment of pertussis. For persons 2 months of age and older, an alternative to macrolides is trimethoprim-sulfamethoxazole.

PUBLIC HEALTH REFERENCE SHEET
Pertussis (Whooping Cough)

How can pertussis be prevented?

Vaccination is the best way to protect against pertussis. Prevent exposure of infants and individuals at high risk for pertussis complications from those who are infected.

In the United States, DTaP (diphtheria toxoid, tetanus toxoid, and acellular pertussis) is the combination vaccine recommended for infants and children. DTaP provides approximately 5 years of protection, which fades over time.

The Tdap (Tetanus, Diphtheria, Pertussis) vaccine is for children 7 years and older, adolescents, women during early part of the third trimester of pregnancy, and adults. Adults should receive a booster dose of Tdap every 10 years.

Postexposure antimicrobial prophylaxis (PEP) may be indicated to prevent death and serious complications from pertussis in individuals at increased risk of severe disease. Currently, there are no data to indicate that widespread use of PEP among contacts effectively controls or limits the scope of pertussis outbreaks. Refer to the CDC's guidance on PEP for pertussis at https://www.cdc.gov/pertussis/pep.html.

What are some public health considerations?

- Document pertussis immunization history.
- Consider active screening for pertussis cases during outbreaks in settings such as schools, childcare centers, and hospitals. Refer to the CDC's letter of guidance for pertussis outbreak: https://www.cdc.gov/pertussis/guidance-letter.html.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

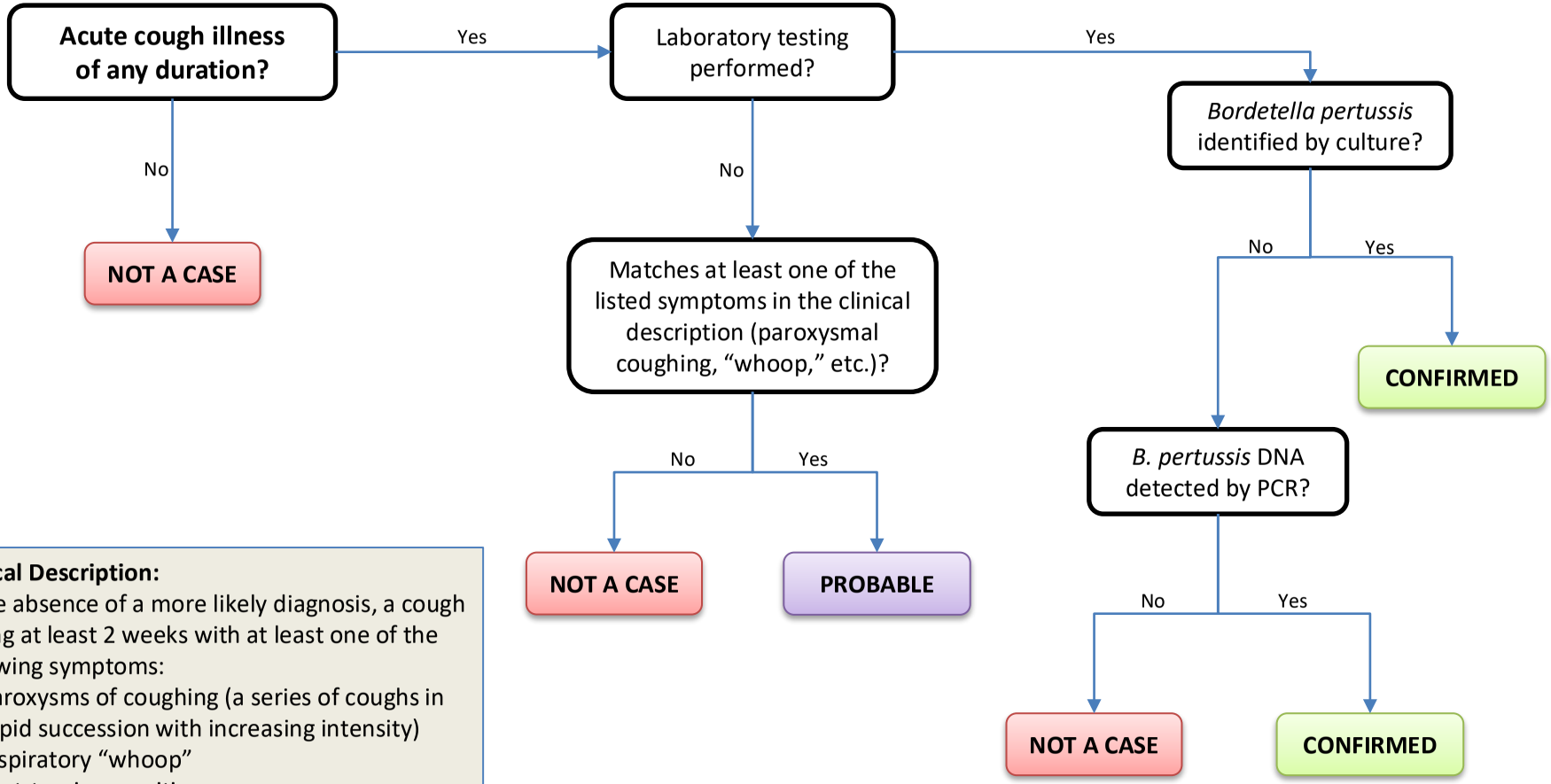
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Pertussis," Centers for Disease Control and Prevention last reviewed August 8, 2022. https://www.cdc.gov/pertussis/

Last Updated September 1, 2023

Pertussis

COMMON NAME: Whooping Cough



Clinical Description:
In the absence of a more likely diagnosis, a cough lasting at least 2 weeks with at least one of the following symptoms:

- Paroxysms of coughing (a series of coughs in rapid succession with increasing intensity)
- Inspiratory "whoop"
- Post-tussive vomiting
- Apnea, with or without cyanosis

Critical Reporting Elements and Comments:
- Note the patient's pertussis immunization history.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Pertussis

Confirmed ◯ Probable ◯ Not a Case ◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)
Cold-like symptoms	☐	☐	
Cough *(lasting at least 2 weeks)*	☐	☐	
Sleep apnea	☐	☐	
Vomiting	☐	☐	
Seizures	☐	☐	
Encephalopathy	☐	☐	
Pneumonia	☐	☐	

Epidemiologic Link

	Y	N
Is the case epidemiologically linked to a laboratory-confirmed case of Pertussis?	☐	☐
Is this case part of a larger group/community outbreak?	☐	☐

Specify the type of Pertussis:

- ☐ **Paroxysms of coughing or inspiratory "whoop"**
- ☐ **Post-tussive vomiting**
- ☐ **Apnea, with or without cyanosis (for infants <1 year)**
- ☐ **Other symptoms (describe below)**

*Describe:*_____

_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)
Is the case vaccinated?	☐	☐	**1st:**____/_____/_____ **2nd:** ____/_____/_____ **3rd:**____/_____/_____

Record any additional vaccination history on page 2

If not ever vaccinated, why?

- ☐ **Religious Exemption**
- ☐ **Medical Contraindication**
- ☐ **Other:** _____
- ☐ **Lab Evidence of Previous Disease**
- ☐ **MD Diagnosis of Previous Disease**
- ☐ **Under Age for Vaccination**
- ☐ **Parental Refusal**
- ☐ **Unknown**
- ☐ **Philosophical Objection**

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: 9–10 days on average; range 6–20 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

Include any other pertinent information for this case below:

PUBLIC HEALTH REFERENCE SHEET
Plague

Name	*Yersinia pestis,* the plague bacillus
Reservoir & Transmission	Wild rodents Rodent flea bite; contact with contaminated fluid or tissue; person-to-person inhalation of infectious droplets
Incubation Period	From 1–7 days; Bubonic: 2–8 days; Pneumonic: 1–3 days
Common Symptoms	Characterized by fever, chills, headache, malaise, prostration, and leukocytosis that manifests as one of the four major clinical forms: • Bubonic: Regional lymphadenitis (bubo) around infected flea bite. Most often inguinal; alternatively cervical or axillary • Septicemic: Without an evident bubo, abdominal pain, shock, bleeding into the skin and other organs, skin turns black and dies • Pneumonic: Rapidly developing pneumonia with shortness of breath, chest pain, cough, and sometimes bloody or watery mucous • Pharyngeal: Pharyngitis and cervical lymphadenitis
Gold Standard Diagnostic Test	Fluorescent Antibody (FA) test: antigen capture by enzyme-linked immunosorbent assay (ELISA) or dipstick formats; or polymerase chain reaction (PCR); or by a four-fold or greater rise or fall in antibody titer. Isolation of *Y. pestis* by culture of bubo aspirates, blood, CSF, or sputum samples
Risk Groups	Susceptibility among humans is general; Veterinary staff, hunters, trappers, trekkers, and farmers during or following outbreak; areas with poor rodent sanitation practices
Geographic Significance	Most common in rural areas of Central and Southern Africa, Central Asia and the Indian subcontinent, the Northeastern South America, and parts of the Southwestern United States

What is plague?
Plague is an infectious disease caused by the *Yersinia pestis* bacteria, a gram-negative coccobacillus. Plague is a Centers for Disease Control and Prevention (CDC) Category A Bioterrorism Agent.

What is the occurrence of plague?
Plague was first introduced into the United States (U.S.) in 1900, by rat-infested steamships that sailed from affected areas, mostly Asia. Between 1900 and 2012, 1,006 confirmed or probable human plague cases occurred in the U.S. Over 80% of U.S. plague cases have been the bubonic form. Per CDC, in recent decades in the U.S., an average of seven human plague cases is reported each year (range: 1–17 cases per year), with most in Northern New Mexico, northern Arizona, southern Colorado, California, southern Oregon, and far western Nevada. Cases can occur any time of the year, though in the U.S., most are acquired from late spring to early fall. Plague is endemic to rural areas in central and southern Africa, especially eastern Democratic Republic of the Congo, northwestern Uganda, and Madagascar; parts of the southwestern United States; the northeastern part of South America; central Asia; and the Indian subcontinent. There have been no reported cases among travelers returning to the U.S. in over 40 years.

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Plague

How is plague transmitted?

Y. pestis transmission usually occurs through the bite of infected rodent fleas. Less common exposures include handling infected animal tissues (e.g., among hunters and wildlife personnel), inhaling infectious droplets from cats or dogs with plague; and, rarely, contact with a patient who has pneumonic plague. Cats can be infected by eating infected rodents and pose a risk of transmitting infectious plague droplets to humans. Several cases of human plague have occurred in the U.S. in recent decades because of contact with infected cats.

Who is at risk for plague?

- Human plague occurs in areas where the bacteria are present in wild rodent populations. Humans are more at risk of exposure during cooler summers that follow wet winters in areas with multiple types of rodents living in high densities and in diverse habitats.
- Veterinary staff, hunters, trappers, trekkers, and farmers operating during or following a plague outbreak.

What are the signs and symptoms of plague?

- Plague illness has 3 possible clinical presentations: bubonic (the most common), pneumonic, or septicemic.
    - Bubonic plague - The incubation period of bubonic plague is 2 to 8 days. Symptoms include fever, headache, chills, weakness, and one or more swollen, painful lymph nodes (buboes). The bacteria multiply in a lymph node near where the bacteria entered the human body, most often (>90%) inguinal, otherwise cervical, or axillary. If not treated with appropriate antibiotics, the bacteria can spread to other parts of the body.
    - Septicemic plague - The incubation period of septicemic plague is poorly defined but is likely within days of exposure. Symptoms include fever, chills, extreme weakness, abdominal pain, shock, and possibly bleeding into the skin and other organs. Skin and other tissues may turn black and die, especially on fingers, toes, and the nose, however without an evident bubo. Septicemic plague can occur as the first symptom of plague or may develop from untreated bubonic plague.
    - Pneumonic plague -The incubation period of pneumonic plague is usually 1 to 3 days. Symptoms include fever, headache, weakness, and a rapidly developing pneumonia with shortness of breath, chest pain, cough, sometimes bloody or watery mucous, and may cause respiratory failure and shock. Primary pneumonic plague may develop from inhaling infectious droplets. Secondary pneumonic plague is from hematogenous spread in bubonic or septicemic cases. Pneumonic plague is the most serious form of the disease and is the only form of plague that can be spread from person-to-person by infectious droplets.
- Pharyngeal plague is rare and presents with fever, sore throat, and cervical lymphadenitis; in its early stages, it may be clinically indistinguishable from more common causes of pharyngitis. Plague pharyngitis is the result from exposure to larger infectious droplets or ingestion of infected tissues. Cervical or submandibular buboes usually develop secondary to the pharyngeal involvement.

What are potential complications of plague?

Complications can include septic shock, organ failure, and death, particularly if left untreated. Meningitis can develop in up to 10% of patients with plague.

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Plague

How is plague diagnosed?

Y. pestis can be isolated from bubo aspirates, blood cultures, or sputum culture if pneumonic. One serum specimen should be taken as early in the illness as possible, followed by a convalescent sample 4–6 weeks or more after disease onset. State public health laboratories or CDC laboratories can confirm diagnosis by culture or serologic tests for the *Y. pestis* F1 antigen. Plague is a nationally notifiable disease. For diagnostic support, clinicians can contact CDC's Division of Vector-Borne Diseases (970-221-6400; dvbid@cdc.gov).

How is plague treated?

- Treatment for plague differs by clinical presentation and illness severity. The decision to initiate antibiotic therapy for plague should be made based on clinical signs and symptoms and a careful patient history. A recent flea bite, exposure to areas with rodents, or contact with a sick or dead animal are risk factors for plague in endemic areas. A confirmatory diagnosis can be established later using specialized laboratory tests. Never delay or withhold treatment pending the receipt of laboratory test results.
- Several different classes of antimicrobials effectively treat plague, but aminoglycosides and fluoroquinolones are considered first-line. Treating physicians can use doxycycline for bubonic or pharyngeal plague, but these should not be used for pneumonic or septicemic plague, or plague meningitis. If plague meningitis is suspected, use dual antibiotic therapy with chloramphenicol and a fluoroquinolone or aminoglycoside. For full treatment recommendations, refer to CDC online resources for clinicians at https://www.cdc.gov/plague/healthcare/clinicians.html.

How can plague be prevented?

- People can prevent plague by reducing contact with fleas and potentially infected rodents and other wildlife. Although a live attenuated vaccine has been in use in Russia since the 1930s, no plague vaccine is currently available for commercial use in the United States or western Europe. A killed whole-cell vaccine was available in the United States for people with occupational risk, but this vaccine was discontinued in 1999. Australia continued to use this vaccine until 2005. Newer vaccines using a recombinant F1 antigen are in development, but none are commercially available or currently approved for use by the U.S. Food and Drug Administration.
- Oral antibiotics, including doxycycline, ciprofloxacin, and levofloxacin can be prescribed for postexposure prophylaxis.

What are some public health considerations?

- When reporting plague in the Disease Reporting System internet (DRSi), document—
    - The clinical form of the infection.
    - Relevant travel and deployment history occurring within the incubation period.
    - The circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Epidemiologically linked cases include any of the following:
    - A person who is epidemiologically linked to a person or animals with laboratory evidence within the prior 2 weeks of symptom onset date; or
    - Close contact with a confirmed pneumonic plague case, including but not limited to presence within 6 feet of a person with active cough due to pneumonic plague; or

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    - A person that lives in or has traveled within 2 weeks of illness onset to a geographically localized area with confirmed plague epizootic activity in fleas or animals as determined by the relevant local authorities.
- Serial or subsequent plague infections in one individual should only be reported as a new case if there is a new epidemiologically compatible exposure and new onset of symptoms.
- In the unlikely circumstance that a natural source of infection cannot be identified, public health and law enforcement authorities might suspect deliberate use. Public health response and measures to prevent the spread during bioterrorism events involving plague can be found at https://www.cdc.gov/plague/healthcare/bioterrorism-response.html.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

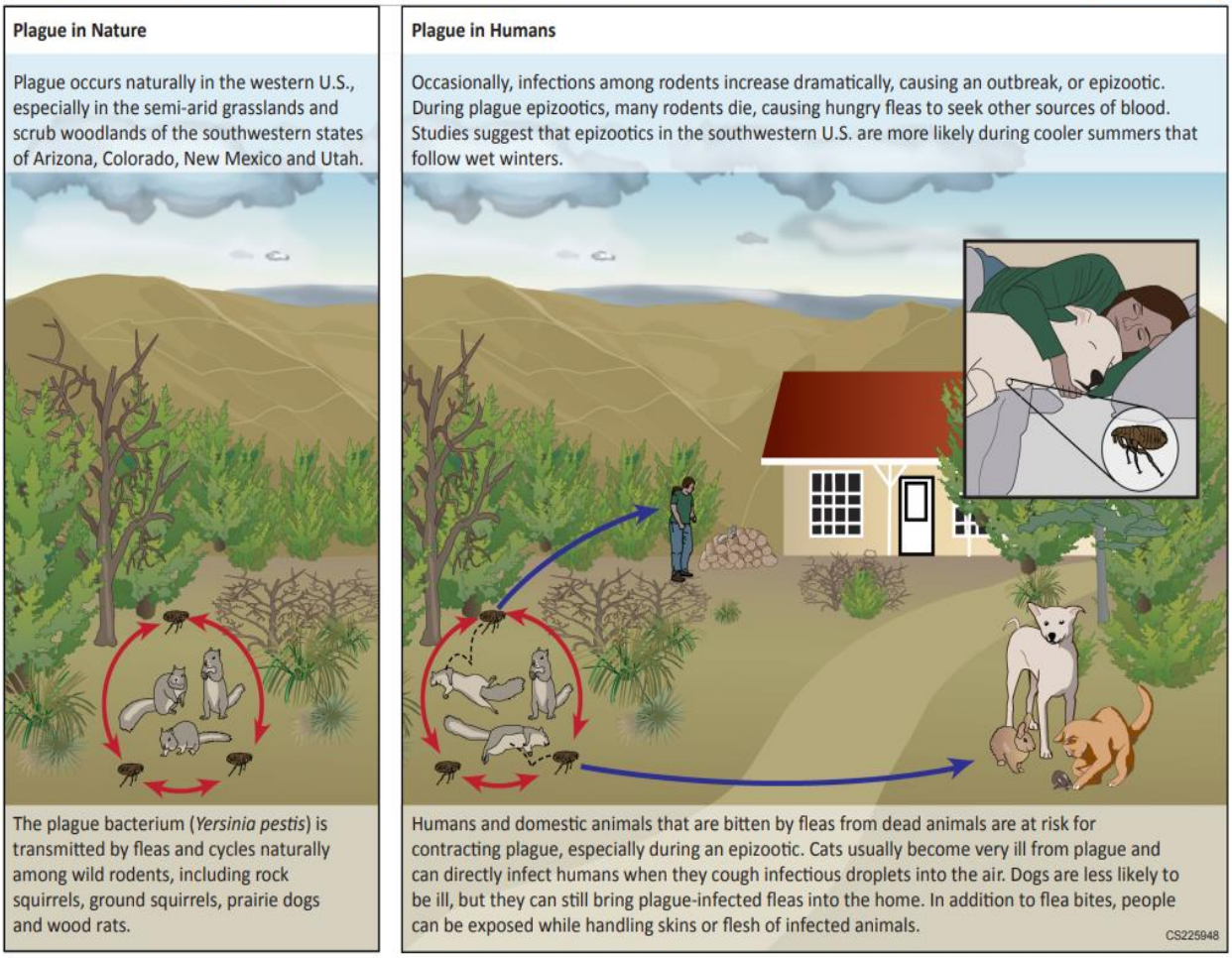
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

McCormick, David, and Mead, Paul. "Plague." *CDC Yellow Book 2024: Travel-Associated Infections & Diseases.* Centers for Disease Control and Prevention, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/plague

"Plague," Centers for Disease Control and Prevention (CDC), last reviewed August 6, 2021. https://www.cdc.gov/plague/index.html

PUBLIC HEALTH REFERENCE SHEET
Plague

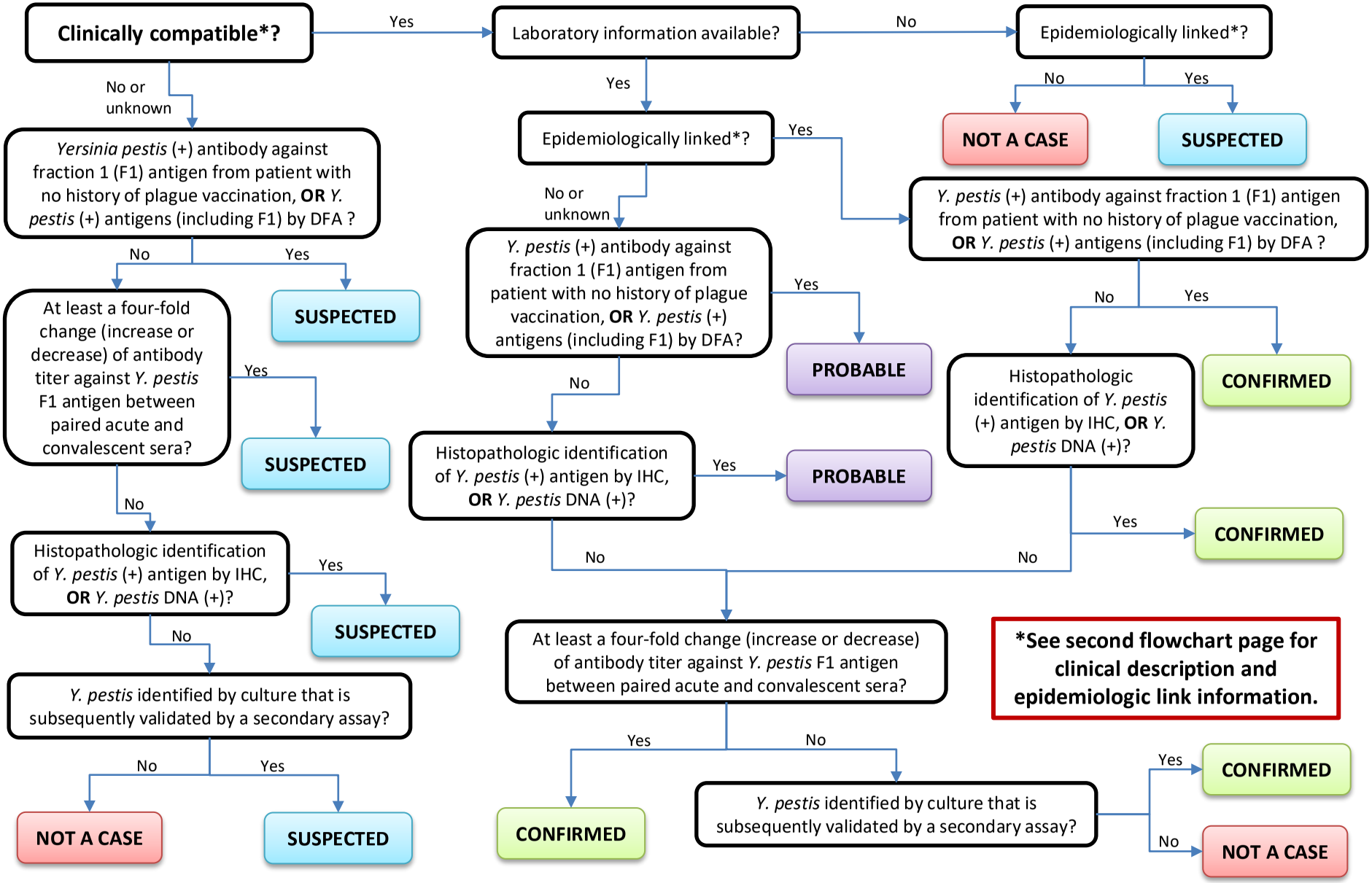
Plague Ecology in the United States



Source: https://www.cdc.gov/plague/index.html

Last Updated October 1, 2023

Plague


Clinically compatible*?
Yes
Laboratory information available?
No
Epidemiologically linked*?
No or unknown
Yersinia pestis (+) antibody against fraction 1 (F1) antigen from patient with no history of plague vaccination, OR Y. pestis (+) antigens (including F1) by DFA ?
No
Yes
SUSPECTED
At least a four-fold change (increase or decrease) of antibody titer against Y. pestis F1 antigen between paired acute and convalescent sera?
Yes
SUSPECTED
No
Histopathologic identification of Y. pestis (+) antigen by IHC, OR Y. pestis DNA (+)?
Yes
SUSPECTED
No
Y. pestis identified by culture that is subsequently validated by a secondary assay?
No
Yes
NOT A CASE
SUSPECTED
Yes
Epidemiologically linked*?
Yes
No or unknown
Y. pestis (+) antibody against fraction 1 (F1) antigen from patient with no history of plague vaccination, OR Y. pestis (+) antigens (including F1) by DFA?
Yes
PROBABLE
No
Histopathologic identification of Y. pestis (+) antigen by IHC, OR Y. pestis DNA (+)?
Yes
PROBABLE
No
At least a four-fold change (increase or decrease) of antibody titer against Y. pestis F1 antigen between paired acute and convalescent sera?
Yes
CONFIRMED
No
Y. pestis identified by culture that is subsequently validated by a secondary assay?
Yes
CONFIRMED
No
NOT A CASE
No
Yes
NOT A CASE
SUSPECTED
Y. pestis (+) antibody against fraction 1 (F1) antigen from patient with no history of plague vaccination, OR Y. pestis (+) antigens (including F1) by DFA ?
No
Yes
Histopathologic identification of Y. pestis (+) antigen by IHC, OR Y. pestis DNA (+)?
Yes
CONFIRMED
No
Yes
CONFIRMED
No
*See second flowchart page for clinical description and epidemiologic link information.

Plague

Clinical Description, Critical Reporting Elements, and Comments

Clinical Description:
An illness characterized by fever as reported by the patient or healthcare provider with or without one or more of the following specific clinical manifestations:

- Bubonic: Regional lymphadenitis (bubo) around the infected flea bite. Most often (> 90%) inguinal; alternatively cervical or axillary.
- Septicemic: Without an evident bubo. May be a complication of any of the other forms of plague or may be the presenting syndrome.
- Pneumonic: Pneumonic plague, resulting from hematogenous spread in bubonic or septicemic cases (secondary pneumonic plague) or inhalation of infectious droplets (primary pneumonic plague).
- Pharyngeal: Pharyngitis and cervical lymphadenitis resulting from exposure to larger infectious droplets or ingestion of infected tissues.

***Epidemiologically linked** cases include any of the following:

- A person who is epidemiologically linked to a person or animals with laboratory evidence within the prior 2 weeks of symptom onset date; or
- Close contact with a confirmed pneumonic plague case, including but not limited to presence within 6 feet of a person with active cough due to pneumonic plague; or
- A person that lives in, or has traveled within 2 weeks of illness onset to a geographically-localized area with confirmed plague epizootic activity in fleas or animals as determined by the relevant local authorities

Critical Reporting Elements and Comments:

- Document the clinical form of the infection.
- Document relevant travel and deployment history occurring within the incubation period (1–3 days for primary pneumonic plague, 2–8 days for bubonic plague. Unclear incubation periods for septicemic and pharyngeal manifestations).
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

NOTE: Serial or subsequent plague infections in one individual should only be reported as a new case if there is a new epidemiologically-compatible exposure and new onset of symptoms.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Plague

Confirmed ○ Probable ○ Suspect ○ Not a Case

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Chills/sweats	☐	☐	
Confusion/delirium	☐	☐	
Vomiting	☐	☐	
Diarrhea	☐	☐	
Abdominal pain	☐	☐	
Sore throat	☐	☐	
Cough	☐	☐	
Chest pain	☐	☐	
Shortness of breath	☐	☐	
Other (describe)	☐	☐	

Localized signs

	Y	N	
Bubo	☐	☐	*If yes, specify:* ☐ Axillary ☐ Cervical ☐ Inguinal/Femoral ☐ Other
Insect bites/skin ulcer	☐	☐	*Location/description:* _____
Chest x-ray	☐	☐	☐ Infiltrates or nodules ☐ Pleural effusion ☐ Clear/normal

Primary Clinical Syndrome

☐ Bubonic ☐ Septicemic ☐ Pneumonic ☐ Pharyngeal

Secondary pneumonic plague

Yes ☐ No ☐ Unknown ☐

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

EXPOSURE AND TRAVEL HISTORY

In the 2 weeks before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

In the 2 weeks before illness, did the case report:

Flea or insect bites: ☐ **Yes** ☐ **No** ☐ **Unk** **If yes, what type of insect:**_____

Animal contact: ☐ **Yes** ☐ **No** ☐ **Unk**

If yes, what type of animal: ☐ **Wild (specify:**_____**)** ☐ **Domestic pet (specify:**_____**)**

What was the nature of the contact?

☐ **Bitten** ☐ **Scratched** ☐ **Disposed/handled deceased animal** ☐ **Cleaned carcass** ☐ **Consumed hunted game meat**

Person-to-person transmission from a known plague patient ☐ **Yes** ☐ **No** ☐ **Unk**

Other possible exposure type: _____

Evidence of *Yersinia pestis* infected animals or fleas in the likely exposure location?

☐ **Yes** ☐ **No** ☐ **Unk** **If yes, specify:**_____

Additional comments:

PUBLIC HEALTH REFERENCE SHEET
Poliomyelitis

Name	Poliovirus
Reservoir & Transmission	Humans Person-to-person by fecal-oral route or droplets
Incubation Period	7–14 days on average for paralytic cases with a range of 3–35 days
Common Symptoms	Non-paralytic Poliomyelitis: sore throat, fever, tiredness, nausea, headache, stomach pain, without symptoms of paralytic poliomyelitis Paralytic Poliomyelitis: Acute onset of a flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause, and without sensory or cognitive loss
Gold Standard Diagnostic Test	Culture
Risk Groups	Those not immunized, migrants, refugees, in settings with poor access to handwashing and sanitation
Geographic Significance	Most common in Afghanistan and Pakistan

What is polio?
Polio, or poliomyelitis, is a disabling and life-threatening infectious disease caused by the poliovirus, which infects a person's brain and spinal cord, causing paralysis.

What is the occurrence of polio?
Poliovirus is no longer endemic in the U.S.; however, the disease still occurs in other parts of the world. One person with polio traveling from another country could reintroduce polio into the U.S.

How is polio transmitted?
The poliovirus only infects humans. It is very contagious and spreads through person-to-person contact, usually by oral-fecal route. The virus lives in an infected person's throat and intestines. It enters the body through the mouth and spreads through contact with the feces of an infected person and, though less common, through droplets from a sneeze or cough. An infected person may spread the virus to others immediately before and up to 2 weeks after symptoms appear. The virus can live in an infected person's intestines for many weeks. It can contaminate food and water in unsanitary conditions. People who don't have symptoms can still pass the virus to others and make them sick.

Who is at risk for polio?
Individuals who are not immunized and those in settings with poor access to handwashing and sanitation are at increased risk of contracting polio virus.

What are the signs and symptoms of polio?
About 72% of people infected with poliovirus will not have any notable signs or symptoms. About 25% of people infected with poliovirus will have flu-like symptoms that may include sore throat, fever, tiredness, nausea, headache, and stomach pain, which may last 2 to 5 days, then resolve without treatment. A smaller proportion of people infected with poliovirus will develop more serious symptoms that affect the brain and spinal cord including meningitis and paralysis or weakness in the arms, legs, or both. A clinically-compatible case with neurologic deficit 60 days after onset of initial symptoms indicates a confirmed case of paralytic polio.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Poliomyelitis

What are potential complications of polio?
Paralysis is the most severe symptom associated with poliovirus as this can lead to permanent disability and death. Acute flaccid paralysis that may be caused by polio virus must be distinguished from other conditions such as Guillain-Barre Syndrome (GBS) or tick paralysis. Children who seem to fully recover can develop new or progressive muscle pain, weakness, or paralysis as adults, called post-polio syndrome. Between 2% and 10% of people who have paralysis from poliovirus infection die because the virus affects the muscles that help them breathe.

How is polio diagnosed?
Poliovirus can be detected in samples from the throat, feces, and occasionally cerebrospinal fluid (CSF), by isolating the virus in cell culture or by detecting the virus by polymerase chain reaction (PCR). The CDC laboratories conduct testing for poliovirus to include culture, intratypic differentiation, genome sequencing, and serology.

How is polio treated?
Currently, there is not a cure for paralytic polio. Treatment is for symptoms such as pain and fever, and intubation and mechanical ventilation is for patients with respiratory insufficiency. Physical therapy is used to reduce long-term neuro-muscular effects of polio.

How can polio be prevented?
There are two types of vaccine that can prevent polio. In the U.S., inactivated poliovirus vaccine (IPV) is given as an intramuscular injection in the arm or leg and can be combined with other immunizations. Throughout much of the world, live attenuated oral poliovirus vaccine (OPV) is still used, particularly in underdeveloped countries and in response to outbreaks. OPV provides a more effective intestinal immunity to polio virus but has a risk of reversion to disease causing "wild type" polio virus. OPV is no longer used or licensed in the U.S. Almost all (99%) of children who receive all recommended doses of polio vaccine will be protected from poliomyelitis. High vaccination rates are needed to sustain eradication of the disease.

What are some public health considerations?
- Specify the clinical form of the disease as non-paralytic or paralytic.
- Document relevant travel and deployment history occurring within the incubation period (3–35 days).
- Note the patient's poliomyelitis immunization history.

References:

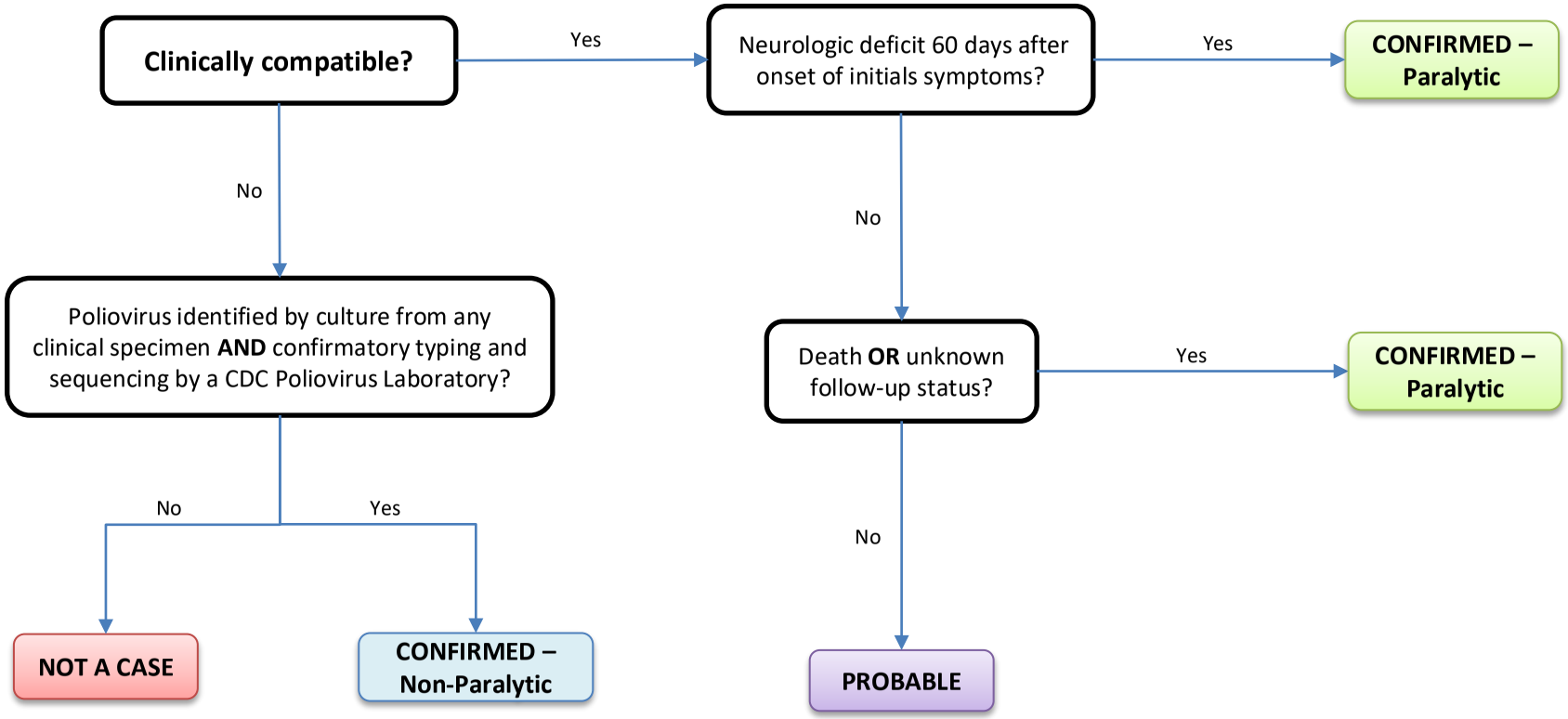
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Polio," Centers for Disease Control and Prevention (CDC), last reviewed January 9, 2023. https://www.cdc.gov/polio/

Last Updated September 1, 2023

Poliomyelitis



Clinical Description and Clinical Forms:
Paralytic: Acute onset of a flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause, and without sensory or cognitive loss
Non-Paralytic: A case without symptoms of paralytic poliomyelitis

Critical Reporting Elements and Comments:
- Specify the clinical form of the disease.
- Document relevant travel and deployment history occurring within the incubation period (3–35 days).
- Note the patient's poliomyelitis immunization history.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Poliomyelitis

Confirmed ○ Probable ○ Not a Case

https://drsi.health.mil/ADRSi/

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N		
Hospitalized	☐	☐	**Admit date:** ____/_____/_____	**Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____	**Cause of death:** _____

	Y	N			
Symptomatic	☐	☐	**Onset date:** ____/_____/_____	**Clinic date:** _____/_____/_____	**Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)		
Sore throat	☐	☐			
Fatigue	☐	☐			
Nausea	☐	☐			
Headache	☐	☐			
Stomach pain	☐	☐			
Paresthesia	☐	☐			

CLINICAL FORM

☐ **Paralytic**

☐ **Non-Paralytic**

VACCINATION HISTORY

	Y	N
Has the case been vaccinated against Polio?	☐	☐
Dose #1: _____/_____/_____	☐	☐
Dose #2: _____/_____/_____	☐	☐
Dose #3: _____/_____/_____	☐	☐
Dose #4: _____/_____/_____	☐	☐

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: generally 7–14 days, range of 3–35 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Post-Exposure Prophylaxis against Rabies

What is rabies post-exposure prophylaxis?
Rabies is a zoonotic disease caused by RNA viruses in the family *Rhabdoviridae*, genus *Lyssavirus.* Rabies virus is present in the saliva and central nervous system (CNS) tissue of rabid animals. If a person has been exposed (or reasonably presumed to have been exposed) to a rabid (or potentially rabid) animal, then Post-Exposure Prophylaxis (PEP) against rabies is warranted for the prevention of human rabies. In the U.S., for individuals who have never been vaccinated against rabies, PEP includes one dose of human rabies immunoglobulin (HRIG) and four doses of rabies vaccine over a 14-day period. For individuals who have been previously vaccinated or are receiving pre-exposure vaccination for rabies should receive only vaccine. In all cases involving rodents, consult the state or local health department before a decision is made to initiate PEP.

When is Post-Exposure Prophylaxis (PEP) against Rabies reportable?
According to the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions, cases are reportable when the individual meets exposure criteria for which PEP against rabies is initiated and a full rabies exposure risk assessment is completed. The case definition only includes bites from animals suspected to be infected with rabies for which a healthcare provider recommended PEP against rabies.

What are the exposure criteria for reporting PEP against Rabies?
Exposure is defined as one or more of the following:

- Any bite, scratch, or other situation in which saliva or CNS tissue of a rabid or potentially rabid animal could have entered an open or fresh wound or come in contact with a mucous membrane by entering the eye, mouth, or nose;
- Inadvertent bat contact or circumstances in which bat contact cannot be ruled out; and/or
- Recipient of organ donations from suspected or known human cases of rabies.

Are cases of refusal of post-exposure prophylaxis against rabies reported?
Yes. All cases where a healthcare provider recommended PEP following a suspected exposure to rabies are to be reported to DRSi within 48 hours of the recommendation. Provide an explanation of why the individual refused PEP against rabies.

When are cases of post-exposure prophylaxis against rabies not reportable?
Cases are not reportable when there is a bite from an animal that was fully vaccinated against rabies, (e.g., military working dog), and did not result in a healthcare provider recommendation for PEP against rabies.

What are some public health considerations?

- Specify the type of exposure (bite, scratch, saliva, slept near, or other circumstance).
- Specify the implicated animal species, if known.
- Specify the anatomical site of exposure.
- Document the circumstances under which the case patient was potentially exposed including deployment and duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Note the patient's rabies immunization history.
- Specify the reasons for discontinuation if PEP was discontinued.

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- Report all cases receiving PEP that met the exposure criteria, even if PEP is subsequently terminated due to the animal being deemed rabies free.

Which animals carry rabies?

Any mammal can contract rabies. The most common wild reservoirs of rabies are raccoon, skunk, bat, fox, and coyote, as well as a feral cat or dog. The following specifies more examples of animals and their contractability of rabies:

- Domestic mammals (cats, dogs, cattle) can contract rabies.
- Ferrets may carry rabies.
- Rodents (chipmunks, rats, mice, hamsters, gerbils, and guinea pigs), rabbits, and hares rarely contract rabies and have not been known to carry rabies in the U.S.
- Squirrels may contract rabies, or suffer from a fatal roundworm brain parasite, which causes signs and symptoms similar to rabies.
- Opossums are resistant to rabies. Hissing, drooling, and swaying are part of the opossum's bluff routine, which is intended to scare away potential predators. Yet, this behavior looks like rabies and is why some believe an opossum is rabid when it is not.

What does an animal infected with rabies look like?

In the "furious" or "rabid" form, wild animals may appear to be agitated, bite, or snap at imaginary and real objects and drool excessively. An old term for rabies was "hydrophobia" due to a rabid animal's apparent inability to swallow water. In the "dumb" form, wild animals may appear tame and seem to have no fear of humans. Non-specific signs include the animal appearing "drunk" or excessively wobbly, circling, seeming partially paralyzed, acting disoriented, or mutilating itself, which may also be indicative of diseases like distemper or lead poisoning.

References:

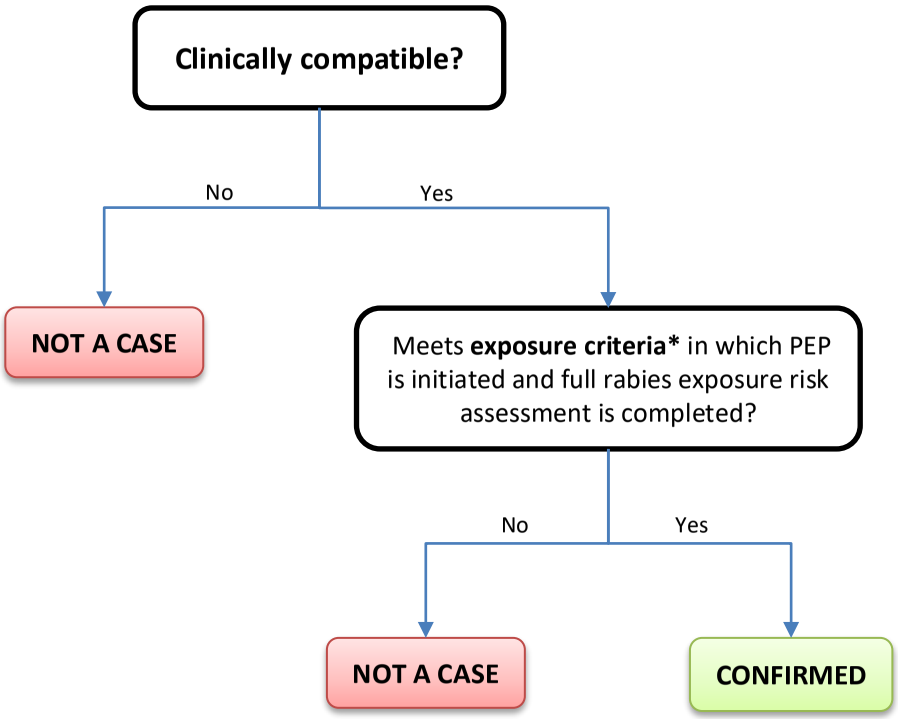
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

MMWR, Vol. 59, No. RR-2. Use of a Reduced (4-Dose) Vaccine Schedule for Postexposure Prophylaxis to Prevent Human Rabies: Recommendations of the Advisory Committee on Immunization Practices, 19 March 2010. https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm
erratum, references: https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5916a5.htm

"Rabies," Centers for Disease Control and Prevention (CDC), last reviewed May 4, 2022. https://www.cdc.gov/rabies/exposure/index.html

Post-Exposure Prophylaxis (PEP) against Rabies



***Exposure is defined as one or more of the following:**

- Any bite, scratch, or other situation in which saliva or CNS tissue of a rabid or potentially rabid animal could have entered an open or fresh wound or encounter a mucous membrane by entering the eye, mouth, or nose
- Inadvertent bat contact or circumstances in which bat contact cannot be ruled out
- Recipient of organ donations from suspected or known human cases of rabies

Clinical Description:

Rabies is a zoonotic disease caused by RNA viruses in the family *Rhabdoviridae*, genus *Lyssavirus*. Rabies virus is present in the saliva and central nervous system (CNS) tissue of rabid mammals. If a person has been exposed (or reasonably presumed to have been exposed) to a rabid (or potentially rabid) animal, then rabies post-exposure prophylaxis (PEP) is warranted for the prevention of human rabies. PEP can be in the form of anti-rabies vaccine, human rabies immunoglobulin (HRIG), or both depending on the circumstances.

Critical Reporting Elements and Comments:

- Specify the implicated animal species, if known.
- Specify the anatomical site of exposure.
- Document the circumstances under which the case patient was potentially exposed including deployment and duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Note the patient's rabies immunization history.
- Specify the reasons for discontinuation if PEP was discontinued.
- Report all cases receiving PEP that met the exposure criteria, even if PEP is subsequently terminated due to the animal being deemed rabies free.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Post-Exposure Prophylaxis against Rabies

Confirmed ◯ Not a Case ◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Exposure date: ____/_____/_____ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Exposure type *(check all that apply)*: ☐ Bite ☐ Scratch ☐ Saliva ☐ Slept near ☐ Other *(describe)*:_____

Specify the implicated animal species (if known): ☐ Dog ☐ Cat ☐ Bat ☐ Raccoon ☐ Other *(describe)*:_____

Specify the anatomical site of exposure: ☐ Arm/hand ☐ Leg/foot ☐ Torso ☐ Head/face ☐ Other (describe):_____

Did the case receive organ donations from suspect or known human cases of rabies? ☐ Yes ☐ No **If yes, what?:**_____

Has the case been previously vaccinated against rabies? ☐ Yes ☐ No **If yes, when & where?:**_____

Any pertinent exposure history (e.g., occupational, high risk)? ☐ Yes ☐ No **If yes, what?:**_____

Any inadvertent bat contact? ☐ Yes ☐ No **If yes, when & where?:**_____

TRAVEL HISTORY

In the 5 weeks before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PEP RECORD

Filling out this portion of the form is optional. This information is not required to be entered in DRSi.

Shot #	Day #	Date Due	Clinic	Injection **(circle vaccine given)**	Date Given	Dose	Lot #	Injection Site	Signature of Provider
HRIG & first vaccination given first day of treatment (day 0); 3 additional rabies vaccinations given on days 3, 7, & 14 (counted from day 0).									
1 of 1	0			HRIG					
1 of 4	0			RabAvert or Imovax #1*					
2 of 4	3			RabAvert or Imovax #2*					
3 of 4	7			RabAvert or Imovax #3*					
4 of 4	14			RabAvert or Imovax #4*					
Persons with immunosuppression, rabies PEP should be administered using a 5-dose vaccine regimen									
IF NEEDED	28			RabAvert or Imovax #5*					

COMMENTS

PUBLIC HEALTH REFERENCE SHEET
Q Fever

Name	*Coxiella burnetii*
Reservoir & Transmission	Sheep, cattle, and goats are primary reservoirs, also in multiple vertebrate species including cats, dogs, wild mammals, birds, ticks Inhalation of aerosols or dust contaminated with dried birth fluids or excreta from infected animals; ingestion of contaminated unpasteurized dairy products; human-to-human transmission via sexual contact is rare
Incubation Period	2–3 weeks; shorter after exposure to large numbers of organisms
Common Symptoms	Self-limiting febrile illness, fatigue, severe headache, chills or sweats, malaise, myalgia, nausea, vomiting and diarrhea, abdominal pain Hepatitis or pneumonia associated with more severe acute infections Endocarditis and endovascular infections in chronic disease
Gold Standard Diagnostic Test	Serologic evidence of a four-fold rise in phase II IgG by indirect fluorescent antibody (IFA) test between paired acute and convalescent serum samples collected 3–4 weeks apart
Risk Groups	Animal handlers, butchers, farmers, meat packers, veterinarians, and seasonal or migrant farm workers; travelers to rural areas or farms with cattle, goats, sheep, or other livestock; people that consume unpasteurized milk
Geographic Significance	Worldwide, except New Zealand

What is Q fever?
Q fever is an acute and chronic febrile disease caused by a highly infectious gram-negative intracellular bacterium *Coxiella burnetii,* which commonly infects animals such as goats, sheep, and cattle.

Q fever was first recognized as a human disease in Australia in 1935 and in the United States (U.S.) in the early 1940s. Q fever was made a nationally notifiable disease in the U.S. in 1999. The “Q” is for “query” which was used in the 1940s when the cause of illness was unknown.

What is the occurrence of Q fever?
C. burnetii has a worldwide distribution but is absent from New Zealand. *C. burnetii* prevalence is greatest in Africa and countries in the Middle East. Reported rates of human infection are higher in France and Australia than in the U.S. Per the Centers for Disease Control and Prevention (CDC), the largest known Q fever outbreak involved 4,000 human cases during 2007–2010 in the Netherlands. In 2019, the U.S. reported 178 acute Q fever cases, as well as 34 chronic Q fever cases. The number of cases of Q fever per million persons varies by state, with cases most frequently reported from western and plains states where ranching and rearing of livestock are common. More than one-third of cases (36%) are reported from three States (California, Texas, and Iowa). Most cases of reported illness begin in the spring and early summer months, peaking in April and May, which is also the peak of birthing season for cattle, sheep, and goats.

How is Q fever transmitted?
C. burnetii is most commonly transmitted through inhalation of aerosols or dust contaminated with dried birth fluids or excreta from infected animals, usually cattle, goats, or sheep. *C. burnetii* is highly infectious and persists in the environment. Infections via ingestion of contaminated

unpasteurized dairy products and human-to-human transmission via sexual contact have been reported, but rarely.

Who is at risk for Q fever?

Occupational exposure to infected animals, particularly during parturition, poses a high risk for infection among butchers, farmers, meat packers, veterinarians, and seasonal or migrant farm workers. Examples of travel-acquired Q fever include cases in Soldiers deployed to rural areas, travelers with livestock contact and consumption of unpasteurized milk, and travelers obtaining treatments that involved the injection of fetal sheep cells.

What are the signs and symptoms of Q fever?

Per CDC, the incubation period is typically 2–3 weeks but can be shorter after exposure to large numbers of organisms. Estimates suggest that over half of acute infections are mild or asymptomatic. The most common clinical presentation of acute infection is a self-limiting febrile illness, with hepatitis or pneumonia associated with more severe acute infections. Chronic infections occur primarily in patients with preexisting cardiac valvulopathies, vascular abnormalities, or immunosuppression. Without proper treatment, infection during pregnancy poses a risk for adverse pregnancy outcomes. The most common manifestations of chronic disease are endocarditis and endovascular infections. Chronic infections might become apparent months or years after the initial exposure.

What are potential complications of Q fever?

- Most people with acute Q fever infection recover completely; however, some may experience serious illness with pneumonia, granulomatous hepatitis, myocarditis, or central nervous system complications.
- Women who are infected during pregnancy may be at risk for miscarriage, stillbirth, pre-term delivery, or low infant birth weight.
- Although most people with acute Q fever recover completely, post-Q fever fatigue syndrome has been reported to occur in up to 20% of patients with acute Q fever. This syndrome is characterized by constant or recurring fatigue, night sweats, severe headaches, photophobia, pain in muscles and joints, mood changes, and difficulty sleeping. No consensus has been reached in the medical community on the pathogenesis or treatment of post-Q fever fatigue syndrome.
- Chronic Q fever occurs in <5% of acutely infected patients and can be fatal if not treated correctly with a combination of antibiotics over several months. Endocarditis is the most common manifestation of chronic Q fever and is fatal if untreated.

How is Q fever diagnosed?

- Serologic evidence of a four-fold rise in phase II IgG by indirect fluorescent antibody test between paired acute and convalescent serum samples collected 3–4 weeks apart is the gold standard for diagnosis. Consider a single high serum phase II IgG titer (>1:64) in conjunction with clinical evidence of infection as indicative of probable acute Q fever. PCR testing of serum or whole blood is useful for confirmation of acute Q fever if samples are taken ≤14 days after symptom onset.
- Per CDC, chronic Q fever diagnosis requires a phase I IgG titer >1:512 and clinical evidence of persistent infection (e.g., endocarditis, infected vascular aneurysm, osteomyelitis). Identifying *C. burnetii* in whole blood, serum, or tissue samples by PCR, immunohistochemical staining, or isolation can be used to confirm chronic disease. Further

information about diagnostic testing is available at CDC's Q Fever webpage https://www.cdc.gov/qfever/public-health/index.html.

How is Q fever treated?

- Per CDC, doxycycline is the most frequently used and most effective treatment for acute Q fever. For pregnant people, children aged <8 years with mild illness, and patients allergic to doxycycline, trimethoprim-sulfamethoxazole is an alternative treatment option. Treatment for acute Q fever is not recommended for asymptomatic people or for those whose symptoms have resolved.
- Chronic *C. burnetii* infections require long-term combination therapy, and the combination of doxycycline and hydroxychloroquine for ≥18 months provides the best treatment outcomes. Alternative treatments include trimethoprim-sulfamethoxazole and fluoroquinolones, but these are less effective.
- Treatment of Q fever also might involve surgery to remove infected tissue.

How can Q fever be prevented?

- Q fever vaccines are not available in the U.S. The only commercially available vaccine for humans is in Australia; Q-VAX® Q Fever Vaccine and Skin Test; and is useful for those in hazardous occupations, including those carrying out medical research with pregnant sheep.
- Research workers using pregnant sheep or goats should be identified and enrolled in a health education and surveillance program. Animal-holding facilities should be away from populated areas, and measures should be implemented to prevent airflow to other occupied areas.
- Educate persons in high-risk occupations on sources of infection and the necessity for adequate disinfection and disposal of animal birth products.

What are some public health considerations?

- When reporting Q fever in the Disease Reporting System, internet (DRSi)—
    - Specify the clinical form of the disease. Report acute and chronic separately.
    - Document the source of the infection, if known.
    - Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
    - Document any relevant travel and deployment history within the incubation period.
- *C. burnetii* is listed as category B bioterrorism agent.

References:

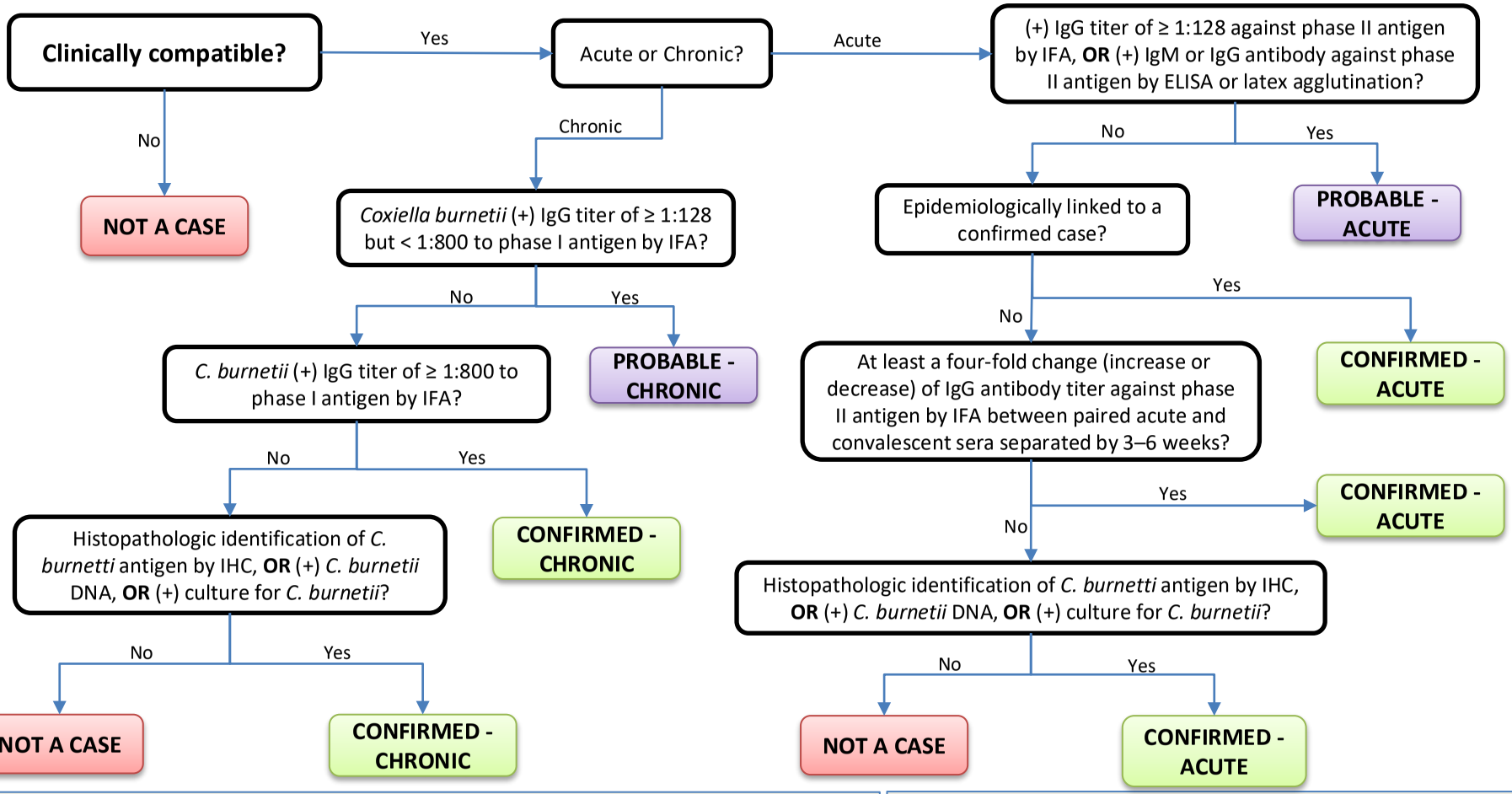
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Kersh, Gilbert. "Q Fever." *CDC Yellow Book 2024: Travel-Associated Infections & Diseases*. Centers for Disease Control and Prevention, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/q-fever

"Q Fever," Centers for Disease Control and Prevention (CDC), last reviewed January 15, 2019. https://www.cdc.gov/qfever/public-health/index.html.

Q Fever



Clinical Description:
An illness that may present as an acute or chronic infection.
Acute: An illness characterized by an acute fever and any of the following: rigors, severe retrobulbar headache, acute hepatitis, pneumonia, or elevated liver enzyme levels.
Chronic: An infection that persists for more than 6 months. Newly recognized, culture-negative endocarditis, particularly in a patient with previous valvulopathy or compromised immune system, suspected infection of a vascular aneurysm or vascular prosthesis, or chronic hepatitis, osteomyelitis, osteoarthritis, or pneumonitis in the absence of other known etiology.

Critical Reporting Elements and Comments:
- Specify the clinical form of the disease.
- Document the source of the infection, if known.
- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Document any relevant travel and deployment history within the incubation period (3–30 days, typically 2–3

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Q Fever

Confirmed ○ Probable ○ Not a Case

☐ Acute
☐ Chronic

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

Army Disease Reporting System internet (ADRSi) link: https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: ***(Last)***_____ ***(First)***_____ ***(MI)***_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: ***(Street)***_____ **DoD ID:** _____

(City) _____ ***(State)*** _____ ***(Zip)*** _____ (_____) - _____ - _____ ***(h)***

PHONE:

(County)_____ ***(Country)***_____ (_____) - _____ - _____ ***(c)***

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____**°F/°C** (☐ **unk**)
Other ***(describe)***	☐	☐	*Describe other symptoms or relevant clinical information:*

Any pre-existing medical conditions?

☐ **Immunocompromised** ☐ **Valvular heart disease or vascular graft** ☐ **Pregnancy** ☐ **Other:** _____

EXPOSURE HISTORY

Occupation at time of illness: _____

Exposure to birthing animals? ☐ **Y** ☐ **N** ☐ **Unk** **If yes, what animal:** _____

Exposure to unpasteurized milk? ☐ **Y** ☐ **N** ☐ **Unk** **If yes, what animal:** _____

Other family members with illness? ☐ **Y** ☐ **N** ☐ **Unk** **If yes, who:** _____

Any contact with animals within two months prior to onset? (check all that apply)

☐ **Cattle** ☐ **Goats** ☐ **Cats** ☐ **Sheep** ☐ **Pigeons** ☐ **Rabbits** ☐ **Other:**_____

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test (type of test performed)	Collection Date	Source (Circle Type)	Result	
☐ **Antibody**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **Antigen**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **PCR (DNA)**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **Culture**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **Screen**	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**
☐ **Other** *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ **Positive**	☐ **Negative**

TRAVEL HISTORY

In the 5 weeks before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Describe any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Rabies, Human

Name	Lyssaviruses
Reservoir & Transmission	Mammals; primarily: dogs, cats, bats, foxes, coyotes, wolves, jackals, raccoons, skunks Virus-laden saliva from rabid animal introduced through bite or scratch
Incubation Period	Usually 3–8 weeks, and very rarely as short as a few days
Common Symptoms	General weakness or discomfort, fever or headache then acute encephalomyelitis that almost always progresses to coma or death within 10 days after the first symptom
Gold Standard Diagnostic Test	PCR; DFA
Risk Groups	Persons exposed to rabid animals, veterinarians, animal control staff, wildlife researchers, travelers to rabies-endemic areas
Geographic Significance	Worldwide

What is rabies?
Rabies is an acute viral zoonotic disease that causes a progressive viral encephalomyelitis and is nearly always fatal. Rabies virus is part of the family *Rhabdoviridae* in the genus *Lyssavirus*.

What is the occurrence of rabies?
Genus *Lyssavirus* currently contains 14 species and is divided into 3 phylogroups. Only one of the species, classical rabies virus, is currently present in the Americas, and it causes 99.9% of all human rabies cases worldwide. Annual country-level assessment information is available from the CDC at https://www.cdc.gov/rabies/resources/countries-risk.html.

How is rabies transmitted?
All species of mammals are susceptible to rabies virus infection, but only a few species are important as reservoirs for the disease. In the U.S., distinct strains of rabies virus have been identified in raccoons, skunks, foxes, and coyotes. Several species of insectivorous bats are also reservoirs for strains of the rabies virus.

Rabies virus is transmitted through direct contact (such as through broken skin or mucous membranes in the eyes, nose, or mouth) with saliva or brain/nervous system tissue from an infected animal. People usually get rabies from the bite of a rabid animal. It is also possible, but rare, for people to get rabies from non-bite exposures, which can include scratches, abrasions, or open wounds that are exposed to saliva or other potentially infectious material from a rabid animal. Transmission has been rarely documented via inhalation of aerosolized rabies virus as in a laboratory environment, or through corneal or solid organ transplants.

Rabies virus becomes noninfectious when it dries out and when it is exposed to sunlight.

Who is at risk for rabies?
Individuals are at risk when traveling in certain areas of the world, including but not limited to parts of Africa, Asia, and Central and South America, where rabies in dogs is still a major problem and access to preventive treatment may be difficult to obtain. Occupational exposure is a risk for those who work with or may come into contact with potentially rabid animals. Less than 20 cases of human survival from clinical rabies have been documented. Only a few survivors had no history of pre- or postexposure prophylaxis.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Rabies, Human

What are the signs and symptoms of rabies?

In humans, the first symptoms of rabies may be very similar to those of the flu including general weakness or discomfort, fever, or headache. There may be also discomfort or a prickling or itching sensation at the site of bite. The acute period of disease typically ends after 2 to 10 days. Symptoms then progress to cerebral dysfunction, anxiety, confusion, and agitation. As the disease progresses, the person may experience delirium, abnormal behavior, hallucinations, hydrophobia (fear of water), and insomnia.

In animals, the signs, symptoms, and outcomes of rabies can vary. Symptoms in animals are often similar to those in humans and may include early nonspecific symptoms, acute neurologic symptoms, and ultimately death.

What are potential complications of rabies?

Once clinical signs of rabies appear, the disease is nearly always fatal, and treatment is typically supportive.

How is rabies diagnosed?

In animals, rabies is diagnosed using the direct fluorescent antibody (DFA) test for the presence of rabies virus antigens in brain tissue.

Rapid and accurate laboratory diagnosis of rabies in humans and other animals is essential for timely administration of postexposure prophylaxis. Within a few hours, a diagnostic laboratory can determine whether an animal is rabid and inform the responsible medical personnel. The laboratory results may save a patient from unnecessary physical and psychological trauma and financial burdens if the animal is not rabid. Because of the hazards associated with handling specimens, testing is only done with prior consultation.

Contact the state health department regarding any sample submissions, including suspected human rabies cases. If it is deemed necessary to send human samples for testing to the Rabies Laboratory at the CDC, the Rabies Duty Officer can answer questions regarding likelihood of a case, sampling techniques, and shipping at **404-639-1050**. Refer to the CDC's specimen submission guidelines: https://www.cdc.gov/rabies/resources/specimen-submission-guidelines.html.

In humans, several tests are necessary to diagnose rabies ante-mortem (before death); no single test is sufficient. Tests are performed on samples of saliva, serum, spinal fluid, and skin biopsies of hair follicles at the nape of the neck. Saliva can be tested by virus isolation in culture or reverse transcription followed by polymerase chain reaction (RT-PCR). Serum and spinal fluid are tested for antibodies to rabies virus. Skin biopsy specimens are examined for Lyssavirus antigen in the cutaneous nerves at the base of hair follicles.

How is rabies treated?

Rabies is a medical urgency. Decisions should not be delayed. Wash any wounds immediately with soap and water. Bite wounds can cause serious injury such as nerve or tendon laceration and local and system infection.

Post-exposure prophylaxis (PEP) regimens depend on vaccination history. The CDC guidelines are available at: https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Rabies, Human

People who have been previously vaccinated or are receiving pre-exposure vaccination for rabies should receive only rabies vaccine. Previously vaccinated persons are those who have received one of the Advisory Committee on Immunization Practices (ACIP)-recommended pre- or postexposure prophylaxis regimens (with cell-culture vaccines) or those who received another vaccine regimen (or vaccines other than cell-culture vaccine) and had a documented adequate rabies virus-neutralizing antibody response. Previously vaccinated persons, as defined above, should receive two vaccine doses (1.0 mL each in the deltoid), the first dose immediately and the second dose 3 days later.

For people who have never been vaccinated against rabies, PEP should include administration of both passive antibody and a series of rabies vaccine doses. The combination of human rabies immune globulin (HRIG) and vaccine is recommended for both bite and non-bite exposures, regardless of the interval between exposure and initiation of treatment. Rabies PEP consists of a dose of HRIG and rabies vaccine given on the day of the exposure, and then a dose of vaccine given again on days 3, 7, and 14.

If feasible, the animal should be captured. If the animal is declared healthy after an appropriated observation period or tests negative for rabies, the vaccine series can be stopped.

Service members returning from deployment may not have a completed postexposure prophylaxis regimen documented in their medical records. PEP is still effective if given weeks, months, or even years after a potential exposure. For questions or concerns about intentional or unintentional deviation from this rabies vaccine schedule, call the DHA Immunization Healthcare Division (IHD) at 877-438-8222 (GETVACC), Option 1.

How can rabies be prevented?

In 2022, ACIP published an update for the use of a modified pre-exposure prophylaxis vaccination schedule to prevent human rabies, https://www.cdc.gov/mmwr/volumes/71/wr/mm7118a2.htm. The major source of rabies in humans can be eliminated through ensuring adequate animal vaccination and control, educating those at risk, pre-exposure vaccination for those at risk, and enhancing access of those bitten to post-exposure medical care. Avoid feral or stray cats and dogs, as well as non-domestic mammals acting abnormally, appearing sick or injured, or showing no or little fear of humans.

What are some public health considerations?

- Specify the implicated animal species if known.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Note the patient's rabies immunization history. Check the electronic health record system for vaccination templates.

References

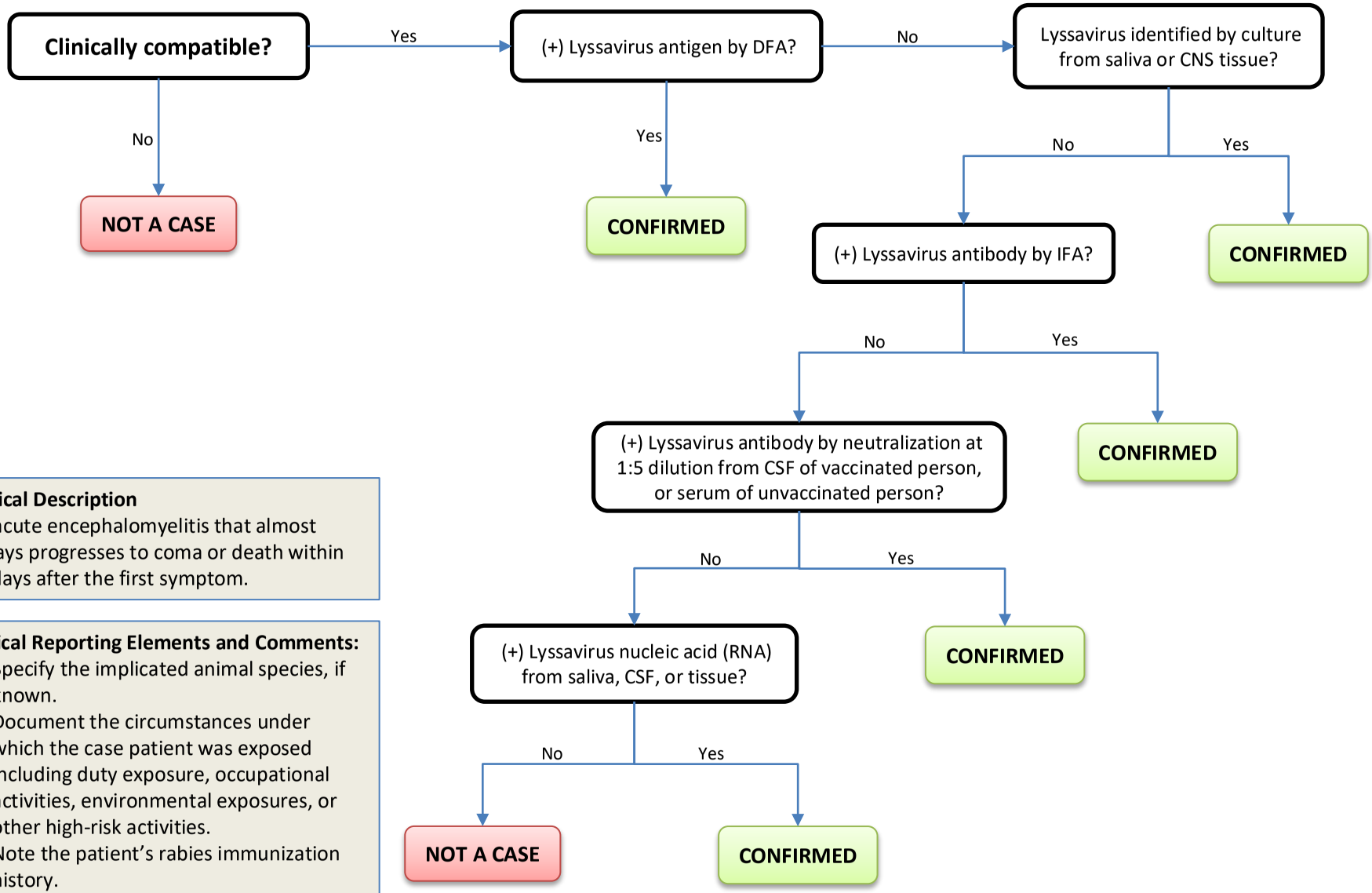
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Rabies," Centers for Disease Control and Prevention (CDC), last reviewed December 8, 2022. https://www.cdc.gov/rabies

Last Updated September 1, 2023

Rabies, Human



Clinical Description
An acute encephalomyelitis that almost always progresses to coma or death within 10 days after the first symptom.

Critical Reporting Elements and Comments:

- Specify the implicated animal species, if known.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Note the patient's rabies immunization history.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Human Rabies

https://drsi.health.mil/ADRSi

Confirmed ◯ Not a Case ◯

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Prior to filling out this form, you MUST notify DCPH-A & local Public Health Department IMMEDIATELY
DCPH-A: 410-417-2377

If case does NOT have rabies and was only potentially EXPOSED to rabies, please use the Post-Exposure Prophylaxis against Rabies form.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/hospital:** _____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

	Y	N		
Symptomatic	☐	☐	**Onset date:** ____/_____/_____	**Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)	**Onset date:** ____/_____/_____ **Duration (in days):** _____
Headache	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____
Weakness	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____
Discomfort	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____
Anxiety	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____
Confusion	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____
Agitation	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____
Delirium	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____
Abnormal behavior	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____ **Specify behavior:**
Insomnia	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____
Other *(describe)*	☐	☐	**Onset date:** ____/_____/_____	**Duration (in days):** _____ **Describe:**

EPIDEMIOLOGIC

Exposure type ***(check all that apply)*****:** ☐ **Bite** ☐ **Scratch** ☐ **Saliva** ☐ **Slept near** ☐ **Other***(describe)*:_____

Specify the implicated animal species (if known): ☐ **Dog** ☐ **Cat** ☐ **Bat** ☐ **Raccoon** ☐ **Other***(describe)*:_____

Specify the anatomical site of exposure: ☐ **Arm/hand** ☐ **Leg/foot** ☐ **Torso** ☐ **Head/face** ☐ **Other***(describe)*:_____

Did the case receive organ donations from suspect or known human cases of rabies? ☐ **Yes** ☐ **No** **If yes, what?:**_____

Has the case been previously vaccinated against rabies? ☐ **Yes** ☐ **No** **If yes, when & where?:**_____

Any pertinent exposure history (e.g. occupational, high risk)? ☐ **Yes** ☐ **No** **If yes, what?:**_____

Any inadvertent bat contact? ☐ **Yes** ☐ **No** **If yes, when & where?:**_____

LABORATORY RESULTS

COMMENTS

Test (type of test performed)	Collection Date	Source (Circle Type)	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *(Describe)*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

(If yes) **Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation period: within 10 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Include any other pertinent information on this case below:

PUBLIC HEALTH REFERENCE SHEET
Relapsing Fever

Name	*Borrelia* species
Reservoir & Transmission	Humans or wild rodents Tick-borne relapsing fever (TBRF) also called soft tick relapsing fever (STRF): bite of infected soft ticks of the genus *Ornithodoros* Louse-borne relapsing fever (LBRF): human-to-human by body louse *Pediculus humanus humanus* Hard tick relapsing fever (HTRF): also called *Borrelia miyamotoi* disease: bite of infected blacklegged tick ("deer" tick) (*Ixodes scapularis*) or Western blacklegged tick (*Ixodes pacificus*)
Incubation Period	TBRF/STRF: 7 days (range 2–18 days) LBRF: 4 to 8 days (range 5–15 days)
Common Symptoms	High fever, headache, muscle and joint aches, or nausea
Gold Standard Diagnostic Test	Microscopic identification
Risk Groups	TBRF/STRF: staying in rodent or tick-infested cabins LBRF: living in crowded and poor sanitary conditions HTRF: exposed to blacklegged ticks
Geographic Significance	TBRF/STRF: Western United States, in Texas, linked to cave exposures; Western Europe; Middle East; Africa; and Central Asia LBRF: sub-Saharan Africa, Ethiopia, Sudan, Eritrea, Somalia HTRF: In the same places where Lyme disease is found in U.S.: northeastern, mid-Atlantic, upper midwestern States

What is relapsing fever?

Relapsing fever is a bacterial infection. There are three types of relapsing fever:

- Tick-borne relapsing fever (TBRF) also known as soft tick relapsing fever (STRF)
  - Caused by species of *Borrelia*, gram negative bacteria, found in "soft ticks" of genus *Ornithodoros* (*hermsii; parkeri; turicatae)*. The most common is *Borrelia hermsii.*
- Louse-borne relapsing fever (LBRF)
  - Caused by *Borrelia recurrentis*, a spiral-shaped bacteria, transmitted from human-to-human.
- Hard tick relapsing fever (HTRF): *Borrelia miyamotoi* disease
  - A type of spiral shaped bacteria that is closely related to the bacteria that causes TBRF/STRF and more distantly related to the bacteria that causes Lyme disease.

Relapsing fever spirochetes have a unique process of DNA rearrangement that allows them to periodically change the molecules on their outer surface. This process, called antigenic variation, allows the spirochete to evade the host immune system and cause relapsing episodes of fever and other symptoms.

What is the occurrence of relapsing fever?

TBRF/STRF is a rare infection. In the U.S., TBRF/STRF occurs most commonly in 14 western states: Arizona, California, Colorado, Idaho, Kansas, Montana, Nevada, New Mexico, Oklahoma, Oregon, Texas, Utah, Washington, and Wyoming. From 1990 to 2011, 483 cases of TBRF/STRF were reported in the western U.S., with infections most frequently transmitted in California, Washington, and Colorado. Most cases occur in the summer months when sleeping

in rodent-infested cabins. In the winter months, fires started to warm a cabin can activate ticks resting in the walls and woodwork.

LBRF causes sporadic illness and outbreaks in sub-Saharan Africa, particularly in regions affected by war and in refugee camps. LBRF is commonly found in Ethiopia, Sudan, Eritrea, and Somalia. Illness can be severe, with mortality of 30% to 70% in outbreaks.

HTRF (*B. miyamotoi* disease) is relatively rare in the U.S.

How is relapsing fever transmitted?

TBRF/STRF is spread by three tick species, each of which has a preferred habitat and set of hosts. *Ornithodoros hermsi,* the tick responsible for most cases in the U.S., prefers coniferous forests at altitudes of 1,500 to 8,000 feet where it feeds on tree squirrels and chipmunks. The *O. parkeri* and *O. turicata* species are generally found at lower altitudes in the Southwest where they inhabit caves and the burrows of ground squirrels, prairie dogs, and burrowing owls. Humans typically come into contact with soft ticks when they sleep in rodent-infested cabins. The ticks emerge at night and feed briefly while the person is sleeping. The bites are painless. Between meals, the ticks may return to the nesting materials in their host burrows.

LBRF is a vector-borne disease caused by the spiral-shaped bacteria *Borrelia recurrentis*, a human-restricted pathogen transmitted by the body louse *Pediculus humanus humanus*.

HTRF (*B. miyamotoi* disease) is transmitted by two types of North American ticks, the blacklegged or “deer” tick (*Ixodes scapularis*) and the Western blacklegged tick (*Ixodes pacificus*), which also spread the germs that cause several diseases, including Lyme disease and anaplasmosis.

Who is at risk for relapsing fever?

TBRF/STRF is found in discrete areas throughout the world, including mountainous areas of North America, plateau regions of Mexico, Central and South America, the Mediterranean, Central Asia, and much of Africa. People become exposed when they sleep in cabins and other rustic buildings in which rodents have built nests. These nests are usually located inside the walls or in the attic or crawl space. Soft ticks can live up to 10 years; in certain parts of Russia, the same tick has been found to live almost 20 years. Individual ticks will take many blood meals during each stage of their life cycle, and some species can pass the infection along through their eggs to their offspring. Given the long-life span of soft ticks, once a cabin or homestead is infested, it may remain infested unless the rodent nest is removed.

LBRF: Persons living in crowded and poor sanitary conditions.

HTRF (*B. miyamotoi* disease): Persons exposed to blacklegged ticks.

What are the signs and symptoms of relapsing fever?

In general, relapsing fever is an illness characterized by high fever, headache, muscle and joint aches, or nausea. Fever typically lasts 2 to 9 days and alternates with afebrile periods of 2 to 4 days. The total number of relapses varies from a single incident to over 10.

TBRF/STRF: Non-specific symptoms include high fever (e.g., 103°F), headache, and muscle and joint aches. Symptoms can reoccur, producing a telltale pattern of fever lasting roughly 3 days, followed by 7 days without fever, followed by another 3 days of fever. Without antibiotic

treatment, this process can repeat several times. Patients typically appear moderately ill and may be dehydrated. Occasionally, a macular rash or scattered petechiae may be present on the trunk and extremities. Less frequently, patients may have jaundice, hepatosplenomegaly, meningismus, and/or photophobia. Although less common, infection with *B. turicatae* is especially likely to result in neurologic involvement.

LBRF: sudden onset of high fever, general malaise, chills, and/or sweats. May also include headache, meningism, myalgia/arthralgia and non-specific gastrointestinal symptoms (nausea and vomiting). Mycocutaneous symptoms include conjunctival injection, scattered petechiae, and erythematous rash. Cardio-respiratory symptoms such as tachycardia, mild tachypnea, and non-productive cough can occur. Patients may present with hepatomegaly and splenomegaly, with risk of splenic rupture. Neurological and ocular complications can occur, such as meningitis, meningoencephalitis, neuropathies and cranial-nerve palsy, iritis, and acute ophthalmitis. Hemorrhage is a common complication with epistaxis, blood-tinged sputum, and even central nervous system or gastrointestinal hemorrhage.

HTRF (*B. miyamotoi* disease): fever, chills, headache, body, and joint pain and fatigue. Fewer than 1 in 10 develop a rash.

What are the potential complications of relapsing fever?
TBRF/STRF: Long-term sequelae are rare but include iritis, uveitis, cranial nerve, and other neuropathies.

How is relapsing fever diagnosed?
TBRF/STRF and LBRF are usually diagnosed by microscopic identification of *Borrelia* from a sample of blood, especially obtained during the symptomatic febrile phase. With subsequent febrile episodes, the number of circulating spirochetes decreases, making it harder to detect spirochetes on a peripheral blood smear. Even during the initial episode, spirochetes will only be seen 70% of the time. *Borrelia* may be identified by intraperitoneal inoculation of laboratory rats or mice with blood or by blood culture.

HTRF (*B. miyamotoi* disease): Polymerase chain reaction (PCR) tests detect DNA from the bacteria. Serologic tests detect antibodies made by the human body in response to infection. The CDC provides laboratory diagnostic support at the request of state health departments.

How is relapsing fever treated?
Given appropriate treatment, most patients recover within a few days.

TBRF/STRF: The spirochetes are susceptible to penicillin and other beta-lactam antimicrobials, as well as tetracyclines, macrolides, and possibly fluoroquinolones. The CDC has not developed specific treatment guidelines for TBRF/STRF; however, in general, tetracycline 500mg every 6 hours for 10 days is the preferred oral regimen for adults. Erythromycin, 500mg (or 12.5 mg/kg) every 6 hours for 10 days is an effective alternative when tetracyclines are contraindicated. Parenteral therapy with ceftriaxone 2 grams per day for 10–14 days is preferred for patients with central nervous system involvement, similar to early neurologic Lyme disease. When in treatment, acute respiratory distress syndrome requiring intubation may occur.

LBRF: Medication options include a single dose of tetracycline, penicillin G, erythromycin, or chloramphenicol.

PUBLIC HEALTH REFERENCE SHEET
Relapsing Fever

Antibiotic treatment for TBRF/STRF or LBRF can induce a potentially severe or fatal Jarisch-Herxheimer reaction (JHR). This reaction is often observed a few hours after the first antibiotic treatment and follows two successive phases. These include the chill phase (rigours, high fever, anxiety or confusion, increasing metabolic rate) and the flush phase (decrease in temperature, drenching sweat, and significant decrease in arterial pressure and myocardial dysfunction requiring supportive care for monitoring fluid balance and arterial/venous pressure). JHR is a normal response to effective antibiotic therapy that will usually resolve in 24 hours; it does not, by itself, warrant discontinuing or changing antibiotics but should be differentiated from an allergic or hypersensitivity reaction.

HTRF (*B. miyamotoi* disease): a 2- to 4-week course of the antibiotic doxycycline. Amoxicillin and ceftriaxone have also been successfully used.

How can relapsing fever be prevented?

- Avoid sleeping in rodent-infested buildings. Although rodent nests may not be visible, other evidence of rodent activity (e.g., droppings) is a sign that a building may be infested. Large multistate outbreaks have been linked to rental cabins near national parks and other common vacation locations.
- Prevent tick bites. Use insect repellent containing DEET (on skin or clothing) or permethrin (applied to clothing or equipment).

What are some public health considerations?

- Document relevant travel and deployment history occurring within the incubation period (TBRF/STRF: 2–18 days; LBRF: 5–15 days).
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
    - Is there documented exposure to lice and/or ticks?

Prompt reporting of TBRF/STRF cases is required in at least 12 states: Arizona, California, Colorado, Idaho, Montana, North Dakota, Nevada, New Mexico, Oregon, Texas, Utah, and Washington.

MilTICK is a free tick testing and identification service available for ticks removed from Department of Defense (DoD) personnel and their dependents. For more information about services provided, including identifying tick species, assessing how long the tick has been attached, and testing the tick for human pathogens, as well as contact information, go to: https://ph.health.mil/topics/envirohealth/epm/Pages/HumanTickTestKitProgram.aspx.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

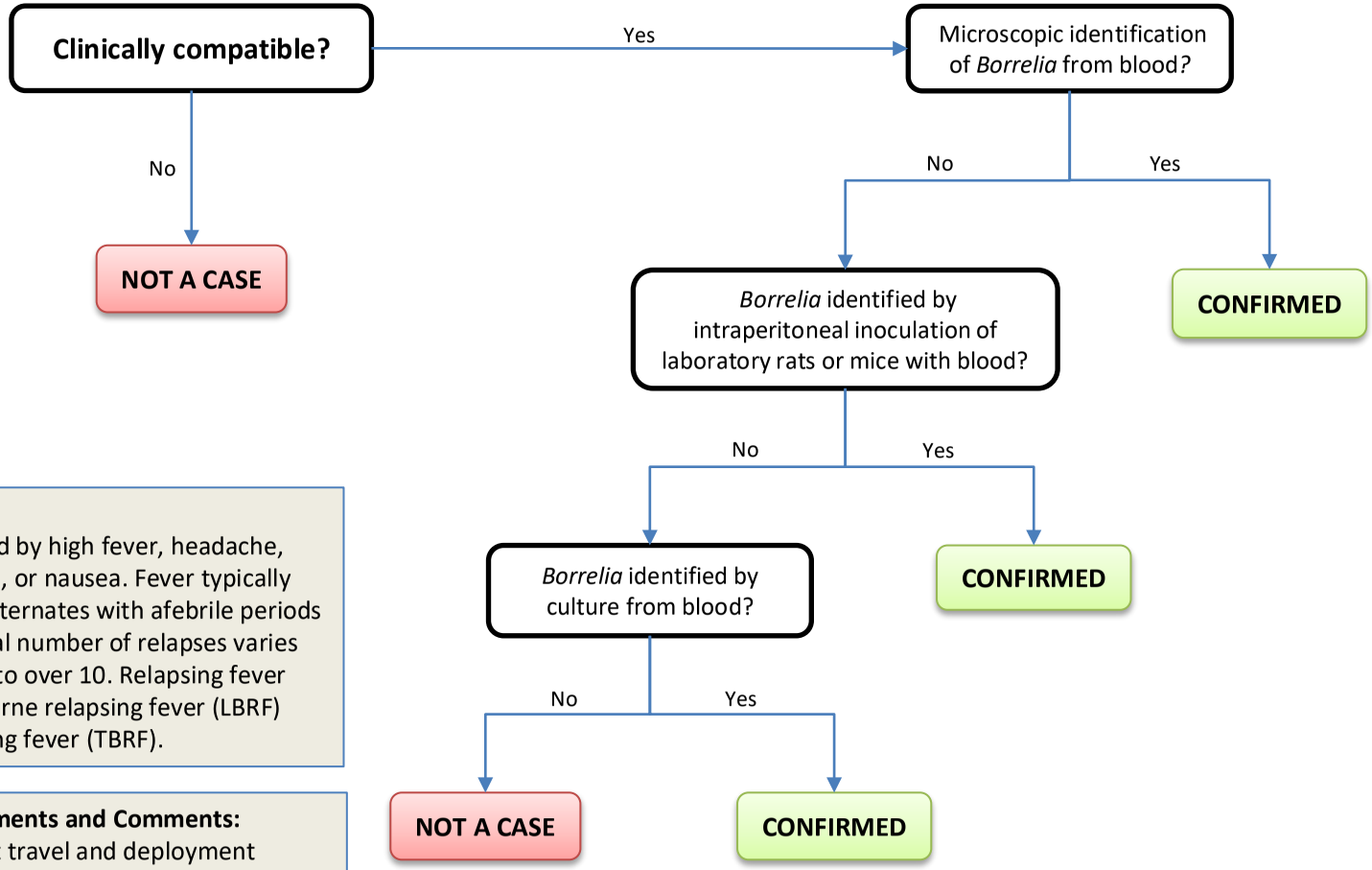
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Relapsing Fever," Centers for Disease Control and Prevention (CDC), last reviewed July 24, 2023. https://www.cdc.gov/relapsing-fever/

Last Updated September 1, 2023

Relapsing Fever

COMMON NAME: Tick-borne relapsing fever (TBRF), louse-borne relapsing fever (LBRF)



Clinical Description:
An illness characterized by high fever, headache, muscle and joint aches, or nausea. Fever typically lasts 2 to 9 days and alternates with afebrile periods of 2 to 4 days. The total number of relapses varies from a single incident to over 10. Relapsing fever includes both louse-borne relapsing fever (LBRF) and tick-borne relapsing fever (TBRF).

Critical Reporting Elements and Comments:

- Document relevant travel and deployment history occurring within the incubation period (5–15 days for LBRF, 2–18 days for TBRF).
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Relapsing Fever

Confirmed ◯ Not a Case ◯

https://drsi.health.mil/ADRSi

☐ Tick-borne relapsing fever

☐ Louse-borne relapsing fever

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____**°F/°C (☐ unk)**
Headache	☐	☐	
Mylagia	☐	☐	***Describe any other relevant symptoms or clinical history:***
Arthralgia	☐	☐	
Nausea	☐	☐	
Other *(describe)*	☐	☐	

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Microscopic identification	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Intraperitoneal inoculation in laboratory mice/rats	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: Tick-borne relapsing fever = 2–18 days
Louse-borne relapsing fever = 5–15 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

EXPOSURE HISTORY

Is there documented exposure to lice and/or ticks? Y ☐ N ☐ **If yes, when:** _____/_____/_____ **to** _____/_____/_____

If yes, where: *(city)*_____ *(state)*_____*(country)*_____

Describe tick(s):_____ **Describe louse:**_____

Please document exposure history (e.g., occupational exposures):

PUBLIC HEALTH REFERENCE SHEET
Rift Valley Fever

Name	Rift Valley fever (RVF) virus
Reservoir & Transmission	*Aedes sp.* mosquitos Bite of infected mosquito, contact with body fluids of infected animals
Incubation Period	2–7 days on average
Common Symptoms	Fever (may be biphasic), chills, headache, myalgia, or arthralgia. May include retinitis, encephalitis, and hemorrhage
Gold standard Diagnostic Test	Whole blood or serum can be used for virologic testing by reverse transcription PCR (RT-PCR), antigen detection, or virus isolation, and to test for immunologic (IgM, IgG) evidence of infection. Skin biopsies fixed in formalin can be tested by immunohistochemistry, RT-PCR, and virus isolation.
Risk Groups	Farmers, herders, owners of livestock, abattoir workers, and veterinary personnel
Geographic Significance	East Africa, sub-Saharan Africa, Egypt, Madagascar, Yemen, Saudi Arabia

What is Rift Valley fever?

Rift Valley fever (RVF) is an acute viral hemorrhagic fever disease caused by the RVF virus (RVFV). RVF causes illness not only in humans but is most commonly seen in domesticated animals (such as cattle, buffalo, sheep, goats, and camels).

What is the occurrence of Rift Valley fever?

- RVF was first reported in livestock by veterinary officers in Kenya's Rift Valley in the early 1910s. It is generally found in regions of eastern and southern Africa where sheep and cattle are raised, but exists in most of sub-Saharan Africa, including West Africa and Madagascar. In September 2000, an outbreak of RVF was reported in Saudi Arabia. It was then found in Yemen. These were the first cases of RVF identified outside of Africa.
- Outbreaks of RVF can have major societal impacts, including significant economic losses and trade reductions. The disease most commonly affects livestock, causing severe illness and abortion in domesticated animals, which is an important income source for many. Outbreaks of disease in animal populations are called "epizootics."
- Epizootic outbreaks of RVF also increase the likelihood of contact between diseased animals and humans, which can lead to outbreaks of RVF in people.

How is Rift Valley fever transmitted?

- People usually get RVF through contact with blood, body fluids, or tissues of infected animals, mainly livestock such as cattle, sheep, goats, buffalo, and camels. This direct contact can occur during slaughter or butchering, while caring for sick animals, during veterinary procedures such as assisting an animal with giving birth, and when consuming raw or undercooked animal products.
- People can also get RVF through bites from infected mosquitoes and, rarely, from other biting insects. Several mosquito species can spread RVFV, most commonly the *Aedes* and *Culex* mosquitoes, which vary by region. Environmental conditions, particularly rainfall, are an important risk factor for outbreaks in both animals and people. Since mosquitoes spread RVF, outbreaks are most often linked to years of unusually heavy rainfall and flooding, which allows more mosquito eggs to hatch.
- Infection with the RVFV has occurred in laboratories when someone has inhaled the virus that was in the air (known as aerosol transmission).

- RVFV spreading from person-to-person has not been documented, and no transmission of RVF to healthcare workers has been reported when standard infection control precautions have been put in place.

Who is at risk for Rift Valley fever?
Spending time in rural areas and sleeping outdoors at night in regions where outbreaks of RVF occur could be risk factors for exposure to mosquitoes and other insect vectors. People who work with or butcher/handle raw meat from potentially infected animals in RVF endemic areas have an increased risk for infection. This could include animal herdsmen and farmers, slaughterhouse workers, veterinarians, and other people who work with animals and animal products. Laboratory workers who may be exposed to the RVFV may also be at risk.

What are the signs and symptoms of Rift Valley fever?
- RVFV has an incubation period of 2 to 7 days following exposure to the virus and can cause several different disease syndromes if symptoms do appear. Most commonly, people with RVF have either no symptoms or a mild illness that includes fever, weakness, back pain, and dizziness at the onset of illness. Typically, patients recover within 2 days to 1 week after symptoms start.
- Per CDC, a small percentage (8–10%) of people infected with RVFV develop much more severe symptoms, including ocular disease, encephalitis, and hemorrhagic fever.
- RVF causes severe disease in animals that is characterized by fever, weakness, abortions (loss of pregnancy), and a high rate of severe illness and death, particularly among young animals.

What are potential complications of Rift Valley Fever?
Retinitis, encephalitis, and hemorrhagic fever. Approximately 1% of humans infected with RVF die of the disease. RVFV infection causes abortion in nearly 100% of livestock pregnancies and most young animals that are infected will die, whereas fatality among adult animals is significantly lower.

How is Rift Valley fever diagnosed?
RVF symptoms can be mild and non-specific, making a clinical diagnosis difficult, especially early in the course of the disease. Definitive diagnosis of RVF requires laboratory testing of blood or other tissue samples. The virus can be detected in the blood (during illness) and in postmortem tissue by virus isolation in cell culture and by molecular techniques (reverse transcriptase polymerase chain reaction, or RT-PCR). Antibody testing using enzyme-linked immunoassay (ELISA) can also be used to confirm infection with RVFV by showing the presence of IgM antibodies, which appear briefly as an early response to a recent infection, and IgG antibodies, which persist for several years. Both IgM and IgG antibodies are specific to RVFV.

How is Rift Valley fever treated?
There are no FDA-approved treatments for RVF. Since most cases of RVF are mild and self-limiting, a specific treatment for RVF has not been established. Symptoms of mild illness, such as fever and body aches, can be managed with standard over-the-counter medications. Typically, people will get better within 2 days to 1 week after their illness starts. Treatment for more serious cases may require hospitalization and are generally limited to supportive care.

PUBLIC HEALTH REFERENCE SHEET
Rift Valley Fever

How can Rift Valley fever be prevented?

- People living in or visiting areas with RVF can prevent infection with these steps:
    - Avoid contact with blood, body fluids, or tissues of infected animals. People working with animals in RVF-endemic areas should wear appropriate protective equipment (such as gloves, boots, long sleeves, and a face shield) to avoid any exposure to blood or tissue of animals that may potentially be infected.
    - Use only safe animal products. All animal products (including meat, milk, and blood) should be thoroughly cooked before eating or drinking.
    - Protection against mosquitoes and other bloodsucking insects by using insect repellents and bed nets and wearing long-sleeved shirts and long pants to cover exposed skin.
- No vaccines are currently available for vaccination in people.

What are some public health considerations?

- When reporting cases of RFV in the Disease Reporting System Internet (DRSI)–
    - Document relevant travel and deployment history occurring within the incubation period (2–7 days).
    - Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Healthcare personnel should notify local health authorities immediately of any suspected cases of RVF or other viral hemorrhagic fevers occurring in people residing in the United States.

References:

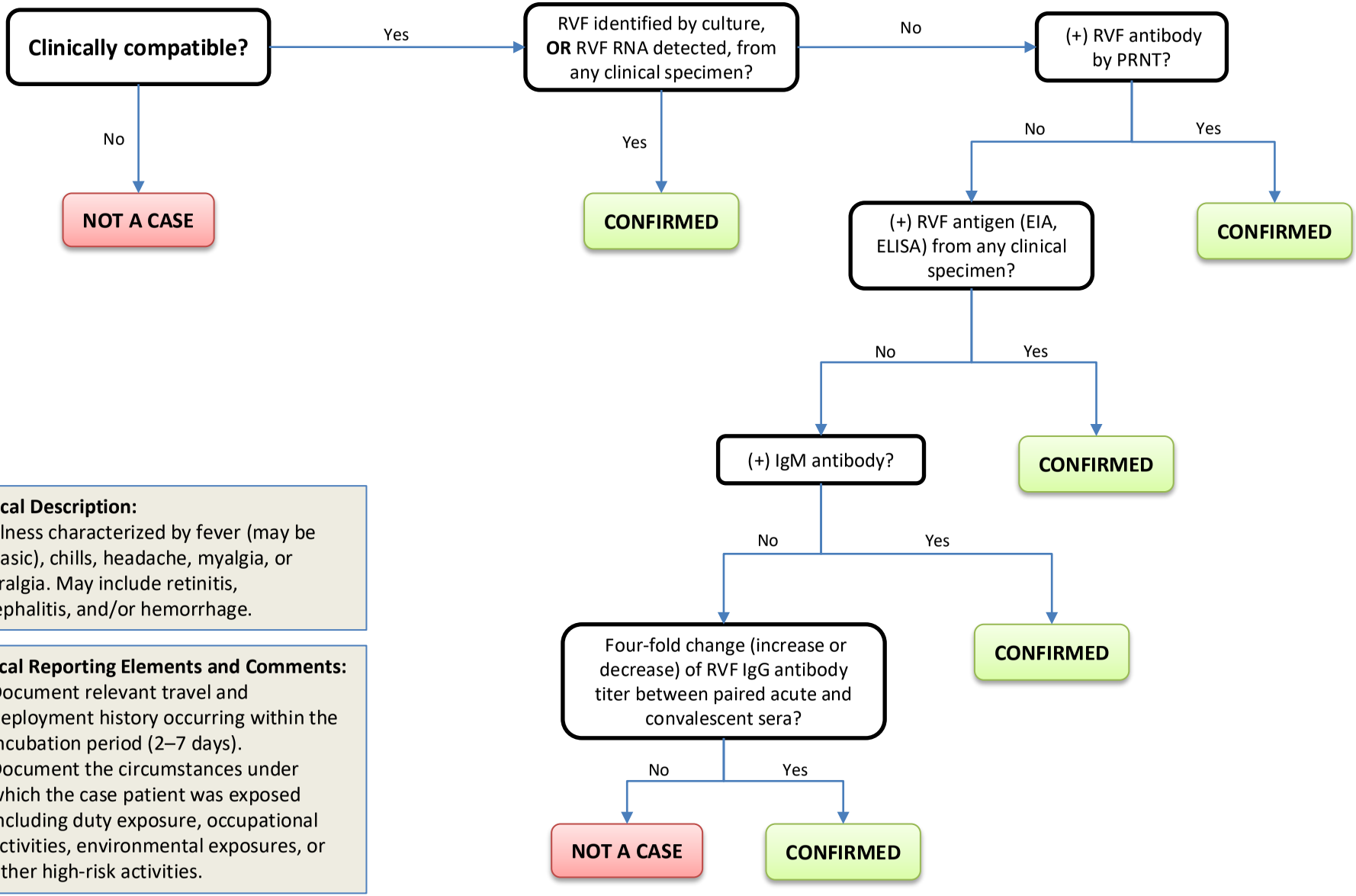
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Rift Valley Fever," Centers for Disease Control and Prevention (CDC), last reviewed June 8, 2023. https://www.cdc.gov/vhf/rvf/index.html

Last Updated October 1, 2023

Rift Valley Fever (RVF)



Clinical Description:
An illness characterized by fever (may be biphasic), chills, headache, myalgia, or arthralgia. May include retinitis, encephalitis, and/or hemorrhage.

Critical Reporting Elements and Comments:

- Document relevant travel and deployment history occurring within the incubation period (2–7 days).
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Rift Valley Fever

Confirmed ◯ Not a Case ◯

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

Army Disease Reporting System internet (ADRSi) link: https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: ***(Last)***_____ ***(First)***_____ ***(MI)***_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: ***(Street)***_____ **DoD ID:** _____

(City) _____ ***(State)*** _____ ***(Zip)*** _____ (_____) - _____ - _____ ***(h)***

PHONE:

(County)_____ ***(Country)***_____ (_____) - _____ - _____ ***(c)***

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____**°F/°C (☐ unk)**
Liver Abnormalities	☐	☐	

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

(If yes) **Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation Period Variable, 2–7 days on average

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Rubella

Name	Rubella virus
Reservoir & Transmission	Humans Droplet transmission
Incubation Period	Average 17 days (range: 12–23 days)
Common Symptoms	Acute onset maculopapular rash and fever >99.0ºF, and any of arthralgia, arthritis, lymphadenopathy, conjunctivitis
Gold Standard Diagnostic Test	PCR, ELISA
Risk Groups	Infants; unimmunized individuals
Geographic Significance	Africa, South and Southeast Asia

What is rubella?
Rubella is an enveloped, positive-stranded RNA virus belonging to genus *Rubivirus* and family *Matonaviridae* (formerly belonged to *Togaviridae*). Rubella is a vaccine preventable illness that can cause birth defects, epidemics, and death. Also called “German measles” and “Three-Day Measles,” rubella and measles are caused by different viruses.

What is the occurrence of rubella?
In the U.S., endemic rubella virus transmission was interrupted in 2001 and elimination was verified in 2004, but imported cases continue to occur. During 2016–2019, a median of 5 (range, 1–7) imported rubella cases were reported annually in the U.S., and 8 cases of congenital rubella syndrome (CRS) were reported during the same period. As of February 2022, almost 50% of countries had eliminated rubella and CRS, but 19 countries had not started using the rubella vaccine. Rubella virus continues to circulate widely. Globally, >100,000 infants are born each year with CRS, and >80% of those are born in Africa and some countries in South and Southeast Asia.

How is rubella transmitted?
Rubella is transmitted primarily through direct, or droplet contact from nasopharyngeal secretions. Humans are the only natural hosts. In temperate climates, infections usually occur during late winter and early spring. People infected with rubella are most contagious when the rash is erupting but can be contagious from 7 days before to 7 days after the rash appears.

Who is at risk for rubella?
Unvaccinated individuals are at risk for rubella. If a woman is infected with rubella while pregnant, she can pass it to her developing fetus, resulting in CRS. A pregnant woman exposed, or potentially exposed, to rubella should be immediately referred to their healthcare provider.

What are the signs and symptoms of rubella?
About 25% to 50% of infections are asymptomatic. Rubella is characterized by a mild, maculopapular rash along with lymphadenopathy and a slight fever. The rash usually starts on the face, becomes generalized within 24 hours, and lasts a median of 3 days; it occurs in 50% to 80% of infected people. Lymphadenopathy, which may precede rash, often involves posterior auricular or suboccipital lymph nodes, can be generalized, and lasts between 5 and 8 days.

In children, rubella is usually mild, with few noticeable symptoms. Symptoms that may occur 1 to 5 days before the rash appears include a low-grade fever, headache, mild pink eye, general

discomfort, swollen and enlarged lymph nodes, cough, and/or runny nose. A red rash may start on the face, spread to the rest of the body, and last about 3 days.

Most adults who contract rubella usually have a mild illness. Before a rash appears on the face and spreads to the rest of the body, some adults develop a headache, pink eye, and general discomfort followed by low-grade fever and sore throat.

What are potential complications of rubella?
Arthralgia or arthritis may occur in up to 70% of adult women with rubella, but this is rare in children and men. Other rare complications include thrombocytopenic purpura and encephalitis. When rubella infection occurs during pregnancy, especially during the first trimester, serious consequences include miscarriages, fetal deaths/stillbirths, and severe birth defects known as CRS. The most common congenital defects are cataracts, heart defects, and hearing impairment and may include intellectual disability, and liver or spleen damage.

How is rubella diagnosed?
Clinical diagnosis of rubella is unreliable as it is clinically indistinguishable from measles (rubeola), parvovirus B19 (Fifth Disease), and several other diseases with a febrile rash; therefore, cases must be laboratory confirmed. Virus detection and serologic testing can be used to confirm acute or recent rubella infection. Serologic tests can also be used to screen for rubella immunity.

Rubella virus can be detected from nasopharyngeal swabs, throat swabs, or urine specimens for viral detection by polymerase chain reaction (PCR) testing and molecular typing, as well as blood for serology testing. Cerebrospinal fluid specimens should be reserved for persons with suspected rubella encephalitis. Efforts should be made to obtain clinical specimens for virus detection from all case-patients at the time of the initial investigation. The virus may be detected from 1 week before to 2 weeks after rash onset. However, maximum viral shedding occurs up to day 4 after rash onset.

Real-time reverse transcriptase (RT)-PCR and RT-PCR can be used to detect rubella virus and has been extensively evaluated for its usefulness in detecting rubella virus in clinical specimens.

Molecular typing is recommended because it provides important epidemiologic information to track the epidemiology of rubella in the U.S. since the rubella virus no longer continuously circulates in this country. By comparing virus sequences obtained from new case-patients with other virus sequences, the origin of virus types can be tracked. This information may help in documenting the maintenance of the elimination of endemic transmission. In addition, genotyping methods are available to distinguish wild-type rubella virus from vaccine virus.

How is rubella treated?
There is no specific antiviral therapy for rubella infection. Mild symptoms can be managed with supportive care to include managing fever with acetaminophen. Aspirin is contraindicated in children and teenagers because of the risk of developing Reye's Syndrome.

How can rubella be prevented?
Vaccination prevents rubella. However, rubella vaccine should not be given during pregnancy. Promptly isolate people suspected of having rubella. Conduct case contact investigations to prevent further spread of the disease.

PUBLIC HEALTH REFERENCE SHEET
Rubella

What are some public health considerations?

- Isolate people suspected to have rubella.
- Specify whether the patient presented with congenital rubella syndrome (CRS).
- Specify whether the patient is pregnant.
- Document relevant travel and deployment history occurring within the incubation period.
- Note the patient's rubella immunization history.
- Patients who have laboratory evidence of recent measles infection are excluded.

Because rubella has been eliminated in the U.S., consider one case a potential outbreak. Identify the source of infection for every confirmed case of rubella. Case-patients or their caregivers should be asked about contact with other known cases. Since many rubella cases are asymptomatic, a source may not be identified. When no history of contact with a known case can be elicited, look for potential sources of exposure in unidentified cases in populations at high risk (e.g., foreign born persons), and at the place and time in which transmission would have occurred.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

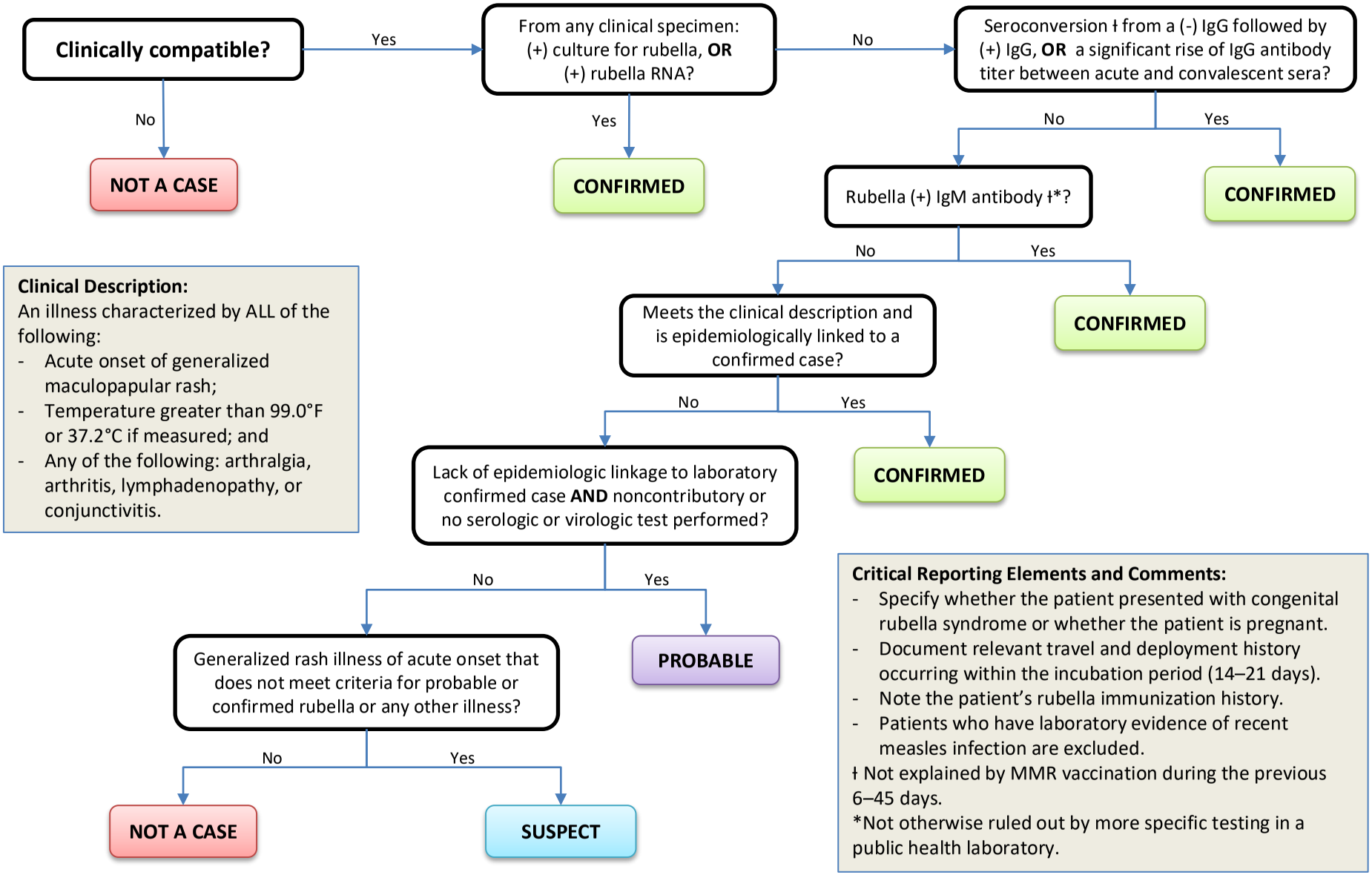
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Rubella," Centers for Disease Control and Prevention (CDC), last reviewed December 31, 2020. https://www.cdc.gov/rubella/

Last Updated September 1, 2023

Rubella

COMMON NAME: German measles



Clinical Description:
An illness characterized by ALL of the following:

- Acute onset of generalized maculopapular rash;
- Temperature greater than 99.0°F or 37.2°C if measured; and
- Any of the following: arthralgia, arthritis, lymphadenopathy, or conjunctivitis.

Critical Reporting Elements and Comments:

- Specify whether the patient presented with congenital rubella syndrome or whether the patient is pregnant.
- Document relevant travel and deployment history occurring within the incubation period (14–21 days).
- Note the patient's rubella immunization history.
- Patients who have laboratory evidence of recent measles infection are excluded.

ǂ Not explained by MMR vaccination during the previous 6–45 days.
*Not otherwise ruled out by more specific testing in a public health laboratory.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Rubella

Confirmed ○ Probable ○ Suspect ○ Not a Case

https://drsi.health.mil/ADRSi/

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)
Arthralgia	☐	☐	
Lymphadenopathy	☐	☐	
Conjunctivitis	☐	☐	
Rash*	☐	☐	

Epidemiologic Link	Y	N
Is the case epidemiologically linked to another confirmed to a probable/confirmed case of Rubella?	☐	☐
Is this case part of a larger group/community outbreak?	☐	☐

***If the case has a rash, describe:**

Rash onset: _____/_____/_____

Rash duration: _____

Describe rash:_____

_____

_____

_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)
Is the case vaccinated?	☐	☐	**1st:**____/_____/_____ **2nd:** ____/_____/_____ **3rd:**____/_____/_____

If not ever vaccinated, why?

☐ **Religious Exemption** ☐ **Medical Contraindication** ☐ **Philosophical Objection**

☐ **Lab Evidence of Previous Disease** ☐ **MD Diagnosis of Previous Disease**

☐ **Under Age for Vaccination** ☐ **Parental Refusal** ☐ **Other:** _____

☐ **Unknown**

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation period: 14–21 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Include any other pertinent information below:

PUBLIC HEALTH REFERENCE SHEET
Salmonellosis

Name	*Salmonella* species
Reservoir & Transmission	Domestic and wild animals; including poultry, reptiles, amphibians, swine, cattle, rodents, and pets. Humans are also a reservoir Direct or indirect contact with infected animals or their environments Ingestion of contaminated food or water
Incubation Period	From 6 to 72 hours, usually about 12 to 36 hours
Common Symptoms	Diarrhea (may be bloody), abdominal pain, nausea, and/or sometimes vomiting
Gold Standard Diagnostic Test	Culture
Risk Groups	Everyone is susceptible. Children under 5 years old have higher rates of infection than any other age group
Geographic Significance	Worldwide

What is Salmonellosis?
Salmonellosis is a diarrheal illness caused by infection with a group of bacteria called *Salmonella*.

What is the occurrence of Salmonellosis?
In the U.S., the CDC estimates *Salmonella* causes about 1.2 million illnesses, 23,000 hospitalizations, and 450 deaths every year. Among these cases, about 1.1 million are acquired in the U.S. and food is the source of infection for about 1 million illnesses, 19,000 hospitalizations, and 380 deaths. Salmonellosis infections occur more often in the summer than in the winter.

How is Salmonellosis transmitted?
Salmonella bacteria are found in the intestinal tracts of humans and other animals, especially reptiles. Most people get *Salmonella* by eating undercooked and raw foods such as beef, poultry, milk, eggs, and vegetables contaminated with the bacteria. It can also be spread by contact with contaminated water and infected animals. Reptiles and birds, especially baby chicks and ducklings, can carry *Salmonella*.

Who is at risk for Salmonellosis?
Although anyone can be exposed to the bacteria, children are at the highest risk for *Salmonella* infection. Children under the age of 5 have higher rates of *Salmonella* infection than any other age group. Young children, older adults, and people with weakened immune systems are the most likely to have severe infections.

What are the signs and symptoms of Salmonellosis?
The symptoms of Salmonellosis include diarrhea (which may be bloody), abdominal pain, nausea, and/or sometimes vomiting. Symptoms typically occur between 12 to 72 hours after infection, and the illness usually lasts 4 to 7 days. Most individuals recover without treatment.

Last Updated October 25, 2023

PUBLIC HEALTH REFERENCE SHEET
Salmonellosis

What are potential complications of Salmonellosis?
Some individuals may experience severe diarrhea and require hospitalization. *Salmonella* infection may spread from the intestines to the bloodstream and then to other body sites; this infection can cause death unless the person is treated promptly with antibiotics.

How is Salmonellosis diagnosed?
Identification of *Salmonella* is usually determined by culture of stool or blood. Further testing can determine the specific serotype.

How is Salmonellosis treated?
Salmonella infections often do not require treatment unless the patient becomes severely dehydrated or the infection spreads from the intestines. Persons with severe diarrhea may require rehydration, often with intravenous fluids. Antibiotics are not usually necessary unless the infection spreads from the intestines.

How can Salmonellosis be prevented?
Do not eat raw or undercooked eggs, poultry, meat, or unpasteurized dairy products. Wash hands, cutting boards, counters, knives, and other utensils thoroughly after touching uncooked foods to avoid re-contamination and cross-contamination. Wash fruits and vegetables thoroughly before consuming. Wash hands before preparing and/or eating food. Wash hands after each toilet visit and after contact with animals and animal feces, including petting zoos and livestock shows. Wash hands after handling reptiles. Reptiles are not appropriate pets for small children and should not be in the same house as an infant.

What are some Public Health considerations?
- Specify the serotype characterization (O and H antigen), if known.
    - INCLUDES**:** *Salmonella* species, including *Salmonella* Paratyphi.
    - EXCLUDES**:** *Salmonella* Typhi. See Typhoid Fever case definition.
- Document if the patient works in, lives in, or attends a high-transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

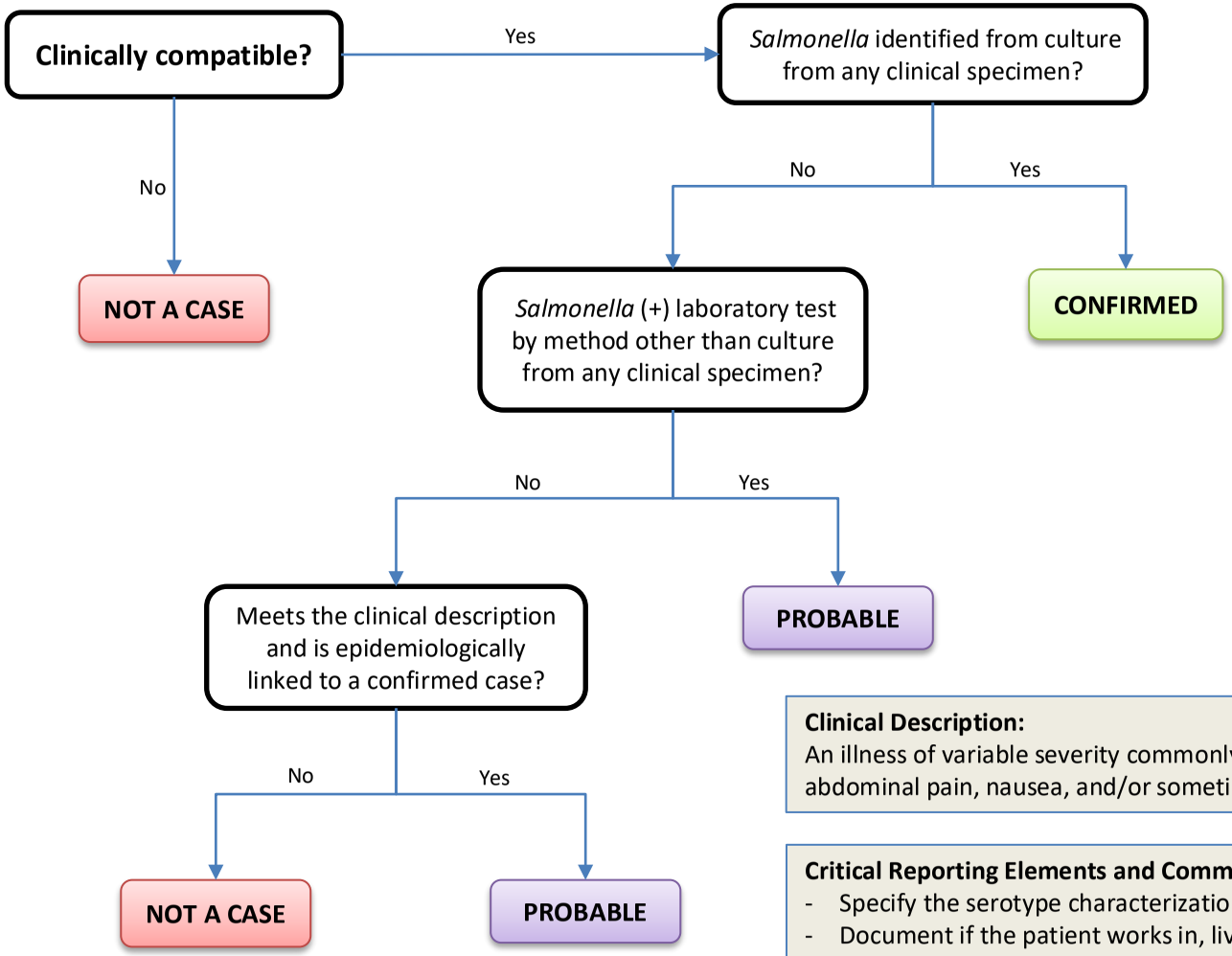
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Salmonella," Centers for Disease Control and Prevention (CDC), last reviewed October 24, 2023. https://www.cdc.gov/salmonella/

Last Updated October 25, 2023

Salmonellosis

INCLUDES: *Salmonella* species, including *Salmonella* Paratyphi.
EXCLUDES: *Salmonella* Typhi. See Typhoid Fever case definition.



Clinical Description:
An illness of variable severity commonly manifested by diarrhea, abdominal pain, nausea, and/or sometimes vomiting.

Critical Reporting Elements and Comments:
- Specify the serotype characterization (O and H antigen), if known.
- Document if the patient works in, lives in, or attends a high-transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

GASTROINTESTINAL INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

This form can be used for the following reportable medical events:

☐ **Campylobacter** ☐ **Salmonella (non-Typhi)**

☐ **Cryptosporidium** ☐ **Shiga-toxin producing E. coli**

☐ **Norovirus** ☐ **Shigella**

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk) **Duration of symptoms:** _____ ☐ **Still ill**

Diarrhea Y ☐ N ☐ *Describe any other symptoms or pertinent clinical information:*

Bloody diarrhea Y ☐ N ☐

Abdominal cramps Y ☐ N ☐

Vomiting Y ☐ N ☐

Nausea Y ☐ N ☐

Chills Y ☐ N ☐

Muscle aches Y ☐ N ☐

Other (describe): Y ☐ N ☐

Laboratory results:

Test type: **Culture** ☐ **PCR** ☐ **Antibody** ☐ **Other** ☐

Collection Date: ____/____/____ **Result date:** ____/_____/_____

Result: **Positive** ☐ **Negative** ☐ **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ **Unk** ☐

Details: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

CONTACTS

List all household contacts, ill or not ill, and any close contacts regardless of where they live (i.e., caregivers, partners, etc). Indicate for all contacts if high risk; if symptomatic, give onset date and testing information. List additional contacts on the last page of this form if needed.

Name/Contact	Age	Relationship to case	Symptoms		Onset Date	Lab testing	High Risk		
			Yes	No		Y/N, coll. date, result	Day care	Health care	Food Svc.

ENVIRONMENTAL EXPOSURES

In the 7 days before illness onset, from _____/_____/_____ to _____/_____/_____ did [you/your child]:

WATER-RELATED EXPOSURES	YES	NO	UNK	*If yes, details:*
1. Stay in a home with a septic system?				
2. Primarily use water from a well for drinking water?				*Treatment:*
3. Primarily drink bottled water?				*Brand(s):*
4. Drink any untreated water (pond, lake, etc)?				
5. Swim or wade in untreated water?				*Where?*
6. Swim or wade in treated water (pool, hot tub, etc)?				*Where?*
ANIMAL CONTACT	YES	NO	UNK	*If yes, details:*
1. Have contact with an animal?				
If yes, did [you/your child] have contact with a:				
a. Dog				
b. Cat				
c. Other pet mammal				*Specify:*
d. Reptile or amphibian				*Specify:*
e. Live poultry				
f. Pet bird				
g. Cattle, goat, or sheep				*Specify:*
h. Pig				
i. Other animal				*Specify:*
j. Pet with diarrhea				
2. Visit, work, or live on a farm, ranch, or petting zoo?				*Specify:*
3. Have exposure to a daycare or nursery?				*Where?*
4. Have a household or close contact with diarrhea?				*Who?*
5. Work in a restaurant or prepare food for others?				*Specify:*

FOOD HISTORIES

(For all cases, complete for the 7 days before illness. If case was asymptomatic or the onset is unknown, complete for the 7 days before collection. List ALL ingredients in each meal.)

Start with most recent date and move back

Date							
Morning/breakfast							
Afternoon/lunch							
Evening/dinner							
Snacks/other							

FOOD SOURCES

In the 7 days before illness, from _____/_____/_____ to _____/_____/_____, did [you/your child]:	YES	NO	UNK
1. Attend any events where food was served? (if yes, list below)			

Event	Date	Location	Foods Eaten
a.			
b.			
c.			

2. Eat at any restaurants? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

3. Eat food purchased from a farm or farm stand? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			

4. List all stores where food eaten in the days prior to illness were purchased (e.g. grocery stores, ethnic markets).

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

Also complete food exposure questions for ALL Campylobacter, non-Typhi Salmonella, and STEC cases

Notes and Summary of Investigation

List actions taken on cases and contacts and outcome:

FOOD EXPOSURES

[Instructions: Complete for all Campylobacter, non-Typhi Salmonella, and STEC cases. For all questions, ask for the 7-day period prior to onset of illness or, if unknown or asymptomatic, in the 7 days prior to collection date. For questions answered YES, use the space on the right to provide additional details, such as the specific type of food and where the food was purchased or eaten. Be specific.]

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household HANDLE any:	YES	NO	UNK	*If yes: provide specific details*
1. Raw beef?				
2. Raw poultry?				
3. Raw seafood?				
In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
MEAT PRODUCTS				
1. Chicken or foods containing chicken?				
If yes: a. Chicken prepared outside the home?				*Where?*
If yes: b. Chicken at home that was bought fresh?				*Which part(s):*
If yes: c. Chicken at home that was bought frozen?				*Which part(s):*
If yes: d. Frozen chicken that was stuffed or filled?				
If yes: e. Ground chicken?				
2. Turkey or foods containing turkey?				
if yes: a. Turkey prepared outside the home?				*Where?*
if yes: b. Ground turkey?				
3. Other poultry (e.g. Cornish hen, quail, etc)?				*Specify:*
4. Beef or foods containing beef?				
if yes: a. Beef prepared outside the home?				*Where?*
if yes: b. Ground beef?				
if yes: > Undercooked or raw ground beef?				
5. Pork or foods containing pork?				
6. Lamb or mutton?				
7. Liver?				
if yes a. Undercooked or raw liver?				
if yes b. Liver pate?				
8. Deli meat (e.g. ham, roast beef, salami)?				*Specify:*
9. Other meat (e.g. venison, goat)?				*Specify:*
FISH AND SEAFOOD				
10. Fish or fish products?				
if yes a. Fish prepared outside the home?				*Where?*
if yes b. Undercooked or raw fish (e.g. sushi)?				
11. Seafood (e.g. crab, shrimp, oysters, clams)?				*Specify:*
if yes a. Seafood prepared outside the home?				*Where?*
if yes b. Undercooked or raw seafood?				*Which?*

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
FROZEN FOODS				
12. Frozen meals (e.g. pizza, soup, entrée)?				*Specify:*
DAIRY PRODUCTS				
13. Dairy products (e.g. milk, yogurt, cheese, cream)?				
a. Pasteurized cow's or goat's milk?				
if yes b. Unpasteurized milk?				*From where?*
c. Soft cheese (e.g. queso fresco)?				
if yes >Unpasteurized soft cheese?				*From where?*
if yes d. Any other raw or unpasteurized dairy products?				*From where?*
14. Eggs?				
a. Eggs made outside the home?				*Where?*
if yes b. Eggs that were runny, raw, or uncooked foods made with raw eggs?				*From where?*
FRESH FRUITS AND VEGETABLES				
15. Fresh cantaloupe?				
16. Fresh watermelon?				
17. Fresh (unfrozen) berries?				*Specify:*
18. Other fresh fruit eaten raw?				*Specify:*
19. Unpasteurized, not from concentrate juice (sold at an orchard or farm, or commercially with label)?				*From where?*
20. Fresh green onion or scallions?				
21. Fresh cucumber?				
22. Fresh, raw tomatoes?				*Type(s) & from where?*
23. Fresh peppers (e.g. bell, hot, sweet)?				*Specify:*
24. Fresh, raw lettuce?				*Specify loose ( ) or pre-packaged ( )*
25. Fresh (unfrozen), raw spinach?				*Specify loose ( ) or pre-packaged ( )*
26. Sprouts?				*Specify:*
27. Other fresh vegetables eaten raw?				*Specify:*
28. Fresh (not dried) herbs (e.g. basil, cilantro)?				*Specify:*
29. Nuts or seeds?				*Specify:*

Any other comments, notes, or contacts:

PUBLIC HEALTH REFERENCE SHEET
Schistosomiasis

Name	*Schistosomiasis* species
Reservoir & Transmission	Humans are main reservoir; also found in dogs, cats, pigs, cattle, water buffalo, and wild rodents Penetration of larvae through skin
Incubation Period	2–6 weeks
Common Symptoms	Urinary schistosomiasis: dysuria, frequency, and hematuria at end of urination Intestinal schistosomiasis: diarrhea, abdominal pain, and hepatosplenomegaly
Gold Standard Diagnostic Test	Microscopic identification of eggs
Risk Groups	Susceptibility is universal. Risk is higher in groups with greatest exposure to water containing infectious cercariae.
Geographic Significance	Most common in Africa, the Middle East, South America, Indonesia, some parts of China, and Southeast Asia

What is schistosomiasis?
Schistosomiasis, also known as bilharzia or snail fever, is a disease caused by parasitic flatworms (trematodes). Infection with *Schistosoma mansoni*, *S. haematobium*, and *S. japonicum* causes illness in humans; less commonly, *S. mekongi* and *S. intercalatum* can cause disease.

What is the occurrence of schistosomiasis?
Although the worms that cause schistosomiasis are not found in the United States, more than 200 million people are infected worldwide. Geographic area include:

- Southern and sub-Saharan Africa: all freshwater in including the great lakes and rivers
- Mahgreb region of North Africa
- Nile River valley in Egypt and Sudan
- South America: Brazil, Suriname, Venezuela
- Caribbean: Dominican Republic, Guadeloupe, Martinique, Saint Lucia (low risk)
- The Middle East: Iran, Iraq, Saudi Arabia, Yemen
- Southern China
- Parts of Southeast Asia, the Philippines, Laos

How is schistosomiasis transmitted?
Infection occurs when the skin comes in contact with freshwater that is inhabited by certain types of snails that carry schistosomes. Freshwater becomes contaminated by *Schistosoma* eggs when infected people urinate or defecate in the water. The eggs hatch, and if certain types of freshwater snails are present in the water, the parasites develop and multiply inside the snails. The parasite leaves the snail and enters the water where it can survive for about 48 hours. *Schistosoma* parasites can penetrate the skin of persons who are wading, swimming, bathing, or washing in contaminated water. Within several weeks, parasites mature into adult worms, residing in the blood vessels of the body where the females produce eggs. Some of the eggs travel to the bladder or intestine and are passed into the urine or stool.

Who is at risk for schistosomiasis?
Individuals at risk are those who live in or travel to areas where schistosomiasis occurs, and the skin contacts freshwater from canals, rivers, streams, ponds, or lakes. Consider in risk

assessments with military operations involving contact with infested, or potentially infested, freshwater canals, rivers, streams, ponds, or lakes.

What are the signs and symptoms of schistosomiasis?
Within days after becoming infected, the patient may develop a rash or itchy skin. Fever, chills, cough, and muscle aches can begin within 1–2 months of infection. Most people have no symptoms at this early phase of infection. When adult worms are present, the eggs that are produced usually travel to the intestine, liver, or bladder, causing inflammation or scarring. Children who are repeatedly infected can develop anemia, malnutrition, and learning difficulties.

What are potential complications of schistosomiasis?
After years of infection, the parasite can also damage the liver, intestine, lungs, and bladder. Bladder infection with *S. haematobium* is a risk factor for bladder cancer. Rarely, eggs are found in the brain or spinal cord and can cause seizures, paralysis, or spinal cord inflammation. Symptoms of schistosomiasis are caused by the body's reaction to the eggs produced by worms, not by the worms themselves.

How is schistosomiasis diagnosed?
Stool or urine samples can be examined microscopically for parasite eggs (stool for *S. mansoni* or *S. japonicum* eggs and urine for *S. haematobium* eggs). The eggs tend to be passed intermittently and in small amounts and may not be detected, so it may be necessary to perform a serologic test.

How is schistosomiasis treated?
Praziquantel for 1–2 days to treat infections caused by all *Schistosoma* species. In endemic areas, periodic mass treatment with praziquantel is recommended.

How can schistosomiasis be prevented?
- Avoid swimming or wading in freshwater in countries in which schistosomiasis occurs.
- Drink from approved water sources. Although schistosomiasis is not transmitted by swallowing contaminated water, infection could occur if the mouth or lips come in contact with water containing the parasites. Boil water from canals, lakes, rivers, streams, or springs for at least 1 minute to kill parasites, bacteria, or viruses. Iodine treatment alone will not guarantee that water is safe.
- Bath water should be heated to a rolling boil for at least 1 minute. Water held in a storage tank for at least 1–2 days should be safe for bathing.
- Vigorous towel drying after an accidental, very brief water exposure may help to prevent the *Schistosoma* parasite from penetrating the skin.
- When appropriate and feasible, molluscicides can be used to treat snail breeding areas.

What are some public health considerations?
- Specify the clinical form of the disease.
- Document relevant travel and deployment history occurring within the incubation period (2-6 weeks).
- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

PUBLIC HEALTH REFERENCE SHEET
Schistosomiasis

References:

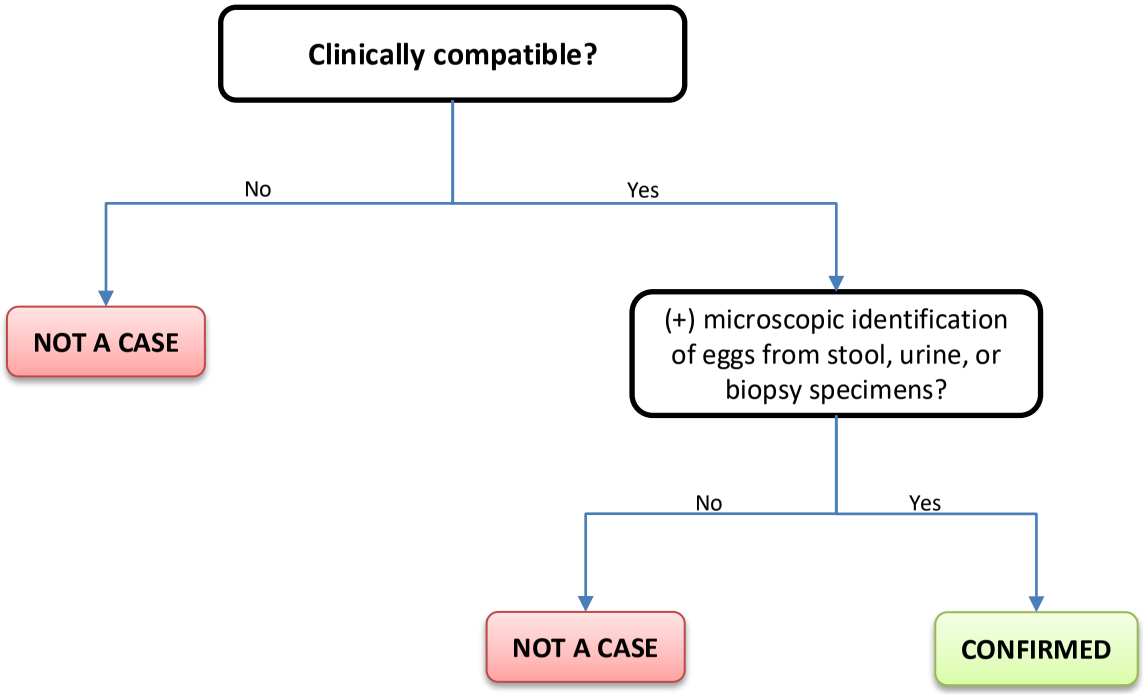
Defense Health Agency. 2023. *Armed Forces Reportable Medical Events Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events-Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington DC: APHA Press.

"Schistosomiasis," Centers for Disease Control and Prevention, last reviewed October 28, 2020. https://www.cdc.gov/parasites/schistosomiasis/health_professionals/index.html

Last Updated September 1, 2023

Schistosomiasis



Clinical Description:
Urinary schistosomiasis: gives rise to dysuria, frequency, and hematuria at the end of urination, usually caused by *Schistosoma haematobium*.
Intestinal schistosomiasis: is accompanied by diarrhea, abdominal pain, and hepatosplenomegaly, and is caused by *Schistosoma mansoni* and *Schistosoma japonicum*.

Critical Reporting Elements and Comments:
- Specify the clinical form of the disease.
- Document relevant travel and deployment history occurring within the incubation period (2–6 weeks).
- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

INVESTIGATION WORKSHEET

Defense Health Agency ®

Schistosomiasis

Confirmed ○ Not a Case ○

☐ Entered in DRSi?

☐ Reported to health dept?

https://drsi.health.mil/ADRSi

POC: _____

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference

(_____) - _____ - _____

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: ***(Last)***_____ ***(First)***_____ ***(MI)***_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: ***(Street)***_____ **DoD ID:** _____

(City) _____ ***(State)*** _____ ***(Zip)*** _____ (_____) - _____ - _____ ***(h)***

PHONE:

(County)_____ ***(Country)***_____ (_____) - _____ - _____ ***(c)***

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N		
Hospitalized	☐	☐	**Admit date:** ____/_____/_____	**Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____	**Cause of death:** _____

	Y	N			
Symptomatic	☐	☐	**Onset date:** ____/_____/_____	**Clinic date:** _____/_____/_____	**Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____**°F/°C (☐ unk)**		
Bloody diarrhea	☐	☐			
Body aches	☐	☐			
Abdominal pain	☐	☐			

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

*Incubation period: typically 2–6 weeks

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Severe Acute Respiratory Syndrome (SARS)

Name	Common name SARS Includes: SARS-CoV1 Excludes: SARS-CoV-2 (refer to COVID-19)
Reservoir & Transmission	Himalayan masked palm civet Person-to-person by direct contact or respiratory transmission
Incubation Period	2–10 days (average 5–6 days)
Common Symptoms	Fever, chills, headache, myalgia, rigors, diarrhea, sore throat, lower respiratory illness, pneumonia, acute respiratory distress syndrome
Gold Standard Diagnostic Test	A reverse transcription polymerase chain reaction (RT-PCR) test can detect SARS-CoV in clinical specimens such as blood, stool, and nasal secretions. Serologic testing also can be performed to detect SARS-CoV antibodies produced after infection. Cultures
Risk Groups	Those in contact with SARS-CoV infected person, healthcare workers
Geographic Significance	Worldwide

What is SARS?
Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus called SARS-associated coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. The illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained.

What is the occurrence of SARS?
According to the World Health Organization (WHO), a total of 8,098 people worldwide became sick with SARS during the 2003 outbreak. Of these, 774 died. In the United States, only eight people had laboratory evidence of SARS-CoV infection. All of these people had traveled to other parts of the world where SARS was spreading. SARS did not spread more widely in the community in the United States. Since 2004, there have not been any known cases of SARS reported anywhere in the world.

How is SARS transmitted?
The main way that SARS seems to spread is by close person-to-person contact. The virus that causes SARS is thought to be transmitted most readily by respiratory droplets produced when an infected person coughs or sneezes. The virus also can spread when a person touches a surface or object contaminated with infectious droplets and then touches his or her mouth, nose, or eye(s). In addition, it is possible that the SARS virus might spread more broadly through the air (airborne spread) or by other ways that are not now known.

Who is at risk of SARS?
Healthcare workers, as well as first responders, are potentially at increased risk of infection, especially before the diagnosis of SARS is suspected and when involved in aerosol-generating procedures such as intubation, manual ventilation before intubation, tracheotomy, noninvasive ventilation, and/or other resuscitation methods.

What are the signs and symptoms of SARS?
SARS is characterized by severity of illness as follows:

- Early illness: Two or more of the following:
  - Fever (might be subjective), chills, rigors, myalgia, headache, diarrhea, sore throat, or rhinorrhea.

PUBLIC HEALTH REFERENCE SHEET
Severe Acute Respiratory Syndrome (SARS)

- Mild-to-moderate respiratory illness: Temperature of > 100.4°F (> 38°C) and one or more clinical findings of lower respiratory illness (example: cough, shortness of breath, or difficulty breathing).
- Severe respiratory illness: Meets clinical description for mild-to-moderate respiratory illness with any of the following:
    - Radiographic evidence of pneumonia, or
    - Acute respiratory distress syndrome

What are the potential complications of SARS?
SARS caused many pulmonary and extrapulmonary complications. A small percentage of patients had long-term effects from their illness, including depression or anxiety, cough, shortness of breath, and/or chronic lung disease or kidney disease. However, most patients fully recovered.

How is SARS diagnosed?
Several laboratory tests can be used to detect SARS-CoV. A reverse transcription polymerase chain reaction (RT-PCR) test can detect SARS-CoV in clinical specimens such as blood, stool, and nasal secretions. Serologic testing also can be performed to detect SARS-CoV antibodies produced after infection. Finally, viral culture has been used to detect SARS-CoV.

How is SARS treated?
There is no specific treatment, and supportive care is emphasized. Once suspected of SARS, the patient needs to be quickly identified and placed in isolation with appropriate infection control measures in place to avoid transmission. Triage using a set of clinical criteria and epidemiologic criteria should be in place to allow the rapid identification of suspected patients.

How can SARS be prevented?
If transmission of SARS-CoV occurs, there are some common-sense precautions that individuals can take that apply to many infectious diseases. The most important is frequent handwashing with soap and water or use of an alcohol-based hand sanitizer. Additional protective measures include high quality housekeeping, especially high touch areas/surfaces; wearing a face mask; and staying home when sick. People should also avoid touching their eyes, nose, and mouth with unclean hands and encourage close contacts to cover their nose and mouth with a tissue when coughing or sneezing.

What are some public health considerations?
- When reporting SARS in the Disease Reporting System internet (DRSi), document relevant travel and deployment history occurring within the incubation period.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

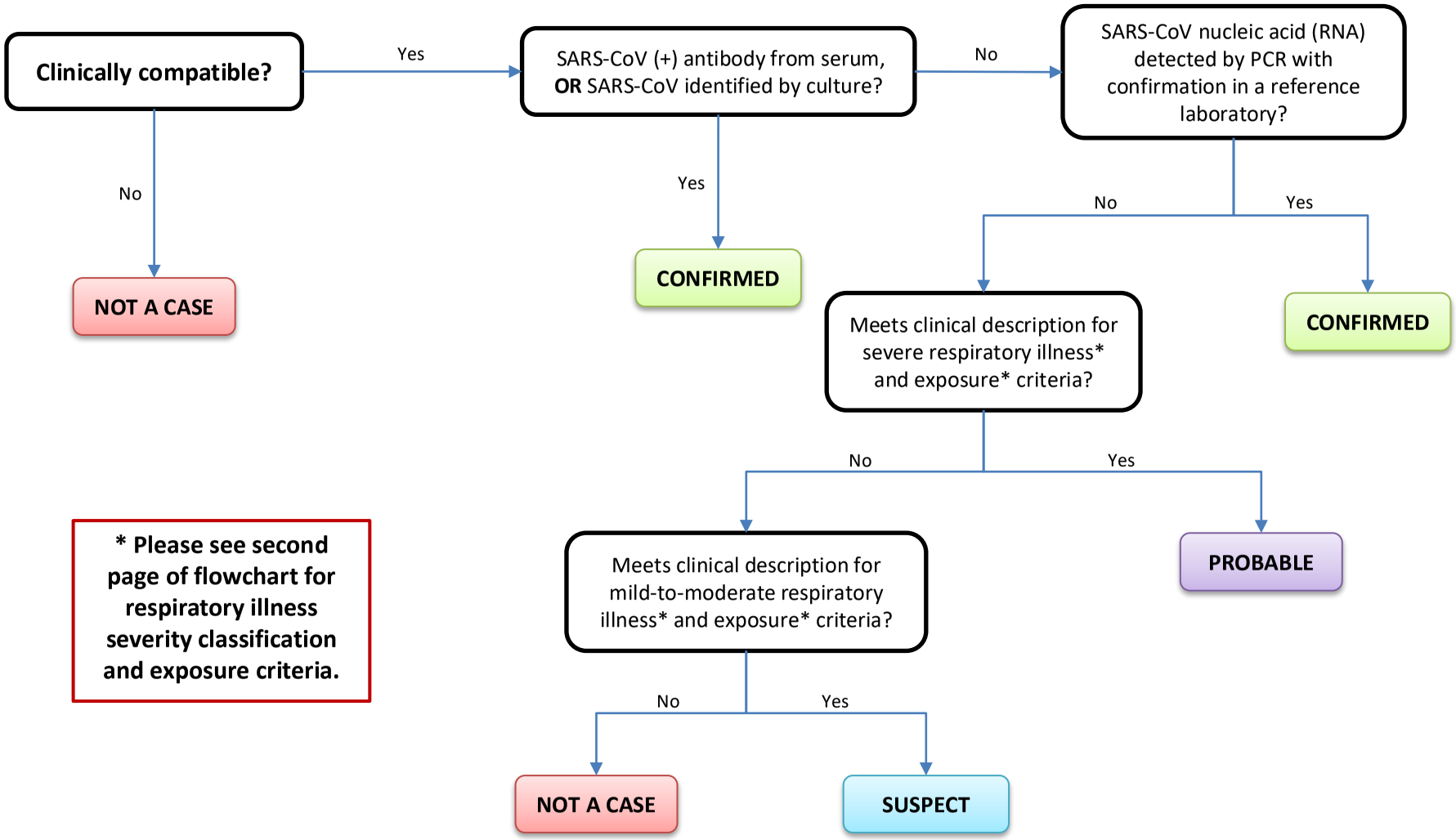
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Severe Acute Respiratory Syndrome," Centers for Disease Control and Prevention (CDC), last reviewed December 6, 2017. https://www.cdc.gov/sars/

Last Updated September 1, 2023

Severe Acute Respiratory Syndrome (SARS)

INCLUDES: SARS-CoV-1
EXCLUDES: SARS-CoV-2. See the COVID-19 case definition.



Severe Acute Respiratory Syndrome (SARS)

Clinical Description, Critical Reporting Elements, and Comments

Clinical Description:
SARS is characterized by severity of illness as follows:
Early Illness: Fever, chills, rigors, myalgia, headache, diarrhea, sore throat, or rhinorrhea
Mild-to-moderate respiratory illness: Temperature of >100.4°F (>38°C) and one or more lower respiratory illness (cough, shortness of breath, or difficulty breathing)
Severe respiratory illness: Meets mild-to-moderate respiratory illness with any of the following: radiographic evidence of pneumonia or acute respiratory distress syndrome

*** Exposure** is defined as one or more of the following in the 10 days before onset of symptoms:
- Close contact as defined in the definition page with a person with confirmed SARS-CoV disease, or
- Close contact as defined in the definition page with a person with mild-to-moderate or severe respiratory illness for whom a chain of transmission can be linked to a confirmed case of SARS-CoV disease.

Critical Reporting Elements and Comments:
- Document relevant travel and deployment history occurring within the incubation period (2–14 days).

NOTE: A person may be excluded as a reportable case of SARS if any of the following apply:
- An alternative diagnosis can fully explain the illness, or
- Antibody to SARS-CoV is undetectable in a serum specimen obtained > 28 days after onset of illness, or
- The case was reported based on contact with a person who was excluded subsequently as a case of SARS-CoV disease; then, the reported case also is excluded, provided other epidemiologic or laboratory criteria are not present.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Severe Acute Respiratory Syndrome (SARS)

Confirmed ◯ Probable ◯ Suspect ◯ Not a Case ◯

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

Army Disease Reporting System internet (ADRSi) link: https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N		
Hospitalized	☐	☐	**Admit date:** ____/_____/_____	**Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____	**Cause of death:** _____

	Y	N				
Symptomatic	☐	☐	**Onset date:** ____/_____/_____	**Clinic date:** _____/_____/_____	**Diagnosis date:** _____/_____/____	
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)			
Dry cough	☐	☐	**Rigors**	☐		
Shortness of breath	☐	☐	**Headache**	☐		
Chills	☐	☐	**Sore throat**	☐		
Muscle aches	☐	☐				
Diarrhea	☐	☐				

TREATMENT

Treated with antivirals? Y ☐ N ☐

Type of antiviral	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum CSF Urine Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the week before illness onset (when symptoms started), did the case..... (Incubation period 2–14 days)

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

- ☐ Deployment
- ☐ TDY
- ☐ Vacation
- ☐ Visiting Friends
- ☐ Business (non-DoD)
- ☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Shigellosis

Name	*Shigella* species
Reservoir & Transmission	Humans Direct or indirect fecal-oral transmission
Incubation Period	Average 1–3 days. Range 12–96 hours
Common Symptoms	Diarrhea (may be bloody), fever, nausea, cramps, tenesmus
Gold Standard Diagnostic Test	Culture
Risk Groups	Children less than 10 years old
Geographic Significance	Worldwide

What is shigellosis?
Shigella bacteria cause Shigellosis, which is an extremely contagious diarrheal disease. There are four different species*: Shigella sonnei*, *Shigella flexneri, Shigella boydii,* and *Shigella dysenteriae*.

What is the occurrence of shigellosis?
The CDC estimates about 450,000 cases of shigellosis occur in the U.S. every year, making it the third most common bacterial enteric disease. Shigellosis does not have a marked seasonality, likely reflecting the importance of person-to-person transmission. Shigellosis is particularly common in settings where hygiene is poor. *S. sonnei* is the most common in U.S. Although *S. boydii* and *S. dysenteriae* are rare in the U.S., they are important causes of disease in areas with less access to resources. *S. dysenteriae* type 1 can cause death.

How is shigellosis transmitted?
Shigella resides in the stool of infected individuals while they have diarrhea and up to 2 weeks after diarrhea has subsided. *Shigella* is transmitted by direct or indirect contact of fecal matter from an infected individual via the fecal-oral route. A microscopic amount of *Shigella* bacteria in fecal matter can infect someone. Transmission may occur by eating contaminated food, drinking contaminated water, swimming in contaminated water, or swallowing something contaminated with the bacteria. *Shigella* can be transmitted by exposure to feces through sexual contact.

Who is at risk for shigellosis?
Anyone can get shigellosis, but it occurs most often in toddlers aged 2 to 4. Outbreaks of shigellosis have occurred among men who have sex with men, HIV-infected persons, travelers, and orthodox Jewish communities. Outbreaks can occur in crowded conditions where exposure to fecal matter may be higher, such as prisons, daycare centers, refugee camps, and disaster areas. Service members under operational and field conditions are at risk when flies transfer fecal matter from latrines to unprotected foods.

What are the signs and symptoms of shigellosis?
Some people may be asymptomatic. Others may experience mild to severe symptoms, typically starting 1–2 days after exposure. The symptoms of shigellosis include diarrhea, which may be bloody, fever, stomach cramps, and tenesmus (frequent urge have a bowel movement in the absence of stool). Young children and the elderly may need to be hospitalized due to severe diarrhea. Symptoms usually last 5 to 7 days but may last for 4 or more weeks. In some cases, bowel habits (frequency and consistency of stool) do not return to normal for several months.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Shigellosis

What are potential complications of shigellosis?

- Post-infectious arthritis: Also called Reiter's syndrome, this is a syndrome of joint pain, eye irritation, and painful urination that can happen in about 2% of people who are infected with *S. flexneri*. Few cases have been reported in association with *S. sonnei* or *S. dysenteriae* infection. Symptoms can last for months or years and can lead to chronic arthritis. Post-infectious arthritis is caused by a reaction to *Shigella* infection that happens only in people who are genetically predisposed to it.
- Bloodstream infections. Although rare, bloodstream infections are caused either by *Shigella* organisms or by other germs in the gut that get into the bloodstream when the lining of the intestines is damaged during shigellosis. Bloodstream infections are most common among patients with weakened immune systems, such as those with HIV, cancer, or severe malnutrition.
- Seizures. Generalized seizures have been reported occasionally among young children with shigellosis and usually resolve without treatment. Children who experience seizures while infected with *Shigella* typically have a high fever or abnormal blood electrolytes, but it is not well understood why the seizures occur.
- Hemolytic-uremic syndrome (HUS). HUS occurs when bacteria enter the digestive system and produce a toxin that destroys red blood cells. Patients with HUS often have bloody diarrhea. When infected with *Shigella*, HUS is only associated with Shiga-toxin producing strains, most commonly *S. dystenteriae.*

How is a shigellosis diagnosed?

The diagnosis of shigellosis is confirmed by a stool culture. A stool specimen may be tested by a culture-independent diagnostic test (CIDT), which can detect the presence of a gene or antigen associated with the bacteria. However, CIDTs usually do not provide important information such as whether the pathogen is a particularly harmful strain, how it will respond to antimicrobial agents, or if it recently has been found in others who are sick, which suggests an outbreak might be occurring. Clinical diagnostic laboratories can submit *Shigella* isolates to state and territorial public health laboratories to be confirmed, speciated, and subtyped.

How is shigellosis treated?

Persons with mild infections usually recover within 5 to 7 days without antibiotic treatment but may need hydration and rest. More severe cases, however, can be treated with antibiotics. Some *Shigella* bacteria have become resistant to antibiotics. Antidiarrheal agents such as bismuth subsalicylate (e.g., Pepto-Bismol®) may be helpful. However, loperamide (e.g., Imodium®) or diphenoxylate with atropine (e.g., Lomotil®) are likely to make the illness worse and should be avoided.

How can shigellosis be prevented?

The most important precaution is to wash hands with soap and water notably with supervised handwashing of all children in childcare centers. Follow all food safety practices. Water filters may not be effective against *Shigella* and may need to be chlorinated or boiled. Avoid swallowing water from ponds, lakes, or untreated swimming pools. When traveling internationally, adhere to food and water precautions and thoroughly wash hands with soap and water frequently.

What are some public health considerations?

- Specify the serotype characterization (O antigen) if known.
- Document the source of infection if known.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Shigellosis

- Document if the case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, healthcare, training center, or ship.
- Identification of Shiga toxin is presumptive for *E. coli* and should not be reported as shigellosis.
- Refer to the Centers for Disease Control and Prevention for current information about extensively drug-resistant *Shigella* infection (shigellosis) in the U.S.

References:

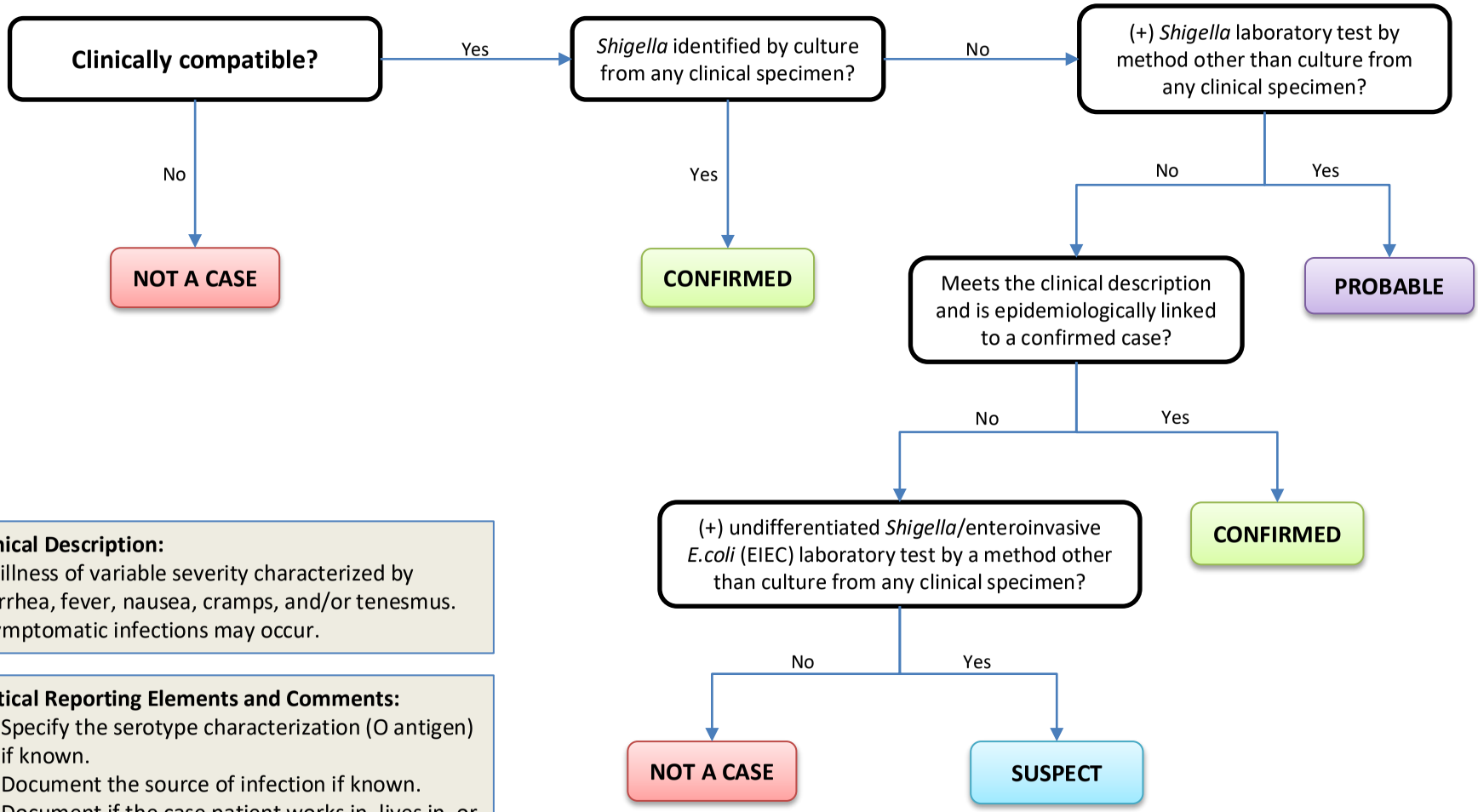
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Shigella," Centers for Disease Control and Prevention (CDC), last reviewed March 30, 2023. https://www.cdc.gov/shigella/

Last Updated September 1, 2023

Shigellosis



Clinical Description:
An illness of variable severity characterized by diarrhea, fever, nausea, cramps, and/or tenesmus. Asymptomatic infections may occur.

Critical Reporting Elements and Comments:

- Specify the serotype characterization (O antigen) if known.
- Document the source of infection if known.
- Document if the case patient works in, lives in, or attends a high transmission setting such as food handling, day care, school, group living, healthcare, training center, or ship.

Identification of Shiga toxin is presumptive for *E. coli* and should not be reported as shigellosis.

GASTROINTESTINAL INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

This worksheet can be used for the following reportable medical events:

☐ **Campylobacter** ☐ **Salmonella (non-Typhi)**

☐ **Cryptosporidium** ☐ **Shiga-toxin producing E. coli**

☐ **Norovirus** ☐ **Shigella**

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk) **Duration of symptoms:** _____ ☐ **Still ill**

Diarrhea Y ☐ N ☐ *Describe any other symptoms or pertinent clinical information:*

Bloody diarrhea Y ☐ N ☐

Abdominal cramps Y ☐ N ☐

Vomiting Y ☐ N ☐

Nausea Y ☐ N ☐

Chills Y ☐ N ☐

Muscle aches Y ☐ N ☐

Other (describe): Y ☐ N ☐

Laboratory results:

Test type: **Culture** ☐ **PCR** ☐ **Antibody** ☐ **Other** ☐

Collection Date: ____/____/____ **Result date:** ____/_____/_____

Result: **Positive** ☐ **Negative** ☐ **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ **Unk** ☐

Details: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

CONTACTS

List all household contacts, ill or not ill, and any close contacts regardless of where they live (i.e., caregivers, partners, etc). Indicate for all contacts if high risk; if symptomatic, give onset date and testing information. List additional contacts on the last page of this form if needed.

Name/Contact	Age	Relationship to case	Symptoms		Onset Date	Lab testing	High Risk		
			Yes	No		Y/N, coll. date, result	Day care	Health care	Food Svc.

ENVIRONMENTAL EXPOSURES

In the 7 days before illness onset, from _____/_____/_____ to _____/_____/_____ did [you/your child]:

WATER-RELATED EXPOSURES	YES	NO	UNK	*If yes, details:*
1. Stay in a home with a septic system?				
2. Primarily use water from a well for drinking water?				*Treatment:*
3. Primarily drink bottled water?				*Brand(s):*
4. Drink any untreated water (pond, lake, etc)?				
5. Swim or wade in untreated water?				*Where?*
6. Swim or wade in treated water (pool, hot tub, etc)?				*Where?*
ANIMAL CONTACT	YES	NO	UNK	*If yes, details:*
1. Have contact with an animal?				
If yes, did [you/your child] have contact with a:				
a. Dog				
b. Cat				
c. Other pet mammal				*Specify:*
d. Reptile or amphibian				*Specify:*
e. Live poultry				
f. Pet bird				
g. Cattle, goat, or sheep				*Specify:*
h. Pig				
i. Other animal				*Specify:*
j. Pet with diarrhea				
2. Visit, work, or live on a farm, ranch, or petting zoo?				*Specify:*
3. Have exposure to a daycare or nursery?				*Where?*
4. Have a household or close contact with diarrhea?				*Who?*
5. Work in a restaurant or prepare food for others?				*Specify:*

FOOD HISTORIES

(For all cases, complete for the 7 days before illness. If case was asymptomatic or the onset is unknown, complete for the 7 days before collection. List ALL ingredients in each meal.)

Start with most recent date and move back

Date							
Morning/breakfast							
Afternoon/lunch							
Evening/dinner							
Snacks/other							

FOOD SOURCES

In the 7 days before illness, from _____/_____/_____ to _____/_____/_____, did [you/your child]:	YES	NO	UNK
1. Attend any events where food was served? (if yes, list below)			

Event	Date	Location	Foods Eaten
a.			
b.			
c.			

2. Eat at any restaurants? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

3. Eat food purchased from a farm or farm stand? (if yes, list below)			

Name	Date	Location	Foods Eaten
a.			
b.			
c.			

4. List all stores where food eaten in the days prior to illness were purchased (e.g. grocery stores, ethnic markets).

Name	Date	Location	Foods Eaten
a.			
b.			
c.			
d.			

Also complete food exposure questions for ALL Campylobacter, non-Typhi Salmonella, and STEC cases

Notes and Summary of Investigation

List actions taken on cases and contacts and outcome:

FOOD EXPOSURES

[Instructions: Complete for all Campylobacter, non-Typhi Salmonella, and STEC cases. For all questions, ask for the 7-day period prior to onset of illness or, if unknown or asymptomatic, in the 7 days prior to collection date. For questions answered YES, use the space on the right to provide additional details, such as the specific type of food and where the food was purchased or eaten. Be specific.]

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household HANDLE any:	YES	NO	UNK	*If yes: provide specific details*
1. Raw beef?				
2. Raw poultry?				
3. Raw seafood?				
In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
MEAT PRODUCTS				
1. Chicken or foods containing chicken?				
If yes: a. Chicken prepared outside the home?				*Where?*
If yes: b. Chicken at home that was bought fresh?				*Which part(s):*
If yes: c. Chicken at home that was bought frozen?				*Which part(s):*
If yes: d. Frozen chicken that was stuffed or filled?				
If yes: e. Ground chicken?				
2. Turkey or foods containing turkey?				
if yes: a. Turkey prepared outside the home?				*Where?*
if yes: b. Ground turkey?				
3. Other poultry (e.g. Cornish hen, quail, etc)?				*Specify:*
4. Beef or foods containing beef?				
if yes: a. Beef prepared outside the home?				*Where?*
if yes: b. Ground beef?				
if yes: > Undercooked or raw ground beef?				
5. Pork or foods containing pork?				
6. Lamb or mutton?				
7. Liver?				
if yes a. Undercooked or raw liver?				
if yes b. Liver pate?				
8. Deli meat (e.g. ham, roast beef, salami)?				*Specify:*
9. Other meat (e.g. venison, goat)?				*Specify:*
FISH AND SEAFOOD				
10. Fish or fish products?				
if yes a. Fish prepared outside the home?				*Where?*
if yes b. Undercooked or raw fish (e.g. sushi)?				
11. Seafood (e.g. crab, shrimp, oysters, clams)?				*Specify:*
if yes a. Seafood prepared outside the home?				*Where?*
if yes b. Undercooked or raw seafood?				*Which?*

In the 7 days before illness onset, from ____/____/____ to ____/____/____, did [you/your child] or anyone in your household EAT or DRINK any:				
FROZEN FOODS				
12. Frozen meals (e.g. pizza, soup, entrée)?				*Specify:*
DAIRY PRODUCTS				
13. Dairy products (e.g. milk, yogurt, cheese, cream)?				
a. Pasteurized cow's or goat's milk?				
if yes b. Unpasteurized milk?				*From where?*
c. Soft cheese (e.g. queso fresco)?				
if yes >Unpasteurized soft cheese?				*From where?*
if yes d. Any other raw or unpasteurized dairy products?				*From where?*
14. Eggs?				
a. Eggs made outside the home?				*Where?*
if yes b. Eggs that were runny, raw, or uncooked foods made with raw eggs?				*From where?*
FRESH FRUITS AND VEGETABLES				
15. Fresh cantaloupe?				
16. Fresh watermelon?				
17. Fresh (unfrozen) berries?				*Specify:*
18. Other fresh fruit eaten raw?				*Specify:*
19. Unpasteurized, not from concentrate juice (sold at an orchard or farm, or commercially with label)?				*From where?*
20. Fresh green onion or scallions?				
21. Fresh cucumber?				
22. Fresh, raw tomatoes?				*Type(s) & from where?*
23. Fresh peppers (e.g. bell, hot, sweet)?				*Specify:*
24. Fresh, raw lettuce?				*Specify loose ( ) or pre-packaged ( )*
25. Fresh (unfrozen), raw spinach?				*Specify loose ( ) or pre-packaged ( )*
26. Sprouts?				*Specify:*
27. Other fresh vegetables eaten raw?				*Specify:*
28. Fresh (not dried) herbs (e.g. basil, cilantro)?				*Specify:*
29. Nuts or seeds?				*Specify:*

Any other comments, notes, or contacts:

PUBLIC HEALTH REFERENCE SHEET
Smallpox

Name	Variola virus EXCLUDES: Vaccinations and vaccine adverse events
Reservoir & Transmission	Humans Droplet spread via respiratory tract or skin inoculation
Incubation Period	7–19 days
Common Symptoms	Acute onset of fever ≥ 101°F (≥ 38.3°C), followed by a rash characterized by firm, deep-seated vesicles or pustules in the same stage of development without other apparent cause
Gold Standard Diagnostic Test	Culture, PCR
Risk Groups	Smallpox research scientists. Since smallpox has been eradicated, the general population is not at risk. However, in the event of a bioterrorism attack, anyone unvaccinated could potentially be at risk.
Geographic Significance	N/A

What is smallpox?
Smallpox is a severe infectious disease caused by the variola virus, genus *Orthopoxvirus*.

What is the occurrence of smallpox?
- Per the Centers for Disease Control and Prevention (CDC), the last documented case of naturally occurring (endemic) smallpox was in 1977. A single confirmed case of smallpox today could be the result of an intentional act (bioterrorism) and would be considered a global public health emergency.
- Infections with wild vaccinia-like viruses have been reported among cattle and buffalo herders in India and among dairy workers in southern Brazil and Colombia. Travelers touching affected bovines might acquire a localized, cutaneous infection. Immunosuppressed people or people with certain skin conditions are at an increased risk for developing systemic illness.

How is smallpox transmitted?
- In 1980, the World Health Organization (WHO) officially declared smallpox eradicated; however, the threat of reemergence by intentional introduction (e.g., bioterrorism) persists. Before smallpox was eradicated, it spread from person-to-person principally through respiratory droplets. Contact with infectious skin lesions or scabs was a less common mode of transmission but sometimes occurred (e.g., when caregivers cared for patients or washed contaminated clothing). Rarely, smallpox spread through air in enclosed settings (airborne transmission).
- Vaccinia virus is the live virus component of contemporary smallpox vaccines. One of these vaccines, ACAM2000, is a replication competent vaccinia virus; occasionally, infection occurs from touching the fluid or crust material from the inoculation lesion of someone recently vaccinated against smallpox, or from touching contaminated materials like sheets and towels. Human infections with vaccinia virus have occurred in Brazil, Colombia, and India after contact with agricultural animals, often bovids, infected with sylvatic vaccinia-like viruses (CDC, 2023).

Who is at risk for smallpox?
Immunocompromised patients or people with exfoliative skin conditions (e.g., atopic dermatitis or eczema) are at greater risk for severe illness or death. A person is considered at risk for

contracting smallpox after prolonged, close contact with an infectious smallpox patient. Before smallpox was eradicated, the disease had a secondary household or close contact attack rate of approximately 60% among unvaccinated individuals.

What are the signs and symptoms of smallpox?

Clinical signs and symptoms include acute onset of fever >101°F (38.3°C), head and body aches, malaise, and sometimes vomiting; then, a characteristic, disseminated rash of firm, deep-seated vesicles or pustules in the same stage of development on each affected body site. Clinically, varicella (chickenpox) is the most common rash illness likely to be confused with smallpox. Lesions on the palms or soles and a centrifugal distribution of lesions on the body, which are characteristic of smallpox, can sometimes help distinguish *orthopoxvirus* infection from varicella.

What are potential complications of smallpox?

Severe complications could include encephalitis, corneal ulcerations, and severe scarring from lesions. For the unvaccinated, smallpox can have a mortality rate of approximately 30%. Poor pregnancy outcomes, including fetal death, have been observed when pregnant people have had variola virus infections.

How is smallpox diagnosed?

- Diagnosis involves evaluating patients with acute onset of fever followed by a rash. The CDC provides a detailed algorithm and clinical criteria for evaluating and categorizing the risk of smallpox in patients presenting with vesicular or pustular rash illnesses, which can be found at https://www.cdc.gov/smallpox/clinicians/diagnosis-evaluation.html.
- PCR testing or virus isolation can confirm an *orthopoxvirus* infection. For patients with a high risk of having smallpox, the state health department will contact the CDC to conduct laboratory testing to confirm or rule out smallpox. In the absence of known smallpox disease, the predictive value of a positive smallpox test diagnosis is low, so only cases that meet the clinical definition of the disease should be tested.

How is smallpox treated?

- Treatment of smallpox is mainly supportive care through hydration, nutritional supplementation, and prevention of secondary infections.
- To diminish the chances of spreading virus to other parts of the body or to other people, advise people to keep all pox lesions covered until the scab detaches and to avoid touching their eyes before proper hand washing. Topical antivirals (e.g., trifluridine drops) have been used to treat ocular involvement.
- Tecovirimat (TPOXX), brincidofovir (Tembexa), and vaccinia immune globulin have been licensed by the U.S. Food and Drug Administration to treat smallpox or vaccinia complications and are stocked in the U.S. government's Strategic National Stockpile (SNS).
- Vaccination within 2 to 3 days of exposure can prevent or lessen the severity of the disease and may decrease symptoms if given within the first week of exposure.

How can smallpox be prevented?

- There are vaccines to protect people from smallpox. Currently, smallpox vaccines are not recommended for the general public because smallpox has been eradicated. If there were a smallpox outbreak, health officials would use smallpox vaccines to control it.
- Two vaccines are licensed for the prevention of smallpox in the United States. The Advisory Committee on Immunization Practices only recommends preexposure prophylaxis for people

at occupational risk for *orthopoxvirus* infection (e.g., since healthcare delivery to a patient or laboratory work involves orthopoxviruses). Members of the U.S. military are required to receive the vaccine.

What are some public health considerations?

- When reporting smallpox in the Disease Reporting System internet (DRSi)—
  - Document the source of infection, if known.
  - Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- The deliberate release of smallpox as an epidemic disease is a remote possibility, and the United States is taking appropriate precautions. Smallpox is classified as a Category A agent by the CDC. Category A agents are believed to pose the greatest potential threat for adverse public health impact and have a moderate to high potential for large-scale dissemination. The public is generally more aware of category A agents, and broad-based public health preparedness efforts are necessary.
- For patient and clinician smallpox comprehensive resources and for Department of Defense Smallpox Vaccination Program (SVP), military and civilian healthcare personnel can access the Defense Health Agency (DHA)'s online Smallpox Resource Center at https://www.health.mil/Military-Health-Topics/Health-Readiness/Immunization-Healthcare/Vaccine-Preventable-Diseases/Smallpox-ACAM2000/Smallpox-Resource-Center.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

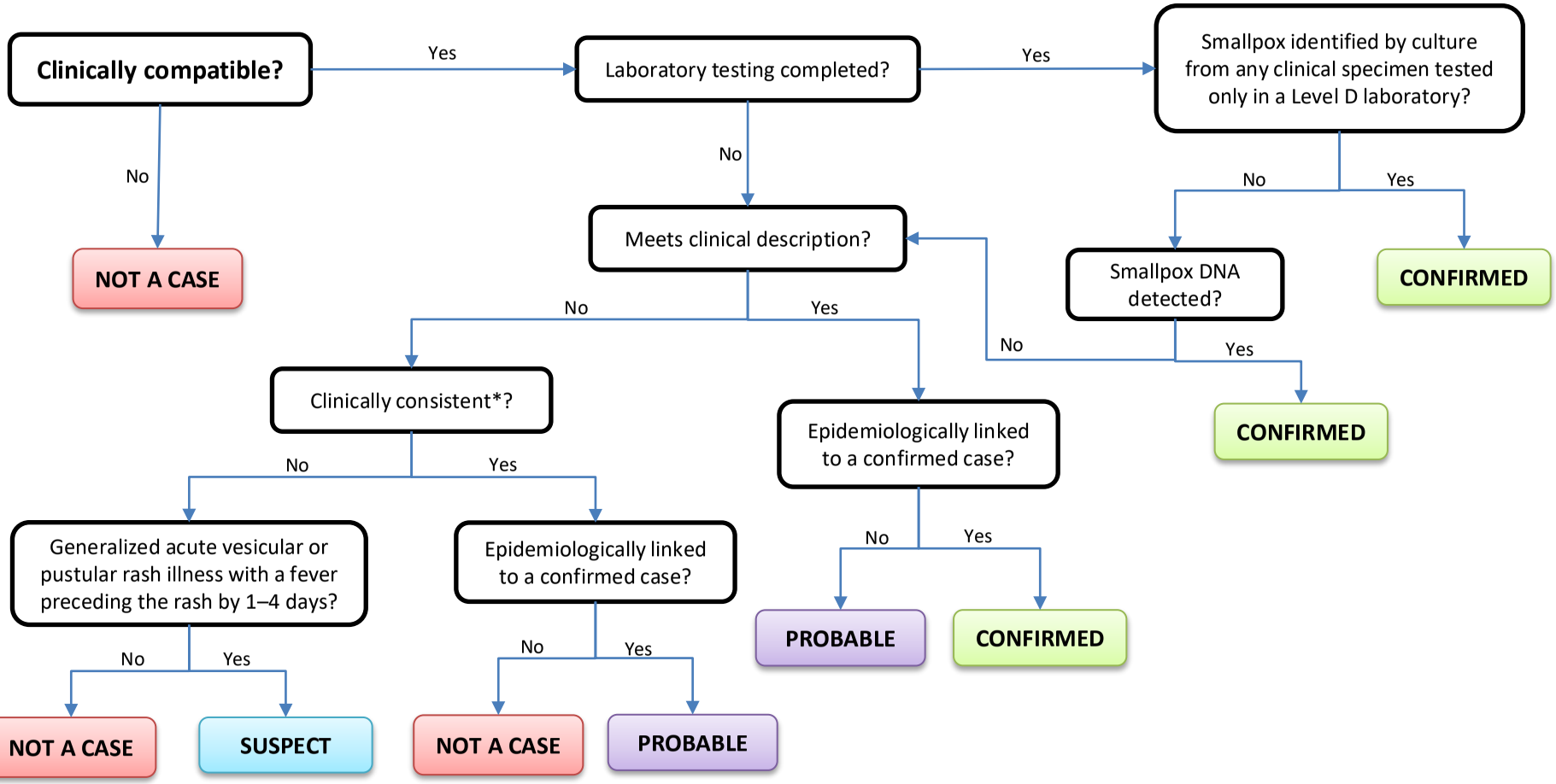
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Rao, Agam and McCollum, Andrea. "Smallpox & Other Orthopoxvirus-Associated Infections." *CDC Yellow Book 2024: Travel-Associated Infections & Diseases.* Centers for Disease Control and Prevention, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/smallpox-other-orthopoxvirus-associated-infections

"Smallpox," Centers for Disease Control and Prevention (CDC), last reviewed July 12, 2017 https://www.cdc.gov/smallpox/

Smallpox

EXCLUDES: Vaccinations and vaccine adverse events.



Clinical Description:
An illness with acute onset of fever ≥ 101° F (≥ 38° C) followed by a rash characterized by firm, deep-seated vesicles or pustules in the same stage of development without other apparent cause.

Critical Reporting Elements and Comments:

- Document the source of infection, if known.
- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

* **Clinically consistent** cases are presentations of smallpox that do not meet the classical clinical description and include a) hemorrhagic type, b) flat type, and c) *variola sine eruption*.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Smallpox

Confirmed ◯ Probable ◯ Suspect ◯ Not a Case

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

Army Disease Reporting System Internet (ADRSi) link: https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Rash	☐	☐	**Rash onset:** ____/_____/_____ **Describe rash:**
Vesicles/Pustules	☐	☐	
Other *(describe)*	☐	☐	

Describe other symptoms or relevant clinical information:

VACCINATION AND EXPOSURE

Vaccination History

	Y	N
Has the case been vaccinated against smallpox?	☐	☐
Vaccination date: _____/_____/_____		
Any adverse effects?	☐	☐

Exposure History

	Y	N
Does the case work in, live in, or attend a high-transmission setting?	☐	☐
If yes, where:		

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the incubation period, 7–19 days, before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Provide any additional relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Spotted Fever Rickettsiosis

Name	*Rickettsia* species INCLUDES: Rocky Mountain spotted fever, Pacific Coast tick fever, African tick-bite fever, and others EXCLUDES: Rickettsia prowazekii and Rickettsia typhi. See Typhus Fever case definition
Reservoir & Transmission	Variety of tick species, rodents, domestic and wild ruminants (e.g., cattle, sheep), dogs Arthropod vectors (fleas, lice, mites, ticks)
Incubation Period	2–21 days
Common Symptoms	Spotted Fever group *Rickettsiae* (SFGR) are illness characterized by fever (reported by the patient or provider) and one or more of the following: rash, eschar, headache, myalgia, anemia, thrombocytopenia, or any hepatic transaminase elevation (AST or ALT). The macular or maculopapular rash appears on the fourth to seventh days following fever onset in most patients, often present on the palms and soles.
Gold Standard Diagnostic Test	Indirect immunofluorescence antibody (IFA) assay for serological diagnosis confirmation
Risk Groups	alcoholism, glucose-6-phosphate dehydrogenase (G6PD) deficiency, or immunocompromise
Geographic Significance	Worldwide **Rocky Mountain spotted fever**: throughout the U.S.; Argentina, Brazil, Canada, Colombia, Mexico, and Central America ***Rickettsia parkeri* rickettsiosis**: coastal regions of southeastern U.S.; southern South America

What is spotted fever rickettsiosis?
Spotted Fever group *Rickettsiae* (SFGR) are bacterial diseases caused by the species of the genus *Rickettsia*. Since 2010, cases are reported in the category spotted fever rickettsiosis.

What is the occurrence of spotted fever rickettsiosis?
SFGR occur world-wide. Rocky Mountain spotted fever (RMSF) occurs across the U.S., in Argentina, Brazil, Canada, Colombia, Mexico, and Central America. In most of the U.S., infections occur primarily from April through September, mainly in the southeast and south-central regions; highest incidence rates are seen in North Carolina and Oklahoma; in the southwest, cases occur year-round with most reported March–November.

How is spotted fever rickettsiosis transmitted?
Most spotted fever infections are transmitted by ixodid (hard) ticks, which are widely distributed throughout the world. Contamination of breaks in the skin or mucous membranes, feces of the tick, or aerosolized particles in the case of RMSF, may also lead to infection. The disease is not directly transmitted from person-to-person. Household clusters may occur because of the possible proximity to the infected tick population. Animal hosts include dogs, rodents, and domestic and wild ruminants (e.g., deer).

Who is at risk for spotted fever rickettsiosis?
Susceptibility is general. Risk factors for severe or fatal outcome include young or advanced age, alcoholism, G6PD deficiency, or immunocompromise. Fatal outcome can occur in previously healthy people of all ages in severe diseases such as RMSF.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Spotted Fever Rickettsiosis

What are the signs and symptoms of spotted fever rickettsiosis?
SFGR illnesses are a closely related group of primarily tickborne bacterial infections causing clinically similar diseases, which are characterized by sudden onset of moderate to high fever and one or more of the following: rash, eschar, headache, myalgia, anemia, thrombocytopenia, or any hepatic transaminase elevation. The macular or maculopapular rash, often present on the palms and soles, may appear a few days following fever onset in most patients. A primary lesion or eschar, which is a small ulcer 2–5 mm in diameter with a black center and red areola, may occur at the site of a tick bite and become evident at the onset of fever.

What are potential complications of spotted fever rickettsiosis?
Although clinical presentations and severity vary by species, some spotted fever infections can be associated with multiorgan involvement such as respiratory failure, hepatosplenomegaly, heart failure, renal failure, bleeding, and neurological complications. In the absence of treatment, the diseases can be fatal.

How is spotted fever rickettsiosis diagnosed?
Most routine laboratory tests are unable to distinguish between Rocky Mountain Spotted Fever (RMSF) and rickettsial diseases caused by other, antigenically similar spotted fever group *Rickettsia* species such as *R. parkeri* and *Rickettsia 364D*.

The indirect immunofluorescence antibody assay (IFA) is the gold standard for serological diagnosis confirmation. Serological diagnosis is confirmed by a four-fold or greater rise in specific antibody (immunoglobulin class G [IgG]) titer when comparing acute and convalescent-phase serum samples. The acute sample should be taken in the first week of illness and the convalescent should be taken 3–4 weeks after the acute sample. IFA tests become positive generally in the second to third week of illness. An acute titer taken in the first week of illness should be used as a baseline for comparison to the convalescent sample, and a negative acute result does not rule out active infection, nor does a positive acute result confirm the diagnosis. A four-fold rise in titer should not be excluded as confirmatory laboratory criteria if the acute and convalescent specimens are collected within 2 weeks of one another. Older Weil-Felix tests using Proteus OX-19 and Proteus OX-2 antigens are less sensitive and less specific and are not recommended. During acute stages of infection and prior to doxycycline treatment, rickettsiae may sometimes be detected by polymerase chain reaction (PCR) in blood and serum. Detection can be achieved in skin biopsies using immunostains or PCR. Culturing blood or buffy coats on cell culture monolayers permits isolation of the organisms and facilitates precise confirmatory diagnosis.

How is spotted fever rickettsiosis treated?
Doxycycline is the treatment of choice for all suspected rickettsial infections. Empiric treatment with doxycycline is recommended in patients of all ages, particularly when a life-threatening disease such as RMSF is suspected. Treatment is most effective at preventing death and severe illness when doxycycline is started within the first 5 days of symptoms. When treated within the first 5 days of illness, fever generally subsides within 24–48 hours. Severely ill patients may require longer periods before their fever resolves, especially if they have experienced damage to organ systems. Resistance to doxycycline or relapses in symptoms after the completion of the recommended course of treatment have not been documented. In cases of RMSF, use of antibiotics other than doxycycline increases the risk of severe illness and patient death. Post-tick bite antibiotic prophylaxis is not recommended to prevent rickettsial infection.

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Spotted Fever Rickettsiosis

How can spotted fever rickettsiosis be prevented?
There is not a vaccine to prevent spotted fever rickettsiosis. SFGR infections can occur in clusters due to similar environmental exposures. Notify people identified in a cluster to be alert for symptoms and be treated if they become febrile. Treat homes, yards, and pets with acaracide containing products if ticks are present. Prevent tick exposure using DEET repellent on skin, treating clothing/gear with permethrin, and using tick prevention products (tick collars, shampoo, top spot medications) on pets. Tick removal devices are available on the market, but fine-tipped tweezers work well. Directions for how to remove a tick and visualization of this process is at https://www.cdc.gov/lyme/removal/index.html).

Department of Defense (DoD) Military Tick Identification/Infection Confirmation Kit (MilTICK) is a free tick testing and identification service available for ticks removed from DoD personnel and beneficiaries. Ticks will be identified to species, assessed for how long they have been attached, and tested for pathogens. For additional information, or to request tick kits or services, contact the Tick-borne Disease Laboratory by phone: 410-436-5421 or 410-436-5425 by email: dha.apg.pub-health-a.mbx.tickcom@health.mil or https://ph.health.mil/topics/envirohealth/epm/Pages/HumanTickTestKitProgram.aspx.

What are some public health considerations?
- Since 2010, cases are reported in the category spotted fever rickettsiosis. Most routine laboratory tests are unable to distinguish between RMSF and rickettsial diseases caused by other, antigenically similar spotted fever group Rickettsia species such as *R. parkeri*, *R. akari*, and *Rickettsia 364D*. https://www.cdc.gov/otherspottedfever/info/index.html
- There can be antibody cross-reactivity between spotted fever and typhus group antigens. In cases where antibody titers are positive for both diseases, report the case under the disease most consistent with the case's clinical presentation, exposure history, and travel history.
- When reporting SFGR in the Disease Reporting System, internet (DRSi)—
    - A person previously reported as a probable or confirmed case may be reported as a new case when there is an episode of new clinically compatible illness with confirmatory laboratory evidence.
    - Document relevant travel and deployment history occurring within the 14 days prior to symptom onset.
    - Document potential occupational/high-risk exposure (outdoor activity, camping, hunting, field exercise, mission/duty related, etc.) to known arthropods.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

"Entomology and Pest Management," Defense Centers for Public Health–Aberdeen (DCPH-A), last modified April 17, 2023. https://ph.health.mil/topics/envirohealth/epm/Pages/default.aspx

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Imported Spotted Fevers," Centers for Disease Control and Prevention (CDC), last reviewed January 18, 2019. https://www.cdc.gov/otherspottedfever/imported/index.html

Last Updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Spotted Fever Rickettsiosis

"Other Spotted Fever Group Rickettsioses," Centers for Disease Control and Prevention (CDC), last reviewed March 29, 2021. https://www.cdc.gov/otherspottedfever/healthcare-providers/index.html

"Rickettsial Diseases," Centers for Disease Control and Prevention (CDC), last reviewed May 1, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/rickettsial-diseases

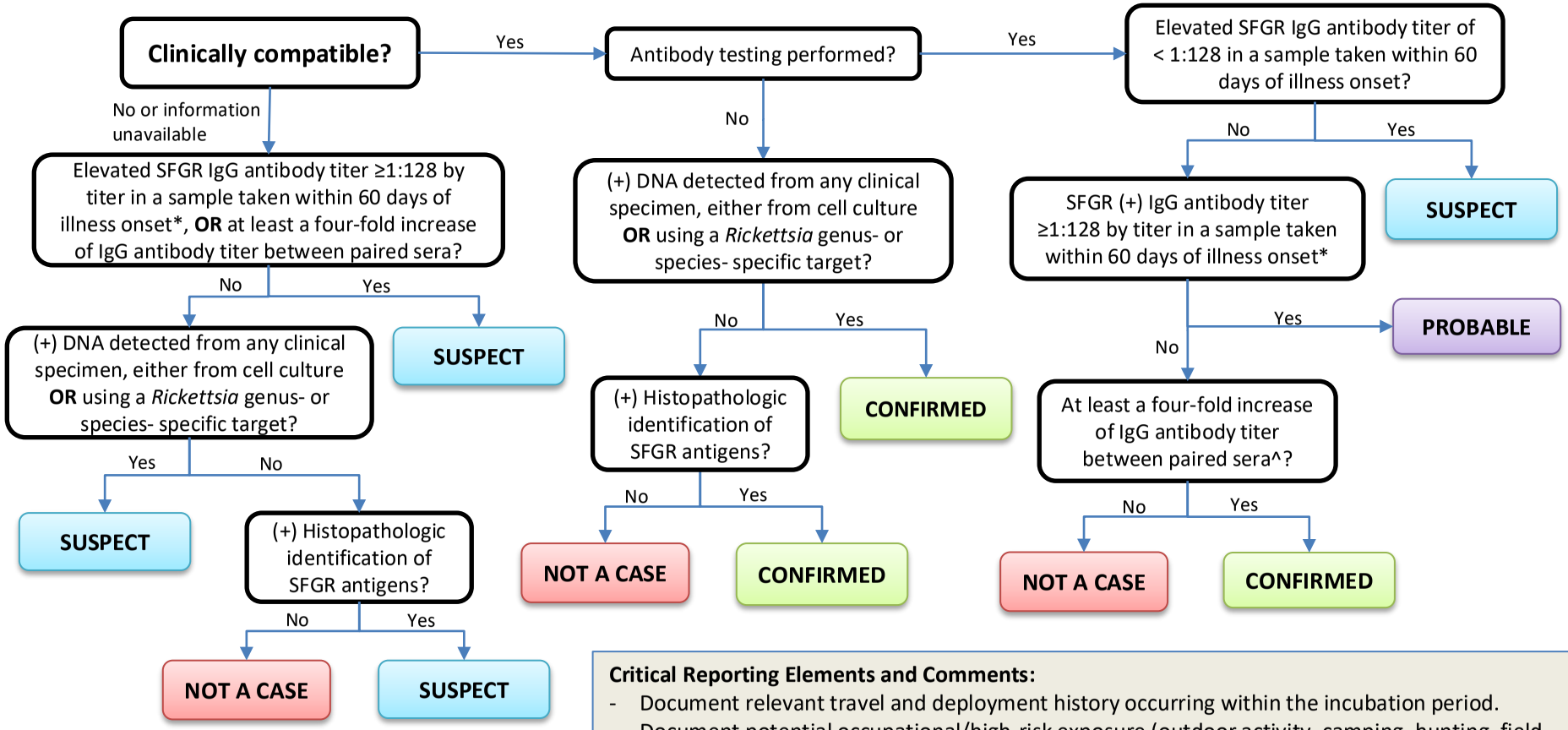
"Rocky Mountain Spotted Fever (RMSF)," Centers for Disease Control and Prevention (CDC), last reviewed August 5, 2022. https://www.cdc.gov/ticks/tickbornediseases/rmsf.html

"*Rickettsia parkeri* Rickettsiosis," Centers for Disease Control and Prevention (CDC), last reviewed August 5, 2022. https://www.cdc.gov/ticks/tickbornediseases/index.html

Last Updated September 1, 2023

Spotted Fever Rickettsiosis

INCLUDES: Rocky Mountain Spotted Fever, Pacific Coast tick fever, African tick-bite fever, and others.
EXCLUDES: *Rickettsia prowazekii* and *Rickettsia typhi*. See the Typhus Fever case definition.



Clinical Description:
Spotted Fever group *Rickettsiae* (SFGR) are illnesses characterized by fever (reported by the patient or provider) and one or more of the following: rash, eschar, headache, myalgia, anemia, thrombocytopenia, or any hepatic transaminase elevation (AST or ALT). The macular or maculopapular rash appears on the fourth to seventh days following fever onset in most patients, often present on the palms and soles. Most often tick-borne, but some *Rickettsia* species can be transmitted by mites and fleas.

Critical Reporting Elements and Comments:
- Document relevant travel and deployment history occurring within the incubation period.
- Document potential occupational/high-risk exposure (outdoor activity, camping, hunting, field exercise, mission/duty related, etc.) to known arthropods.

NOTE: There can be antibody cross-reactivity between spotted fever and typhus group antigens. In cases where antibody titers are positive for both diseases, report the case under the disease most consistent with the case's clinical presentation, exposure history, and travel history.
***** This includes paired serum specimens without evidence of four-fold rise in titer, but with at least one single titer ≥1:128 in IgG-specific antibody titers reactive with SFGR antigen by IFA.
^ A four-fold rise in titer should not be excluded as confirmatory laboratory criteria if the acute and convalescent specimens are collected within 2 weeks of one another.
A person previously reported as a probable or confirmed case may be reported as a new case when there is an episode of new clinically compatible illness with confirmatory laboratory evidence.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

☐ Ehrlichiosis/Anaplasmoisis	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Lyme Disease	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Powassan Virus	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Tick-Borne Encephalitis	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case
☐ Spotted Fever Rickettsiosis	◯ Confirmed	◯ Probable	◯ Suspect	◯ Not a case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ PARENT/GUARDIAN: _____

DOB: _____/_____/_____ AGE: _____ FMP: _____ SEX: ☐ M ☐ F ☐ Unk RACE: _____

UNIT: _____ SERVICE:_____ RANK: _____ DUTY STATUS:_____

ADDRESS: *(Street)*_____ DoD ID: _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ Clinic/Hospital:_____

Hospitalized Y ☐ N ☐ Admit date: _____/_____/_____ Discharge date: _____/_____/_____

Deceased Y ☐ N ☐ Date of death: _____/_____/_____ Cause of death:_____

Symptomatic Y ☐ N ☐ Onset date: ____/_____/_____ Clinic date: _____/_____/_____ Diagnosis date: _____/_____/____

Fever Y ☐ N ☐ Max Temp: _____°F/°C (☐ unk)

Rash Y ☐ N ☐ Describe rash:

Chills/sweats Y ☐ N ☐

Headache Y ☐ N ☐

Myalgia Y ☐ N ☐

Arthralgia Y ☐ N ☐

Other symptoms Y ☐ N ☐

Complications* Y ☐ N ☐

LYME ONLY LATE MANIFESTATIONS:

Arthritis & joint swelling Y ☐ N ☐

Lymphocytic meningitis Y ☐ N ☐

Bell's palsy Y ☐ N ☐

Radiculoneuropathy Y ☐ N ☐

Encephalomyelitis Y ☐ N ☐

2nd/3rd heart block Y ☐ N ☐

PLEASE SEE LABORATORY VALUES AND EXPOSURE HISTORY ON BACK OF PAGE

TICK-BORNE ENCEPHALITIS ONLY

History of TBE vaccination Y ☐ N ☐

Vaccination date: _____/_____/_____

Exposure to raw/ unpasteurized dairy? Y ☐ N ☐

Date of exposure: _____/_____/_____

*Describe complications:

☐ Encephalitis/meningitis

☐ Seizure(s)

☐ Heart failure

☐ Renal failure

☐ Other *(describe above)*

DIAGNOSIS

Did provider diagnose this current illness as a tick-borne disease?

☐ Yes (mark all that apply)

☐ Anaplasmosis ☐ Ehrlichiosis

☐ Lyme Disease ☐ Powassan V.

☐ Spotted Fever Rickettsiosis ☐ Tick-borne Encephalitis

☐ "tick-borne illness"

☐ Other: _____

☐ No, NOT a tick-borne illness

Describe: _____

BLOOD VALUES

DATE

Anemia Y ☐ N ☐ Lowest Hgb: _____ Hct: _____

Leukopenia Y ☐ N ☐ Lowest WBC:_____

Thrombocytopenia Y ☐ N ☐ Lowest PLT: _____

Elevated liver enzymes Y ☐ N ☐ Highest ALP: _____ ALT:_____ AST:_____

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test *(type of test performed)*	Pathogen *(specify if Lyme, HA, PV, etc)*	Collection Date	Source *(CSF, Serum, etc)*	Result *(Describe result)*
☐ **Antibody** *Western blot or acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

Additional labs (if case has co-infection)

☐ **Antibody** *Western blot or acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat aby** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

EXPOSURE HISTORY

In the 3–30 days before illness onset, did the case.....

1. **Have a known tick bite?*** **Y** ☐ **N** ☐ **Unk** ☐ **Details and date:** _____
2. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐ **Location and dates:** _____
   - **If yes, was travel duty-related?** **Y** ☐ **N** ☐ **Unk** ☐ **Location and dates:** _____
3. **Engage in outdoor activities?** **Y** ☐ **N** ☐ **Unk** ☐ **Location and dates:** _____
   - **Habitat (wooded, brushy, grassy, etc):** _____
   - **Activity (PT, jogging, camping, etc):** _____
4. **Use tick repellent?** **Y** ☐ **N** ☐ **Unk** ☐ **Type (Permethrin, DEET, etc):** _____

***Note: A tick bite that occurred outside of the 32-day incubation period is not applicable.**

PUBLIC HEALTH REFERENCE SHEET
Syphilis

Name	Causative agent: *Treponema pallidum*
Reservoir & Transmission	Humans Direct contact (mainly sexual) with infected individual
Incubation Period	10 days to 3 months. Usually, 3 weeks
Common Symptoms	Symptoms based on stages of infection: • Primary syphilis classically presents as a single painless ulcer or chancre at the site of infection but can also present with multiple, atypical, or painful lesions. • Secondary syphilis manifestations can include skin rash, mucocutaneous lesions, and lymphadenopathy. • Latent infections may be lacking clinical manifestations. Latent syphilis acquired within the preceding year is referred to as early latent syphilis; all other cases of latent syphilis are classified as late latent syphilis or latent syphilis of unknown duration. • Tertiary syphilis can present with cardiac involvement, syphilitic growths on organs and skin, gait disturbances (tabes dorsalis) and general paresis. • Neurosyphilis, ocular syphilis, and otosyphilis - Neuro, ocular, and otic manifestations can occur at any stage of disease. Neurosyphilis can include severe headache, trouble with muscle movements, muscle weakness or paralysis, numbness, and changes in mental status. Ocular syphilis can include eye pain or redness, floaters, sensitivity to light, and changes in vision. Otosyphilis may include hearing loss, ringing, buzzing, roaring, or tinnitus, dizziness, or vertigo. • Congenital - Having syphilis can lead to a low-birth-weight infant, early delivery, or stillborn. An infected infant may be born without signs or symptoms of disease. Untreated infants can have health problems such as cataracts, deafness, seizures, or death
Gold Standard Diagnostic Test	Treponemal serological test, darkfield microscopy, enzyme immunoassay (EIA), PCR. Darkfield examinations and molecular tests for detecting *T. pallidum* directly from lesion exudate or tissue are the definitive methods for diagnosing early syphilis and congenital syphilis.
Risk Groups	Any sexually active person that has unprotected vaginal, anal, or oral sex; higher in men who have sex with men (MSM)
Geographic Significance	Worldwide

What is syphilis?
Syphilis is a sexually transmitted infection (STI) caused by the bacterium *Treponema pallidum*. Syphilis can cause serious health effects without adequate treatment. Syphilis is divided into stages (primary, secondary, latent, and tertiary). There are different signs and symptoms associated with each stage. The disease course is complex and variable.

What is the occurrence of syphilis?
According to CDC (2023), syphilis case reports continue to increase since reaching a historic low in 2000 and 2001. During 2021, there were 176,713 new cases of syphilis (all stages). Gay, bisexual, and other men who have sex with men (MSM) are experiencing extreme effects of

PUBLIC HEALTH REFERENCE SHEET
Syphilis

syphilis. They account for 36% of all primary and secondary (P&S) syphilis cases in the 2021 STD Surveillance Report https://www.cdc.gov/std/statistics/2021/overview.htm#Syphilis. They also account for 47% of all male P&S cases. However, case rates are increasing among heterosexual men and women in recent years. Congenital syphilis continues to be a concern in the United States. Congenital syphilis occurs when a pregnant person passes syphilis to their baby. Final 2021 data show more than 2,800 cases of congenital syphilis.

How is syphilis transmitted?
Syphilis spreads from person-to-person by direct contact with a syphilitic sore, known as a chancre. Chancres can occur in, on, or around the penis; vagina; anus; rectum; and lips or mouth. Syphilis can spread during vaginal, anal, or oral sex. Syphilis can also be spread from an infected mother to her fetus.

Who is at risk for syphilis?
Any sexually active person can get syphilis, as well as other STIs, through unprotected vaginal, anal, or oral sex. Men account for the most cases of syphilis, with most of those cases occurring among gay, bisexual, and other MSM.

What are the signs and symptoms of syphilis?
Syphilis has been divided into the following stages based on clinical findings, which guide treatment and follow-up:

- Primary - One or more painless ulcerative lesions (chancres). Lesions are typically on the genitals, in the rectal area or in the mouth; because they are painless, an infected person may not be aware of them.
- Secondary - A rash, often including the palms and soles of the feet, with swollen lymph nodes. Other symptoms can include fever, sore throat, headache, weight loss, myalgia, fatigue, mucous patches, wart-like genital lesions, and hair loss.
- Latent - The latent (hidden) stage of syphilis is a period when there are no visible signs or symptoms of syphilis. Without treatment, syphilis will remain in the body, even though there are no signs or symptoms. Early latent syphilis occurs with infection within past 12 months. Late latent syphilis occurs with infection more than 12 months. Latent syphilis of unknown duration is when there is not enough evidence to confirm initial infection was within the previous 12 months.
- Concurrent, uncontrolled HIV infection may alter the clinical presentation of primary and secondary stages of syphilis, which may delay the diagnosis and treatment of syphilis; thus, increasing the risk of progression to tertiary syphilis, including neurosyphilis.
- Tertiary - Neurological findings usually predominate such as dementia, tabes dorsalis, and may include many other systemic findings to include gummas lesions and variable involvement of other organ systems.
- Infection of the central nervous system (neurosyphilis), visual system (ocular syphilis), or auditory system (otosyphilis) can occur at any stage of syphilis, but it is commonly identified during the early stages and can present with or without additional CNS involvement. Neurosyphilis presents as cranial nerve dysfunction, meningitis, meningovascular syphilis, or acute altered mental status. Ocular syphilis often presents as panuveitis but can involve structures in both the anterior and posterior segment of the eye, including conjunctivitis, anterior uveitis, posterior interstitial keratitis, optic neuropathy, and retinal vasculitis. Otosyphilis typically presents with cochleo-vestibular symptoms, including tinnitus, vertigo, and sensorineural hearing loss. Hearing loss can be unilateral or bilateral, have a sudden onset, and progress rapidly.

- Congenital - If a pregnant woman has syphilis, the infection can be spread to their unborn fetus. Having syphilis can lead to a low-birth-weight infant. It can also make it more likely that the fetus will be delivered too early or stillborn. An infected infant may be born without signs or symptoms of disease. However, if not treated immediately, the infant may develop serious problems within a few weeks.

What are the potential complications of syphilis?

Potential complications include cranial nerve dysfunction, meningitis, stroke, acute altered mental status, tabes dorsalis, permanent vision or hearing loss. Syphilis in pregnant women can lead to low-birth-weight infants, prematurity, or stillborn. Untreated infants infected with syphilis can have health problems such as cataracts, deafness, seizures, or death.

How is syphilis diagnosed?

- Darkfield examinations and molecular tests for detecting *T. pallidum* directly from lesion exudate or tissue are the definitive methods for diagnosing early syphilis and congenital syphilis.
- A presumptive diagnosis of syphilis requires use of two laboratory serologic tests: a nontreponemal test (i.e., Venereal Disease Research Laboratory [VDRL] or rapid plasma reagin [RPR] test) and a treponemal test (i.e., the *T. pallidum* passive particle agglutination [TP-PA] assay, various EIAs, chemiluminescence immunoassays [CIAs] and immunoblots, or rapid treponemal assays).
- Use of only one type of serologic test (nontreponemal or treponemal) is insufficient for diagnosis and can result in false-negative results among persons tested during primary syphilis and false-positive results among persons without syphilis or previously treated syphilis.
- For further guidance on nontreponemal tests and traditional algorithm, treponemal tests and reverse sequence algorithm, cerebrospinal fluid evaluation, and evaluation of infants for congenital syphilis, please refer to the 2021 STI Treatment Guidelines at https://www.cdc.gov/std/treatment-guidelines/syphilis.htm.

How is syphilis treated?

- Penicillin G, administered parenterally, is the preferred drug for treating patients in all stages of syphilis. The preparation used, the dosage, and the length of treatment depend on the stage and clinical manifestations of the disease.
- Selection of the appropriate penicillin preparation is important because *T. pallidum* can reside in sequestered sites (e.g., the CNS and aqueous humor) that are poorly accessed by certain forms of penicillin. Combinations of benzathine penicillin, procaine penicillin, and oral penicillin preparations are not considered appropriate for syphilis treatment. Reports have indicated that practitioners have inadvertently prescribed combination long- and short-acting benzathine-procaine penicillin (Bicillin C-R) instead of the standard benzathine penicillin product (Bicillin L-A) recommended in the United States for treating primary, secondary, and latent syphilis. Practitioners, pharmacists, and purchasing agents should be aware of the similar names of these two products to avoid using the incorrect combination therapy agent for treating syphilis.
- Parenteral penicillin G is the only therapy with documented efficacy for syphilis during pregnancy. Pregnant women with syphilis at any stage who report penicillin allergy should be desensitized and treated with penicillin.
- The Jarisch-Herxheimer reaction is an acute febrile reaction frequently accompanied by headache, myalgia, and fever that can occur within the first 24 hours after the initiation of any syphilis therapy; it is a reaction to treatment and not an allergic reaction to penicillin.

Patients should be informed about this possible adverse reaction and how to manage it if it occurs. The Jarisch-Herxheimer reaction occurs most frequently among persons who have early syphilis, presumably because bacterial loads are higher during these stages. Antipyretics can be used to manage symptoms; however, they have not been proven to prevent this reaction. The Jarisch-Herxheimer reaction might induce early labor or cause fetal distress in pregnant women; however, this should not prevent or delay therapy.

- For further guidance, please refer to the 2021 STI Treatment Guidelines at https://www.cdc.gov/std/treatment-guidelines/syphilis.htm.

How can syphilis be prevented?

The only way to avoid being infected with syphilis is to not have vaginal, anal, or oral sex. If a person is sexually active, the following safer sex practices can lower the chances of getting and spreading syphilis:

- Being in a long-term, mutually monogamous relationship with a partner who has been tested and has negative STI test results.
- Proper use of latex condoms with every sexual encounter. Condoms prevent transmission of syphilis by preventing contact with chancre or other syphilitic lesions. Sometimes these lesions occur in areas not covered by a condom. Contact with these lesions can still transmit syphilis, thus teach infected people to avoid sexual activity while lesions are present.
- Regular testing and early treatment to prevent spread.
- Partner notification and treatment to prevent reinfection.
    - The following sex partners of persons with syphilis are considered at risk for infection and should be confidentially notified of the exposure and need evaluation:
        - Partners who have had sexual contact within 3 months, plus the duration of symptoms for persons who receive a diagnosis of primary syphilis;
        - Within 6 months, plus duration of symptoms for those with secondary syphilis; and
        - Within 1 year for persons with early latent syphilis.

What are some Public Health considerations?

- When reporting syphilis in the Disease Reporting System Internet (DRSI)—
    - Specify the stage of the disease and any diagnosed clinical manifestation.
    - Refer to the Armed Forces Reportable Medical Events (AFRME) 2022 guidelines to determine the case classification and for criteria on what is acceptable as evidence of having acquired syphilis within the preceding 12 months.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Syphilis," Centers for Disease Control and Prevention (CDC), last reviewed April 11, 2023. https://www.cdc.gov/std/syphilis/default.htm

Syphilis

Primary

Meets Clinical Description?

- No → **NOT A CASE**
- Yes → Microscopic identification of *T. pallidum* by dark field microscopy?
  - Yes → **CONFIRMED**
  - No → *T. pallidum* nucleic acid (DNA) detected?
    - Yes → **CONFIRMED**
    - No → Reactive nontreponemal test?
      - Yes → **PROBABLE**
      - No → Reactive treponemal specific test?
        - Yes → **PROBABLE**
        - No → **NOT A CASE**

Clinical Description:
One or more painless ulcerative lesions (chancres). Lesions are typically on the genitals, in the rectal area, or in the mouth, and because they are painless, the patient may not be aware of them. Careful and thorough clinical examination is required.

*** Please see fourth page of flowchart for description of treponemal vs. non-treponemal laboratory tests**

Secondary

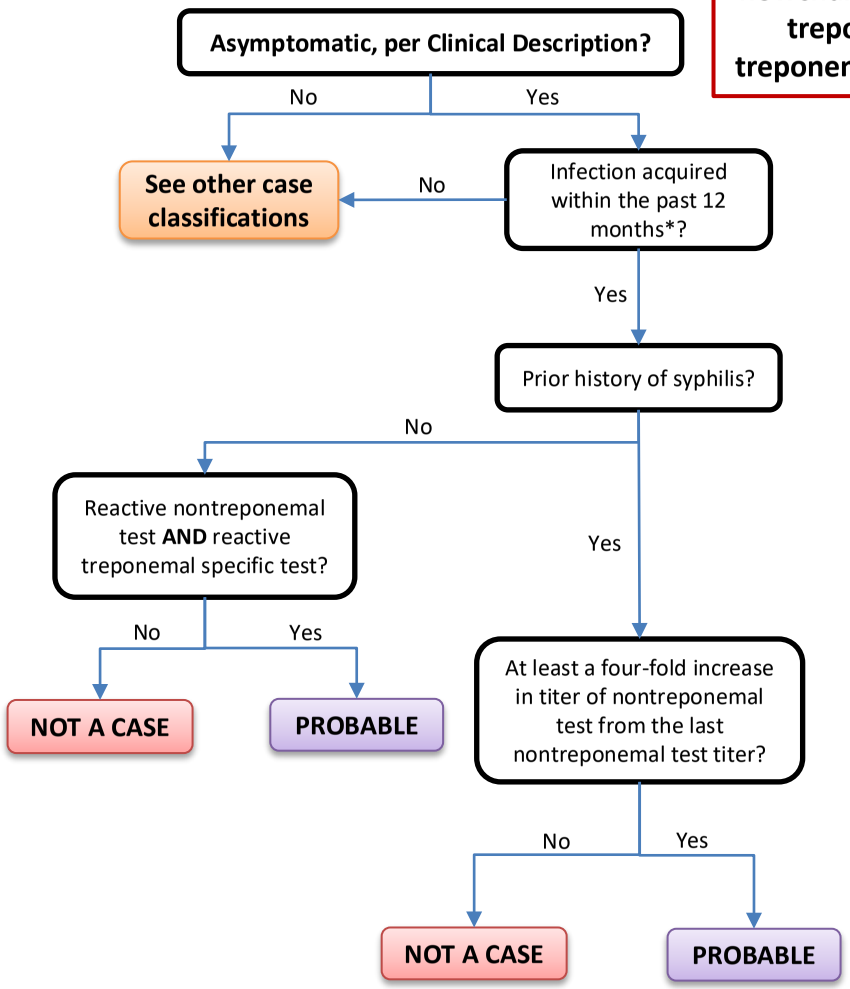
Meets Clinical Description?

- No → **NOT A CASE**
- Yes → Microscopic identification of *T. pallidum* by dark field microscopy?
  - Yes → **CONFIRMED**
  - No → *T. pallidum* nucleic acid (DNA) detected?
    - Yes → **CONFIRMED**
    - No → Reactive nontreponemal test?
      - No → **NOT A CASE**
      - Yes → Reactive treponemal specific test?
        - No → **NOT A CASE**
        - Yes → **PROBABLE**

Clinical Description:
Secondary: A rash, often including the palms and soles of the feet, with swollen lymph nodes. Other symptoms can include mucous patches, wart-like genital lesions, and hair loss. The primary ulcerative lesion may still be present.

Syphilis

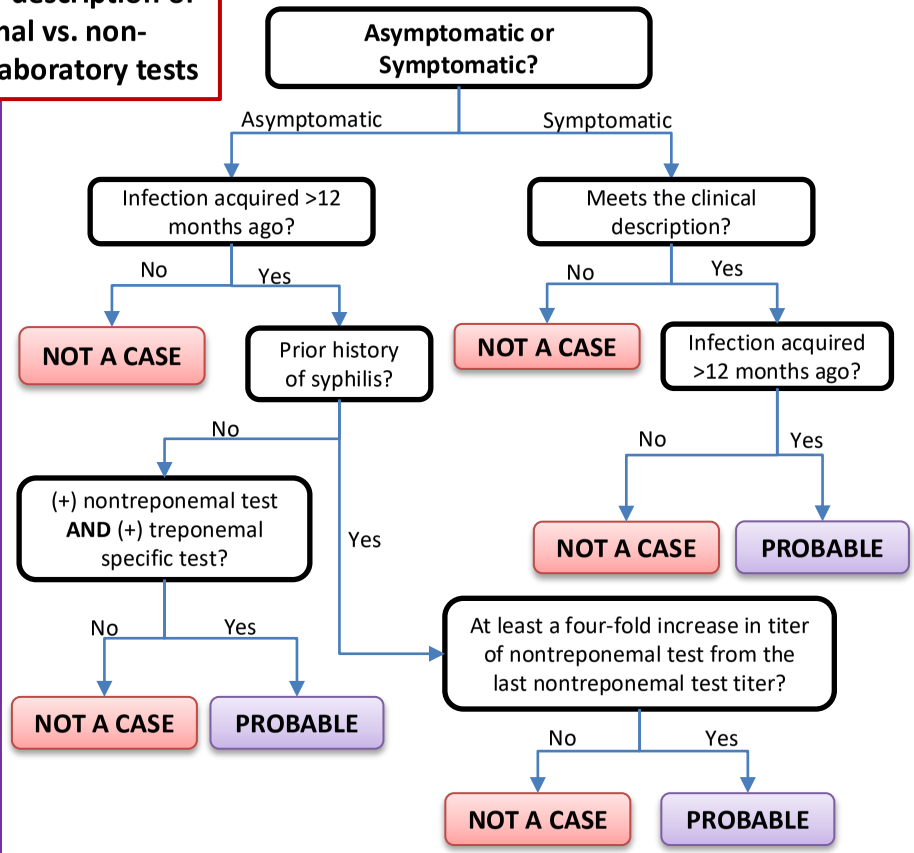
Early Latent



*** Please see fourth page of flowchart for description of treponemal vs. non-treponemal laboratory tests**

Clinical Description:
Early latent (early non-primary non-secondary): Asymptomatic, infected in the last 12 months.*

Late/Tertiary/Unknown

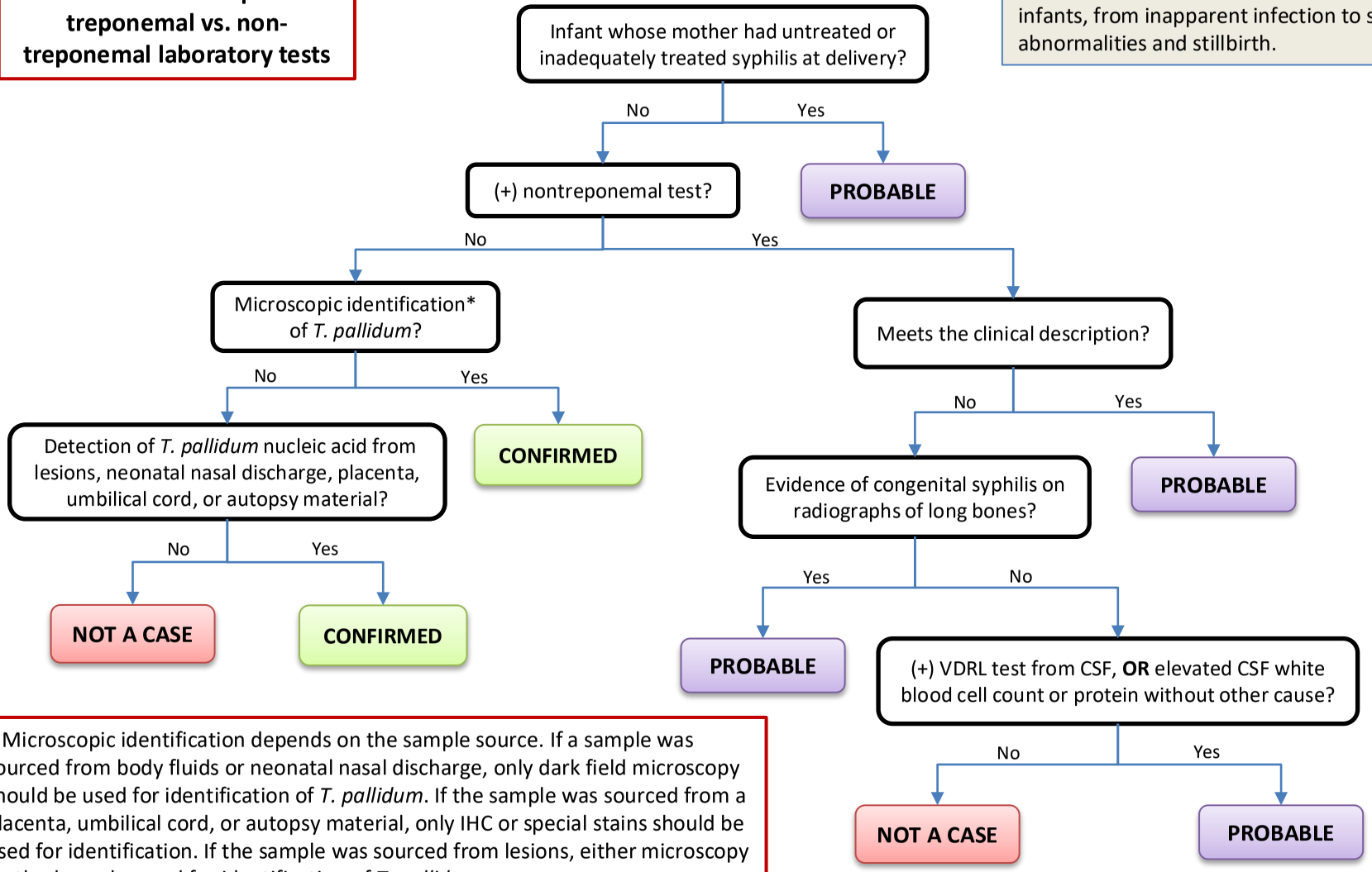


Clinical Description:
Late/Tertiary/Unknown: A case infected more than 12 months ago. Neurological findings usually predominate such as dementia and gait disturbances (tabes dorsalis). Clinical findings may also include many other systemic findings to include gummas (syphilitic growths on organs and skin), eye or ear involvement that can result in blindness or hearing loss, and variable involvement of other organ systems. Clinical symptoms may occur decades after an untreated initial infection.

Syphilis

*** Please see fourth page of flowchart for description of treponemal vs. non-treponemal laboratory tests**

Congenital



Clinical Description:
Congenital: Fetal infection with *T. pallidum* can result in a broad range of severity in infants, from inapparent infection to severe abnormalities and stillbirth.

* Microscopic identification depends on the sample source. If a sample was sourced from body fluids or neonatal nasal discharge, only dark field microscopy should be used for identification of *T. pallidum*. If the sample was sourced from a placenta, umbilical cord, or autopsy material, only IHC or special stains should be used for identification. If the sample was sourced from lesions, either microscopy method may be used for identification of *T. pallidum*.

Syphilis

Stages of Infection, Critical Reporting Elements, and Comments

Stages of Infection:
Syphilis is a systemic, sexually transmitted infection that can cause a variety of clinical manifestations if untreated. The disease course is complex and variable. For surveillance purposes, syphilis is characterized by a combination of 1) clinical signs and 2) time since infection. Stage of infection reflects both, and case reporting should include both the stage and any specific clinical manifestations.

Primary: One or more painless ulcerative lesions (chancres). Lesions are typically on the genitals, in the rectal area or in the mouth, and because they are painless, the patient may not be aware of them. Careful and thorough clinical examination is required.

Secondary: A rash, often including the palms and soles of the feet, with swollen lymph nodes. Other symptoms can include mucous patches, wart like genital lesions, and hair loss. The primary ulcerative lesion may still be present.

Early latent (early non-primary non-secondary): Asymptomatic, infected in the last 12 months.

Late/Tertiary/Unknown: A case infected more than 12 months ago. Neurological findings usually predominate such as dementia and gait disturbances (tabes dorsalis). Clinical findings may also include many other systemic findings to include gummas (syphilitic growths on organs and skin), eye or ear involvement that can result in blindness or hearing loss, and variable involvement of other organ systems. Clinical symptoms may occur decades after an untreated initial infection.

Congenital: Fetal infection with *T. pallidum* can result in a broad range of severity in infants, from inapparent infection to severe abnormalities and stillbirth.

Critical Reporting Elements and Comments:
- Specify the stage of the disease and any diagnosed clinical manifestation.

Neuro, ocular, and otic manifestations can occur at any stage of disease.
* The following are acceptable as evidence of having acquired syphilis within the preceding 12 months:
- Seroconversion from a negative nontreponemal test by VDRL, Reagin (RPR), or equivalent serologic methods followed by a positive nontreponemal test during the previous 12 months; or
- A nontreponemal test titer by VDRL, Reagin (RPR), or equivalent serologic methods demonstrating at least a four-fold increase from the last nontreponemal test titer during the previous 12 months; or
- Seroconversion from a negative treponemal-specific test by FTA-ABS, TP-PA, EIA, CIA, or equivalent serological methods followed by a positive treponemal-specific test during the previous 12 months; or
- A history of symptoms consistent with the clinical description of primary or secondary syphilis during the previous 12 months; or
- A history of sexual exposure to a partner within the previous 12 months who had primary, secondary, or early latent syphilis with a duration of less than 12 months; or
- Only sexual contact (1st sexual encounter) was within the last 12 months.

Notes on Laboratory Testing Methods: Treponemal vs. Non-Treponemal Tests
There are a variety of different treponemal and non-treponemal laboratory tests available for use. Both treponemal and non-treponemal tests are antibody tests, which help to identify which stage of syphilis an individual may have. Examples of treponemal tests include FTA-ABS, TP-PA, EIA, and CIA. Examples of non-treponemal tests include VDRL and Reagin (RPR) tests.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Syphilis

Confirmed ○ Probable ○ Not a Case

Circle type: Early latent, late latent, late, primary, secondary, neurosyphilis, or congenital syphilis

Outbreak investigations must be reported immediately to DRSi through the outbreak module - https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Pregnant Y ☐ N ☐

Lesions Y ☐ N ☐

Swollen lymph nodes Y ☐ N ☐

Central nervous system involvement* Y ☐ N ☐

Other (specify): Y ☐ N ☐

If asymptomatic, why was the patient tested? *(Check all that apply)*

☐ **Reported contact to another STI case (specify):** ☐ **Gonorrhea** ☐ **Chlaymdia** ☐ **HIV**

☐ **Screening**

☐ **Rescreening after previous positive**

☐ **Patient request**

☐ **Other (*specify*):** _____

Did case present with neurosyphilis (evidence of central nervous system infection)?

☐ **Y** ☐ **N** ☐ **Unk**

Describe: _____

TREATMENT

Treated with antibiotics? ☐ Y ☐ N

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____

LABORATORY RESULTS

	Test *(type of test performed)*	**Pathogen** *(specify if Chlamydia or Gonorrhea)*	**Collection Date**	**Source** *(CSF, Serum, etc)*	**Result**
☐	**Antibody**	_____	_____/_____/_____	_____	_____
☐	**Repeat aby**	_____	_____/_____/_____	_____	_____
☐	**PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐	**Culture**	_____	_____/_____/_____	_____	_____
☐	**Other**	_____	_____/_____/_____	_____	_____

This page is to be filled out for DRSi STI Risk Surveys.

Do NOT record patient's name or partner names/identifying information on these pages.

BEHAVIORAL

Does the patient have sex with: ☐ Men ☐ Women ☐ Both ☐ Other ☐ Unknown

Martial status:

- ☐ Single, never married
- ☐ Married
- ☐ Married, separated
- ☐ Divorced
- ☐ Widowed
- ☐ Cohabitating
- ☐ Committed relationship
- ☐ Unknown
- ☐ Refused to answer

Sexual behavior	within past 3 months	within past 12 months
Anonymous Partner	☐	☐
Sex with spouse/partner	☐	☐
Men-sex-with-men	☐	☐
Exchanged money/drugs for sex	☐	☐
Injection drug use	☐	☐
Other	☐	☐
Unknown	☐	☐
Refused to answer	☐	☐

Prevention counseling and partner referral services conducted?

☐ Yes ☐ No ☐ Unk

PARTNER INFORMATION

Testing and treatment are appropriate for all named partners of this patient who were exposed within 60 days prior to the date of onset.

Partner # 1

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Partner # 2

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Print third page for additional partners

This page is to be filled out for DRSi STI Risk Surveys.

Do NOT record patient's name or partner names/identifying information on these pages.

ADDITIONAL PARTNER INFORMATION

Testing and treatment are appropriate for all named partners of this patient who were exposed within 60 days prior to the date of onset.

Partner #_____

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Partner #_____

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

Partner #_____

Partner type:

- ☐ Spouse
- ☐ Anonymous partner
- ☐ Refused to answer
- ☐ Other main partner
- ☐ Casual or periodic partner
- ☐ Commercial sex worker
- ☐ Unknown

Location at time of exposure to this partner:

- ☐ Home station
- ☐ On leave/liberty
- ☐ Deployed
- ☐ Underway
- ☐ CONUS
- ☐ OCONUS
- ☐ Prior to enlistment
- ☐ Other

Partner notification option chosen by patient:

- ☐ Provider referral
- ☐ Third party referral
- ☐ Patient referral
- ☐ Contract referral
- ☐ Dual referral
- ☐ Other:
- ☐ None

Condom used?

☐ Yes ☐ No ☐ Unk

Partner testing and treatment confirmed within 30 days?

☐ Yes ☐ No ☐ Unk

Partner notified of exposure within 30 days?

☐ Yes ☐ No ☐ Unk

Partner confirmed infected with STI?

☐ Yes ☐ No ☐ Unk

T-Z

PUBLIC HEALTH REFERENCE SHEET
Tetanus

Name	*Clostridium tetani*
Reservoir & Transmission	Soil, intestines of animals A puncture wound contaminated with soil, street dust, or animal or human feces; laceration, or injection (e.g., with contaminated needle)
Incubation Period	Usually 3–21 days; average 8 days
Common Symptoms	Acute onset of hypertonia or painful muscular contractions (usually jaw and neck) and generalized muscle spasms
Gold Standard Diagnostic Test	Diagnosis by healthcare provider in absence of more likely diagnosis. No reliable diagnostic tests are available.
Risk Groups	Military Service members, policemen, and others at greater than usual risk of traumatic injury. Workers in contact with soil, sewage, and domestic animals. Adults with diabetes mellitus, and unvaccinated women of reproductive age and their newborns.
Geographic Significance	Worldwide

What is tetanus?
Tetanus is an acute disease that results from an infection by bacteria called *Clostridium tetani*. When these bacteria invade the body, they produce a poison (exotoxin) that causes painful muscle contractions. Tetanus is also known as "lockjaw" because it often causes a person's neck and jaw muscles to lock, making it hard to open the mouth or swallow. The spores germinate in the presence of anaerobic conditions. The bacteria produce very potent toxins, which the blood stream and lymphatic system can disseminate throughout the body.

What is the occurrence of tetanus?
In the U.S. since 1947, reported tetanus cases have declined more than 95% and deaths from tetanus have declined more than 99%; this was in part due to continued use of tetanus antitoxin for wound management and introduction of tetanus vaccines in the 1930s and 1940s.

How is tetanus transmitted?
Different from other vaccine-preventable diseases, tetanus does not spread from person-to-person. The bacteria are usually found in soil, dust, and manure and enter the body through breaks in the skin, often cuts or puncture wounds caused by contaminated objects. Increased risk of infection includes:

- Wounds contaminated with dirt, feces, or saliva
- Wounds caused by an object puncturing the skin, such as a nail or needle
- Burns
- Crush injuries
- Injuries with dead tissue

Tetanus has also been linked to clean superficial wounds, surgical procedures, insect bites, dental infections, compound fractures, chronic sores and infections, intravenous drug use, and intramuscular injections.

Who is at risk for tetanus?
People who have never received a tetanus vaccine, or adults who have not remained current on their 10-year booster shots are at risk of tetanus. Neonatal tetanus usually occurs because of umbilical stump infections. Diabetes, a history of immunosuppression, and intravenous drug use may be risk factors for tetanus.

Last updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Tetanus

What are the signs and symptoms of tetanus?
Typical clinical manifestations of tetanus are from toxins interfering with the release of neurotransmitters and blocking inhibitor impulses, which leads to unopposed muscle contraction and generalized spasm and are frequently induced by sensory stimuli. Seizures may occur, and the autonomic nervous system may also be affected. A common first symptom suggestive of tetanus in older children and adults is abdominal rigidity, but this can also be seen with bites of certain poisonous spiders. The incubation period for tetanus is usually 3–21 days (average 8 days), although it may range from 1 day to several months, depending on the kind of wound. Most cases occur within 14 days. In general, shorter incubation periods are seen with more heavily contaminated wounds, more severe disease, and a worse outcome of the disease.

In general, tetanus symptoms include:

- Headache
- Jaw cramping
- Muscle spasms – sudden and often in the stomach
- Painful muscle stiffness all over the body
- Trouble swallowing
- Seizures
- Fever and sweating
- High blood pressure and fast heart rate

There are three clinical forms of tetanus:

- Generalized: Generalized tetanus is the most common form, accounting for more than 80% of cases. The most common initial sign is spasm of the jaw muscles or “lockjaw”. Other subsequent signs can include painful spasms in other muscle groups in the neck, trunk, and extremities as well as generalized, seizure-like activity or convulsions in severe cases. Even with modern intensive care, generalized tetanus is associated with death rates of 10% to 20%. Neonatal tetanus is a form of generalized tetanus occurring in newborn infants who lack the passive protection derived from maternal antibodies.
- Localized: Localized tetanus is an unusual form of the disease consisting of muscle spasms in a confined area close to the site of injury. Although localized tetanus often occurs in people with partial immunity and is usually mild, progression to generalized tetanus can occur.
- Cephalic: The rarest form, cephalic tetanus, is associated with lesions of the head or face and may also be associated with otitis media. The incubation period is short, usually 1 to 2 days. Unlike generalized and localized tetanus, cephalic tetanus results in flaccid cranial nerve palsies rather than spasm. Spasm of the jaw muscles may also be present. Like localized tetanus, cephalic tetanus can progress to the generalized form.

What are potential complications of tetanus?
Tetanus complications include:

- Laryngospasm
- Bone fractures
- Hypertension
- Pulmonary embolism
- Aspiration pneumonia
- Death (10–20% of cases are fatal)

Last updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Tetanus

How tetanus diagnosed?
Tetanus is diagnosed by clinical examination as there are no confirmatory laboratory tests.

How is tetanus treated?
Tetanus is a medical emergency requiring hospitalization, immediate treatment with human tetanus immune globulin (TIG), tetanus toxoid, drugs to control muscle spasms, aggressive wound care, and antibiotics. Depending on severity of infection, mechanical ventilation may be required. Begin or continue active immunization with a tetanus toxoid-containing vaccine as soon as the person's condition has stabilized.

How can tetanus be prevented?
Tetanus disease does not result in tetanus immunity. Vaccination with tetanus toxoid, primary series, and periodic boosters, is recommended for infants, children, teens, and adults to prevent tetanus. The primary series is a 5-dose series of the DTaP (Diphtheria, tetanus, and acellular pertussis) vaccine starting at 2 months of age. A booster dose of Tdap (tetanus, diphtheria, acellular pertussis) or Td (tetanus, diphtheria) is recommended every 10 years. In 2023, Sanofi Pasteur, Inc. stopped manufacturing the diphtheria and tetanus toxoids absorbed vaccine, known as DT.

What are some public health considerations?
- Note the patient's tetanus immunization history.
- There is no confirmed case classification for tetanus.

References

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

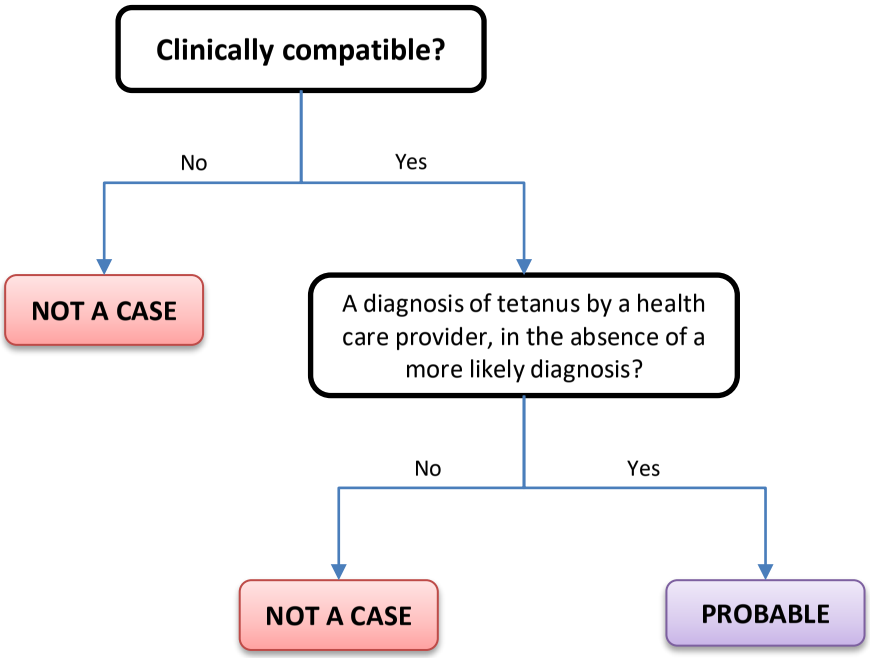
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Tetanus," Centers for Disease Control and Prevention (CDC), last reviewed August 29, 2022. https://www.cdc.gov/tetanus/index.html

Last updated September 1, 2023

Tetanus

COMMON NAME: Lockjaw



Clinical Description:
An illness characterized by acute onset of hypertonia or painful muscular contractions (usually the jaw and neck) and generalized muscle spasms without other apparent medical cause.

Critical Reporting Elements and Comments:
- Note the patient's tetanus immunization history.
- There is no confirmed case classification for tetanus.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Tetanus

Probable ◯ Not a Case ◯

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Jaw cramping	☐	☐	
Muscle spasms	☐	☐	
Muscle stiffness	☐	☐	
Headache	☐	☐	
Tachycardia	☐	☐	
High blood pressure	☐	☐	

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Human tetanus immune globulin (TIG) Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)
Is the case vaccinated?	☐	☐	1st:____/_____/_____ 2nd: ____/_____/_____ 3rd:____/_____/_____

Record any additional vaccination history on page 2

If not ever vaccinated, why?

- ☐ Religious Exemption
- ☐ Medical Contraindication
- ☐ Other: _____
- ☐ Lab Evidence of Previous Disease
- ☐ MD Diagnosis of Previous Disease
- ☐ Under Age for Vaccination
- ☐ Parental Refusal
- ☐ Unknown
- ☐ Philosophical Objection

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

(If yes) **Reason for travel**

- ☐ Deployment
- ☐ TDY
- ☐ Vacation
- ☐ Visiting Friends
- ☐ Business (non-DoD)
- ☐ Other: _____

*__Incubation Period:__ Variable, usually 8 days, can range from 3 to 21 days.

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

PUBLIC HEALTH REFERENCE SHEET
Toxic Shock Syndrome (TSS)

Name	INCLUDES: Streptococcal TSS and non-streptococcal TSS Streptococcal TSS: *Streptococcus pyogenes* (Group A Strep) Non-streptococcal: Often caused by *Staphylococcus aureus*
Reservoir & Transmission	Humans Transmission is through large respiratory droplets or entry of the bacterium through a compromised barrier (such as a skin injury) or through mucus membranes. The bacteria then spread to deep tissues and eventually to the bloodstream.
Incubation Period	The incubation period for STSS varies depending on site of entry. Once initial symptoms occur, hypotension generally develops within 24 to 48 hours. Variable; menstrual TSS usually occurs during the last 2 days of menstruation.
Common Symptoms	Streptococcal TSS often begins with influenza-like symptoms, including fever, chills, myalgia, nausea, and vomiting. These symptoms often quickly progress to sepsis with hypotension, tachycardia, tachypnea, and signs and symptoms suggestive of specific organ failure, including of the following organ systems: kidney, liver, lung, and blood.
Gold Standard Diagnostic Test	Cultures
Risk Groups	STSS can occur in anyone, but risk factors can include adults 65 years of age or older and people with skin injury or breakdown. Predisposing conditions for severe infection are drug abuse, diabetes mellitus, chronic renal failure (especially patients on dialysis), and rheumatoid arthritis. Use of steroids and other immunosuppressive agents also increases susceptibility. Although almost all early cases of TSS occurred in women during menstruation, and most with vaginal tampon use, only about half of the cases now reported are associated with menses. Other risk factors include use of contraceptive diaphragms and vaginal contraceptive sponges and infection following childbirth or abortion.
Geographic Significance	Worldwide

What is toxic shock syndrome?

Streptococcal toxic shock syndrome (STSS) is a disease defined as an infection with *Streptococcus pyogenes*, which are also called group *A Streptococcus* (group A strep). When production of bacterial exotoxins and virulence factors occur in the deep tissues and bloodstream, the induction of the cytokine cascade can occur. Massive cytokine cascades contribute to the development of shock or organ failure, accompanied by the following clinical manifestations:

- Hypotension defined by a systolic blood pressure less than or equal to 90 mm Hg for adults or less than the fifth percentile by age for children less than 16 years old.
- Multi-organ involvement characterized by two or more of the following:
    - Renal impairment: Creatinine greater than or equal to 2 mg/dL (greater than or equal to 177 ìmol/L) for adults or greater than or equal to twice the upper limit of normal for age. In patients with preexisting renal disease, a greater than twofold elevation over the baseline level.

- Coagulopathy: Platelets less than or equal to 100,000/mm^3 or disseminated intravascular coagulation, defined by prolonged clotting times, low fibrinogen level, and the presence of fibrin degradation products.
- Liver involvement: Alanine aminotransferase, aspartate aminotransferase, or total bilirubin levels greater than or equal to twice the upper limit of normal for the patient's age. In patients with preexisting liver disease, a greater than twofold increase over the baseline level.
- Acute respiratory distress syndrome: defined by acute onset of diffuse pulmonary infiltrates and hypoxemia in the absence of cardiac failure or by evidence of diffuse capillary leak, which is manifested by acute onset of generalized edema, or pleural or peritoneal effusions with hypoalbuminemia.
- A generalized erythematous macular rash that may desquamate.
- Soft-tissue necrosis, including necrotizing fasciitis or myositis, or gangrene.

In STSS production of superantigen, exotoxins directly stimulate a large proportion of circulating T cells, leading to massive cytokine release. Streptococcal pyrogenic exotoxin A is the most commonly implicated superantigen; it is produced by 80% of Group A Streptococcal (GAS) strains causing STSS.

Non-streptococcal TSS is an illness caused by strains of *Staphylococcus aureus* capable of producing pyrogenic toxins, called superantigens. Superantigens activate up to 20% of all T cells simultaneously, which leads to an overwhelming inflammatory response with the following clinical manifestations:

- Fever: temperature greater than or equal to 102.0°F (greater than or equal to 38.9°C)
- Rash: diffuse macular erythroderma
- Desquamation: 1–2 weeks after onset of rash
- Hypotension: systolic blood pressure less than or equal to 90 mm Hg for adults or less than fifth percentile by age for children less than 16 years old
- Multisystem involvement (three or more of the following organ systems):
  - Gastrointestinal: vomiting or diarrhea at onset of illness
  - Muscular: severe myalgia or creatine phosphokinase level at least twice the upper limit of normal
  - Mucous membrane: vaginal, oropharyngeal, or conjunctival hyperemia
  - Renal: blood urea nitrogen or creatinine at least twice the upper limit of normal for laboratory or urinary sediment with pyuria (greater than or equal to 5 leukocytes per high-power field) in the absence of urinary tract infection
  - Hepatic: total bilirubin, alanine aminotransferase enzyme, or aspartate aminotransferase enzyme levels at least twice the upper limit of normal for laboratory
  - Hematologic: platelets less than 100,000/mm^3
  - Central nervous system: disorientation or alterations in consciousness without focal neurologic signs when fever and hypotension are absent

What is the occurrence of toxic shock syndrome?

Streptococci have been implicated as a long-standing cause of invasive infection in immunocompromised individuals. However, in the 1980s, STSS was discovered to be affecting young, otherwise healthy individuals as well. The majority of cases are sporadic. It can occur worldwide. The highest incidence of skin and soft tissue infection is in areas where hygiene conditions are suboptimal, and people are crowded together. It is common among children. The disease occurs sporadically and as small epidemics in families, sport teams, and summer camps, with various members developing recurrent illness due to the same bacterial strain.

PUBLIC HEALTH REFERENCE SHEET
Toxic Shock Syndrome (TSS)

Menstrual TSS was first reported in 1978 and has declined with the withdrawal of highly absorbent tampons from the market.

How is toxic shock syndrome transmitted?

Any group A strep infection may progress to STSS. Disease occurs with entry of the bacterium through a compromised barrier (such as a skin injury) or through mucus membranes. The bacteria then spread to deep tissues and eventually to the bloodstream. The main sites of entry for streptococci leading to toxic shock syndrome include vagina, pharynx, mucosa, or skin/soft tissue. Any skin injury or breakdown, including surgical wounds, may provide a site of entry for the bacteria. Unfortunately, route of entry remains unknown for up to 50% of cases. Secondary cases among close contacts or healthcare workers are rare, although have been known to occur. Contaminated objects can also serve as sources of infection. Airborne spread is rare but has been demonstrated in patients with associated viral respiratory disease.

Who is at risk for toxic shock syndrome?

STSS can occur in anyone, but risk factors can include:

- Age: STSS is more common in adults 65 years of age or older.
- Skin injury or breakdown: Recently having surgery, a viral infection that causes open sores (like varicella), or other skin injury increases risk for developing STSS.
- Chronic illnesses: Having alcohol use disorder or diabetes can also increase risk for developing STSS.
- Additionally, strains of group A strep that produce certain virulence factors and exotoxins, particularly streptococcal pyrogenic exotoxins, are more likely to cause STSS and other severe infections.
- Use of non-steroidal anti-inflammatory drugs (NSAIDs) may also increase risk, although evidence for this is limited.

Although almost all early cases of TSS occurred in women during menstruation, and most with vaginal tampon use, only about half of the cases now reported are associated with menses. Other risk factors include use of contraceptive diaphragms and vaginal contraceptive sponges and infection following childbirth or abortion.

What are the signs and symptoms of toxic shock syndrome?

STSS often begins with influenza-like symptoms, including fever, chills, myalgia, nausea, and vomiting. These symptoms often quickly progress to sepsis with hypotension, tachycardia, tachypnea, and signs and symptoms suggestive of specific organ failure, including of the following organ systems: kidney, liver, lung, and blood.

S. aureus can produce toxins that act distant from the site of bacterial infection or colonization. Although infrequent, TSS is reviewed as it is a particularly severe manifestation and hard to diagnose. TSS is a severe illness characterized by sudden onset of high fever, vomiting, profuse watery diarrhea, myalgia, and rash, accompanied by hypotension, edema, and—in severe cases—shock. Menstrual and nonmenstrual TSS can be distinguished. Menstrual TSS is associated with the use of high-absorbency tampons where certain *S. aureus* strains find favorable conditions for toxin production. In nonmenstrual TSS, bacteria can colonize virtually all body sites, including surgical wounds.

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Toxic Shock Syndrome (TSS)

What are the potential complications of toxic shock syndrome?
Despite aggressive treatment, the mortality rate for STSS ranges from 30% to 70%. Mortality from STSS is substantially lower in children than adults. Known complications of shock and organ failure can occur, including tissue necrosis and loss of extremities.

How is toxic shock syndrome diagnosed?
Toxic shock syndrome is typically confirmed by isolation of the organism in culture and alternatively by polymerase chain reaction methods. Most strains of staphylococci can be characterized through the antibiotic resistance profile and molecular methods, such as spa typing or whole-genome sequencing.

- The differential diagnosis of patients in the early stages of STSS is broad, including other viral or bacterial infections (such as staphylococcal toxic shock); therefore, patients are often misdiagnosed. Diagnosis of STSS is made based on the Nationally Notifiable Diseases Surveillance System 2010 case definition (see definition for STSS under the section, “what is toxic shock syndrome?”)
- Laboratory criteria for STSS diagnosis: Isolation of group A Streptococcus.
- Case classification:
    - Probable: A case that meets the clinical case definition in the absence of another identified etiology for the illness and with isolation of group A Streptococcus from a nonsterile site.
    - Confirmed: A case that meets the clinical case definition and with isolation of group A Streptococcus from a normally sterile site (e.g., blood or cerebrospinal fluid or, less commonly, joint, pleural, or pericardial fluid).

- Diagnosis of non-streptococcal TSS is made based on the Nationally Notifiable Diseases Surveillance System 2011 case definition for Toxic Shock Syndrome (Other Than Streptococcal) (TSS) (see definition for non-streptococcal TSS under the section, “what is toxic shock syndrome?”)
- Laboratory criteria for diagnosis of non-streptococcal TSS: negative results on the following tests, if obtained:
    - Blood or cerebrospinal fluid cultures (blood culture may be positive for Staphylococcus aureus).
    - Negative serologies for Rocky Mountain spotted fever, leptospirosis, or measles.
- Case classification:
    - Probable: A case which meets the laboratory criteria and in which four of the five clinical criteria described above are present.
    - Confirmed: A case which meets the laboratory criteria and in which all five of the clinical criteria described above are present, including desquamation, unless the patient dies before desquamation occurs.

How is toxic shock syndrome treated?
- Hospitalization is required. Standard treatment of shock and organ failure, such as fluid resuscitation, is imperative as the first step in treatment. Antibiotic therapy is critical. Know your facility’s existing guidance for diagnosing and managing sepsis. If you suspect sepsis, start antibiotics as soon as possible, in addition to other therapies appropriate for the patient. Once STSS is confirmed, antibiotics can be tailored. Penicillin and clindamycin are used in conjunction as first-line antibiotic choices for STSS. Removal of the source of infection, if possible, is important in the management of STSS, and surgical debridement of deep tissue infection may be necessary. The use of intravenous immunoglobulin has been

used for severely ill patients early in the clinical course; however, more evidence is needed to determine the potential efficacy of this therapy.

- Treatment of TSS is largely supportive with fluid replacement and concomitant respiratory and inotropic support. Efforts should be made to eradicate potential foci of *S. aureus* infection through drainage of wounds, removal of vaginal tampons or other foreign bodies (e.g., wound packing), and use of anti-staphylococcal drugs. Clindamycin may help to reduce toxin production.

How can toxic shock syndrome be prevented?

- There is currently no vaccine to prevent group A strep infections. Screening and antibiotic prophylaxis for household contacts of STSS patients is not recommended for household members under age 65 years, as the risk of secondary cases in these individuals is low. However, the risk of a secondary case in the 30 days following exposure to the index case is highest among household contacts who are 65 years of age or older; thus, antibiotic chemoprophylaxis should be considered for household contacts aged ≥65 years old.
- The spread of group A strep can be reduced by standard infection control practices, including good hand hygiene and respiratory etiquette (e.g., covering your cough or sneeze).
- Menstrual TSS can be prevented by avoiding use of highly absorbent vaginal tampons; risk may be reduced by using tampons intermittently (i.e., not all day and all night throughout the period) and using less absorbent tampons.

What are some Public Health considerations?

- When reporting cases of TSS in the Disease Reporting System Internet (DRSi) system, specify the clinical form of the disease.
- CDC tracks invasive group A strep infections through the Active Bacterial Core surveillance (ABCs) program at https://www.cdc.gov/abcs/index.html.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

"Group A Streptococcal (GAS) Disease - Streptococcal Toxic Shock Syndrome," Centers for Disease Control and Prevention (CDC), last reviewed June 27, 2022. https://www.cdc.gov/groupastrep/diseases-hcp/Streptococcal-Toxic-Shock-Syndrome.html

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"National Notifiable Diseases Surveillance System (NNDSS) - Toxic Shock Syndrome (Other Than Streptococcal) (TSS) - 2011 Case Definition," Centers for Disease Control and Prevention (CDC), last reviewed April 16, 2021. https://ndc.services.cdc.gov/case-definitions/toxic-shock-syndrome-2011/

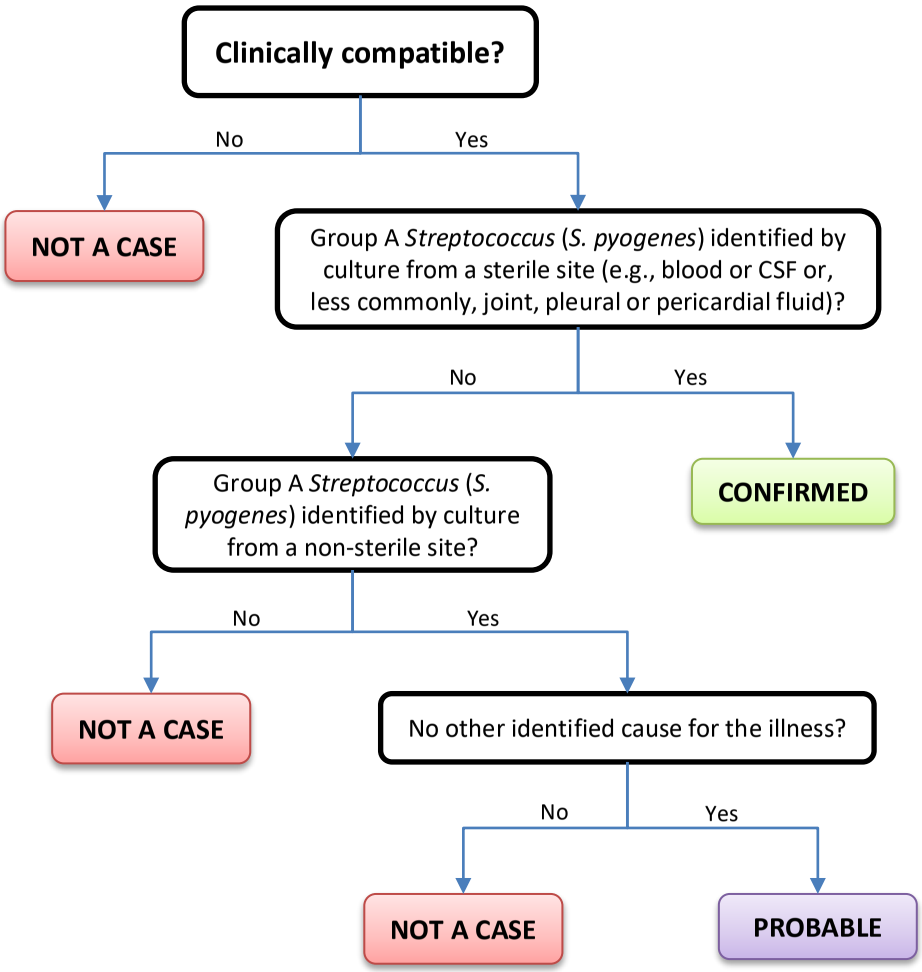
Toxic Shock Syndrome (TSS)

Streptococcal TSS

INCLUDES: *Streptococcus pyogenes* (Group A Strep)

Clinical Description

- Hypotension defined by a systolic blood pressure less than or equal to 90 mm Hg for adults or less than the fifth percentile by age for children less than 16 years old
- Multi-organ involvement characterized by two or more of the following:
  - Renal impairment: Creatinine greater than or equal to 2 mg/dL (greater than or equal to 177 µmol/L) for adults or greater than or equal to twice the upper limit of normal for age. In patients with preexisting renal disease, a greater than twofold elevation over the baseline level
  - Coagulopathy: Platelets less than or equal to 100,000/mm^3 (less than or equal to 100 x 10^6/L) or disseminated intravascular coagulation, defined by prolonged clotting times, low fibrinogen level, and the presence of fibrin degradation products
  - Liver involvement: Alanine aminotransferase, aspartate aminotransferase, or total bilirubin levels greater than or equal to twice the upper limit of normal for the patient's age. In patients with preexisting liver disease, a greater than twofold increase over the baseline level
  - Acute respiratory distress syndrome: defined by acute onset of diffuse pulmonary infiltrates and hypoxemia in the absence of cardiac failure or by evidence of diffuse capillary leak manifested by acute onset of generalized edema, or pleural or peritoneal effusions with hypoalbuminemia
  - A generalized erythematous macular rash that may desquamate
  - Soft-tissue necrosis, including necrotizing fasciitis or myositis, or gangrene



Critical Reporting Elements and Comments:

- Specify the clinical form of the disease.

Toxic Shock Syndrome (TSS)

Non-Streptococcal TSS

OFTEN CAUSED BY: *Staphylococcus aureus*

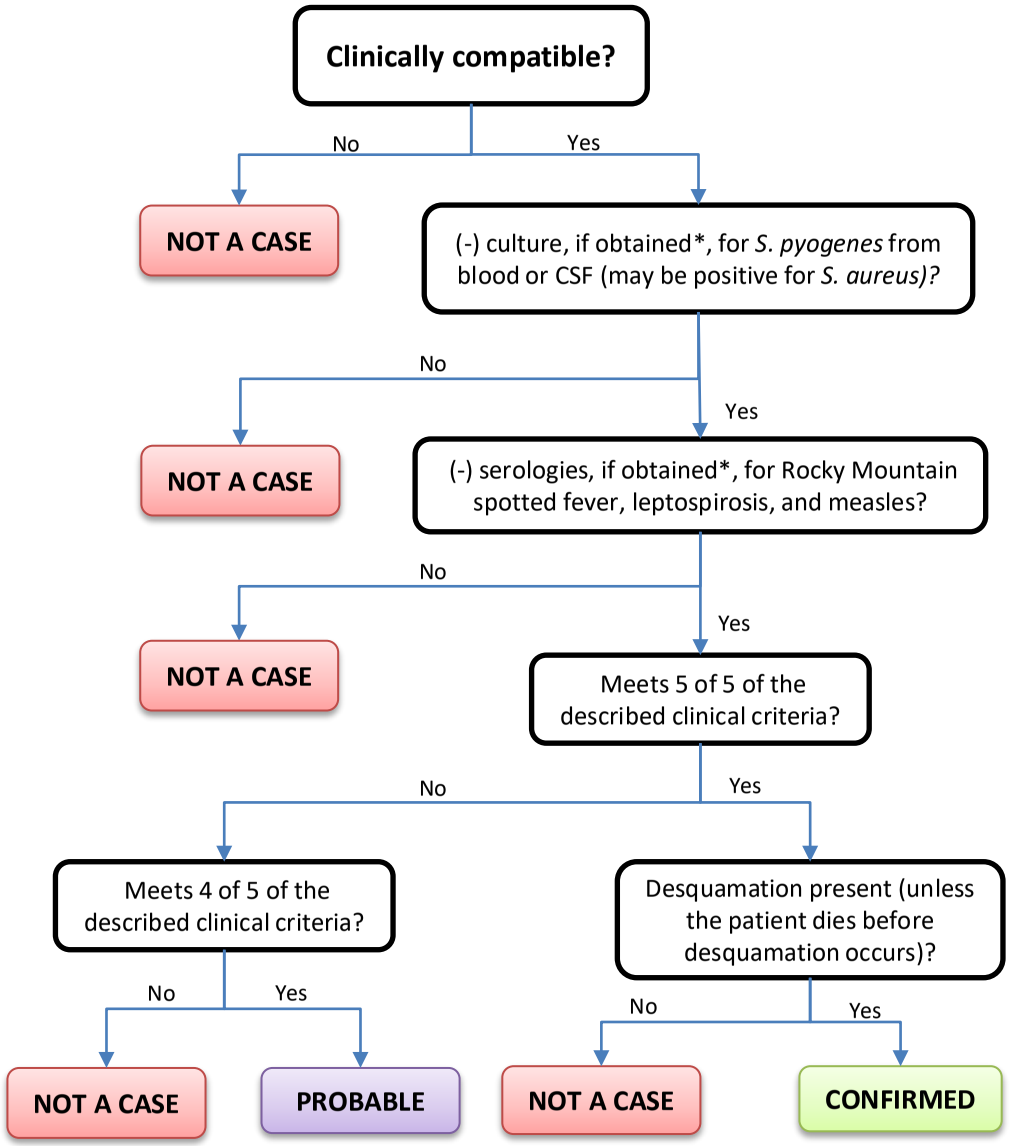
Clinical Description

- Fever: temperature greater than or equal to 102.0°F (greater than or equal to 38.9°C).
- Rash: diffuse macular erythroderma
- Desquamation: 1–2 weeks after onset of rash
- Hypotension: systolic blood pressure less than or equal to 90 mm Hg for adults or less than fifth percentile by age for children less than 16 years old
- Multisystem involvement (three or more of the following organ systems):
    - Gastrointestinal: vomiting or diarrhea at onset of illness
    - Muscular: severe myalgia or creatine phosphokinase level at least twice the upper limit of normal Mucous membrane: vaginal, oropharyngeal, or conjunctival hyperemia
    - Renal: blood urea nitrogen or creatinine at least twice the upper limit of normal for laboratory or urinary sediment with pyuria (greater than or equal to 5 leukocytes per high-power field) in the absence of urinary tract infection
    - Hepatic: total bilirubin, alanine aminotransferase enzyme, or aspartate aminotransferase enzyme levels at least twice the upper limit of normal for laboratory
    - Hematologic: platelets less than 100,000/mm^3
    - Central nervous system: disorientation or alterations in consciousness without focal neurologic signs when fever and hypotension are absent

Critical Reporting Elements and Comments:

- Specify the clinical form of the disease.

* If samples not obtained, follow the "Yes" arrow to the next step.



INVESTIGATION WORKSHEET

Defense Health Agency ®

Toxic Shock Syndrome

Confirmed ○ Not a case ○ Probable ○

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ **PHONE:** (_____) - _____ - _____ *(h)*

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk) **Duration of symptoms:** _____ ☐ **Still ill**

Rash Y ☐ N ☐

Vomiting Y ☐ N ☐

Myalgia Y ☐ N ☐

Hypotension Y ☐ N ☐

Soft tissue necrosis Y ☐ N ☐

Describe any other symptoms or pertinent clinical information (including underlying conditions):

Specify the clinical form of the disease (Streptococcal or non-streptococcal):_____

Laboratory results:

Test type: ☐ Culture ☐ PCR ☐ Antibody ☐ Other:_____

Collection Date: ____/____/____ **Result date:** ____/_____/_____

Result: ☐ Positive ☐ Negative **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ Unk ☐

Details: _____

Other relevant information:

_____

_____

_____

_____

_____

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_____

PUBLIC HEALTH REFERENCE SHEET
Trichinellosis

Name	Trichinellosis, also known as Trichinosis Causative Agent: *Trichinella species*
Reservoir & Transmission	Swine, dogs, cats, horses, rats, and many wild animals Consumption of raw or undercooked animal meat containing larvae
Incubation Period	1–2 days (enteral phase) to 2–8 weeks (parenteral phase) and varies up to 45 days depending on the infectious dose of parasites
Common Symptoms	Eosinophilia, fever, myalgia, periorbital edema
Gold Standard Diagnostic Test	Tissue biopsy, serological testing
Risk Groups	Individuals who ingest raw or undercooked meat, especially pork and wild game (e.g., cougar, fox, wolf)
Geographic Significance	Worldwide

What is trichinellosis?
Trichinellosis, also called Trichinosis, is a parasitic disease caused by ingesting raw or undercooked meat on animals infected with the larvae of a species of round worm (nematodes) called *Trichinella*. Several different species of *Trichinella* can cause human disease; the most common species is *Trichinella spiralis*, which has a global distribution and is the species most commonly found in pigs. Other *Trichinella* species are less commonly reported as the cause of human disease and may be found in different parts of the world, usually infecting wild animals.

What is the occurrence of trichinellosis?
Worldwide, an estimated 10,000 cases of trichinellosis occur every year. In the U.S., trichinellosis cases used to be more common; however, infection is now rare. During 2011–2015, 16 cases were reported per year on average. The number of cases decreased beginning in the mid-20th century because of improved pig-raising practices in the legislation prohibiting the feeding of raw-meat garbage to hogs, the use of commercial and home freezing of pork, and the public awareness of the danger of eating raw or undercooked pork products. Cases are less commonly associated with pork products and more often associated with eating raw or undercooked wild game meats.

How are *Trichinella* transmitted?
When a human or animal eats meat that contains infective *Trichinella* cysts, the acid in the stomach dissolves the hard covering of the cyst and releases the worms. Infection occurs commonly in wild carnivorous (meat-eating) animals such as bear or cougar, or omnivorous animals such as domestic pigs or wild boar. *Trichinella* are transmitted to humans through consumption of raw or insufficiently cooked meat, primarily pork and pork products and wild game such as bear. Beef is not typically infected with *Trichinella* except through cross-contamination. Infection is not transmitted directly from person-to-person. Animal hosts remain infective for months, and their meat stays infective for appreciable periods of time unless cooked, frozen, or irradiated to kill the larvae. Infection results in partial immunity.

Who is at risk for trichinellosis?
In the U.S., the risk of trichinellosis from commercially raised and properly prepared pork is very low. Individuals who eat raw or undercooked meats, particularly bear, pork, wild feline (such as a cougar), fox, dog, wolf, horse, seal, or walrus are at risk for trichinellosis.

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Trichinellosis

What are the signs and symptoms of a trichinellosis?

The signs, symptoms, severity, and duration of trichinellosis vary from inapparent infection to a fulminating, fatal disease, depending on the infectious dose and host characteristics, such as age of the patient or immunological priming as a result of previous *Trichinella* infection. Initial symptoms, usually within 1–2 days after infection, may include nausea, diarrhea, vomiting, fatigue, fever, and abdominal discomfort. Subsequent symptoms, usually start 2–8 weeks after eating contaminated meat, and may include headache, fever, chills, cough, swelling of the face and eyes (periorbital edema), aching joints and muscle pains, itchy skin, diarrhea, or constipation. Muscle pain, tenderness, and swelling can cause patients to experience difficulty coordinating movements. For mild to moderate infections, most symptoms subside within a few months. Fatigue, weakness, muscle pain, and diarrhea may last for months.

What are potential complications of trichinellosis?

In addition to physical damage to affected tissues, larval penetration and tissue migration causes an immune-mediated inflammatory reaction and stimulates the development of eosinophilia. More severe manifestations include myocarditis, encephalitis, and thromboembolic disease.

How is trichinellosis diagnosed?

The diagnosis of trichinellosis is based on history of consumption of potentially contaminated meat, the presence of compatible signs and symptoms, and identification of *Trichinella* larvae in biopsy muscle tissue or serum detection of antibodies to excretory/secretory *Trichinella* antigen in EIA format. Muscle biopsy is infrequently performed but allows for molecular identification on the *Trichinella* species or genotype, which is not possible with antibody testing. IgG antibodies can be detected approximately 12 to 60 days post-infection. Antibody development depends on the amount of infective *Trichinella* larvae that are consumed. Levels peak in the second- or third-month post-infection, and then decline but may be detectable for 10 years or more following infection. At least two serum specimens should be drawn and tested weeks apart to demonstrate seroconversion in patients with suspected trichinellosis whose initial results were negative or weakly positive.

How is trichinellosis treated?

Prompt treatment with antiparasitic drugs can help prevent the progression of trichinellosis by killing the adult worms, thus preventing further release of larvae. Once the larvae have become established in skeletal muscle cells, usually by 3 to 4 weeks post infection, treatment may not completely eliminate the infection and associated symptoms. The recommended antihelminths to treat the parasitic infection are mebendazole or albendazole. Treatment should begin as soon as possible, and the decision to treat is based upon symptoms, exposure to raw or undercooked meat, and laboratory test results.

How can trichinellosis be prevented?

A potential risk of trichinellosis is from eating meat, particularly pork, from sources not subject to or not compliant with food safety laws, regulations, and inspections, such as animals raised or hunted for personal consumption or meat from unlicensed/unregulated food establishments, street vendors, and/or their meat suppliers.

- Cook meat to safe temperatures using a food thermometer to measure the internal temperature of cooked meat.
- Curing (salting), drying, smoking, or microwaving meat alone does not consistently kill infective worms; homemade jerky and sausage caused cases of trichinellosis.
- Freeze pork less than 6 inches thick for 20 days at 5°F (-15°C) to kill any worms.

Last Updated October 1, 2023

- Freezing wild game meats, unlike freezing pork products, may not effectively kill all worms because some worm species that infect wild game animals are freeze-resistant.
- Clean meat grinders thoroughly after each use.
- To help prevent *Trichinella* infection in animal populations, pigs or wild animals are not to eat uncooked meat, scraps, or carcasses of any animals, including rats, which may be infected with *Trichinella*.

What are some public health considerations?

- When reporting trichinellosis in the Disease Reporting System internet (DRSi), document the source of infection, if known.
- A CDC case report form for trichinellosis is available at https://www.cdc.gov/parasites/trichinellosis/health_professionals/index.html.

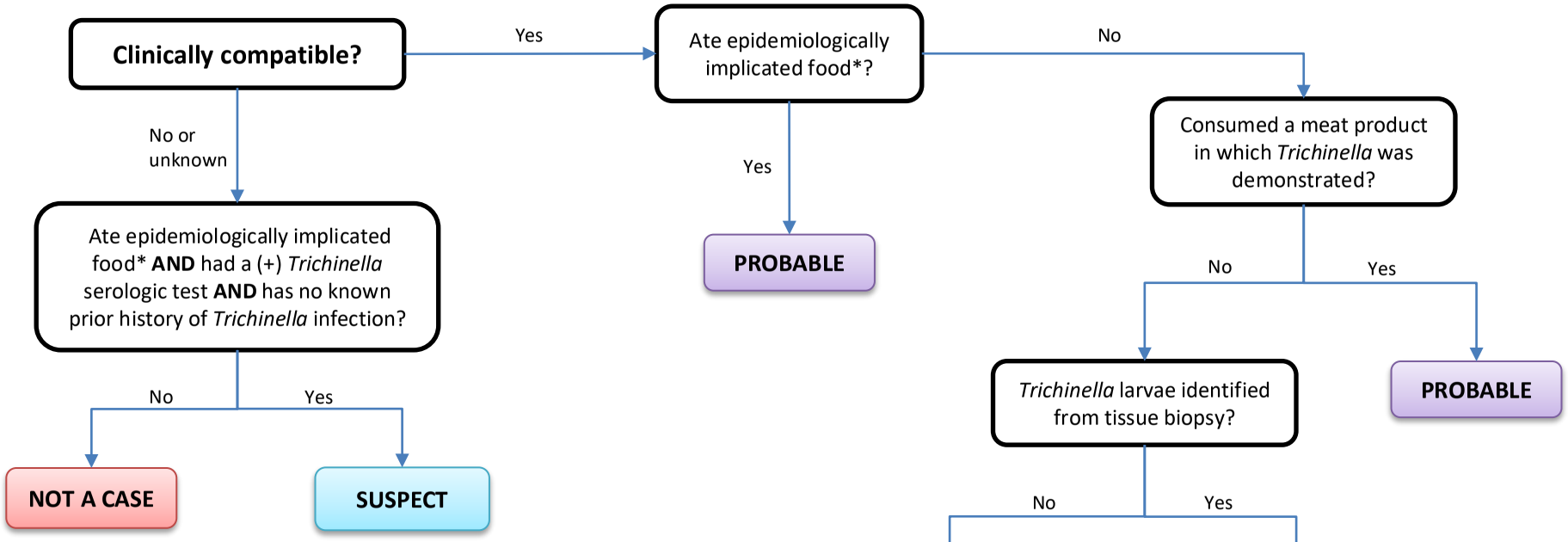
References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Trichinellosis," Centers for Disease Control and Prevention (CDC), last reviewed June 9, 2023. https://www.cdc.gov/parasites/trichinellosis/

Trichinellosis



Clinical Description:
The disease has variable clinical manifestations. Common signs and symptoms among symptomatic persons include eosinophilia, fever, myalgia, and/or periorbital edema.

Critical Reporting Elements and Comments:
- Document the source of infection, if known. *Trichomonas* and trichomoniasis are STDs and are not the same thing as Trichinellosis. *Trichomonas* and trichomoniasis are not reportable and should not be reported as Trichinellosis.

* An epidemiologically implicated food is defined as food that was consumed by a person who subsequently became a confirmed case.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Trichinellosis

Confirmed ◯ Probable ◯ Suspect ◯ Not a Case

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

Army Disease Reporting System internet (ADRSi) link: https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic Y ☐ N ☐ **Onset date:** ____/____/____ **Clinic date:** ____/____/____ **Diagnosis date:** ____/____/____

Fever Y ☐ N ☐ **Max Temp:** _____°F/°C (☐unk) **Duration of symptoms:** _____ ☐ **Still ill**

Bloating Y ☐ N ☐ *Describe any other symptoms or pertinent clinical information (including underlying conditions):*

Diarrhea Y ☐ N ☐

Abdominal cramps Y ☐ N ☐

Malabsorption Y ☐ N ☐

Weight loss Y ☐ N ☐

Myalgia Y ☐ N ☐

Periorbital edema Y ☐ N ☐

Laboratory results:

Test type: ☐ Culture ☐ PCR ☐ Antibody ☐ Other:_____

Collection Date: ____/____/____ **Result date:** ____/____/____

Result: ☐ Positive ☐ Negative **Details:** _____

Antibiotic Treatment

Treated with antibiotics? Y ☐ N ☐ Unk ☐

Details: _____

*Incubation Period: Ranges from 1 to 2 days to 2 to 8 weeks or longer

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

CONTACTS

List all household contacts, ill or not ill, and any close contacts regardless of where they live (i.e. caregivers, partners, etc). Indicate for all contacts if high risk; if symptomatic, give onset date and testing information. List additional contacts on the last page of this form, if needed.

Name/Contact	Age	Relationship to case	Symptoms		Onset Date	Lab testing	High Risk		
			Yes	No		Y/N, coll. date, result	Day care	Health care	Food Svc.

ENVIRONMENTAL EXPOSURES

In the 3 - 25 days before illness onset, from _____/_____/_____ to _____/_____/_____ did [you/your child]:

WATER-RELATED EXPOSURES	YES	NO	UNK	*If yes, details:*
1. Stay in a home with a septic system?				
2. Primarily use water from a well for drinking water?				*Treatment:*
3. Primarily drink bottled water?				*Brand(s):*
4. Drink any untreated water (pond, lake, etc)?				
5. Swim or wade in untreated water?				*Where?*
6. Swim or wade in treated water (pool, hot tub, etc)?				*Where?*
ANIMAL CONTACT	YES	NO	UNK	*If yes, details:*
1. Have contact with an animal?				
If yes, did [you/your child] have contact with a:				
a. Dog				
b. Cat				
c. Other pet mammal				*Specify:*
d. Reptile or amphibian				*Specify:*
e. Live poultry				
f. Pet bird				
g. Cattle, goat, or sheep				*Specify:*
h. Pig				
i. Other animal				*Specify:*
j. Pet with diarrhea				
2. Visit, work, or live on a farm, ranch, or petting zoo?				*Specify:*
3. Have exposure to a daycare or nursery?				*Where?*
4. Have a household or close contact with diarrhea?				*Who?*
5. Work in a restaurant or prepare food for others?				*Specify:*

PUBLIC HEALTH REFERENCE SHEET
Trypanosomiasis

Name	Common name: African trypanosomiasis (Sleeping sickness) American trypanosomiasis (Chagas disease) Causative Agent: African trypanosomiasis: *Trypanosoma brucei* (*T. b. rhodesiense* and *T. b. gambiense*) American trypanosomiasis: *Trypanosoma cruzi*
Reservoir & Transmission	*T. b. rhodesiense*: wild and domestic animals, cattle *T. b. gambiense*: humans, domestic, and wild animals *T. cruzi*: armadillos, opossums, raccoons, woodrats, some other rodents, domestic dogs African trypanosomiasis: bite from tsetse fly (*Glossina species*) American trypanosomiasis: infected feces from triatomine (*Reduviidae*) bugs (kissing bugs) through conjunctivae, mucous membranes, or skin wounds
Incubation Period	African trypanosomiasis: within 3 days to a few weeks American trypanosomiasis: acute disease immediately after infection; 5–14 days after bite, or 30–40 days after blood transfusion
Common Symptoms	African trypanosomiasis: painful chancre, fever, intense headache, insomnia, painless swollen lymph nodes, anemia, local edema, rash American trypanosomiasis: fever, malaise, hepatosplenomegaly, and swollen lymph nodes
Gold Standard Diagnostic Test	African trypanosomiasis: microscopy American trypanosomiasis: microscopy, antibody testing
Risk Groups	All susceptible
Geographic Significance	African trypanosomiasis: Most common in rural sub-Saharan Africa American trypanosomiasis: Most common in Mexico, Central America, and South America

What is trypanosomiasis?

Trypanosomiasis is a parasitic infection caused by the *Trypanosoma* species. There are two types of trypanosomiasis infections: African trypanosomiasis, also known as sleeping sickness, is caused by microscopic parasites of the species *Trypanosoma brucei*, and American trypanosomiasis, also known as Chagas disease, is caused by the parasite *Trypanosoma cruzi*.

What is the occurrence of trypanosomiasis?

- African trypanosomiasis is endemic to rural sub-Saharan Africa. *T. brucei rhodesiense* is reported from eastern and southeastern Africa, mainly Malawi, Tanzania, Uganda, Zambia, and Zimbabwe. *T. brucei gambiense* is reported from central and west Africa, particularly in parts of the Democratic Republic of the Congo, as well as Angola, Cameroon, Central African Republic, Chad, Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Guinea, South Sudan, (northern) Uganda, and other countries.
- *T. cruzi* is endemic to many parts of Mexico and Central and South America; rare locally acquired American trypanosomiasis cases have been reported in the southern United States. No vectorborne transmission has been documented in the Caribbean islands. In the United States, American trypanosomiasis is primarily a disease of immigrants from endemic areas of Latin America.

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Trypanosomiasis

How is trypanosomiasis transmitted?

- African trypanosomiasis is transmitted by the bite of an infected tsetse fly (*Glossina spp*.), which is found only in sub-Saharan Africa. Bloodborne, congenital, sexual, and transfusion or transplantation transmission are rare.
- American trypanosomiasis infection in humans occur when *T. cruzi* in the feces of an infected triatomine insect (reduviid bug/kissing bug) enters the body. Entry portals include breaks in the skin (e.g., at the site of a reduviid bug bite), through the eyes by touching or rubbing with contaminated fingers, and through the gastrointestinal tract by consuming contaminated food or beverages. *T. cruzi* also can be transmitted through blood transfusions, organ transplantation, and vertically, from mother to infant (CDC, 2023).

Who is at risk for trypanosomiasis?

- The risk for African trypanosomiasis is minimal to travelers to urban areas, although transmission has been observed in some urban settings in the past. Tsetse flies bite during the day, and <1% are infected. Risk for infection in travelers increases with the number of fly bites, which does not always correlate with duration of travel. People most likely to be exposed to African trypanosomiasis infection are hunters and villagers with infected cattle herds. Tourists and other people working in or visiting game parks are at risk for contracting African trypanosomiasis if they spend long periods in rural areas where the disease is present.
- The risk for American trypanosomiasis is higher to immigrants and refugees from endemic areas and long-term travelers to endemic areas.

What are the signs and symptoms of trypanosomiasis?

- African Trypanosomiasis: In the early stages of infection, there may be a painful chancre, which originates as a papule and evolves into a nodule at the site of the tsetse fly bite. There may be fever, intense headache, insomnia, painless swollen lymph nodes, anemia, local edema, or rash. In the later stages, there may be cachexia, central nervous system dysfunction, or somnolence (hence the name “sleeping sickness”). The disease may run a protracted course of several years in the case of *T. b. gambiense*. In cases of *T. b. rhodesiense*, the disease has a rapid and acute evolution. Disease caused by either species is always fatal without treatment.
- Acute American Trypanosomiasis: Acute disease occurs immediately after infection and may last up to a few weeks or months. Infections may be mild or asymptomatic. If symptoms do develop, they are typically mild or nonspecific, and include fever, malaise, or hepatosplenomegaly. An inflammatory response at the infection site (chagoma) may last several weeks.
- Chronic American Trypanosomiasis: Most infected people enter a prolonged asymptomatic form of disease (chronic indeterminate) following the acute phase. Many remain asymptomatic for life. Approximately 20–30% of chronic American trypanosomiasis cases develop severe symptoms including cardiovascular complications (heart rhythm abnormalities, dilated heart) or gastrointestinal complications (dilated esophagus or colon, leading to difficulties eating or passing stool).

How is trypanosomiasis diagnosed?

- Tsetse fly bites are characteristically painful, and a chancre can develop at the bite location. No serologic tests for *T. brucei* are available in the United States. Diagnosis of *T. b. rhodesiense* is made by microscopic identification of parasites in specimens of blood,

chancre fluid, or tissue; cerebrospinal fluid (CSF); bone marrow aspirates; or lymph node aspirates. The level of parasitemia is lower in *T. b. gambiense* than *T. b. rhodesiense* infections. Microscopic identification generally requires serial examinations of samples concentrated by techniques, such as centrifugation followed by buffy coat examination, microhematocrit centrifugation, or mini-anion exchange centrifugation. All patients diagnosed with African trypanosomiasis must have their CSF examined on a wet preparation to look for motile trypomastigotes and white blood cells (WBC) checked to determine whether the CNS is involved; the choice of treatment drugs depends on the disease stage. Patients with ≤5 WBC/mL and no trypomastigotes in CSF are in the first stage, and those with >5 WBC/mL or trypomastigotes in CSF are in the second stage (CDC, 2023).

- During the acute phase, parasites can be detected in fresh preparations of buffy coat or stained peripheral blood specimens; PCR testing also can help detect acute infection. After the acute phase, diagnosis requires ≥2 serologic tests to detect *T. cruzi*–specific antibodies, most commonly ELISA, immunoblot, and immunofluorescent antibody test. PCR is not a useful diagnostic test for chronic-phase infections because parasites cannot be detected in the peripheral blood during this phase.

How is trypanosomiasis treated?

- Treat people diagnosed with African trypanosomiasis with a drug course specific to the type of infection (*T. b. rhodesiense* or *T. b. gambiense*) and disease stage (i.e., presence or absence of CNS involvement). Pentamidine, the recommended treatment for first-stage *T. b. gambiense* infection, is available in the United States. Nifurtimox was approved by the U.S. Food and Drug Administration (FDA) in August 2020 and is commercially available. No test of cure is available for African trypanosomiasis. After treatment, closely follow patients for 24 months and monitor for relapse. Recurrence of symptoms will require examination of body fluids, including CSF, to detect the presence of trypanosomes (CDC, 2023).
- Antitrypanosomal drug treatment is always recommended for acute, early congenital, and reactivated *T. cruzi* infection, as well as for chronic *T. cruzi* infection in children <18 years old. In adults with chronic infection, treatment is usually recommended. The two drugs used to treat American trypanosomiasis are benznidazole and nifurtimox. Benznidazole is approved by the FDA for use in children 2–12 years old and is commercially available. Nifurtimox is approved by the FDA for treatment of children from birth to <18 years old who weigh at least 2.5 kg. The drug was approved in August 2020 and became commercially available later that year (CDC, 2023).

How can trypanosomiasis be prevented?

- No vaccines or prophylactic drugs against African trypanosomiasis are available. To reduce the risk for infection, people should minimize contact with tsetse flies by wearing long-sleeved shirts and long pants made of medium-weight fabric in neutral colors. Tsetse flies are attracted to bright or dark colors, especially blue and black, and can bite through lightweight clothing. People should inspect vehicles before entering because the flies are attracted to the motion and dust from moving vehicles, and they should avoid bushes because tsetse flies are less active during the hottest part of the day but will bite if disturbed. Although permethrin-impregnated clothing and insect repellent have not proven to be particularly effective against tsetse flies, people should use DEET repellent to prevent other insect bites that can cause illness.
- To avoid American trypanosomiasis, people should follow insect bite precautions and food and water precautions. People also should avoid sleeping in adobe, mud, or thatch housing

in endemic areas, and use insecticides in and around such homes. Insecticide-treated bed nets are helpful. Screening blood and organs for American trypanosomiasis prevents transmission via transfusion or transplantation. Screening of pregnant people coming from endemic areas and early detection and treatment of mother-to-baby (congenital) cases also will help reduce disease burden.

What are some Public Health considerations?

- When reporting cases of trypanosomiasis in the Disease Reporting System Internet (DRSi), specify the form of disease, document relevant travel and deployment history occurring within the incubation period, and specify whether the patient presented with congenital disease.

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Montgomery, Susan, et al. "Trypanosomiasis, American/Chagas Disease." *CDC Yellow Book 2024: Travel-Associated Infections & Diseases*. Centers for Disease Control and Prevention, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/trypanosomiasis-american-chagas-disease

"Parasites – African Trypanosomiasis (also known as Sleeping Sickness)," Centers for Disease Control and Prevention (CDC), last reviewed June 6, 2023. https://www.cdc.gov/parasites/sleepingsickness/index.html

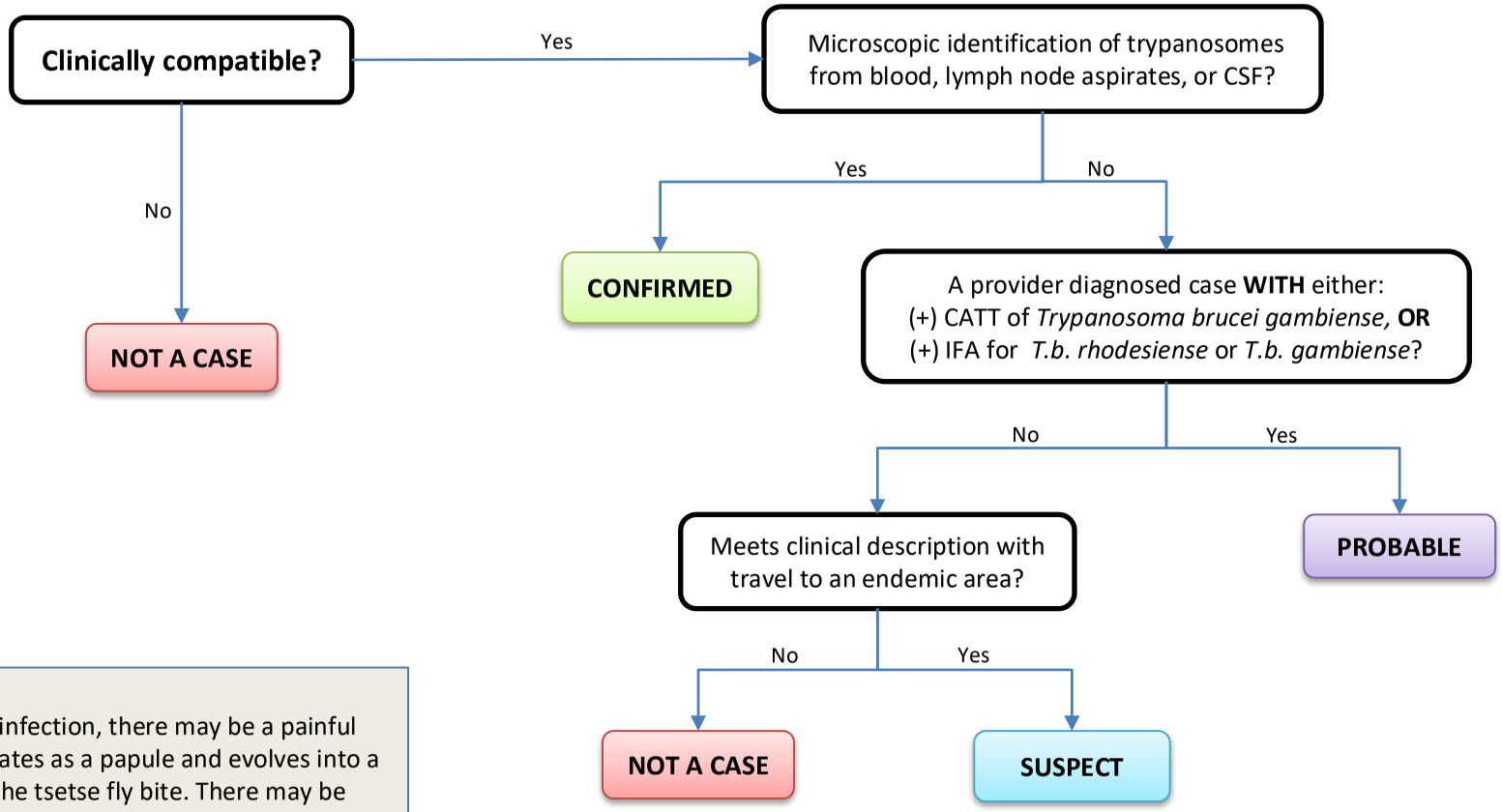
"Parasites – American Trypanosomiasis (also known as Chagas Disease)," Centers for Disease Control and Prevention (CDC), last reviewed August 24, 2023. https://www.cdc.gov/parasites/sleepingsickness/index.html

Roy, Sharon, et al. "Trypanosomiasis, African." *CDC Yellow Book 2024: Travel-Associated Infections & Diseases*. Centers for Disease Control and Prevention, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/trypanosomiasis-african

Trypanosomiasis

African Trypanosomiasis

COMMON NAME: Sleeping sickness



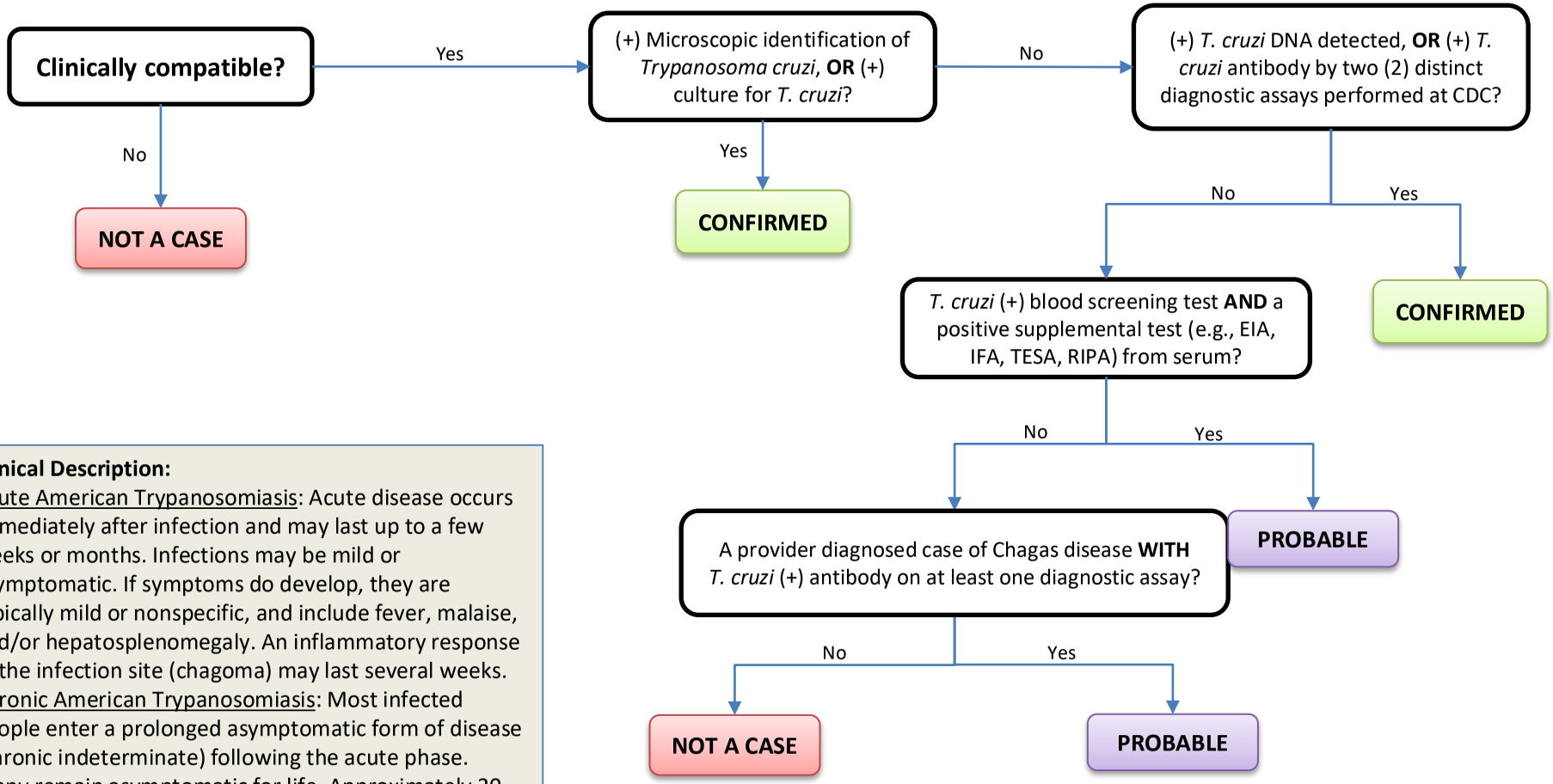
Clinical Description:
In the early stages of infection, there may be a painful chancre, which originates as a papule and evolves into a nodule at the site of the tsetse fly bite. There may be fever, intense headache, insomnia, painless swollen lymph nodes, anemia, local edema, and/or rash. In the later stages, there may be cachexia, central nervous system dysfunction, and somnolence (hence the name "sleeping sickness"). The disease may run a protracted course of several years in the case of *T. b. gambiense*. In cases of *T. b. rhodesiense*, the disease has a rapid and acute evolution. Disease caused by either species is always fatal without treatment.

Critical Reporting Elements and Comments:
- Specify the form of disease.
- Document relevant travel and deployment history occurring within the incubation period *(T. b. rhodesiense*: 3 days to a few weeks; *T. b. gambiense*: several months).
- Specify whether the patient presented with congenital disease.

Trypanosomiasis

American Trypanosomiasis

COMMON NAME: Chagas disease



Clinical Description:

Acute American Trypanosomiasis: Acute disease occurs immediately after infection and may last up to a few weeks or months. Infections may be mild or asymptomatic. If symptoms do develop, they are typically mild or nonspecific, and include fever, malaise, and/or hepatosplenomegaly. An inflammatory response at the infection site (chagoma) may last several weeks.

Chronic American Trypanosomiasis: Most infected people enter a prolonged asymptomatic form of disease (chronic indeterminate) following the acute phase. Many remain asymptomatic for life. Approximately 20–30% of chronic American trypanosomiasis cases develop severe symptoms including cardiovascular complications (heart rhythm abnormalities, dilated heart) or gastrointestinal complications (dilated esophagus or colon, leading to difficulties eating or passing stool).

Critical Reporting Elements and Comments:

- Specify the form of disease.
- Document relevant travel and deployment history occurring within the incubation period (5–14 days if infected via insect bite; 30–40 days if infected via a contaminated blood transfusion).
- Specify whether the patient presented with congenital disease.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

African and American Trypanosomiasis

Confirmed ◯ Probable ◯ Not a Case ◯

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.
Outbreak investigations must be reported immediately to DRSi through the outbreak module at https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____ **Location:** _____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Headache	☐	☐	***Describe any other symptoms or relevant clinical history below:***
Insomnia	☐	☐	
Swollen lymph nodes	☐	☐	
Anemia	☐	☐	
Edema	☐	☐	
Rash	☐	☐	
Malaise	☐	☐	
Neurological changes	☐	☐	
Somnolence	☐	☐	
Enlarged liver	☐	☐	
Difficulty Eating	☐	☐	
Chagoma	☐	☐	

Did the case present with congenital disease? If so, specify:	Specify the form of the disease:	Other relevant information:

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

Does the case have cross-reactive serologies to other flavivurses? Y ☐ N ☐

If yes, describe:

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: *T. b. rhodesiense:* 3 days to a few weeks; *T. b. gambiense:* several months. American Trypanosomiasis: (5–14 days if infected via insect bite; 30–40 days via a contaminated blood transfusion)

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Describe any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Tuberculosis

Name	*Mycobacterium tuberculosis* ****This RME must be reported IMMEDIATELY into DRSi****
Reservoir & Transmission	Humans with latent *M. tuberculosis* infection and active TB disease Droplet transmission through coughing, speaking, and sneezing
Incubation Period	2–10 weeks
Common Symptoms	Cough, fatigue, fever, night sweats, and weight loss Hemoptysis and hoarseness associated with laryngeal TB may occur in advanced stages
Gold Standard Diagnostic Test	Nucleic acid amplification tests (NAAT) Microscopy of smear and culture
Risk Groups	Children < 3 years old, adolescents, young adults, older individuals, and the immunocompromised Humanitarian aid workers and healthcare personnel working in high-prevalence settings (e.g., refugee camps; homeless shelters, HIV clinics, and in-patient hospital wards)
Geographic Significance	Worldwide, but with wide variations by region and social context

What is tuberculosis?
Tuberculosis (TB) is a chronic bacterial infection caused by a bacterium called *Mycobacterium tuberculosis (M. tuberculosis)* characterized pathologically by the formation of granulomas.

Not everyone infected with TB bacteria becomes sick. As a result, two TB-related conditions exist: latent TB infection (LTBI) and TB disease. People with LTBI are infected with *M. tuberculosis*, but they do not have TB disease, do not have signs and symptoms of TB disease, and they cannot spread *M. tuberculosis* to others.

What is the occurrence of tuberculosis?
According to the World Health Organization (WHO), approximately 10 million new TB cases and 1.2 million TB-related deaths occurred in 2019. TB occurs throughout the world, but the incidence varies. In some countries in sub-Saharan Africa and Asia, the annual incidence is several hundred per 100,000 population. In the United States, the annual incidence is <3 per 100,000 population, but immigrants from countries with a high TB burden and long-term residents of high-burden countries have a 10 times greater incidence of TB than the U.S. national average. The Centers for Disease Control and Prevention (CDC) estimates that up to 13 million people in the U.S. have LTBI.

How is tuberculosis transmitted?
Persons with active pulmonary TB transmit the *M. tuberculosis* bacilli (MTB) during coughing or sneezing, aerosolizing the infected droplets, which are inhaled by contacts. *M. tuberculosis* in the droplets reach the alveoli and are ingested by alveolar macrophages; they are then restricted by a granuloma or progress to active disease. The period of infectivity lasts as long as there are viable MTB in sputum. Effective anti-TB therapy usually eliminates contagiousness within 2–4 weeks. Some untreated or inadequately treated patients with active pulmonary TB can remain contagious for years. The degree of communicability depends on intimacy and duration of the exposure, the number of bacilli discharged, virulence of the bacilli, adequacy of ventilation, exposure of bacilli to sun or ultraviolet light, and opportunities for aerosolization through coughing or during aerosolizing procedures. Direct invasion of MTB through mucous membranes or breaks in the skin can occur but is extremely rare.

Last Updated September 30, 2023

PUBLIC HEALTH REFERENCE SHEET
Tuberculosis

Who is at risk for tuberculosis?

Those at highest risk include persons in close contact with TB patients, healthcare workers, individuals with certain medical conditions, and travelers to areas where TB is common. The risk of active pulmonary TB, once infected, is highest in children younger than 3 years, young adults, the elderly, and the immunocompromised, including those with HIV infection.

What are the signs and symptoms of tuberculosis?

- *M. tuberculosis* infection can be detected by a positive tuberculin skin test (TST) or interferon-gamma release assay (IGRA) 8–10 weeks after exposure. Overall, only 5%–10% of otherwise healthy people who are infected progress to TB disease during their lifetimes. Progression to TB disease can take weeks to decades after initial infection. People with TB disease have symptoms or other manifestations of illness (e.g., an abnormal chest radiograph). For most people who become infected, *M. tuberculosis* remains in an inactive state (latent TB infection or LTBI) in which the infected person has no symptoms and cannot spread the infection to others.
- TB disease can affect any organ but affects the lungs in 70%–80% of cases. Typical TB symptoms include prolonged cough, fever, hemoptysis, night sweats, decreased appetite, and weight loss. The most common sites for TB outside the lungs (i.e., extrapulmonary TB) are the bladder, bones and joints, brain and meninges, genitalia, kidneys, lymph nodes, and pleura.
- The risk for progression to disease is much higher in immunosuppressed people; for example, progression is 8%–10% per year in HIV-infected people not receiving antiretroviral therapy. People receiving tumor necrosis factor blockers to treat rheumatoid arthritis and other chronic inflammatory conditions also are at increased risk for disease progression.

What are the potential complications of tuberculosis?

If untreated, TB can be fatal. Complications may include spinal pain, joint damage, meningitis, liver or kidney problems, and heart disorders.

How is tuberculosis diagnosed?

- TB is diagnosed through a combination of skin or blood tests, chest x-rays, and sputum tests. LTBI is diagnosed by a positive result from positive TST, Mantoux technique using tuberculin purified protein derivative (PPD), or interferon-γ release assay (e.g., QuantiFERON-TB Gold) after further examinations (e.g., chest radiograph, symptom review) have excluded TB disease. Infection can be detected 8–10 weeks after exposure. IGRA is preferred over the TST in those that received the bacillus Calmette-Guérin (BCG) vaccine because BCG might induce false-positive TST results. No BCG effects on IGRA results have been detected in multiple studies. Live virus vaccines, if indicated, should be given the same day or 1 month after a TST. A TST that cannot be read in 48–72 hours should be delayed, may need to be repeated, or consider an interferon-γ release assay. The Tine TB skin test is no longer used in the U.S. but may be used in other countries for TB and LTBI screenings (CDC, 2023).
- Although diagnosis of TB disease can be made using clinical criteria in the absence of microbiologic confirmation, perform laboratory testing to confirm the diagnosis, guide treatment decisions, and provide bacterial DNA for molecular epidemiology. Molecular tests for mutations that confer drug resistance can be performed directly on specimens and can guide initial treatment while culture results are pending. Culture-based susceptibility testing is recommended for all patients with a positive culture result to help determine the appropriate drug regimen.

Last Updated September 30, 2023

- Collect sputum or other respiratory specimens for culture and smears for acid-fast bacilli (AFB) from people being examined for pulmonary TB. The CDC, the American Thoracic Society (ATS), and the Infectious Diseases Society of America (IDSA) jointly published diagnostic recommendations for both TB disease and LTBI, and can be found at https://www.cdc.gov/tb/topic/testing/default.htm.

How is tuberculosis treated?

- Latent Tuberculosis Infection: People with LTBI can be treated, and treatments are effective at preventing progression to TB disease. Clinicians must exclude TB disease before starting LTBI treatment. In the United States, several regimens exist for the treatment of drug-susceptible LTBI, including 3 months of once-weekly isoniazid and rifapentine; 4 months of daily rifampin; 3 months of daily isoniazid and rifampin; and 6–9 months of daily isoniazid. Given the low completion rates of the 6- to 9-month isoniazid regimen, shorter duration regimens are preferred. CDC guidance on treatment can be found at https://www.cdc.gov/tb/topic/treatment/default.htm.
- Tuberculosis Disease: CDC/ATS/IDSA published guidelines for treating drug-susceptible TB disease with a multiple-drug regimen administered by directly observed therapy for 6–9 months. Usually, the regimen is isoniazid, rifampin, ethambutol, and pyrazinamide for 2 months, then isoniazid and rifampin for an additional 4 months.
- Drug-resistant TB is more difficult to treat, historically requiring 4–6 drugs for 18–24 months and best managed by an expert. In a randomized controlled trial, a newer 6-month all-oral regimen of bedaquiline, pretomanid, and linezolid was effective in treating highly-drug-resistant TB or patients who could not tolerate other regimens. For information about the treatment of drug-resistant TB, visit the CDC's Drug-Resistant TB webpage at https://www.cdc.gov/tb/topic/drtb/default.htm.

How can tuberculosis be prevented?

- Early detection and treatment of active TB and TB testing for those at risk.
- Systematic testing and treatment of LTBI.
- Educating the public regarding mode of spread, symptoms, methods of control, and importance of early diagnosis and continued adherence to treatment.
- Establish and maintain effective TB infection control measures in institutional settings where health care is provided and especially where immunocompromised patients congregate, including hospitals, drug treatment programs, prisons, nursing homes, and homeless shelters.
- Address social, economic, and housing determinants by reducing or eliminating these conditions that increase the risk of infection and progression to disease, including poorly ventilated and crowded living conditions, malnutrition, indoor air pollution, smoking, and alcohol abuse.
- Travelers should avoid exposure to people with TB disease in crowded and enclosed environments. Advise travelers who will be caring for patients, or who will be working in healthcare facilities where people with TB are likely to be patients, to consult infection control or occupational health experts about baseline LTBI screening, procedures for obtaining personal respiratory protective devices (e.g., N95 respirators), and recommendations for respirator selection and training.
- Based on WHO recommendations, BCG vaccine is used once, at birth, in countries with higher TB burdens to reduce the severe consequences of TB and extrapulmonary TB infections in infants and children. BCG vaccine has low and variable efficacy in preventing TB in adults; however, U.S. Food and Drug Administration-approved vaccine formulations of BCG are no longer available in the United States. All people, including those who have

received BCG vaccination, must follow recommended TB infection control precautions to the greatest extent possible. Individuals from countries where BCG vaccine is used may not know or recall if they received this vaccine.

What are some Public Health considerations?

- Active TB disease is a communicable disease that must be reported through military and civilian public health channels. A CDC Report of Verified Case of Tuberculosis (RVCT) will be completed for each case of active TB disease. The RVCT will be sent to the supporting county and/or State health department and reported through Disease Reporting System internet (DRSi). LTBI is not communicable and is not a reportable event in DRSi.
- When reporting cases of active TB in the DRSi—
    - Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
    - Document if the case patient works in, lives in, or attends a high-transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.
    - Note the patient's BCG (tuberculosis vaccine) immunization history.
    - Document evidence of drug resistance.
- Army's TB Surveillance and Control Program can be found at https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN22182_P40_11_FINAL.pdf.
- Marine and Navy's TB Prevention and Control program can be found at https://www.med.navy.mil/Navy-and-Marine-Corps-Force-Health-Protection-Command/Preventive-Medicine/Program-and-Policy-Support/Tuberculosis-Prevention-and-Control/.
- Air Force's TB surveillance guidelines can be found on https://www.e-publishing.af.mil/Product-Index/ by searching for the most recent Public Health Surveillance publication.

References:

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Department of the Army. 2020. Pamphlet 40-11, *Army Public Health Program*. https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN22182_P40_11_FINAL.pdf

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

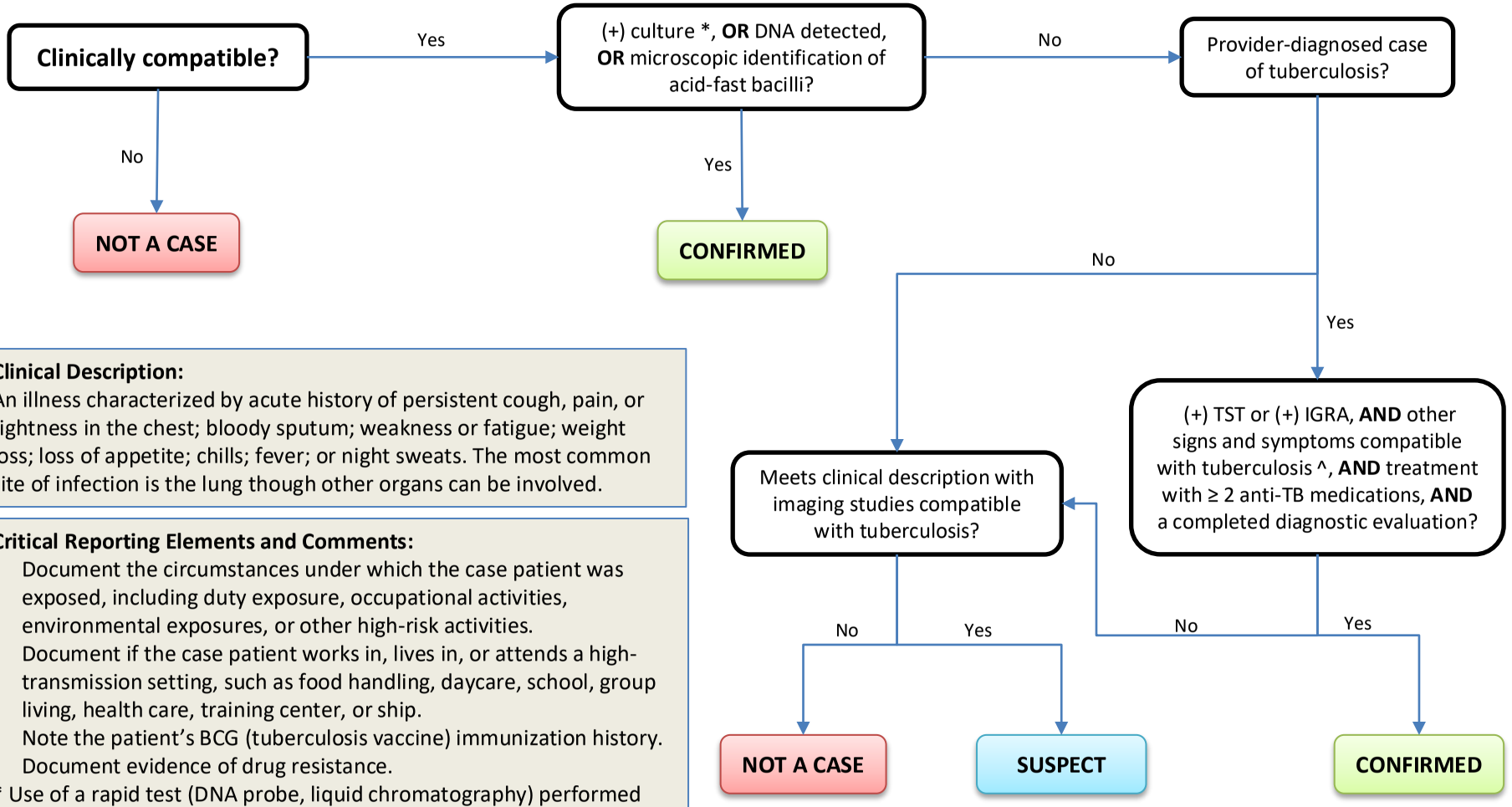
"Tuberculosis Prevention and Control," Navy and Marine Corps Force Health Protection Command, last reviewed no date listed. https://www.med.navy.mil/Navy-and-Marine-Corps-Force-Health-Protection Command/Preventive-Medicine/Program-and-Policy-Support/Tuberculosis-Prevention-and-Control/

"Tuberculosis," Centers for Disease Control and Prevention, last reviewed August 29, 2023. https://www.cdc.gov/tb/default.htm

"Traveler's Health, *CDC Yellow Book 2024*, Tuberculosis," CDC, last reviewed May 1, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/tuberculosis

Tuberculosis

COMMON NAME: TB
INCLUDES: Pulmonary and non-pulmonary tuberculosis
EXCLUDES: Latent tuberculosis infection (LTB) when a person tests positive via Mantoux tuberculin skin test (TST) or via FDA approved interferon-gamma release assay (IGRA) but is without evidence of active disease (negative chest x-ray for presence of TB disease and asymptomatic).



Clinical Description:
An illness characterized by acute history of persistent cough, pain, or tightness in the chest; bloody sputum; weakness or fatigue; weight loss; loss of appetite; chills; fever; or night sweats. The most common site of infection is the lung though other organs can be involved.

Critical Reporting Elements and Comments:

- Document the circumstances under which the case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Document if the case patient works in, lives in, or attends a high-transmission setting, such as food handling, daycare, school, group living, health care, training center, or ship.
- Note the patient's BCG (tuberculosis vaccine) immunization history.
- Document evidence of drug resistance.

* Use of a rapid test (DNA probe, liquid chromatography) performed from the culture is acceptable for this criterion.
^ For example: abnormal chest radiograph, abnormal chest computerized tomography scan or other chest imaging study, or clinical evidence of current disease.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Tuberculosis

Confirmed ◯ Probable ◯ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

	Y	N
Symptomatic	☐	☐
Fever	☐	☐
Persistent cough	☐	☐
Chest pain or tightness	☐	☐
Bloody sputum	☐	☐
Weakness	☐	☐
Fatigue	☐	☐
Appetite/weight loss	☐	☐
Chills or night sweats	☐	☐

Onset date: ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____

Max Temp: _____°F/°C (☐unk)

Epidemiologic Link

	Y	N
Is the case epidemiologically linked to a laboratory-confirmed case of Tuberculosis?	☐	☐
Is this case part of a larger group/community outbreak?	☐	☐

☐ **Other symptoms (describe below)**

*Describe:*_____

_____

_____

_____

_____

HISTORY

Document the circumstances under which the case/patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

_____

_____

_____

Document if the case/patient works in, lives in, or attends a high-transmission setting such as food handling, daycare, school, group living, health care, training center, or ship.

_____

_____

_____

_____

Document evidence of drug resistance.

If applicable, document the case/patient's BCG (tuberculosis vaccine) immunization history.

_____

_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the 2 days to then weeks before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

Include any other pertinent information for this case below:

PUBLIC HEALTH REFERENCE SHEET
Tularemia

Name	*Francisella tularensis* (rabbit fever)
Reservoir & Transmission	Wild animals, especially rabbits, hares, voles, muskrats, water rats, beavers, and some domestic animals; also, various hard ticks Arthropod bites, handling infected animal tissues, ingestion of contaminated food or water, inhalation of contaminated aerosols
Incubation Period	Usually 3–5 days (range 1–14 days)
Common Symptoms	Vary depending on how the bacteria enter the body. All forms of illness cause fever as high as 104ºF
Gold Standard Diagnostic Test	Culture
Risk Groups	Occupational and recreational activities involving wild animals or exposure to ticks
Geographic Significance	Most common in North America and in parts of Europe, Russia, China, and Japan

What is tularemia?
Tularemia is a potentially life-threatening illness caused by the bacterium *Francisella tularensis* (*F. tularensis)* (formerly called *Pasteurella tularensis*) that is found in animals, especially rodents, rabbits, and hares.

What is the occurrence of tularemia?
Naturally occurring *F. tularensis* infections have been reported from all states except Hawaii. In the U.S., tularemia is an uncommon disease with approximately 250 cases reported annually.

How is tularemia transmitted?
Individuals can develop tularemia by being bitten by an infected tick, deerfly, or other insect; skin contact from handling infected animal carcasses; eating or drinking contaminated food or water; inhaling contaminated aerosols or agricultural and landscaping dust; occupational exposure in the laboratory; or exposure as a result of bioterrorism. Tularemia does not spread from person-to-person contact. Ticks that transmit *F. tularensis* bacteria to humans include the dog tick (*Dermacentor variabilis*), Rocky Mountain wood tick (*D. andersoni*), and lone star tick (*Amblyomma americanum*). *F. tularensis* is not transmitted by the same ticks that transmit *Borrelia burgdorferi*, the agent of Lyme disease.

Who is at risk for tularemia?
Hunters, trappers, sheep shearers, veterinarians, forest rangers, game wardens, hikers, and campers are at increased risk of infection.

What are the signs and symptoms of tularemia?
Symptoms of tularemia vary depending on how the person was infected. All forms of tularemia are accompanied by fever, which can be as high as 104°F. Generalized signs and symptoms include fever, chills, headache, malaise, fatigue, anorexia, myalgia, chest discomfort, cough, sore throat, vomiting, diarrhea, abdominal pain.

- **Ulceroglandular:** The most common form of tularemia usually occurs following a tick or deer fly bite or after handling of an infected animal. A skin ulcer usually appears at the site where the bacteria entered the body and is accompanied by swelling of regional lymph glands, usually in the armpit or groin.

Last updated September 1, 2023

- **Glandular:** Similar to ulceroglandular tularemia but without an ulcer. Also generally acquired through the bite of an infected tick or deer fly or from handling sick or dead animals.
- **Oculoglandular:** Occurs when the bacteria enter through the eye, for example, when a person touches their eye after handling infectious material. Symptoms include irritation and inflammation of the eye; photophobia; excessive lacrimation; conjunctivitis; and preauricular, submandibular, and cervical lymphadenopathy.
- **Oropharyngeal:** Results from eating or drinking contaminated food or water. Symptoms may include sore throat; mouth ulcers; exudative pharyngitis or tonsillitis; and cervical, preparotid, and/or retropharyngeal lymphadenopathy.
- **Pneumonic:** The most serious form of tularemia occurs after breathing dusts or aerosols containing the bacteria or is secondary to other untreated forms of tularemia. Symptoms include cough (dry or productive), substernal tightness, difficulty breathing, hilar adenopathy, infiltrate, or pleural effusion may be present on chest imaging.
- **Intestinal:** intestinal pain, vomiting, and diarrhea
- **Typhoidal:** Characterized by any combination of the general symptoms (without the localizing symptoms of other syndromes)

What are potential complications of tularemia?
Tularemia disease can be fatal left untreated.

How is tularemia diagnosed?
Culture of *F. tularensis* is confirmatory from a clinical specimen, such as swabs or scapings of ulcers, lymph node aspirates or biopsies, pharyngeal swabs, or respiratory specimens (e.g., pleural fluid), depending on the form of illness. Serologic testing for *F. tularensis* can be confirmatory with the first serum collected during the acute phase of illness (within first week of onset) and the second serum sample collected 2–3 weeks later. Positive serologic tests should be interpreted in the context of a compatible clinical illness and exposure. *F. tularensis* serologic tests can cross-react with antibodies to some other bacteria, including *Brucella*, causing false positive results. Supportive laboratory tests include detection of antibodies to *F. tularensis* through a single serologic test of serum collected at least 14 days after illness onset, or detection of *F. tularensis* in a clinical specimen by direct immunofluorescence assay (DFA), immunohistochemical staining, sequence-based technologies, or polymerase chain reaction (PCR) assay.

How is tularemia treated?
Consult an infectious disease specialist regarding individual patient treatment decisions. Most infections can be treated with antibiotics (e.g., gentamicin, doxycycline, and ciprofloxacin) for 10 to 21 days depending on medication, stage of illness, and personal factors (e.g., age, medical history, underlying health conditions, pregnancy status, or allergies). Although symptoms may last for several weeks, most patients completely recover.

Tularemia post-exposure prophylaxis is recommended in cases of laboratory exposure to infectious materials.

A live virus vaccine for tularemia used for research and laboratory personnel who are at risk of exposure to *F. tularensis* is under review by the Food and Drug Administration and is not generally available in the U.S., nor is it useful in management of ill patients. Natural infection with *F. tularensis* is thought to impart life-long immunity, but re-infections have occurred.

Last updated September 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Tularemia

How can tularemia be prevented?

Prevent insect bites by using repellent containing DEET on skin or permethrin to treat clothing. Wear gloves when handling sick or dead animals. Cook food thoroughly. Ensure water is from a safe source. Note any change in the behavior of pets (especially rodents, rabbits, and hares) or livestock, and consult a veterinarian if unusual symptoms develop.

What are some public health considerations?

- Specify the clinical form of disease.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
- Alert laboratory personnel when tularemia is suspected. All work with suspect cultures of *F. tularensis* should be performed in a biological safety cabinet. Standard diagnostic procedures with clinical materials can be performed in biosafety level 2 conditions. Manipulation of cultures and other procedures that might produce aerosols or droplets (e.g., grinding, centrifuging, or vigorous shaking) should be conducted under biosafety level 3 conditions.
- *F. tularensis* is a CDC Category A bioterrorism agent/disease. A small number (10–50) of organisms can cause disease. If *F. tularensis* were used as a potential bioweapon, the bacteria would likely be made airborne (aerosolized) for exposure by inhalation. People who inhale an infectious aerosol or contaminated dust would generally experience severe respiratory illness (pneumonic tularemia), including life-threatening pneumonia and systemic infection, if they are not treated.
- The CDC's tularemia case report form is available at: https://www.cdc.gov/tularemia/publichealthofficials/index.html

References

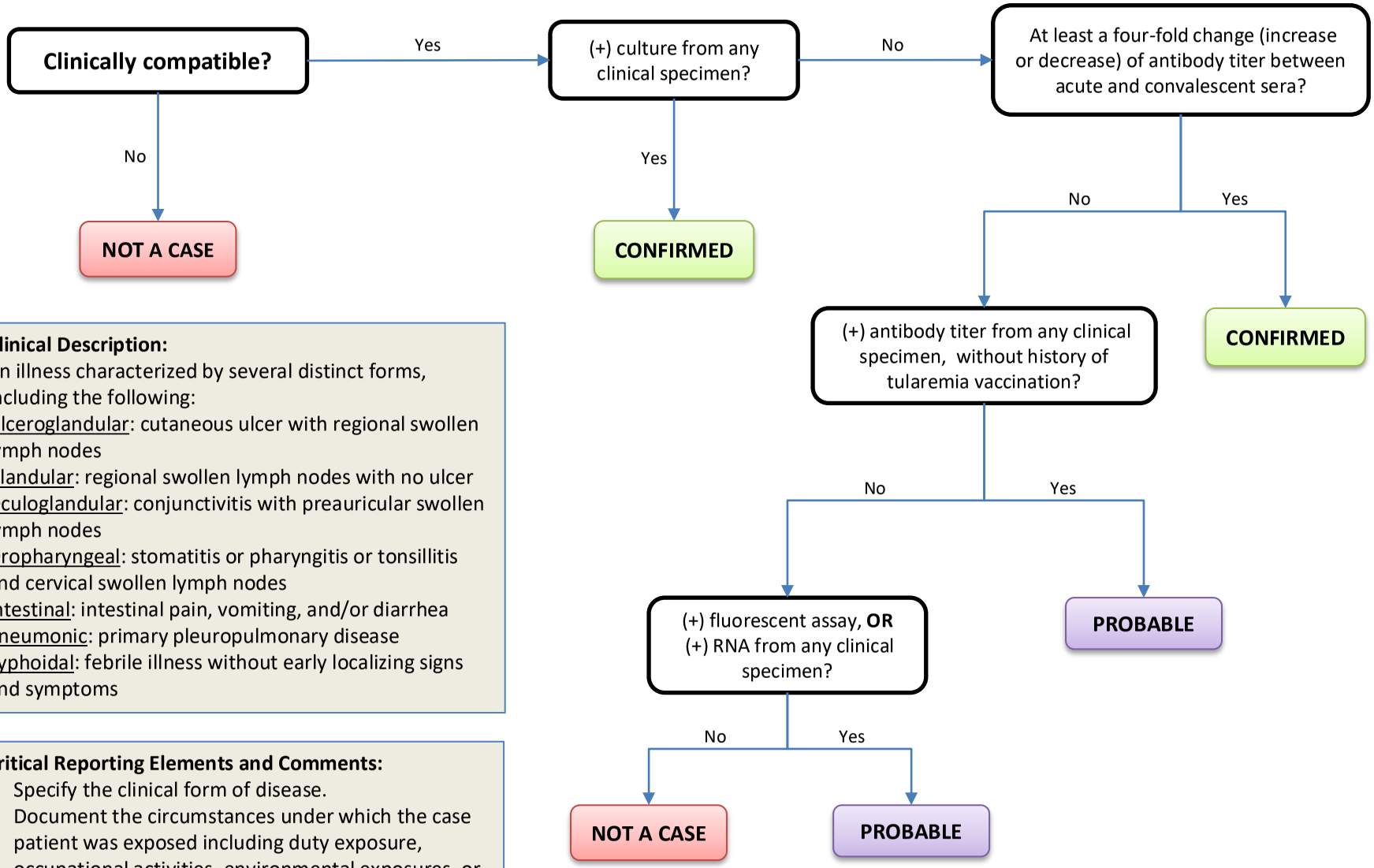
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Tularemia," Centers for Disease Control and Prevention (CDC), last reviewed July 5, 2022. https://www.cdc.gov/tularemia/

Last updated September 1, 2023

Tularemia



Clinical Description:
An illness characterized by several distinct forms, including the following:
Ulceroglandular: cutaneous ulcer with regional swollen lymph nodes
Glandular: regional swollen lymph nodes with no ulcer
Oculoglandular: conjunctivitis with preauricular swollen lymph nodes
Oropharyngeal: stomatitis or pharyngitis or tonsillitis and cervical swollen lymph nodes
Intestinal: intestinal pain, vomiting, and/or diarrhea
Pneumonic: primary pleuropulmonary disease
Typhoidal: febrile illness without early localizing signs and symptoms

Critical Reporting Elements and Comments:
- Specify the clinical form of disease.
- Document the circumstances under which the case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Tularemia

Confirmed ◯ Probable ◯ Not a Case

https://drsi.health.mil/ADRSi

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

	Y	N			
Symptomatic	☐	☐	**Onset date:** ____/_____/_____	**Clinic date:** _____/_____/_____	**Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)		
Skin ucler	☐	☐			
Cough *(lasting at least 2 weeks)*	☐	☐			
Swollen lymph nodes	☐	☐			
Pharyngitis	☐	☐			
Diarrhea	☐	☐			
Vomiting	☐	☐			
Myalgia	☐	☐			

Specify the type of Tularemia:

- ☐ Ulceroglandular
- ☐ Glandular
- ☐ Oculoglandular
- ☐ Oropharyngeal
- ☐ Intestinal
- ☐ Pneumonic
- ☐ Typhoidal
- ☐ Unknown

EXPOSURE HISTORY

	Y	N
Has the case been exposed to any wild animals (rabbits, hares, beavers, ticks, etc.) in the past 2 weeks?	☐	☐
Has the case had contact with contaminated water in the past 2 weeks?	☐	☐

If yes, please describe the exposure(s) including: the type of animal(s) and approximate duration of exposure(s):

_____

_____

_____

_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD) before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: 9–10 days on average; range 6–20 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

Include any other pertinent information for this case below:

PUBLIC HEALTH REFERENCE SHEET
Typhoid fever

Name	*Salmonella enterica* serotype Typhi *(S. Typhi)* EXCLUDES: All other *Salmonellas* including *Salmonella Typhimurium* See Salmonella reference sheet
Reservoir & Transmission	Humans Transmitted through ingestion of food and water contaminated by feces or urine of patients and carriers
Incubation Period	6–30 days
Common Symptoms	Insidious onset of sustained fever, headache, malaise, anorexia, slow heart rate, constipation or diarrhea, and nonproductive cough However, many mild and atypical infections occur. Carriage of *S. Typhi* may be prolonged.
Gold Standard Diagnostic Test	Blood culture
Risk Groups	Risk is very low in the United States, higher among international travelers, and highest among people living in places with poor sanitation and hygiene.
Geographic Significance	Africa, Latin America, and Asia Most typhoid fever patients in the United States report international travel in the 30 days before their illness; most of these patients traveled to South Asia (e.g., India, Bangladesh, Pakistan).

What is typhoid fever?
Typhoid fever is a systemic bacterial disease caused by the bacterium *Salmonella enterica* serotypes Typhi (*S. Typhi*).

What is the occurrence of typhoid fever?
An estimated 11 to 21 million cases of typhoid fever occur worldwide each year, causing an estimated 135,000–230,000 deaths. An estimated 5,700 infections of *S. Typhi* occur among people in the United States each year; an estimated 620 of these people are hospitalized. Approximately 85% of typhoid fever cases in the United States occur among international travelers; most cases are in travelers returning from South Asia, primarily Bangladesh, India, and Pakistan. Other high-risk regions for infection include Africa, Latin America, and Southeast Asia; lower-risk regions include East Asia and the Caribbean.

How is typhoid fever transmitted?
Humans are the only source of the bacteria that cause typhoid fever; no animal or environmental reservoirs have been identified. Typhoid is acquired through consumption of water or food contaminated by feces of an acutely infected or convalescent person, or a person with chronic, asymptomatic carriage. Sexual contact, particularly among men who have sex with men, has been documented as a rare route of transmission.

Who is at risk for typhoid fever?
Risk for infection is high in low- and middle-income countries with endemic disease, poor access to safe food and water, and poor sanitation. Travelers visiting friends and relatives in endemic regions are at increased risk because they might be less careful with food and water while abroad than other travelers, and they might not seek pretravel health consultation or typhoid vaccination. Although the risk of acquiring illness increases with the duration of stay,

travelers have acquired typhoid fever even during visits of <1 week to countries where the disease is highly endemic (e.g., Bangladesh, India, Pakistan).

What are the signs and symptoms of typhoid fever?

The incubation period of typhoid infections is typically 6–30 days but may range more widely depending on exposure and/or individual factors. The onset of illness is insidious, with gradually increasing fatigue and a fever that increases daily from low-grade to 102°F–104°F (38°C–40°C) by the third or fourth day of illness. Fever is commonly lowest in the morning, peaking in the late afternoon or evening. Anorexia, headache, and malaise are nearly universal, and abdominal pain, constipation, or diarrhea are common. Diarrhea and vomiting are more common in children than in adults. People also can have dry cough, fatigue, myalgias, and sore throat. Hepatosplenomegaly often can be detected. A transient, maculopapular rash of rose-colored spots can occasionally be seen on the trunk.

The clinical presentation is often confused with malaria. Typhoid fever is suspected in a person with a history of travel to an endemic area who is not responding to antimalarial medication. Untreated, the disease can last for a month, and reported case-fatality ratios are 10%–30%. By comparison, the case-fatality ratio in patients treated early is usually <1%. Serious complications of typhoid fever occur in 10%–15% of hospitalized patients, generally after 2–3 weeks of illness, and include life-threatening gastrointestinal hemorrhage, intestinal perforation, and encephalopathy.

How is typhoid fever diagnosed?

Poor sensitivity and specificity of rapid antibody tests and the time it takes to obtain a positive culture suggest that the initial diagnosis must often be made clinically. The combination of risk factors for infection and gradual onset of fever that increases in severity over several days should raise suspicion of typhoid fever.

Patients with typhoid fever typically have bacteremia; therefore, blood culture is the preferred method of diagnosis. Bone marrow cultures have sensitivity of 80% in some studies and can remain positive despite antibiotic therapy. Multiple cultures are usually needed to identify the pathogen. Stool culture is not usually positive during the first week of illness and has less diagnostic sensitivity than blood culture. Urine culture has a lower diagnostic yield than stool culture. Rapid diagnostics tests, such as the Widal test, are not recommended because of the high rate of false positives; however, it is widely used in developing countries because of its low cost.

How is typhoid fever treated?

- Typhoid fever is treated with antibiotics. Antibiotic therapy shortens the clinical course of typhoid fever and reduces the risk for death.
- Reduced susceptibility to fluoroquinolones (e.g., ciprofloxacin) and the emergence of multidrug resistance has complicated treatment of infections, especially those acquired in South Asia.
- If fever in a person with typhoid infection does not subside within 5 days of initiating antibiotic therapy, consider treatment with alternative antibiotics or begin looking for a persistent focus of infection (e.g., an abscess, bone, joint, or other extraintestinal site).
- Relapse, reinfection, and chronic carriage also can occur. Relapse occurs in ≤10% of patients 1–3 weeks after clinical recovery, requiring further antibiotic treatment. An estimated 1%–4% of treated patients become asymptomatic chronic carriers (defined as

people who excrete the organism in stool for ≥12 months); a prolonged antibiotic course is usually required to eradicate the organism.

How can typhoid fever be prevented?

- Safe food and water precautions and frequent handwashing, especially before meals, are important in preventing typhoid fever, regardless of typhoid vaccination status. Deployed Service members should eat food and consume water from approved sources only. See CDC's recommendations on food and water precautions for travelers at https://wwwnc.cdc.gov/travel/yellowbook/2024/preparing/food-and-water-precautions.
- Two typhoid vaccines are licensed for use in the United States: Vi capsular polysaccharide vaccine (ViCPS) (Typhim Vi, manufactured by Sanofi Pasteur) for intramuscular use; and live attenuated vaccine (Vivotif, manufactured from the Ty21a strain of serotype Typhi by PaxVax) for oral use. Both vaccines are unconjugated, which means the polysaccharide antigens are not paired with a protein to elicit a strong response from the immune system. Because these vaccines protect 50%–80% of recipients, remind travelers that typhoid immunization is not 100% effective, and take the opportunity to reinforce safe food and water precautions. The oral typhoid vaccine (live, attenuated) is licensed for persons 6 years of age and older as a four-dose course, and should be completed at 1 week before travel/deployment to typhoid endemic area. Revaccination is recommended every 5 years for persons who remain at risk for exposure to typhoid. The oral typhoid vaccine should be given to pregnant women only, if clearly needed. The oral typhoid vaccine should not be given to immunocompromised travelers, including those infected with HIV. The injectable typhoid vaccine (inactivated) is licensed for persons 2 years of age and older and should be completed 2 weeks before travel/deployment. Revaccination is recommended every 2 years for persons who remain at risk for exposure to typhoid.
- Recovery from typhoid fever does not provide reliable immunity from future infections.

What are some Public Health considerations?

- Typhoid fever is a communicable disease that must be reported through military and civilian public health channels, such as the supporting county and/or State health department and reported through Disease Reporting System internet (DRSi).
- When reporting cases of typhoid fever in the DRSi, document relevant travel and deployment history occurring within the incubation period and note the patient's typhoid immunization history.
- Epidemic measures: Search intensively for the case/carrier who is the source of infection, and for the vehicle (water or food) through which infection was transmitted. Selectively eliminate suspected contaminated food. Pasteurize or boil milk or exclude milk supplies and other foods suspected on epidemiological evidence until safety is ensured. Chlorinate suspected water supplies adequately under competent supervision or avoid use. All drinking water must be chlorinated, treated with iodine, or boiled before use. Preemptive vaccination before seasonal outbreaks or in areas at risk of an outbreak may be considered.
- Disaster implications: With disruption of usual water supply and sewage disposal and of controls on food and water, transmission and large-scale outbreaks of typhoid fever may occur if there are active cases or carriers in a displaced population. Efforts should be made to restore safe drinking-water supplies and excreta disposal facilities. Selective immunization of stabilized groups, such as schoolchildren, prisoners, and utility, municipal, or hospital personnel, may be helpful.

PUBLIC HEALTH REFERENCE SHEET
Typhoid fever

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

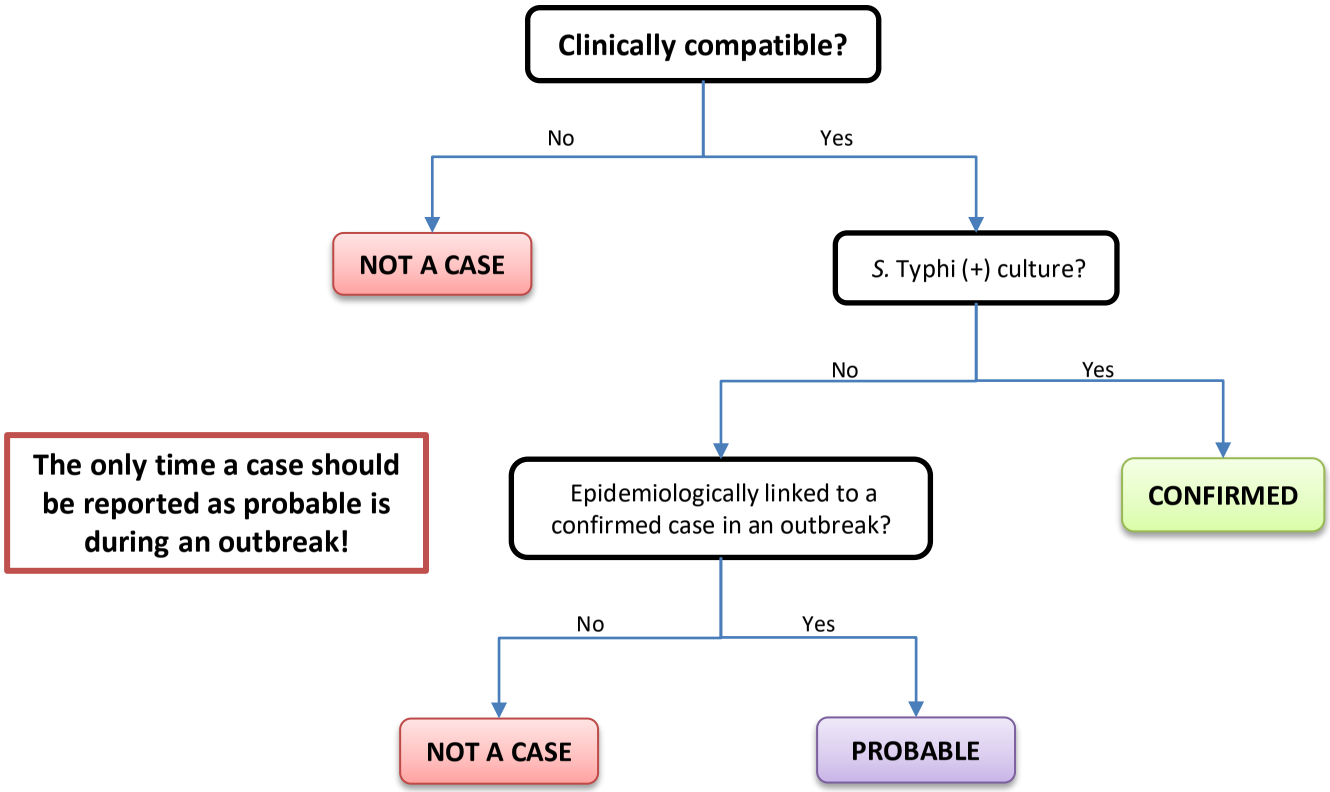
"Traveler's Health, *CDC Yellow Book 2024*, Typhoid & Paratyphoid Fever," Centers for Disease Control and Prevention (CDC), last reviewed May 1, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/typhoid-and-paratyphoid-fever

"Typhoid fever," Centers for Disease Control and Prevention, last reviewed August 22, 2018. https://www.cdc.gov/typhoid-fever/index.html

Last Updated October 1, 2023

Typhoid Fever

COMMON NAME: *Salmonella* Typhi, enteric fever
EXCLUDES: All other *Salmonellas* including *Salmonella* Typhimurium. See Salmonellosis case definition.



Clinical Description:
An illness often characterized by insidious onset of sustained fever, headache, malaise, anorexia, slow heart rate, constipation or diarrhea, and nonproductive cough. However, many mild and atypical infections occur. Carriage of *S. Typhi* may be prolonged.

Critical Reporting Elements and Comments:
- Include relevant travel and deployment history occurring within the incubation period (3–60 days, often 8–14 days).
- Note the patient's typhoid immunization history.

NOTE: *Salmonella Typhi* and *Salmonella Typhimurium* are not the same organisms. *S. Typhimurium* is reportable under Salmonellosis.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

Typhoid Fever

Confirmed ○ Probable ○ Not a Case

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ **M** ☐ **F** ☐ **Unk** **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____ **Location:** _____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever Headache	☐	☐	**Max Temp:** _____**°F/°C** (☐ **unk**)
Malaise	☐	☐	*Describe any other relevant symptoms or clinical history:*
Anorexia	☐	☐	
Slow heart rate	☐	☐	
Constipation	☐	☐	
Diarrhea	☐	☐	
Cough	☐	☐	
Other ***(describe)***	☐	☐	

LABORATORY RESULTS

Test *(type of test performed)*	**Collection Date**	**Source** *Circle Type*	**Result**	
☐ **Culture**	_____/_____/_____	**Serum** **Urine** **CSF** **Other**	☐ **Positive**	☐ **Negative**
☐ **Other** ***Describe***	_____/_____/_____	**Serum** **Urine** **CSF** **Other**	☐ **Positive**	☐ **Negative**

COMMENTS

EPIDEMIOLOGIC DATA

	Y	N	Unk	
Is this case part of an outbreak?	☐	☐	☐	If yes, describe: _____
Has the patient been vaccinated against typhoid?	☐	☐	☐	If yes, date of vaccination: _____/_____/_____
Is this case a food handler?	☐	☐	☐	If yes, where:_____

TRAVEL HISTORY

In the 6 to 30 days incubation period , before illness onset (when symptoms started), did the case.....

1. **Recently travel?** **Y** ☐ **N** ☐ **Unk** ☐
2. **Was travel out of country?** **Y** ☐ **N** ☐ **Unk** ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** **Y** ☐ **N** ☐ **Unk** ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Additional comments:

PUBLIC HEALTH REFERENCE SHEET
Typhus Fever

Name	Epidemic (louse-borne) typhus caused by *Rickettsia prowazekii* Murine (endemic) typhus caused by *Rickettsia typhi* Scrub typhus caused by *Orientia tsutsugamushi* EXCLUDES: All other Rickettsia species; see spotted fever rickettsiosis
Reservoir & Transmission	Epidemic typhus – humans and flying squirrels, vector human body louse, flying squirrel ectoparasites Murine typhus – rodents, vector fleas Scrub typhus – rodents, vector trombiculid mites, and chiggers Transmitted directly to humans by infected arthropod vectors during feeding, when a person inadvertently inoculates the arthropod bite wound (or other breaks in the skin) with rickettsial pathogens or inhaling bacteria or inoculating conjunctiva with infectious material
Incubation Period	Epidemic typhus and murine 1–2 weeks, commonly 12 days. Scrub typhus 6–12 days
Common Symptoms	Common symptoms that typically develop within 1 week of infection include fever, headache, malaise, nausea, or vomiting Can be accompanied by a maculopapular, petechial, or vesicular rash, or sometimes an eschar (a dark necrotic scab) at the site of the mite bite
Gold Standard Diagnostic Test	Serologic testing provides retrospective confirmation and is most accurate when acute and convalescent phase serum samples are compared; a ≥ fourfold rise in antibody titer between paired specimens is diagnostic in indirect immunofluorescence antibody assays.
Risk Groups	All age groups are at risk during visits to endemic areas and that are exposed to vector fleas, lice, mites, chiggers.
Geographic Significance	Epidemic typhus - Central Africa; North, Central and South America; Asia Murine typhus - temperate, tropical, and subtropical areas worldwide Scrub typhus - Asia-Pacific region (north Australia, China, Indonesia, maritime Russia); Middle East (Afghanistan); possibly several countries in sub-Saharan Africa

What is typhus fever?
Typhus fevers are a group of diseases caused by bacteria that are spread to humans by fleas, lice, and chiggers. Typhus fevers include epidemic (louse-borne) typhus, murine (endemic) typhus, and scrub typhus. This reference sheet will individually break down all three diseases.

What is epidemic typhus fever?
Epidemic typhus, also called louse-borne typhus, is an uncommon disease caused by a bacteria called *Rickettsia prowazekii (R. prowazekii)*.

What is the occurrence of epidemic typhus fever?
Most commonly it occurs among people living in crowded conditions where body lice are prevalent (e.g., refugees housed in camps, incarcerated populations). Outbreaks often happen during the colder months. Travelers at greatest risk for epidemic typhus include people who provide medical or humanitarian aid to people living in refugee camps and those who visit

impoverished areas affected by war, famine, or natural disasters. Active foci of epidemic typhus are in the Andes region of South America and some parts of Africa, including but not limited to Burundi, Ethiopia, and Rwanda. Epidemic typhus has not occurred in the United States for approximately the past century; however, a zoonotic reservoir exists in the southern flying squirrel, and sporadic sylvatic epidemic typhus cases are reported when these animals invade people's homes or cabins.

How is epidemic typhus fever transmitted?
The primary vector of epidemic typhus is the pediculus humanus corporis (human body louse). People become infected with *R. prowazekii* when they come into contact with the feces or crushed bodies of infected lice via cut or injured skin. Inhalational exposure of dried louse feces may also occur. *R. prowazekii* can remain infective in louse feces for up to 100 days. Body lice can proliferate to large numbers and rapidly transmit disease among crowded human populations by hiding out in clothes, blankets, or bedding.

In the United States, cases of epidemic typhus have been associated with exposure to flying squirrels or their nests. Fleas and lice carried by the squirrels become naturally infected with *R. prowazekii*; however, the exact mechanism of transmission remains unknown**.**

Who is at risk of epidemic typhus fever?
All age groups are at risk for typhus fever infections during visits to endemic areas. Transmission risk increases with time spent participating in outdoor activities, particularly during seasons of peak feeding and lifecycle activity for the vector. However, typhus fever infections occur year-round in many parts of the world.

What are the signs and symptoms of epidemic typhus fever?
The signs and symptoms vary, often with sudden onset of headache, chills, malaise, fever, or general pains. A macular eruption appears on the fifth or sixth day, initially on the upper trunk, followed by spreading to the entire body, but usually not to the face, palms, or soles. The eruption is often difficult to observe in patients with darkly pigmented skin and/or absent in up to 40% of patients. Cough and tachypnea may be present and neurological signs are common, including confusion, drowsiness, coma, seizures, or hearing loss.

What are the potential complications of epidemic typhus fever?
Patients with epidemic typhus can develop organ failure or other severe sequelae requiring hospital-based management. Death can occur if antimicrobial drug treatment is delayed or if not treated.

How is epidemic typhus fever diagnosed?
Diagnosis is based on clinical findings and epidemiologic factors as reliable, early diagnostic tests are not available. Epidemic typhus should be considered in patients with persistent fever, a history of body louse exposure in crowded or unhygienic areas, or persons who may have come in contact with flying squirrels or their nests. When treated early, patients may experience a less severe illness and shorter recovery time.

R. prowazekii can be detected via indirect immunofluorescence antibody (IFA) assay, immunohistochemistry (IHC), polymerase chain reaction (PCR) assay of blood, plasma, tissue samples, or culture isolation. Serologic tests are the most common means of confirmation and can be used to detect either IgG or IgM antibodies. Acute specimens are taken during the first week of illness and convalescent samples are taken 2–4 weeks later. Detectable levels of IgG or IgM antibodies generally do not appear until 7–10 days after the onset of illness.

PUBLIC HEALTH REFERENCE SHEET
Typhus Fever

How is epidemic typhus fever treated?
Because epidemic typhus can progress rapidly to severe illness, clinicians should initiate therapy as soon as infection is suspected and not wait to receive confirmatory test results. Epidemic typhus has the potential to spread rapidly among persons living in close quarters, so precautions should be taken to rapidly identify and treat patients and to eliminate body louse infestations.

Doxycycline is the treatment of choice for suspected cases of acute epidemic typhus and Brill-Zinsser disease in adults and children of all ages. Recommended dosages of doxycycline include:

- Adults: 100 mg twice per day
- Children under 45 kg (100 lb.): 2.2 mg/kg body weight given twice a day

Patients should be treated for at least 3 days after the fever subsides and until there is evidence of clinical improvement (usually 7–10 days).

How can epidemic typhus fever be prevented?
No vaccine is available for preventing typhus fever infections. Antibiotic prophylaxis is not recommended, and antimicrobial agents should not be given to asymptomatic people.

Instruct travelers going to typhus-endemic areas to minimize their exposure to infectious arthropods and avoid animal reservoirs. Improve living conditions with provisions for bathing and washing clothes. Treat prophylactically those who are subject to risk by application of residual insecticide to clothing and uniforms (dusting or impregnation), and in the case of an epidemic, directly to the skin as well.

What are some Public Health considerations?

- Isolation is not required after proper delousing of patient, clothing, living quarters, and household contacts.
- All immediate contacts should be kept under surveillance for 2 weeks.
- Every effort should be made to trace the infection to the immediate source.
- The best epidemic measure for rapid control of typhus is application of an insecticide with residual effect to all contacts. Where louse infestation is known to be widespread, systematic application of residual insecticide to all people in the community is indicated. Treatment of cases in an epidemic may also decrease the spread of disease. In epidemics, individuals may protect themselves by wearing silk or plastic clothing tightly fastened around wrists, ankles, and neck, and by impregnating clothes and uniforms with repellents or permethrin.
- *R. prowazekii* has been produced as a possible bioweapon and was used before World War II. It is infectious by aerosol, with a high case-fatality rate. The initial reference treatment of any suspected case is a single dose of 200 mg of doxycycline in situations where doxycycline is limited in supply.

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What is murine typhus?
Murine typhus is a flea-borne illness caused by the bacterium *Rickettsia typhi.*

Last Updated September 30, 2023

PUBLIC HEALTH REFERENCE SHEET
Typhus Fever

What is the occurrence of murine typhus?
This illness is distributed worldwide, particularly in and around port cities and coastal regions with large rodent population. Murine typhus has been reported among travelers returning from Africa, Asia, and the Mediterranean Basin. Most cases acquired in the United States are reported from California, Hawaii, and Texas.

How is murine typhus transmitted?
People become infected with *R. typhi* when they come into contact with infected flea feces via scratched or abraded skin. Exposure can also occur when mucous membranes are exposed to infected feces or when a patient inhales the feces.

Several flea species have been identified as potential vectors for murine typhus, including the rat flea (*Xenopsylla cheopis*), cat flea (*Ctenocephalides felis*), and mouse flea (*Leptopsyllia segnis*). Opossums, dogs, and cats living in urban or suburban areas have also been implicated as host species for fleas carrying *R. typhi* in recent cases in the United States and Spain.

Who is at risk for murine typhus?
People are at risk for fleaborne rickettsioses when traveling in endemic regions; when they are exposed to flea-infested cats, dogs, and peridomestic animals; or when they enter or sleep in areas infested with rodents.

What are the signs and symptoms of murine typhus?
Symptoms of the disease manifest 7–14 days post-exposure, with patients usually displaying fever combined with either headache or rash. Other possible symptoms include muscle pain, loss of appetite, nausea, vomiting, abdominal discomfort, cough, or cognitive changes. A rash is common during the first week, lasting between 1 to 4 days. This rash usually begins on the trunk and spreads outwards, avoiding the palms of hands and soles of feet. However, its appearance can differ among patients or might be entirely absent, making it an unreliable diagnostic indicator. Routine lab tests often reveal anemia, low platelet and white blood cell counts, low sodium levels, and increased liver enzyme levels.

What are the potential complications of murine typhus?
Patients with murine typhus can develop organ failure or other severe sequelae, requiring hospital-based management. Death can occur.

How is murine typhus diagnosed?
For lab confirmation*, Rickettsia typhi* can be detected using various methods such as IFA, IHC, PCR, and culture isolation. PCR is best when used within the first week of illness, before administering doxycycline. Serologic tests, especially using IFA, are common for murine typhus confirmation, focusing on detecting IgG or IgM antibodies. Diagnosis often comes from a notable increase in antibody titer from initial to later stages of illness. IgG, appearing 7–10 days post-onset, is more reliable than IgM. Persistent antibody titers from past exposures can confuse diagnosis. Thus, only recent titer changes reliably confirm acute infections. Since *Rtyphi* antigens can cross-react with other species like *R. prowazekii* and *R. felis*, it's crucial to run parallel tests for specificity. IHC detects typhus group Rickettsia in fixed tissue samples.

How is murine typhus treated?
Due to the vague symptoms of murine typhus and early test unreliability, treatment should hinge on clinical signs, exposure history, and travel to tropical areas. Early treatment leads to milder

illness and quicker recovery. Waiting for diagnostic tests before treatment isn't advised. Clusters of murine typhus are found in the U.S., so suspected cases must be reported to curb its spread.

Doxycycline is the treatment of choice for suspected cases of murine typhus in adults and children of all ages. Recommended dosages of doxycycline include:

- Adults: 100 mg twice per day
- Children under 45 kg (100 lbs.): 2.2 mg/kg body weight given twice a day

Patients should be treated for at least 3 days after the fever subsides and until there is evidence of clinical improvement (usually 7–10 days).

How can murine typhus be prevented?

Instruct travelers and Service members going to murine endemic areas to minimize their exposure to infectious arthropods and avoid animal reservoirs. Apply insecticide powders with residual action to rat runs, burrows, and harborages. Control rodents or opossums (North America) around premises or home of patient. To avoid increased exposure of humans, wait until flea populations have first been reduced by insecticides before instituting rodent control measures.

What are some Public Health considerations?

- Case report to local health authority obligatory in most states.
- In endemic areas with numerous cases, use of a residual insecticide effective against rat or cat fleas will reduce the flea index and the incidence of infection in humans.
- Disaster implications are that cases can be expected when people, rats, and fleas are forced to coexist in close proximity, but murine typhus has not been a major contributor to elevated disease rates in such situations.

.....

What is scrub typhus?

Scrub typhus, also known as bush typhus, is a disease caused by a bacteria called *Orientia tsutsugamushi.*

What is the occurrence of scrub typhus?

Scrub typhus is endemic to regions of east Asia (China, northern Japan), Southeast Asia (India, Indonesia, Sri Lanka), the Pacific (eastern Australia), and several parts of south-central Russia. Cases of disease also have been described from several unexpected regions, including the United Arab Emirates and southern Chile, and the cases appear to be caused by newly recognized species of *Orientia*.

How is scrub typhus transmitted?

Scrub typhus is transmitted to humans through bites from infected larval trombiculid mites, commonly known as chiggers. The following species are known vectors of scrub typhus: *Leptotrombidium pallidum, L. fuji, L. scutellare*, and *L. akamushi*. Seasonality of the disease is determined by the appearance of larvae. In temperate zones, scrub typhus season is observed mainly in the fall, but also occurs in the spring. If a person is bitten by an infected mite, disease occurs within 7–10 days and typically lasts 14–21 days without appropriate treatment.

Who is at risk of scrub typhus?

More people worldwide are at risk for scrub typhus than for any other rickettsial disease; >1 million cases occur annually, mostly in farmers or people with occupational exposure. Travel-

acquired cases of scrub typhus occasionally are reported among people who visit rural regions of countries where *O. tsutsugamushi* is endemic, and exposure is often associated with participating in recreational activities (e.g., camping, hiking, rafting). Rare urban cases have been described. Occupational infection is restricted mainly to adult workers (males more than females) who frequent overgrown terrain or other mite-infested areas, such as forest clearings, reforested areas, new settlements, or newly irrigated desert regions. Service members deploying to or training in endemic areas are also at risk.

What are the signs and symptoms of scrub typhus?
Symptoms of scrub typhus begin abruptly, 7 or more days after exposure. Typical signs and symptoms include:

- Fever and chills
- Headache
- Myalgia
- Eschar: the area around the bite may develop a necrotic skin lesion known as an eschar. The eschar may appear before the individual begins to develop systemic symptoms. Common sites of an eschar are axilla, under the breast, and groin, but less often on the abdomen, back, and extremities. Multiple eschars have been reported.
- Altered mental status, ranging from confusion to coma or delirium
- Lymphadenopathy
- Rash: about 25–50% of scrub typhus patients develop a rash. The rash is usually macular or maculopapular. Typically, it will begin on the abdomen of an infected individual and then spread to the extremities. Petechiae are uncommon.

What are the potential complications of scrub typhus?
Severe manifestations usually develop after the first week of untreated illness and may include multiple organ dysfunction syndrome with hemorrhaging, acute respiratory distress syndrome, encephalitis, pneumonia, renal or liver failure, and death.

During pregnancy, scrub typhus frequently leads to spontaneous abortion. Relapses may occur following apparent recovery in cases where inadequate treatment has occurred. Relapse is usually less severe than the initial presentation.

How is scrub typhus diagnosed?
The most rapid and specific diagnostic assays for scrub typhus rely on molecular methods like PCR, which can detect DNA in a whole blood, eschar, or tissue sample. Immunostaining procedures can also be performed on formalin-fixed tissue samples. Since scrub typhus is not common in the United States, confirmatory tests are not typically available at state and local health departments; nonetheless, indirect IFA, culture, and PCR assays can all be performed at the CDC through submission from state health departments. Diagnosis is typically confirmed by documenting a fourfold rise in antibody titer between acute and convalescent samples. Acute specimens are taken during the first week of illness, and convalescent samples are taken 2–4 weeks later. IgG antibodies are considered more accurate than IgM, but detectable levels of IgG antibody generally do not appear until 7–10 days after the onset of illness.

Because antibody titers may persist in some individuals for years after the original exposure, only demonstration of recent changes in titers between paired specimens can be considered reliable confirmation of an acute scrub typhus infection.

PUBLIC HEALTH REFERENCE SHEET
Typhus Fever

How is scrub typhus treated?

Doxycycline is the treatment of choice for suspected scrub typhus in persons of all ages. Recommended dosages of doxycycline include:

- Adults: 100 mg twice per day
- Children under 45 kg (100 lbs): 2.2 mg/kg body weight twice per day

Treatment alternatives primarily for patients with severe doxycycline allergy or women who are pregnant include azithromycin, chloramphenicol, or rifampin. Patients should be treated for at least 3 days after the fever subsides and until there is evidence of clinical improvement. Single-dose or short courses of doxycycline may lead to a relapse in illness.

Rigorous reevaluation of earlier reports of doxycycline-resistant scrub typhus has revealed those reports to be incorrect.

How can scrub typhus be prevented?

Prevention focuses on avoiding chigger bites and understanding the environments where chiggers are found.

- Prevent contact with infected mites through personal prophylaxis by impregnating clothes, uniforms, and blankets with miticidal chemicals (permethrin and benzyl benzoate) and application of mite repellents (diethyltoluamide) to exposed skin surfaces.
- Eliminate mites from the specific sites through application of chlorinated hydrocarbons, such as lindane, dieldrin, or chlordane, to ground and vegetation in environs of camps, mine buildings, and other populated zones in endemic areas.

What are some Public Health considerations?

Use surveillance to include:

- Implementing and maintaining robust surveillance systems can help detect outbreaks early and guide response measures.
- Persons with similar exposures should be monitored for fever and treatment initiated quickly when needed.
- Tourists visiting and Service members deploying to endemic areas should be informed about the risks of scrub typhus and the preventive measures they can adopt.
- Currently, scrub typhus, flea-borne (murine) typhus, and epidemic typhus are not nationally notifiable conditions; however, your state may require notification. Please check with your state and local health departments about reportable diseases. Further information for public health professionals can be found at https://www.cdc.gov/typhus/info/index.html.
- When reporting cases of typhus fever in the Disease Reporting System internet (DRSi)—
    - Specify the clinical form of the disease.
    - Document relevant travel and deployment history occurring within the incubation period (epidemic or murine typhus: 1–2 weeks; scrub typhus: 6–12 days).
    - Document the circumstances under which case patient was exposed, including duty exposure, occupational activities, environmental exposures, or other high-risk activities.
    - There can be antibody cross-reactivity between spotted fever and typhus group antigens. In cases where IgM or IgG titers are positive for both diseases, report the case under the disease most consistent with the case's clinical presentation, exposure history, and travel history.

Last Updated September 30, 2023

PUBLIC HEALTH REFERENCE SHEET
Typhus Fever

References:

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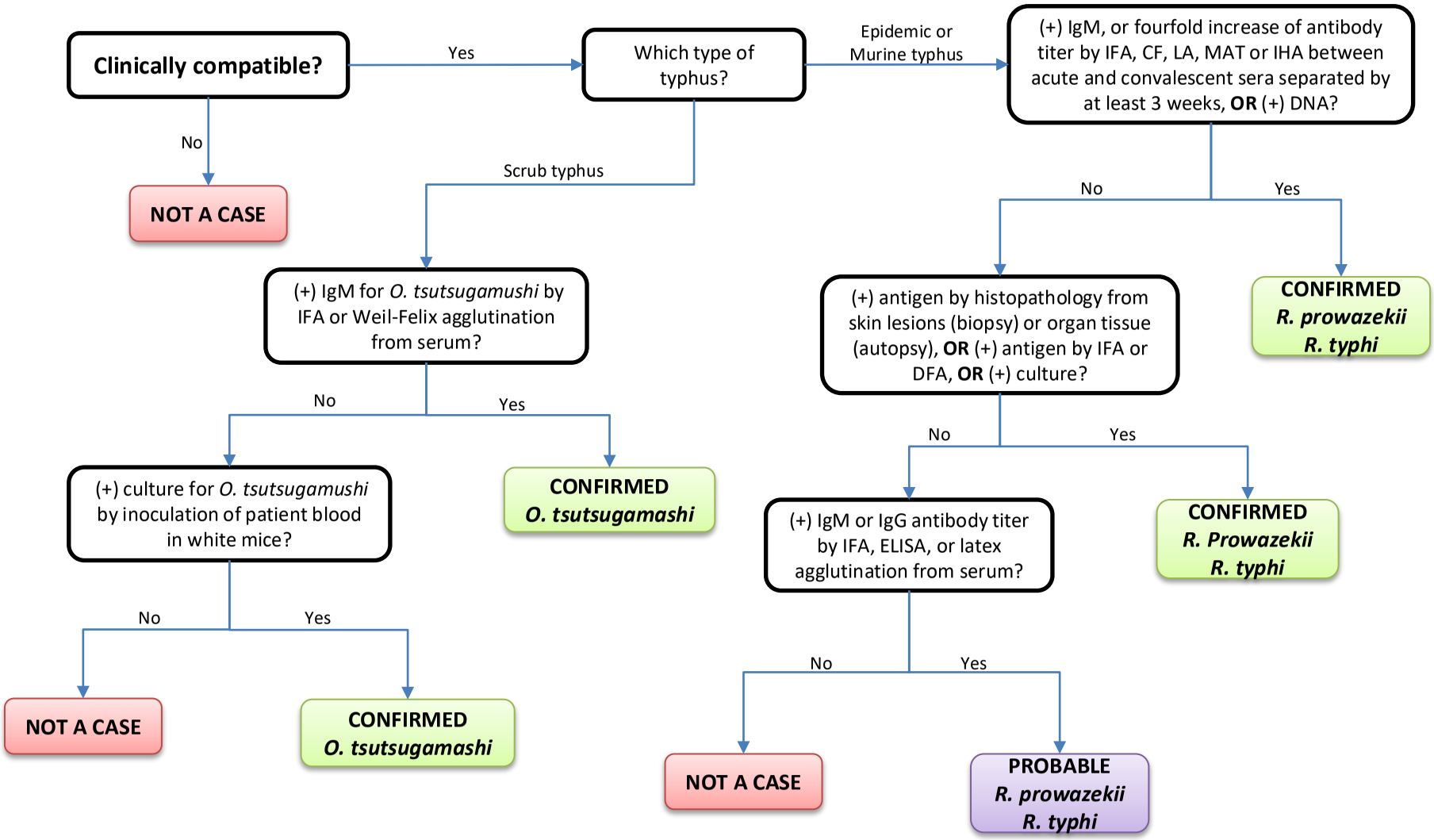
Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Typhus Fevers," Centers for Disease Control and Prevention (CDC), last reviewed November 13, 2020. https://www.cdc.gov/typhus/

Last Updated September 30, 2023

Typhus Fever

EXCLUDES: All other *Rickettsia* species. See Spotted Fever Rickettsiosis.



Typhus Fever (*Rickettsia prowazekii, Rickettsia typhi,* or *Orentia tsutsugamushi*)

Clinical Description, Critical Reporting Elements, and Comments

Clinical Description:

A group of arthropod-borne diseases with three clinically distinct presentations, each with its own specific infectious agent and vector including:

Epidemic (Louse-borne) Typhus: (*Rickettsia prowazekii*) An illness characterized by any reported fever and one or more of the following: rash, headache, chills, prostration, and general pain. The macular or maculopapular rash appears on the fifth to sixth day, initially on the upper trunk followed by spread to the entire body, but usually sparing the face, palm, and soles. The infectious agent is transmitted by body lice. Most commonly found in the colder (i.e., mountainous) regions of central and eastern Africa, Central and South America, and Asia. In the United States, rare cases of epidemic typhus, called sylvatic typhus, can occur after exposure to flying squirrels and their nests.

Murine (Endemic) Typhus: (*Rickettsia typhi*) Similar to louse-borne typhus, but often milder. The infectious agent is transmitted by fleas. Endemic in Mediterranean countries, some African, Central American, and South American countries, some coastal states in the USA, and Southeast Asia.

Scrub Typhus: (*Orientia tsutsugamushi*) Often produces a primary "punched out" skin eschar corresponding to the primary attachment of an infected mite. Acute onset of symptoms follows within several days, characterized by fever, headache, profuse sweating, conjunctival injection, and lymphadenopathy. A dull red maculopapular eruption appears on the trunk late in the first week, gradually extending to the extremities. It is endemic to Southeast Asia, Indonesia, China, Japan, India, and northern Australia.

Critical Reporting Elements and Comments:

- Specify the clinical form of the disease.
- Document relevant travel and deployment history occurring within the incubation period (epidemic or murine typhus: 1–2 weeks; scrub typhus: 6–12 days).
- Document the circumstances under which case patient was exposed including duty exposure, occupational activities, environmental exposures, or other high-risk activities.

There can be antibody cross-reactivity between spotted fever and typhus group antigens. In cases where IgM or IgG titers are positive for both diseases, report the case under the disease most consistent with the case's clinical presentation, exposure history, and travel history.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

Typhus Fever

Confirmed ◯ Not a Case ◯

☐ Epidemic typhus fever
☐ Murine typhus fever
☐ Scrub typhus fever

POC: _____

(_____) - _____ - _____

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

Outbreak investigations must be reported immediately to DRSi through the outbreak module https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____ **Location:** _____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Headache	☐	☐	
Mylagia	☐	☐	***Describe any other relevant symptoms or clinical history:***
Arthralgia	☐	☐	
Nausea	☐	☐	
Other *(describe)*	☐	☐	

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	**Date Started**	**Duration**
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Microscopic identification	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Intraperitoneal inoculation in laboratory mice/rats	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*Incubation period: Epidemic typhus and murine 1–2 weeks, commonly 12 days. Scrub typhus 6–12 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

EXPOSURE HISTORY

Is there documented exposure to lice and/or ticks? Y ☐ N ☐ **If yes, when:** _____/_____/_____ **to** _____/_____/_____

If yes, where: *(city)*_____ *(state)*_____*(country)*_____

Describe tick(s):_____ **Describe louse:**_____

Please document exposure history (e.g., occupational exposures):

PUBLIC HEALTH REFERENCE SHEET
Varicella (varicella-zoster virus)

Name	Chickenpox (varicella virus) Causative agent: varicella-zoster virus EXCLUDES: Shingles (zoster virus, herpes zoster virus)
Reservoir & Transmission	Humans Transmission includes several routes (see below)
Incubation Period	14–16 days after exposure to a varicella or a herpes zoster rash (range 10–21 days).
Common Symptoms	Depends on type (i.e., chickenpox or shingles)
Gold Standard Diagnostic Test	PCR testing of skin lesions (scabs and vesicular fluid)
Risk Groups	Newborns, premature infants, infants, adolescents, adults, immunocompromised persons, and pregnant women
Geographic Significance	Worldwide; more so in temperate climate

What is varicella?
Varicella, commonly called chickenpox, is an acute infectious disease that is caused by varicella-zoster virus (VZV), which is a DNA virus that is a member of the herpesvirus group. Primary infection with VZV causes varicella. After the primary infection, VZV stays in the body (in the sensory nerve ganglia) as a latent infection. Reactivation of latent infection causes herpes zoster (shingles).

What is the occurrence of varicella?
As of 2020, 39 States have been conducting case-based varicella surveillance. Varicella outbreaks continue to occur, even in settings where most children are vaccinated (e.g., schools). The incidence of varicella, as well as varicella-related hospitalizations, has decreased significantly since implementation of the national varicella vaccination program in 1995.

How is varicella transmitted?
Varicella can be spread from person-to-person by direct contact, inhalation of aerosols from vesicular fluid of skin lesions of acute varicella or zoster, and possibly through infected respiratory secretions that also may be aerosolized. Indirect transmission occurs through items that are freshly soiled by discharges from vesicles and mucous membranes of infected people. In contrast to vaccinia and variola, scabs from varicella lesions are not infective.

Varicella is communicable from 1 to 2 days before onset of rash until all lesions are crusted (usually about 5 days) after rash onset. Infectiousness may be prolonged in patients with altered immunity. Herpes zoster patients are infectious while they have active (vesiculopustular) lesions (usually 7–10 days). Susceptible exposed individuals should be considered potentially infectious for 8–21 days following exposure (or 28 days if they received passive immunization). Among household members, about 90% of susceptible close contacts will contract varicella after exposure to persons with the disease.

Who is at risk for varicella?
- Immunocompromised people without evidence of immunity to varicella, such as:
  - People with leukemia or lymphoma
  - People on medications that suppress the immune system, such as high-dose systemic steroids or chemotherapeutic agents

    - People with cellular immune-deficiencies or other immune system problems
- Newborns whose mothers have varicella from 5 days before to 2 days after delivery
- Premature babies exposed to varicella or herpes zoster, specifically—
    - Hospitalized premature infants born at ≥28 weeks of gestation whose mothers do not have evidence of immunity, or
    - Hospitalized premature infants born at <28 weeks of gestation or who weigh ≤1,000 grams at birth regardless of their mothers' varicella immunity status
- Pregnant women without evidence of immunity to varicella

What are the signs and symptoms of varicella?
In healthy children, varicella is generally mild, where a generalized and pruritic rash, malaise, and temperature up to 102°F for 2 to 3 days. In children, the rash is often the first sign of disease. Adolescents and adults can have more severe symptoms. A mild prodrome of fever, malaise, anorexia, or headache may occur 1 to 2 days before rash onset. The rash progresses rapidly from macular to papular to vesicular lesions before crusting. Lesions are typically present in all stages of development at the same time; they usually appear first on the chest, back, and face; then spreads over the entire body; and typically last 4–7 days.

Unvaccinated persons: Varicella in unvaccinated persons involves a rash that is generalized and pruritic. It progresses rapidly from macular to papular to vesicular lesions before crusting. The rash usually appears first on the head, chest, and back, and then it spreads to the rest of the body. The lesions are usually most concentrated on the chest and back. Symptoms typically last 4 to 7 days. Individuals may have some residual scaring (pox marks) and/or hypopigmentation of the skin. Secondary bacterial skin infections can result in disfiguring scars. Persons with herpes zoster (shingles), will usually have a painful unilateral rash confined to a dermatome of the skin, and may experience painful long-term post-herpetic neuralgia.

Vaccinated persons: Varicella in vaccinated persons is called breakthrough varicella, which is an infection with wild-type VZV occurring more than 42 days after varicella vaccination. Breakthrough varicella is usually mild. Patients typically are afebrile or have low fever and develop fewer than 50 skin lesions. Vaccinated individuals usually have a shorter illness compared to unvaccinated people who get varicella. The rash is more likely to be predominantly maculopapular rather than vesicular. However, 25%–30% of persons vaccinated with one dose who get breakthrough varicella will have clinical features similar to those of varicella in unvaccinated people. Vaccinated people may develop lesions that do not crust and are considered contagious until there are no new lesions over a 24-hour period of time. Since the clinical features of breakthrough varicella are often mild, it can be difficult to make a diagnosis on clinical presentation alone. Laboratory testing is increasingly important for confirming varicella and appropriately managing cases and their contacts. There is limited information about breakthrough varicella in persons who have received two doses of varicella vaccine, though it appears to occur less frequently, and disease may be even milder among people vaccinated with two doses of varicella vaccine compared to persons who have received a single dose of varicella vaccine.

What are potential complications of varicella?
Severe complications caused by varicella include cerebellar ataxia, encephalitis, viral pneumonia, and hemorrhagic conditions. Other severe complications are due to bacterial infections and include septicemia, toxic shock syndrome, necrotizing fasciitis, osteomyelitis, bacterial pneumonia, or septic arthritis.

PUBLIC HEALTH REFERENCE SHEET
Varicella (varicella-zoster virus)

How is varicella diagnosed?

Diagnosis includes a clinical assessment of the rash in the context of history of exposure to varicella or acute onset of diffuse (generalized) maculo-papulovesicular rash without other apparent cause. The most sensitive method for laboratory confirmation is detection of varicella nucleic acid (DNA) by PCR, sequencing, or nucleic acid amplification test (NAAT) from testing of skin lesions (scabs and vesicular fluid) or any clinical specimen. Other tests include positive antigen by direct florescent antibody (DFA) assay from any clinical specimen; or viral culture from any clinical specimen, which takes more time to result; or at least a one-fold increase of IgG antibody titer between acute and convalescent sera. Routine testing for varicella immunity after two doses of vaccine is not recommended.

How is varicella treated?

For people exposed to varicella or herpes zoster who cannot receive varicella vaccine, varicella-zoster immune globulin can prevent varicella from developing or lessen the severity of the disease. Varicella-zoster immune globulin is recommended for people who cannot receive the vaccine and 1) who lack evidence of immunity to varicella, 2) whose exposure is likely to result in infection, and 3) are at high risk for severe varicella.

The American Academy of Pediatrics (AAP) recommends that certain groups at increased risk for moderate to severe varicella be considered for oral acyclovir or valacyclovir treatment. These high-risk groups include:

- Healthy people older than 12 years of age
- People with chronic cutaneous or pulmonary disorders
- People receiving long-term salicylate therapy
- People receiving short, intermittent, or aerosolized courses of corticosteroids

Some healthcare providers may elect to use oral acyclovir or valacyclovir for secondary cases within a household. For maximum benefit, oral acyclovir or valacyclovir therapy should be given within the first 24 hours after the varicella rash starts. Oral acyclovir or valacyclovir therapy is not recommended by AAP for use in otherwise healthy children experiencing typical varicella without complications.

How can varicella be prevented?

- Varicella is a vaccine preventable disease. Live attenuated varicella vaccines are available throughout the world. In the U.S., there are two varicella vaccines licensed for use in healthy persons with routine doses at 12–15 months old and 4–6 years old:
    - Varivax® contains only varicella vaccine and is for people 12 months of age or older.
    - ProQuad® contains a combination of measles, mumps, rubella, and varicella (MMRV) and is licensed for use in children 12 months through 12 years of age.
- In some countries, the VARILRIX vaccine can be administered as early as 9 months of age; however, is not approved by the U.S. Food and Drug Administration (FDA), and a dose prior to 12 months will not count in the U.S. schedule.
- The Department of Defense policy is to immunize with varicella vaccine those military accessions and healthcare workers who are susceptible to infection with varicella-zoster virus as determined by serologic screening. Two doses of varicella vaccine are to be given as it produces an improved immune response that correlates with improved protection against the disease.
- A herpes zoster (shingles) vaccine (Shingrix) is licensed in the U.S. for adults ≥50 years of age, and in adults ≥19 years of age who are or will be immunodeficient or immunosuppressed because of disease or therapy.

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Varicella (varicella-zoster virus)

- Consult with the Immunization Healthcare Division for information about vaccine policies, deployment requirements, and travel recommendations. https://www.health.mil/Military-Health-Topics/Health-Readiness/Immunization-Healthcare

What are some public health considerations?

- When reporting varicella infections in the Disease Reporting System internet (DRSi) document the following:
  - Vaccination history and evidence of immunity. Evidence of immunity to varicella includes any of the following:
    - Documentation of age-appropriate varicella vaccination
    - Preschool-age children (i.e., age 12 months through 3 years): one dose
    - School-age children, adolescents, and adults: two doses
    - Laboratory evidence of immunity or laboratory confirmation of disease
    - Commercial assays can be used to assess disease-induced immunity but lack sensitivity to detect vaccine-induced immunity (i.e., might yield false-negative results)
    - Diagnosis or verification of a history of varicella or herpes zoster by a healthcare provider
  - Document if the case patient works in, lives in, or attends a high transmission setting such as food handling, daycare, school, group living, healthcare, training center, or ship.
  - Document travel history in the 5 weeks before illness onset.
- Infection prevention strategies in healthcare settings include:
  - Isolating the patient in a room with a closed door (negative pressure room if available)
  - Following standard, airborne, and contact precautions until lesions are dry and crusted
  - Ensuring only staff with evidence of varicella immunity to care for patients with varicella
- Since varicella is vaccine preventable, all deaths due to varicella should be investigated.

References:

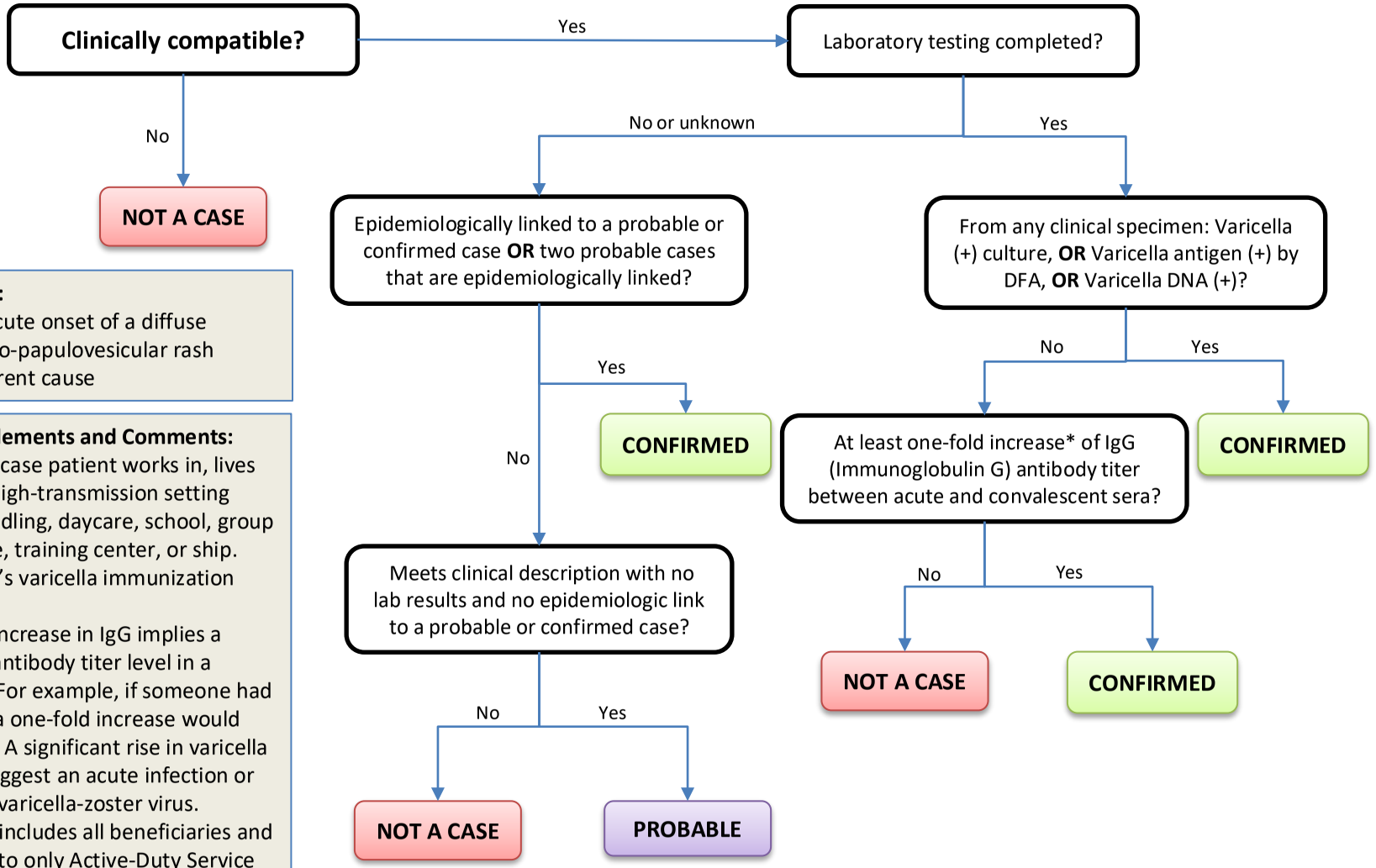
"Chickenpox (Varicella)," Centers for Disease Control and Prevention (CDC), last reviewed October 21, 2022. https://www.cdc.gov/chickenpox/hcp/

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Varicella

Common Name: Chickenpox (varicella virus)
EXCLUDES: Shingles (zoster virus, herpes zoster virus)



Clinical Description:
An illness with an acute onset of a diffuse (generalized) maculo-papulovesicular rash without other apparent cause

Critical Reporting Elements and Comments:

- Document if the case patient works in, lives in, or attends a high-transmission setting such as food handling, daycare, school, group living, healthcare, training center, or ship.
- Note the patient's varicella immunization history.
- A one-fold titer increase in IgG implies a doubling of the antibody titer level in a serological test. For example, if someone had a titer of 1:160, a one-fold increase would bring it to 1:320. A significant rise in varicella IgG titers may suggest an acute infection or reinfection with varicella-zoster virus.

This case definition includes all beneficiaries and is no longer limited to only Active-Duty Service members.

INVESTIGATION WORKSHEET

Defense Health Agency ®

Varicella

Confirmed ○ Probable ○ Not a Case

☐ Entered in DRSi?

☐ Reported to health dept?

https://drsi.health.mil/ADRSi

POC: _____

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.

(_____) - _____ - _____

Outbreak investigations must be reported immediately to DRSi through the outbreak module.

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ **PHONE:** (_____) - _____ - _____ *(h)*

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐unk)
Rash*	☐	☐	
Other *(describe below)*	☐	☐	

Epidemiologic Link	Y	N
Is the case epidemiologically linked to another laboratory-confirmed case of Varicella?	☐	☐
Is this case part of a larger group/community outbreak?	☐	☐

***If the case has a rash, describe:**

Rash onset: _____/_____/_____

Rash duration: _____

Describe rash:_____

_____

_____

_____

VACCINATION HISTORY

	Y	N	Vaccination Date(s)
Is the case vaccinated?	☐	☐	**1st:**____/_____/_____ **2nd:** ____/_____/_____ **3rd:**____/_____/_____

If not ever vaccinated, why?

☐ **Religious Exemption** ☐ **Medical Contraindication** ☐ **Philosophical Objection**

☐ **Lab Evidence of Previous Disease** ☐ **MD Diagnosis of Previous Disease**

☐ **Under Age for Vaccination** ☐ **Parental Refusal** ☐ **Other:** _____

☐ **Unknown**

LABORATORY RESULTS

COMMENTS

Test *(type of test performed)*	Collection Date	Source *Circle Type*	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

TRAVEL HISTORY

In the (INCUBATION PERIOD)* before illness onset (when symptoms started), did the case.....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

*__Incubation Period__ Variable, typically 14–16 days, can range 10–21 days

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Does case works in, lives in, or attends a high-transmission setting such as food handling, daycare, school, group living, etc: Y ☐ N ☐

If yes, where: _____
_____
_____

Include any other pertinent information below:

PUBLIC HEALTH REFERENCE SHEET
Yellow fever

Name	Yellow Fever Virus (family *Flaviviridae* and genus *Flavivirus*)
Reservoir & Transmission	Humans and *Aedes* mosquitoes (urban areas) Non-human primates and forest mosquitoes (rural areas) Bite of an infected *Aedes spp.* Mosquito
Incubation Period	3–6 days
Common Symptoms	Fever, headache, nausea, vomiting, jaundice, elevated total bilirubin ≥3.0mg/dl
Gold Standard Diagnostic Test	Serology of IgM and neutralizing antibodies
Risk Groups	Unvaccinated travelers, those who do not have vaccine-acquired or naturally acquired immunity and live near forest areas or in *A. aegypti*-infested areas
Geographic Significance	Sub-Saharan Africa, topical South America

What is yellow fever?
Yellow fever is a disease caused by the yellow fever (YF) virus which is a single-stranded RNA virus that belongs to the genus *Flavivirus.*

What is the occurrence of yellow fever?
YF occurs in sub-Saharan Africa and tropical South America, where it is endemic and intermittently epidemic. Most YF disease in humans is due to sylvatic or intermediate transmission cycles. Urban YF occurs periodically in Africa and sporadically in the Americas.

How is yellow fever transmitted?
- Vectorborne transmission of YF virus occurs via the bite of an infected mosquito, primarily *Aedes* or *Haemagogus* spp. Nonhuman primates and humans are the main reservoirs of the virus, and anthroponotic (human-to-vector-to-human) transmission occurs. YF virus has three transmission cycles: sylvatic (jungle), intermediate (savannah), and urban.
- The sylvatic (jungle) cycle involves transmission of virus between nonhuman primates and mosquito species found in forest canopies. Virus is transmitted from monkeys to humans via mosquitoes when occupational or recreational activities encroach into the jungle. In Africa, an intermediate (savannah) cycle involves transmission of YF virus from tree hole—breeding *Aedes* spp. to humans in jungle border areas. YF virus can be transmitted from monkeys-to-humans or from human-to-human via these mosquitoes. The urban cycle involves transmission of virus between humans and peridomestic mosquitoes, primarily *Ae. aegypti.*
- Humans infected with YF virus experience the highest levels of viremia shortly before onset of fever and for the first 3–5 days of illness, during which time they can transmit the virus to mosquitoes. Because of the high level of viremia, bloodborne transmission theoretically can occur via transfusion or needlesticks. One case of perinatal transmission of wild-type YF virus from a woman who developed symptoms of YF 3 days prior to delivery has been documented; the infant subsequently tested positive for YF viral RNA and died of fulminant YF on the 12th day of life (CDC, 2023).

Who is at risk for yellow fever?
In areas of Africa with persistent circulation of YF virus, natural immunity accumulates with age; consequently, infants and children are at greatest risk for disease. In South America, YF occurs

most frequently in unimmunized young people exposed to mosquito vectors through their work in forested areas.

A traveler's risk for acquiring YF is determined by their immunization status as well as destination-specific (e.g., local rate of virus transmission) and travel-associated (e.g., exposure duration, occupational and recreational activities, season) factors.

What are the signs and symptoms of yellow fever?
Most people infected with YF virus have minimal or no symptoms and are unlikely to seek medical attention. For those who develop symptomatic illness, the incubation period is typically 3–6 days. The initial illness is nonspecific: backache, chills, fever, headache, myalgia, nausea and vomiting, and prostration. Most infected people improve after the initial presentation. After a brief remission of ≤48 hours, 12% of infected patients progress to a more serious form of the disease, characterized by hemorrhagic symptoms, jaundice, and eventually shock and multisystem organ failure. The case-fatality rate for severe cases is 30%–60% (CDC, 2023).

How is yellow fever diagnosed?
YF is a nationally notifiable disease. A preliminary diagnosis is based on clinical presentation and exposure details. Laboratory diagnosis is best performed by virus isolation or nucleic acid amplification tests (e.g., reverse transcription PCR (RT-PCR)) or by serologic assays. Perform virus isolation or nucleic acid amplification tests for YF virus or YF viral RNA early in the course of the illness. By the time more overt symptoms are recognized, the virus or viral RNA might no longer be detectable; thus, virus isolation and nucleic acid amplification testing should not be used to rule out a diagnosis of YF. Serologic assays can be used to detect virus-specific IgM and IgG antibodies. Because of the possibility of cross-reactivity between antibodies against other flaviviruses, however, more specific antibody testing (e.g., a plaque reduction neutralization test) should be performed to confirm the infection. Contact your state or local health department or call the Centers for Disease Control and Prevention (CDC) Arboviral Diseases Branch at 970-221-6400 for assistance with diagnostic testing for YF virus infections (CDC, 2023).

How is yellow fever treated?
No specific medications are available to treat YF virus infections; treatment is directed at symptomatic relief or life-saving interventions. Fluids, rest, and use of analgesics and antipyretics might relieve symptoms of aching and fever. Avoid prescribing medications that can increase the risk for bleeding (e.g., aspirin or other nonsteroidal anti-inflammatory drugs). During the first few days of illness, protect infected people from further mosquito exposure by keeping them indoors or under a mosquito net, so they do not contribute to the transmission cycle.

How can yellow fever be prevented?
The best way to prevent mosquito-borne diseases, including YF, is to avoid mosquito bites. YF is preventable by a relatively safe, effective vaccine. All YF vaccines currently manufactured are live attenuated viral vaccines. Only one YF vaccine (YF-VAX, Sanofi Pasteur) is licensed for use in the United States. YF vaccine is recommended for people aged ≥9 months who are living in, or traveling to, areas with risk for YF virus transmission in Africa or South America. A single dose of YF vaccine protects most people for life, but a booster dose after 10 years may be recommended for some travelers, as well as some countries may require evidence of YF

vaccination within the past 10 years. Visit the CDC web site for country-specific YF vaccination recommendations and requirements at https://wwwnc.cdc.gov/travel/yellowbook/2024/preparing/yellow-fever-vaccine-malaria-prevention-by-country.

What are some Public Health considerations?

- When reporting cases of YF in the Disease Reporting System Internet (DRSi), document relevant travel and deployment history occurring within the incubation period and note the patient's YF immunization history.
- As proof of vaccination, individuals must possess and International Certificate of Vaccination or Prophylaxis (ICVP), Form CDC 731, that validates with the provider's signature and an official YF vaccination stamp. For all non-operational and leisure travel to endemic areas, follow the Advisory Committee on Immunization Practices, which recommends that a single lifetime dose of YF vaccine is sufficient for most travelers. Consult the DHA Immunization Healthcare Division website at https://www.health.mil/Military-Health-Topics/Health-Readiness/Immunization-Healthcare/Vaccine-Recommendations/Vaccine-Recommendations-by-AOR) for deployment vaccine recommendations by Area of Responsibility (AOR).

References:

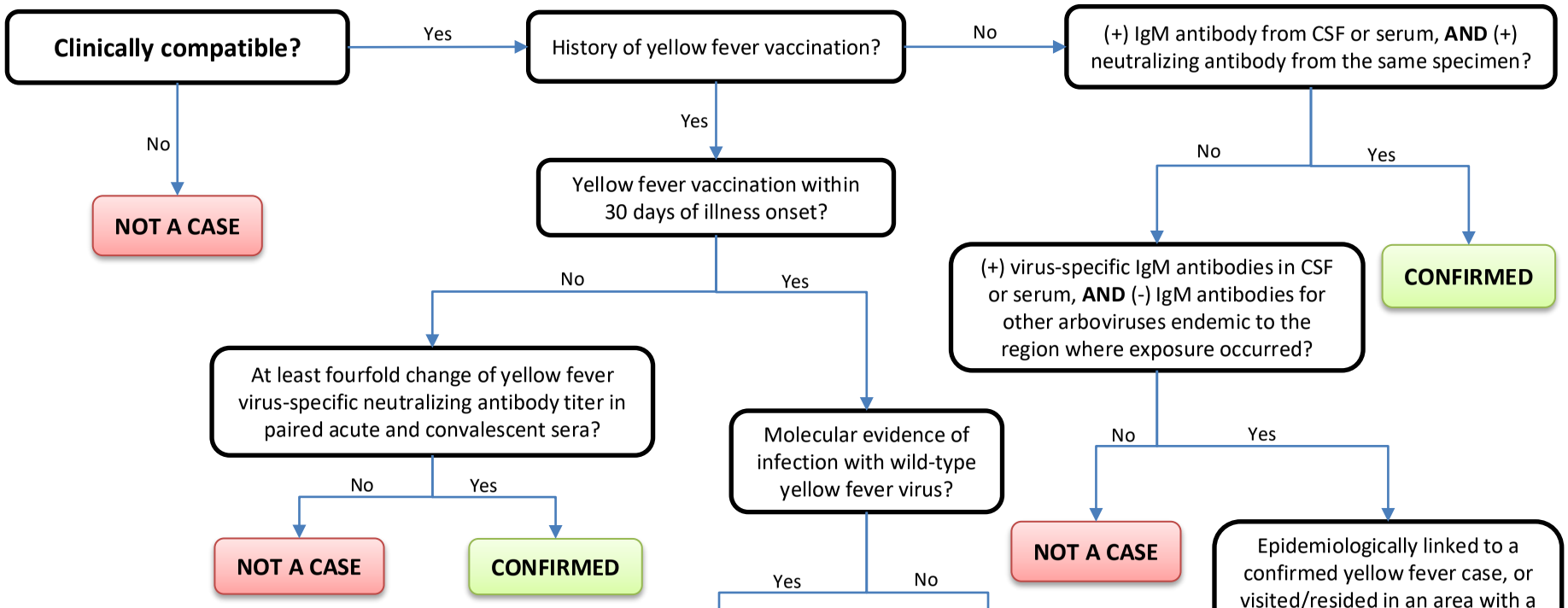
Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

Gershman, Mark, J. and Staples, Erin. "Yellow Fever." *CDC Yellow Book 2024: Travel-Associated Infections & Diseases*. Centers for Disease Control and Prevention, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/yellow-fever

"Yellow Fever Virus," Centers for Disease Control and Prevention(CDC), last reviewed June 2, 2022. https://www.cdc.gov/yellowfever/

Yellow Fever



Clinical Description:
An acute illness, in the absence of a more likely clinical explanation, with at least one of the following:
- Fever
- Jaundice
- Elevated total bilirubin ≥ 3.0 mg/dl

Critical Reporting Elements and Comments:
- Document relevant travel and deployment history occurring within the incubation period (3–6 days).
- Note the patient's yellow fever immunization history.

INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

Yellow Fever

Confirmed ○ Probable ○ Not a Case

POC: _____

(_____) - _____ - _____

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.
Outbreak investigations must be reported immediately to DRSi through the outbreak module at https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:** _____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider: _____ **Clinic/hospital:** _____

	Y	N	
Hospitalized	☐	☐	**Admit date:** ____/_____/_____ **Discharge date:** ____/_____/_____ **Location:** _____
Deceased	☐	☐	**Date of death:** ____/_____/_____ **Cause of death:** _____

	Y	N	
Symptomatic	☐	☐	**Onset date:** ____/_____/_____ **Clinic date:** _____/_____/_____ **Diagnosis date:** _____/_____/____
Fever	☐	☐	**Max Temp:** _____°F/°C (☐ unk)
Chills or rigors	☐	☐	*Describe any other symptoms or relevant clinical history below:*
GI bleeding	☐	☐	
Hemorrhagic signs*	☐	☐	
Jaundice	☐	☐	
Nausea	☐	☐	
Vomiting	☐	☐	
Back pain	☐	☐	
Myalgia	☐	☐	
Headache	☐	☐	
Seizure	☐	☐	
Liver failure	☐	☐	
Other *(describe)*	☐	☐	

Vaccination history

	Y	N
Was the case vaccinated against Yellow Fever?	☐	☐

Vaccination date: _____/_____/_____

Hemorrhagic signs

Describe what hemorrhagic signs this case experienced:

Protective Measures

Did the case:

- ☐ Use bug spray
- ☐ Bed nets
- ☐ Permethrin
- ☐ Sleep outside
- ☐ Other (describe):

LABORATORY RESULTS

COMMENTS

Test (type of test performed)	Collection Date	Source (Circle Type)	Result	
☐ Antibody	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Antigen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ PCR (DNA)	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Culture	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Screen	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative
☐ Other *Describe below*	_____/_____/_____	Serum Urine CSF Other	☐ Positive	☐ Negative

Does the case have cross-reactive serologies to other flavivurses? Y ☐ N ☐

If yes, describe:

TRAVEL HISTORY

In the 5 weeks before illness onset (when symptoms started), did the case.....

Incubation period - 3 to 6 days

1. **Recently travel?** Y ☐ N ☐ Unk ☐

2. Was travel out of country? Y ☐ N ☐ Unk ☐

3. Did case receive theater/ country clearance before recent out-of-country trip? Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment ☐ Visiting Friends
☐ TDY ☐ Business (non-DoD)
☐ Vacation ☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Describe any other relevant information below:

PUBLIC HEALTH REFERENCE SHEET
Zika Virus

Name	Zika virus
Reservoir & Transmission	Nonhuman and human primates are likely the main reservoirs of the virus, and anthroponotic (human-to-vector-to-human) transmission occurs during outbreaks. Perinatal, in utero, and possible sexual and transfusion transmission events
Incubation Period	3–14 days
Common Symptoms	Typically asymptomatic Common symptoms are fever, rash, arthralgias, and conjunctivitis; myalgia and headache
Gold Standard Diagnostic Test	Nucleic acid amplification test (NAAT) assays
Risk Groups	Travelers to endemic areas, pregnant women
Geographic Significance	Worldwide, periodic outbreaks in tropical and subtropical regions For areas with risk of Zika, see map below.

What is Zika virus?
Zika virus is a single-stranded RNA virus of the *Flaviviridae* family, genus *Flavivirus*. *Flaviviruses* are a group of viruses that are transmitted to humans by mosquitoes.

What is the occurrence of Zika virus?
Zika virus occurs in tropical and subtropical regions. Since 2007, outbreaks of Zika virus disease have occurred throughout the Pacific Islands and in Southeast Asia. In 2015, Zika virus was identified in the Western Hemisphere, where large outbreaks occurred in Brazil. The virus then spread throughout much of the Americas, resulting in several hundred thousand cases.

There is no current local transmission of Zika virus in the continental United States (CONUS). The last cases of local Zika transmission by mosquitoes in CONUS were in Florida and Texas in 2016–2017.

Since 2019, there have been no confirmed Zika virus disease cases reported from United States territories. No Zika virus transmission by mosquitoes has ever been reported in Alaska and Hawaii. For areas with risk of Zika, see CDC Zika Travel Information website at https://wwwnc.cdc.gov/travel/page/Zika-information.

How is Zika virus transmitted?
Zika virus is transmitted to humans primarily through the bite of an infected *Aedes* species mosquito (*Ae. aegypti* and *Ae. albopictus*). The mosquito vectors typically breed in domestic water-holding containers; they are aggressive daytime biters and feed both indoors and outdoors near dwellings. Nonhuman and human primates are likely the main reservoirs of the virus, and anthroponotic (human-to-vector-to-human) transmission occurs during outbreaks.

Perinatal, in utero, and possible sexual and transfusion transmission events have also been reported.

Zika virus RNA has been detected in breast milk, but there has not been documented transmission through breast milk.

PUBLIC HEALTH REFERENCE SHEET
Zika Virus

Who is at risk for Zika virus?
Anyone who lives in or travels to an area with risk of Zika and has not already been infected with Zika virus can get it from mosquito bites.

What are the signs and symptoms of Zika virus?
Many people infected with Zika virus are asymptomatic. The characteristic clinical findings are acute onset of fever with maculopapular rash, arthralgia, or conjunctivitis. Other commonly reported symptoms include myalgia and headache. Clinical illness is usually mild with symptoms lasting for several days to a week. Severe disease requiring hospitalization is uncommon and case fatality is low. However, there have been cases of Guillain-Barré syndrome reported in patients following suspected Zika virus infection. Recently, the CDC concluded that Zika virus infection during pregnancy is a cause of microcephaly and other severe fetal brain defects. Due to concerns of microcephaly caused by maternal Zika virus infection, fetuses and infants of women infected with Zika virus during pregnancy should be evaluated for possible congenital infection and neurologic abnormalities.

What are the potential complications of Zika virus?
Zika virus disease is generally mild, and severe disease requiring hospitalization and deaths are uncommon. Zika infection during pregnancy can cause microcephaly and other severe fetal brain defects. Zika has been linked to other problems in pregnancies and among fetuses and infants infected with Zika before birth, such as miscarriage, stillbirth, defects of the eye, hearing deficits, and impaired growth. Rarely, Zika may cause Guillain-Barré syndrome.

Per CDC, Zika virus infection in a woman who is not pregnant would not pose a risk for birth defects in future pregnancies after the virus has cleared from her blood; once a person has been infected with Zika virus, he or she is likely to be protected from a future Zika infection.

How is Zika virus diagnosed?
Consider Zika virus infection in patients with acute onset of fever, arthralgia, conjunctivitis, or maculopapular rash who, ≤2 weeks of illness onset, lived in or recently traveled to areas with ongoing Zika virus transmission or had sex with someone who lives in or traveled to those areas. Because Zika and dengue virus infections have similar clinical presentations, patients with suspected Zika virus infection also should be evaluated for possible dengue.

Since Zika and dengue viruses share a similar global geographic distribution and cause infections that can be difficult to differentiate diagnostically, consider the global epidemiology of these two arboviruses when requesting testing and interpreting results. Zika virus testing guidance is updated as needed to address changes in the epidemiology. Some state health departments and many commercial laboratories perform Zika virus nucleic acid amplification testing (NAAT) and IgM testing. Confirmatory neutralizing antibody testing is available at CDC's Arboviral Diagnostic Reference Laboratory and selected health department laboratories. Current testing guidance is provided on the CDC website at https://www.cdc.gov/Zika/hc-providers/testing-guidance.html.

How is Zika virus treated?
No specific antiviral treatment is available for Zika virus disease. Treatment is generally supportive and can include rest, fluids, and use of analgesics and antipyretics. Because of similar geographic distribution and symptoms, patients with suspected Zika virus infections also should be evaluated and managed for possible dengue or chikungunya virus infection. Aspirin and other non-steroidal

anti-inflammatory drugs (NSAIDs) should be avoided until dengue can be ruled out to reduce the risk of hemorrhage.

How can Zika virus be prevented?

- No vaccine or preventive drug is available for Zika virus. All travelers to areas with Zika virus transmission should take steps to avoid mosquito bites to prevent Zika virus and other vectorborne infections. Previous Zika infection likely provides protection from future infections, but it is uncertain for how long.
- Advise people with possible Zika virus exposure who want to reduce the risk for sexual transmission of the virus to an uninfected partner to follow current CDC recommendations. https://www.cdc.gov/Zika/prevention/sexual-transmission-prevention.html
- Although blood donations in the United States were previously screened for Zika virus RNA, the U.S. Food and Drug Administration ceased this requirement in May 2021 because the virus no longer has sufficient incidence to affect the potential donor population.
- Pregnant women should not travel to areas with ongoing Zika outbreaks. Before traveling to areas with current or past spread of Zika, pregnant people should discuss their travel plans with a healthcare provider. Pregnant people should consider the destination when traveling, their reasons for traveling, and their ability to prevent mosquito bites. If used according to the instructions on the product label, there are no restrictions on the use of insect repellents by people who are pregnant.

What are some Public Health considerations?

- As an arboviral disease, Zika virus is a nationally notifiable condition. Healthcare providers are encouraged to report suspected cases to their state or local health departments to facilitate diagnosis and mitigate the risk of local transmission. State or local health departments are encouraged to report laboratory-confirmed cases to CDC through ArboNET, the national surveillance system for arboviral disease.
- Zika virus cases are reported thru Disease Reporting System internet (DRSi). When reporting cases of Zika virus in the DRSi—
    - Specify the type of disease (e.g., congenital vs non-congenital).
    - Document relevant travel and deployment history occurring within the incubation period (3–14 days).
    - Document the circumstances for exposure (e.g., duty exposure, occupational activities, environmental exposures, other high-risk activities). Exposure is defined as one or more of the following:
        - Resides in or recent travel to an area with known Zika virus transmission
        - Sexual contact with a confirmed or probable case within the infection transmission risk window (up to 3 months) of Zika infection
        - Sexual contact with a person with recent travel to an area with known Zika virus transmission
        - Receipt of blood or blood products within 30 days of symptom onset
        - Organ or tissue transplant recipient within 30 days of symptom onset
    - Associate time and place with a confirmed or probable case.
    - Likely vector exposure is in an area with suitable seasonal and ecological conditions for potential local vector-borne transmission.

PUBLIC HEALTH REFERENCE SHEET
Zika Virus

References:

Defense Health Agency. 2022. *Armed Forces Reportable Medical Events: Guidelines and Case Definitions.* https://www.health.mil/Reference-Center/Publications/2022/11/01/Armed-Forces-Reportable-Medical-Events Guidelines

Heymann, David L. ed. 2022. *Control of Communicable Diseases Manual*. 21st Edition. Washington, DC: APHA Press.

"Traveler's Health, *CDC Yellow Book 2024*, Zika," CDC, last reviewed May 1, 2023. https://wwwnc.cdc.gov/travel/yellowbook/2024/infections-diseases/Zika

"Zika Virus," Centers for Disease Control and Prevention, last reviewed November 2, 2022. https://www.cdc.gov/Zika/index.html

Last Updated October 1, 2023

PUBLIC HEALTH REFERENCE SHEET
Zika Virus

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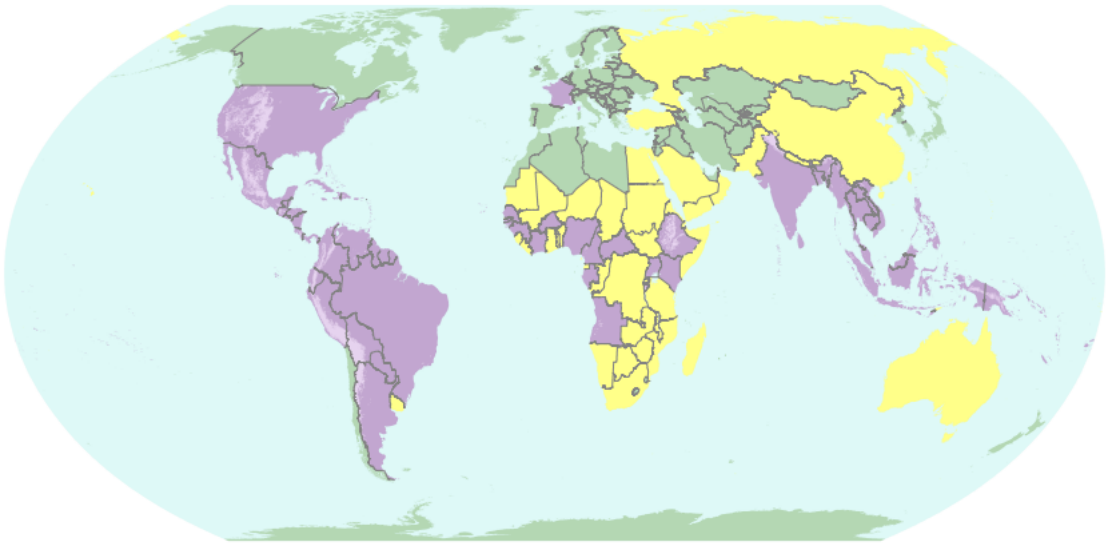


Map Legend

- Country or territory wih current Zika outbreak[1]
- Country or territory that has ever reported Zika cases[2] (past or current)
- Areas with low likelihood of Zika infection because of high elevation (above 6,500ft/2,000m)
- Country or territory with mosquito[3] but no reported Zika cases
- Country or territory with no mosquitoes that spread Zika

[1] No areas are currently reporting Zika outbreaks
[2] Locally acquired, mosquito-borne Zika cases
[3] *Aedes aegypti*

Areas with Risk of Zika

Africa: Angola, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Ethiopia, Gabon, Guinea, Guinea-Bissau, Ivory Coast, Kenya, Nigeria, Senegal, Uganda

Asia: Bangladesh, Burma, Cambodia, India, Indonesia, Laos, Malaysia, Maldives, Philippines, Singapore, Sri Lanka, Thailand, Vietnam

The Caribbean: Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Bonaire, British Virgin Islands, Cayman Islands, Cuba, Curacao, Dominica, Dominican Republic, Grenada, Guadeloupe, Haiti, Jamaica, Martinique, Montserrat, Puerto Rico, Saba, Saint Barthelemy, Saint Kitts and Nevis, Saint Lucia, Saint Martin, Saint Vincent and the Grenadines, Sint Eustatius, Sint Maarten, Trinidad and Tobago, Turks and Caicos, United States Virgin Islands

Central America: Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama

North America: Mexico, United States (Continental US)

The Pacific Islands: American Samoa, Cook Islands, Easter Island, Federated States of Micronesia, Fiji, French Polynesia, Kiribati, Marshall Islands, New Caledonia, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu

South America: Argentina, Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Peru, Suriname, Venezuela

Europe: France

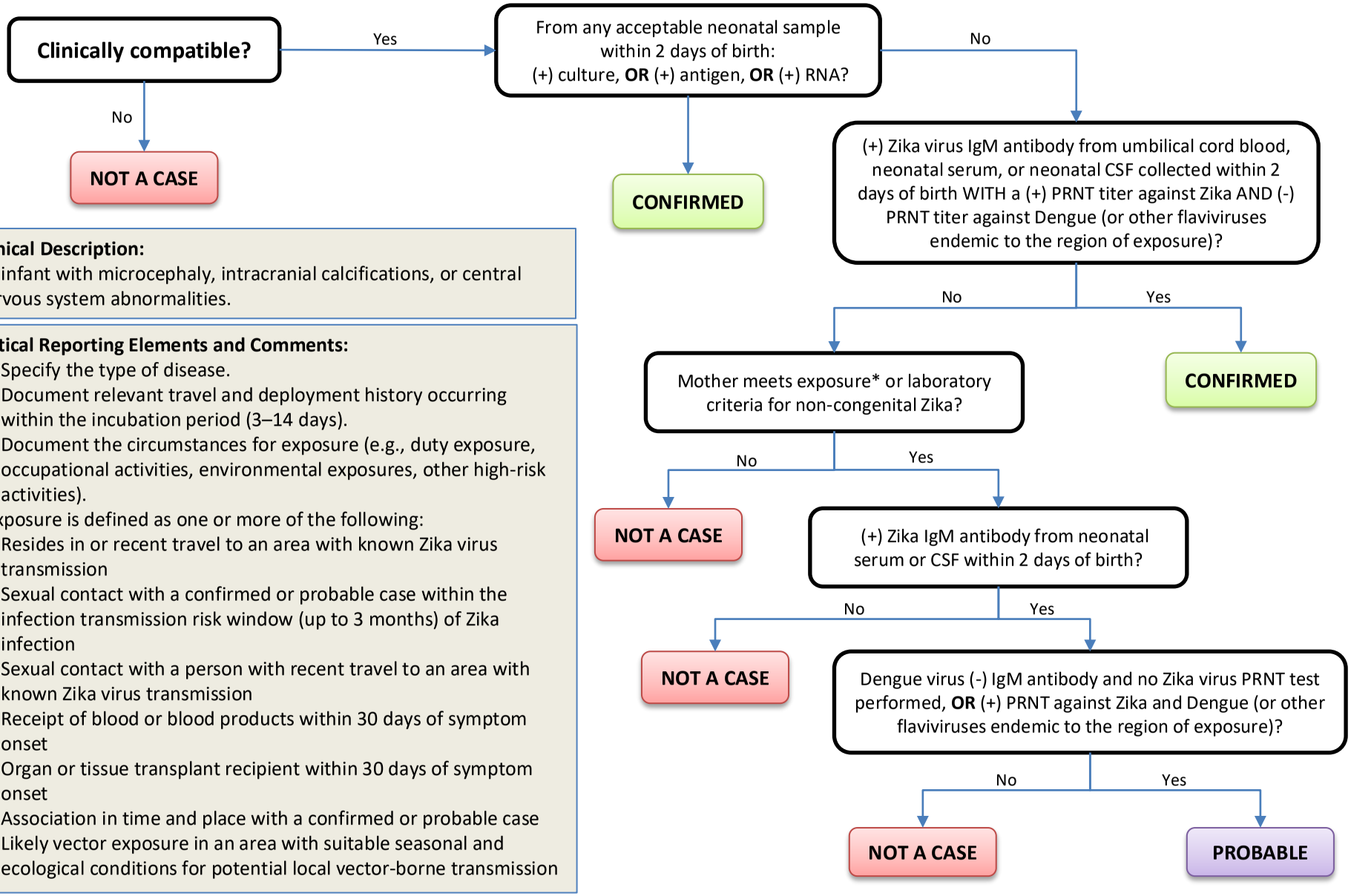
Technical note: Because of variations in laboratory and surveillance capacity internationally, data are not available to define levels of risk. CDC, the World Health Organization, and the European CDC have jointly reviewed the scientific literature.

Current as of September 29, 2023

Image source: https://wwwnc.cdc.gov/travel/files/Zika-areas-of-risk.pdf

Last Updated October 1, 2023

Zika Virus - Congenital



Clinical Description:
An infant with microcephaly, intracranial calcifications, or central nervous system abnormalities.

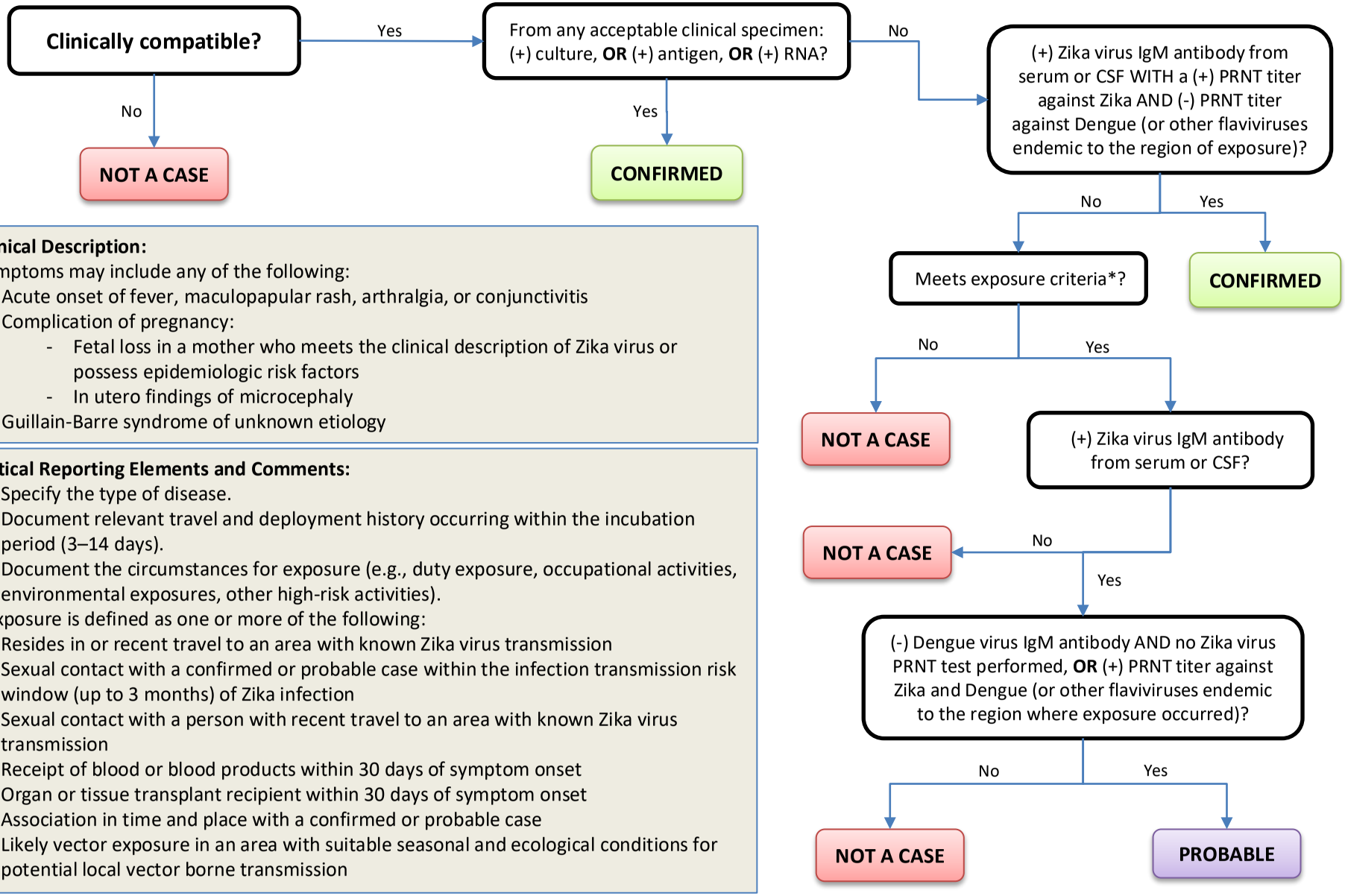
Critical Reporting Elements and Comments:

- Specify the type of disease.
- Document relevant travel and deployment history occurring within the incubation period (3–14 days).
- Document the circumstances for exposure (e.g., duty exposure, occupational activities, environmental exposures, other high-risk activities).

*Exposure is defined as one or more of the following:

- Resides in or recent travel to an area with known Zika virus transmission
- Sexual contact with a confirmed or probable case within the infection transmission risk window (up to 3 months) of Zika infection
- Sexual contact with a person with recent travel to an area with known Zika virus transmission
- Receipt of blood or blood products within 30 days of symptom onset
- Organ or tissue transplant recipient within 30 days of symptom onset
- Association in time and place with a confirmed or probable case
- Likely vector exposure in an area with suitable seasonal and ecological conditions for potential local vector-borne transmission

Zika Virus – Non-Congenital



Clinical Description:
Symptoms may include any of the following:
- Acute onset of fever, maculopapular rash, arthralgia, or conjunctivitis
- Complication of pregnancy:
  - Fetal loss in a mother who meets the clinical description of Zika virus or possess epidemiologic risk factors
  - In utero findings of microcephaly
- Guillain-Barre syndrome of unknown etiology

Critical Reporting Elements and Comments:
- Specify the type of disease.
- Document relevant travel and deployment history occurring within the incubation period (3–14 days).
- Document the circumstances for exposure (e.g., duty exposure, occupational activities, environmental exposures, other high-risk activities).

*Exposure is defined as one or more of the following:
- Resides in or recent travel to an area with known Zika virus transmission
- Sexual contact with a confirmed or probable case within the infection transmission risk window (up to 3 months) of Zika infection
- Sexual contact with a person with recent travel to an area with known Zika virus transmission
- Receipt of blood or blood products within 30 days of symptom onset
- Organ or tissue transplant recipient within 30 days of symptom onset
- Association in time and place with a confirmed or probable case
- Likely vector exposure in an area with suitable seasonal and ecological conditions for potential local vector borne transmission

MOSQUITO-BORNE DISEASE INVESTIGATION WORKSHEET

Defense Health Agency ®

☐ Entered in DRSi?

☐ Reported to health dept?

POC: _____

(_____) - _____ - _____

☐ Arboviral Disease:_____ *Please specify*	◯ Confirmed	◯ Probable	◯ Not a case
☐ Chikungunya Virus	◯ Confirmed	◯ Probable	◯ Not a case
☐ Dengue Virus	◯ Confirmed	◯ Probable	◯ Not a case
☐ Malaria	◯ Confirmed	◯ Suspect	◯ Not a case
☐ Zika Virus	◯ Confirmed	◯ Probable	◯ Not a case

Please see the 2022 Armed Forces Reportable Medical Events Guidelines and Case Definitions for reference.
Outbreak investigations must be reported immediately to DRSi through the outbreak module at https://drsi.health.mil/ADRSi

DEMOGRAPHICS

NAME: *(Last)*_____ *(First)*_____ *(MI)*_____ **PARENT/GUARDIAN:** _____

DOB: _____/_____/_____ **AGE:** _____ **FMP:** _____ **SEX:** ☐ M ☐ F ☐ Unk **RACE:** _____

UNIT: _____ **SERVICE:**_____ **RANK:** _____ **DUTY STATUS:**_____

ADDRESS: *(Street)*_____ **DoD ID:**_____

(City) _____ *(State)* _____ *(Zip)* _____ (_____) - _____ - _____ *(h)*

PHONE:

*(County)*_____ *(Country)*_____ (_____) - _____ - _____ *(c)*

CLINICAL INFORMATION

Provider:_____ **Clinic/Hospital:**_____

Hospitalized Y ☐ N ☐ **Admit Date:** _____/_____/_____ **Discharge date:** _____/_____/_____

Deceased Y ☐ N ☐ **Date of death:** _____/_____/_____ **Cause of death:**_____

Symptomatic	Y ☐	N ☐	**Onset Date:** _____/_____/_____ **Clinic Date:** _____/_____/_____ **Diagnosis Date:** _____/_____/_____
Fever	Y ☐	N ☐	**Max Temp:** _____°F/°C (☐ unk)
Rash	Y ☐	N ☐	
Chills/sweats	Y ☐	N ☐	
Arthralgia	Y ☐	N ☐	
Myalgia	Y ☐	N ☐	
Nausea/vomiting	Y ☐	N ☐	
Headache	Y ☐	N ☐	
Fatigue	Y ☐	N ☐	
Conjunctivitis	Y ☐	N ☐	
Joint swelling	Y ☐	N ☐	
Neurological symptoms	Y ☐	N ☐	
Complications*	Y ☐	N ☐	

MEDICAL HISTORY

(Provide dates and all known details for each question)

History of mosquito-borne illness? Y ☐ N ☐ **Describe:**_____

Immune suppression? Y ☐ N ☐ **Describe:**_____

Underlying illness? Y ☐ N ☐ **Describe:**_____

Transfusion or transplant <30 days before onset? Y ☐ N ☐ **Describe:**_____

Describe any other pertinent medical information:

CHEMOPROPHYLAXIS

Was chemoprophylaxis taken? Y ☐ N ☐

If yes, please indicate:

Chloroquine ☐ Doxycycline ☐

Mefloquine ☐ Malarone ☐

Started: ____/____/____ **Ended:** ____/____/____

IF PREGNANT:

Is case pregnant? Y ☐ N ☐

Trimester: _____

Pregnancy complications? Y ☐ N ☐

Describe:_____

Evidence of microcephaly or Guillain-Barre syndrome?*(Zika)* Y ☐ N ☐

*IF COMPLICATIONS:

(check all that apply and describe below)

- ☐ Encephalitis/meningitis
- ☐ Acute flaccid paralysis
- ☐ Lymphopenia
- ☐ Leukopenia
- ☐ Severe plasma leakage
- ☐ Severe organ involvement
- ☐ Severe bleeding
- ☐ Coma

DIAGNOSIS

Did provider diagnose this current illness as a mosquito-borne disease?

☐ Yes (mark all that apply)

☐ Chikungunya V. ☐ Dengue V.

☐ Malaria ☐ Zika V.

☐ "mosquito-borne illness"

☐ Other: _____

☐ No, NOT a mosquito-borne illness

Describe: _____

MALARIA ONLY

Specify malaria species:

☐ Falciparum ☐ Vivax

☐ Malariae ☐ Ovale

☐ Unspecified ☐ Other:_____

Arboviral Disease incubation periods for mosquito-borne diseases are:

- **West Nile fever - most often 2–6 days, ranges up to 2–14 days, and up to 21 days for immunocompromised**
- **West Nile encephalitis - most often 2–6 days, ranges up to 2–14 days**
- **Japanese encephalitis (JE) - 5–15 days**
- **Western Equine encephalitis (WEE) - 5–15 days**
- **Eastern Equine encephalitis (EEE) - 4–10 days**
- **St. Louis encephalitis (SLE) - 5–15 days**

TREATMENT

Treated with antibiotics? Y ☐ N ☐

Type of antibiotic	Date Started	Duration
1. _____	_____/_____/_____	_____
2. _____	_____/_____/_____	_____
3. _____	_____/_____/_____	_____

LABORATORY RESULTS

Test	Pathogen	Collection Date	Source	Result
(type of test performed)	*(Specify if Dengue, CHIK, etc)*		*(CSF, Serum, etc)*	*(Ex: IgM positive, IgG negative)*
☐ **Antibody** *Acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat antibody** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

Additional labs (if case has co-infection)

☐ **Antibody** *Acute sera*	_____	_____/_____/_____	_____	_____
☐ **Repeat antibody** *Convalescent sera*	_____	_____/_____/_____	_____	_____
☐ **PCR (DNA)**	_____	_____/_____/_____	_____	_____
☐ **Culture**	_____	_____/_____/_____	_____	_____
☐ **Other**	_____	_____/_____/_____	_____	_____

TRAVEL HISTORY

In the 3 months before illness onset (when symptoms started), did the case....

1. **Recently travel?** Y ☐ N ☐ Unk ☐
2. **Was travel out of country?** Y ☐ N ☐ Unk ☐
3. **Did case receive theater/ country clearance before recent out-of-country trip?** Y ☐ N ☐ Unk ☐

***(If yes)* Reason for travel**

☐ Deployment
☐ TDY
☐ Vacation
☐ Visiting Friends
☐ Business (non-DoD)
☐ Other: _____

Travel History (Deployment history) - Details (start with most recent travel/deployment)

Location (City, State, Country)	*# In Group (if applicable)*	*Principal reason for trip*	*Date Travel Started*	*Date Travel Ended*

Appendices

- Lab Acronyms and Titer Overview
- Outbreak Investigation Guidance
- Armed Forces Reportable Medical Events Poster
- Instructional Guide - RME Process: From MHS Genesis to DRSi

Lab Acronyms and Titer Overview

Laboratory Testing Acronyms from the 2022 Armed Forces Reportable Medical Events Guidelines

ALT	Alanine Aminotransferase
AST	Aspartate Aminotransferase
CATT	Card Agglutination Trypanosomiasis Test
CIA	Chemiluminescence Immunoassay
CF	Complement Fixation
CLIA	Clinical Laboratory Improvement Amendments
CNS	Central Nervous System
CK	Creatinine Kinase
CSF	Cerebrospinal Fluid
DA	Direct Agglutination
DFA	Direct Immunofluorescent Antibody
DNA	Deoxyribonucleic Acid
ELISA	Enzyme Linked Immunosorbent Assay
EIA	Enzyme Immunoassay
FTA-ABS	Fluorescent Treponemal Antibody Absorption
HI	Hemagglutination Inhibition
IFA	Indirect Immunofluorescent Antibody
IgG	Immunoglobulin Antibody Class G
IFA	Indirect Immunofluorescent Antibody
IgG	Immunoglobulin Antibody Class G
IgM	Immunoglobulin Antibody Class M
IGRA	Interferon-Gamma Release Assay
IHA	Indirect Hemagglutination
IHC	Immunohistochemistry
IU/L	International Units per Liter
LA	Latex Agglutination
LRN	Laboratory Response Network
MAT	Microagglutination Test
NAAT	Nucleic Acid Amplification Test
NAT	Nucleic Acid Test
PCR	Polymerase Chain Reaction
PRNT	Plaque Reduction Neutralization Test
RIPA	Radioimmunoprecipitation Assay
RNA	Ribonucleic Acid
RPR	Rapid Plasma Reagin
SAT	Slide Agglutination Test
TESA	Trypomastigote Excreted-Secreted Antigen
TP-PA	Treponema Pallidum Particle Agglutination
TST	Tuberculin Skin Test/ Mantoux Test
VDRL	Venereal Disease Research Laboratory

For further information, contact DRSi and Reportable Medical Event Help Desk:
DSN: 867-2377, COMM: 410-417-2377
Email: dha.apg.pub-health-a.mbx.disease-epidemiologyprogram13@health.mil

Lab Acronyms and Titer Overview

Laboratory Tests and Testing Types Listed in the 2022 Armed Forces Reportable Medical Events Guidelines

Serology: Antibody and Antigen Testing	Microscopy / Microbiology
Agglutination tests - Latex agglutination (LA) - Direct agglutination (DA) - Indirect hemagglutination (IHA) - Slide agglutination tests (SAT) - Microagglutination tests (MAT) - Weil-Felix agglutination test Immunoassays - Enzyme immunoassay (EIA) - Enzyme linked immunosorbent assay (ELISA) - Enzyme linked immunospot assay (ELISpot) o Example: Interferon-gamma release essay (IGRA) for tuberculosis - Immunoblot (Western blot) - Fluorescent assays o Direct immunofluorescent antibody (DFA) o Indirect immunofluorescent antibody (IFA) Precipitation tests - Immunodiffusion - Tube precipitin tests Antibody titers Plaque assays - Bacteriophage lysis assay Plaque reducing neutralization test (PRNT) Complement fixation	Microscopic identification of causative agent - Example: identification of malaria parasites in a blood sample Immunohistochemistry (IHC) Blood smears Staining methods - Gram stain - Giemsa stain - Wright stain - Wright-Giemsa stain - Fite stain Histopathologic identification Cultures
Nucleic Acid Analyses / Molecular Testing	**Other Types of Testing**
Polymerase chain reaction (PCR) Reverse-transcriptase polymerase chain reaction (RT-PCR) Nucleic acid amplification tests (NAAT) DNA probe Liquid chromatography Mass spectrometry Genomic sequencing Nucleic acid tests (NAT)	Rapid antigen testing - Lateral flow tests or assays o Example: COVID-19 rapid tests - Rapid card tests o Example: Card agglutination trypanosomiasis test (CATT) Skin reaction tests - Example: Tuberculin skin test (TST) Animal inoculation

For further information, contact DRSi and Reportable Medical Event Help Desk:
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Lab Acronyms and Titer Overview

Understanding Titers

Titers are used to measure the concentration of antibodies in the blood for various pathogens. Typically presented as ratios, a ratio value indicates a greater presence of antibodies in the blood. Titers work by completing dilution steps by half at a time. A positive titer value is typically a set reference value, which corresponds to the dilution step at which antibodies are detected in the sample (for example, 1:128 or 1:256 are common), or the greatest dilution step at which the antibodies are detected. Perhaps a patient has antibodies detected at the 1:64 dilution step, but not at the following dilution step of 1:128. Their result would be 1:64.

A titer starts at 1:1, is then diluted by half to 1:2, then 1:4, 1:8, 1:16, 1:32, 1:64, 1:128, 1:256, and so forth.

Many case definitions for Reportable Medical Events (RMEs) include a laboratory component listing a four-fold change in antibody titer, which may be either an increase or decrease* in titer between different samples from the same patient at differing points of time. These may be paired samples from the acute phase of their illness and after a period of recovery (convalescent). Case definitions and their requirements vary.

- Example of a four-fold change: a patient who is sick has an initial titer of 1:64 when they have their first sample drawn. Two weeks later, they have another sample drawn and their titer result is 1:256. This corresponds to two dilution steps, or a four-fold increase in titer.

Note: *Dependent on the RME, please review case definitions carefully.

For further information, contact DRSi and Reportable Medical Event Help Desk:
DSN: 867-2377, COMM: 410-417-2377
Email: dha.apg.pub-health-a.mbx.disease-epidemiologyprogram13@health.mil

Case and Outbreak Investigation

For assistance, contact the Defense Centers for Public Health–Aberdeen (DCPH-A) Disease Epidemiology Team **Email:** dha.apg.pub-health-a.mbx.disease-epidemiologyprogram13@health.mil **Phone:** 1-410-417-2377
DCPH-A Phone: Toll-Free: 1-800-222-9698
DHA-PH Email: Defense Health Agency (DHA) Public Health Operations at dha.ncr.pub-health.mbx.operation@health.mil
Web page: https://ph.health.mil/topics/healthsurv/de/Pages/DRSiResources.aspx

Case Investigation

A case investigation is conducted for suspected, probable, or confirmed reportable medical events.

Case definition

A standard set of criteria for determining if an individual should be classified as having the health condition. The criteria include clinical features and restrictions by person, place, and time, which are applied to all persons under investigation.

- Clinical features: objective measures associated with the illness/condition (e.g., three or more loose bowel movements per day; or fever ≥101ºF)
- Person: characteristics (e.g., no previous history of a positive TB skin test)
- Place: a geographic location or facility (e.g., Soldiers at field training exercise)
- Time: a period of time associated with onset of illness (e.g., onset of illness within the past 2 weeks)

Procedure

1. Review the electronic health record (EHR) for clinical findings and laboratory results. Review the Armed Forces Reportable Medical Events (AFRME) Guidelines & Case Definitions for disease information, clinical description, and reporting information.

2. Consult with the diagnosing provider, as needed, for additional information to confirm that the case meets reporting criteria, and to identify needed prophylaxis or treatment.

3. Inform Chief, Installation Department of Public Health (DPH) to notify MTF Command, Infection Control, Defense Centers for Public Health–Aberdeen (DCPH-A) and local/state public health departments.

4. Submit a preliminary outbreak report to the Disease Reporting System-internet (DRSi) no later than 24 hours after suspecting an outbreak. Obtain state epidemiology and laboratory resources, case report forms, and procedures to guide the investigation.

5. Obtain or develop an interview tool for the disease or condition of interest. Maintain documentation of a line list (see the end of this section).

6. Interview the patient.

- Review symptoms and potential exposure to specific risk factors, as indicated.
- If the disease is transmissible from person-to-person, request information (i.e., name, phone number, email) for individual(s) with whom the case had contact.
- If the condition is environmental or occupational (e.g., heat illness), request information for individuals who may have also been exposed.
- Provide education on agent-specific prevention and control measures.
- Provide instructions on how to obtain testing, treatment, medications, or vaccinations.

7. Submit updates to DRSi; submit reports to the local/state public health departments.

8. Write reports, as needed, and submit through command channels.

Contact Investigation

1. As identified in the case interview, contact the individuals who may have been potentially exposed or at risk of infection, illness, or injury. Contact the individual by phone and schedule an interview to—

- Inform of possible exposure to the agent of infection, illness, or injury (**do not** disclose the name of the confirmed case or person who identified them as a contact).
- Obtain information on health status.
- Provide information on risks, signs, and symptoms; mode of transmission; incubation period; active surveillance, if necessary (e.g., temperature checks); prevention measures (e.g., quarantine, isolation); testing and treatment options; and when and where to seek medical care.
- Request contact information for all individuals who may have been exposed or at risk.
- Refer to primary healthcare provider or civilian health department for vaccination or prophylaxis, if indicated.

2. Consult with Chief, DPH, to notify the unit and MTF Commander and civilian public health department to ensure testing, treatment, and implementation of control measures.

- Incubation periods help determine which contacts are at risk based on information from the Centers for Disease Control and Prevention (CDC), AFRME, and the Control of Communicable Diseases manual.
- Determine the follow up and prophylaxis/treatment or other control measures of a person identified as a close contact to the case.
- If the number of contacts exceeds the PHN capacity, then other DPH, MTF, or installation personnel may be utilized to call identified contacts.

3. Consult the DCPH-A Disease Epidemiology Division team. Email: dha.apg.pub-health-a.mbx.disease-epidemiologyprogram13@health.mil

Cluster Evaluation

A cluster is an aggregation of cases in a given area over a period of time without regard to whether the number of cases is more than expected. A cluster may be an outbreak with a common cause, or unrelated cases of the same disease, or unrelated cases of similar but unrelated diseases.

A cluster evaluation may relate to non-infectious diseases (e.g., cancer) where exposure occurred years ago; or an infectious disease (e.g., varicella) where exposure occurred within the past few weeks or days.

Case and Outbreak Investigation

The DPH will request the assistance of the Medical Readiness Command and DCPH-A to determine if there is a need for a disease cluster investigation and provide guidance.

The response team will include subject matter experts in epidemiology, occupational and environmental medicine, and the possible exposure and/or disease of concern.

Criteria for a cluster evaluation include:

- Clinically similar health events or conditions without a plausible alternative explanation
- Excess occurrence of such events (over baseline)
- Plausible temporal association with the possible exposure
- Disease present in a particular demographic group in which it is not routinely identified, or the disease is present in a subpopulation and not affecting other groups
- One or more cases of a very rare disease or condition

Outbreak Investigation

An outbreak is the occurrence of more cases of illness/injury/condition than expected among persons in a community, institution, region, or other defined area over a period of time.

> *Foodborne Disease Outbreak*: Two or more persons who experience a similar illness after ingestion of a common food. There may be exceptions, such as one case of botulism or chemical poisoning constituting an outbreak.
>
> *Waterborne Disease Outbreak*: Two or more persons who experience a similar illness after consumption or use of water intended for drinking. Outbreaks in association with recreational water may include exposure to or unintentional ingestion of water.

Outbreaks can be caused by a variety of etiologic agents, transmitted person-to-person or via a common source, resulting in mild to serious illness, or death. The number of cases that constitutes an outbreak depends on the expected number of cases and circumstances. The purpose of any outbreak investigation is to determine the factors associated with the illness or condition and implement measures to prevent new cases.

The **10-step approach** guides and organizes the investigation.

The Chief, DPH, participates in and/or oversees the investigation to include identifying team members and coordinating and communicating with the chain of command, military and civilian partners, and community stakeholders.

Step 1: Prepare for fieldwork: **Gather information and tools, establish team.**

1. Gather information on the illness/condition including symptoms, case definitions, modes of transmission, risk factors, diagnostic tests, treatment protocols, control measures, interview forms, technical references, and points of contact.
2. Notify DCPH-A, local civilian public health agencies, chains-of-command, as needed: medical (regional health), operational (installation), and community (garrison).
3. Consult with the MTF laboratory on proper collection with personal protective equipment, storage, and transportation of specimens if collected outside of the facility.
4. Select and prepare the investigation team.
    - Identify a lead investigator.
    - Identify team members based on the type of outbreak.
    - Identify a primary and alternate spokesperson.

Case and Outbreak Investigation

5. Ensure each team member knows their own roles and responsibilities and is aware of the role of the other team members.
6. Distribute phone roster of team members.
7. Establish communication plan: when – frequency (e.g., daily), why – purposes (e.g., new information), and how – mechanism based on purpose (e.g., phone for immediate discussion; or email (encrypted), EXSUM, meeting for routine updates) within the team, with the chain of command and partner agencies.
8. Gather necessary equipment and supplies (e.g., laptops, cell phones).

Step 2: Establish the existence of an outbreak.

1. Determine if the incidence of the illness/condition is higher than *expected* for the population based on surveillance records or data sources (e.g., DRSi, MHS Genesis, and ESSENCE), historical documents, and medical literature.
2. Check for reports of outbreaks.
   - CDC www.cdc.gov/outbreaks/index.html www.cdc.gov/foodsafety/outbreaks/lists/index.html
   - FDA https://www.fda.gov/food/outbreaks-foodborne-illness/public-health-advisories-investigations-foodborne-illness-outbreaks
3. Evaluate the possibility of changes in reporting. Have there been changes or improvements in reporting? Changes in laboratory testing? Changes in population?
4. Contact DCPH-A and the local public health department to discuss the expected incidence of the illness or condition.
5. Enter a preliminary outbreak report in DRSi.

Step 3: Verify the diagnosis.

1. Confirm the diagnosis to determine control measures. Review clinical findings. Compare with established case definitions.
2. Rule out laboratory or reporting error as the basis for the increase in cases.
3. Assess clinical features. This may involve interviewing patients about their signs and symptoms, exposures, and activities prior to becoming ill.
4. Consult with the Chief, DPH, public health or infectious disease physicians, or DCPH-A epidemiologists regarding possible diagnoses, tests, treatments, and mitigation strategies.
5. Coordinate with supervising physician for orders (lab tests, radiology studies, pharmacy prescriptions) to test and/or treat individuals per consultation with the MTF, civilian public health, and/or DCPH-A.

Step 4: Construct a working case definition.

1. A case definition is a standard set of criteria for deciding whether an individual should be classified as having the health condition of interest.
2. Use established criteria (e.g., AFRME, CDC, or local civilian public health). Criteria include clinical features and restrictions by person, place, and time, which are applied to all persons under investigation.
3. Update the case definition as more information is obtained.

Step 5: Find cases systematically and record information.

1. Identify additional cases through passive and active surveillance.
2. Utilize the Labs Needing Review (LNR) module in DRSi.
3. Contact providers and request reporting of cases that meet the case definition.
4. Review hospital records to identify possible cases that were undetected or unreported.
5. Develop questionnaire in coordination with DCPH-A.
6. Interview cases.

7. Record case information systematically by using an established case report investigation form (e.g., in DRSi, or from CDC).
8. Organize information in a line list of demographic, clinical, and exposure characteristics.

Step 6: Perform descriptive epidemiology.

1. Describe the outbreak by characteristics of time, place, and person. This process may be repeated several times during the investigation as cases are identified or new information becomes available. This characterization identifies or infers the population at risk, provides insight into etiology, as well as source and modes of transmission that can inform a hypothesis and intervention and prevention measures.
    - Time: Construct an epidemic curve (epi curve) of onset times to provide a simple visual display of the magnitude and time trend. Use a unit of time one-eighth to one-third as long as the incubation period. https://www.cdc.gov/foodsafety/outbreaks/basics/epi-curves.html
    - Place: Map the cases to assess the outbreak by place and visualize the geographic extent of the problem, which may also demonstrate clusters or patterns that provide important etiologic clues.
    - Person: Calculate the proportion of affected individuals by host characteristics (e.g., age, race, sex, medical status, etc.) and possible exposures (occupation, events attended, etc.).
2. Consult the epidemiologist to plot the frequency on a histogram and decide whether to proceed with more complex epidemiological studies.

Step 7: Develop hypotheses.

1. Review the data collected thus far and ask the following:
    - What is the agent's usual reservoir?
    - How is it usually transmitted?
    - What vectors are commonly implicated?
    - What is the incubation period?
    - What are common symptoms?
    - What is the gold standard diagnostic test?
    - What are the known risk factors?
    - Who are the at-risk groups?
    - Where is this found (geographic significance)?
2. Discuss with case-patients, the team, and DCPH-A for insights.

Step 8: Evaluate and refine hypotheses epidemiologically and with data from laboratory and environmental studies.

Consult with the Chief, DPH, and DCPH-A for assistance to compare the hypothesis with data collected.

- If the source of infection is established (e.g., there is clear person-to-person transmission), then formal hypothesis testing is not necessary.
- If the source of infection is not clearly established, then use analytic methods (cohort or case-control study) to quantify relationships and test hypotheses.

Step 9: Implement control and prevention measures.

1. Implement control measures against one or more segments of the chain of transmission (agent, source, mode of transmission, portal of entry, or host) based on the origin, spread, and development of the illness or condition. Do not wait for proof from laboratory tests. Measures may change or be narrowed or expanded as new information becomes available. Maintain

confidentiality and protect the patient by not disclosing patient information to unauthorized persons without the patient's permission.

- Refer to information sources such as the—
  - CDC, which has disease specific guidance (e.g., https://www.cdc.gov/healthywater/emergency/waterborne-disease-outbreak-investigation-toolkit/control-outbreak.html
  - FDA https://www.fda.gov/food/outbreaks-foodborne-illness/investigations-foodborne-illness-outbreaks
  - Control of Communicable Diseases Manual as available https://www.apha.org/Publications/Published-Books/CCDM.
- Consult with DCPH-A and local public health department.
- Example control and prevention measures.
  - Eliminate the agent at its source: e.g., for communicable disease, treat with antibiotics to clear the infection and reduce the risk of transmission to others. For environmental toxin or infectious agent in the soil, decontaminate or cover the soil.
  - Eliminate the source: e.g., dispose of suspect water or food, inform community of established food recalls.
  - Interrupt transmission: e.g., vector control (i.e., spray for mosquitos), isolation of ill persons, cohort groups of ill persons; use personal protective equipment (PPE), clean and disinfect food facilities (may be temporarily closed), setup hand washing stations, and relocate food and waste facilities in field training exercise site.
  - Block the portal of entry: e.g., bed nets to prevent being bitten by mosquitoes that may transmit malaria.
  - Increase host defenses: e.g., vaccinations to protect against infection; and chemoprophylaxis (e.g., antimalarial medication).

2. Coordinate and communicate across stakeholders, affected populations, and the community to implement measures and maintain surveillance for new cases.

- Assess to determine if the control and prevention measures are effective.
- Is the number of new cases slowing down or new cases not occurring?
- Are new cases occurring? Where? Are the control and prevention measures being implemented?

Control and Prevention Resources:

- www.cdc.gov/csels.dsepd/ss1978/lesson6/section2.html#step11
- www.cdc.gov/foodsafety/outbreaks/steps/control.html
- https://www.fda.gov/food/outbreaks-foodborne-illness/food-safety-tips-consumers-retailers-during-outbreak-foodborne-illness

Step 10: Communicate findings.

1. Submit an outbreak and report to DRSi within 24 hours of a suspected outbreak. Add cases as needed based on guidance from DCPH-A.

2. Collaborate to provide information to MTF and installation leaders, civilian public health, and the military community at initiation, during and upon closure of the investigation through briefings, public affairs messaging to the community, and written reports per local command criteria (SIR, CCIR, SITREP, EXSUM, MFR, and AAR).
   - SIR: Serious Incident Report
   - CCIR: Commander's Critical Incident Report

Case and Outbreak Investigation

- SITREP: Situation Report
- EXSUM: Executive Summary
- MFR: Memorandum for Record
- AAR: After Action Report

3. Collaborate with DCPH-A to determine if a scientific publication should be submitted to Medical Surveillance Monthly Report (MSMR) at https://www.health.mil, Military Medicine (https://www.amsus.org), or another journal.

Outbreak Investigation Resources

- Training: https://ph.health.mil/topics/healthsurv/de/Pages/Epi-TechTraining.aspx
- Disease Investigation Prioritization matrix: https://www.azdhs.gov/documents/preparedness/epidemiology-disease-control/disease-investigation-resources/prioritization-matrix.pdf

Line List

A line list is a table that summarizes information about individuals who may be associated with an outbreak. Each column is a variable (e.g., case identifier, age) and each row is a unique individual.

Electronic data entry: The CDC provides free access to Epi Info™, which is a public domain software package designed for the global public health community of practitioners and researchers. It provides for easy questionnaire and database construction, data entry, and analysis with epidemiologic statistics, graphs, and maps. (https://www.cdc.gov/epiinfo/)

Manual data entry: Start an Excel® file table with **headers**, as needed, for each column. (Example template: https://www.cdc.gov/urdo/downloads/linelisttemplate.pdf)

Case ID: Unique identifier assigned to each case-patient for this investigation.

Identifying information: To contact the case. Keep information confidential by assigning a case number. The file containing the case number and personal identifiers should be password protected (CAC-enabled and in a restricted access folder).

Last name
First name
Date of birth
SSN (last 4) or DOD-ID (last 4)
Mailing address
Phone number

Consider whether the FMP (family member prefix) would be helpful. (e.g., 20/ for the Soldier; 01/ for first child)

Demographic information: varies based on type of outbreak to describe at-risk groups.

Age (in years, or in months for pediatric cases, as needed)
Sex (male (M), female (F), non-binary (X))
Occupation (job series (MOS for Army Enlisted; AOC for Army Officer))
Place of occupation/unit/school/childcare facility

Case and Outbreak Investigation

Clinical information: to determine if meets case definition, characterize the illness or condition, and create an epidemic curve (epi curve). https://www.cdc.gov/foodsafety/outbreaks/basics/epi-curves.html

Date of onset; time of onset (14032022 0630 = 14 March 2022 at 0630 hrs)
Nausea (Yes/No)
Vomiting (Yes/No)
Diarrhea (Yes/No)
Abdominal cramping (Yes/No)
Headache (Yes/No)
Fever (Yes/No)
Medical diagnosis (free text or drop-down menu)
Underlying conditions (immunodeficiency, medications, or conditions that may alter the individual's susceptibility or course of illness)

Laboratory tests

Specimen (stool, urine, blood, sputum)
Date collected (e.g., DDMMYYYY)
Test requested (e.g., culture, antigen detection, antibody/serology, polymerase chain reaction (PCR))
Result: findings of test (e.g., positive, negative, equivocal)
Date resulted (e.g., DDMMYYYY)

Radiology studies

Chest x-ray (Yes/No)
If yes, date performed
If yes, result

Epidemiological investigation

Dated public health identified person as potential case or contact
Date interviewed (DDMMYYYY)
Food history completed (Yes/No)
Date food history completed (DDMMYYYY)
Recent Travel (dates/locations)
Sick contacts (Yes/No)
Epi Links: known exposures, affiliations, connections to other cases

Risk factor information: varies based on type of outbreak to identify general and established risk factors and focus the investigation.

Food consumption and sources
Water sources used

Location
Dining facilities/restaurants (date/location/food/drinks)
Childcare facility attended
Event attended

Determination of Case

Case and Outbreak Investigation

Confirmed (Yes/No)
Probable (Yes/No)
Suspect (Yes/No)
Not a case (Yes/No)

Current Status: severity of illness/condition
Outpatient
Inpatient ward
Inpatient intensive care unit (ICU)
Discharged
Deceased

For further information, contact DRSi and Reportable Medical Event Help Desk:
DSN: 867-2377, COMM: 410-417-2377
Email: dha.apg.pub-health-a.mbx.disease-epidemiologyprogram13@health.mil

Outbreak or Disease Cluster

An outbreak is defined as the occurrence of a medical condition that exceeds the baseline or expected rate within a specific place or group of people over a given period of time. Outbreaks can be caused by a variety of etiologic agents, transmitted person-to-person, or via a common source, resulting in mild or serious illness. There is no minimum number of cases that constitutes an outbreak. In some instances, a single case can constitute an outbreak depending on the organism (example: smallpox). The rate increase that should trigger reporting will vary according to the circumstances surrounding the event and requires exercise of professional judgment.

While the decision to report an outbreak requires professional judgment, outbreaks should be reported when an increase in illness leads local public health personnel to— (a) identify cases, (b) seek causes, or (c) institute control measures. When in doubt, report, but know that service public health authorities are most interested in the following:

- Illnesses causing a rapid rise in numbers of affected persons
- Severe illnesses such as hospitalized cases
- Illnesses which appear to be limited to a specific group (demographic, occupational, etc.)
- Illnesses indicative of highly infectious or virulent organisms requiring rapid implementation of control measures
- Illnesses which affect or have the potential to affect mission readiness
- Illnesses leading to control measure recommendations which are invasive, involve mass prophylaxis, or are potentially resource intensive
- Illnesses with the potential to attract media attention or generate public concern
- Illnesses which may prompt an installation commander to exercise public health emergency powers (i.e., illnesses indicative of a public health emergency or act of bioterrorism)
- Vaccine-preventable illnesses occurring in a highly vaccinated population

Outbreaks are reportable regardless of whether the etiologic agent itself is known or on the reportable disease list. If the etiological agent is on the reportable disease list, then also report each case individually in addition to reporting the outbreak, unless otherwise directed by your service point of contact!

Critical Reporting Elements:

Document the following in an Outbreak Report in DRSi:

- Location of outbreak
- Source of outbreak, if known or suspected
- Case symptoms and likely etiological agent (if known)
- Number affected in outbreak
- Group affiliation (e.g., military unit, boy scouts)
- Beginning and end dates for outbreak
- Actions taken to mitigate outbreak

Armed Forces Reportable Medical Events

The following is a list of reportable medical conditions. If you encounter any of these, please notify preventive medicine and your local MTF Public Health Department.

Report **BOLDED** conditions immediately.

1. Amebiasis	27. **HEPATITIS A**	53. Rubella
2. **ANTHRAX**	28. Hepatitis B, Acute & Chronic	54. Salmonellosis
3. Arboviral Diseases	29. Hepatitis C, Acute & Chronic	55. Schistosomiasis
4. Babesiosis	30. Influenza-Associated Hospitalization	56. **SEVERE ACUTE RESPIRATORY SYNDROME**
5. **BOTULISM**	31. Lead Poisoning, Pediatric*	57. Shigellosis
6. Brucellosis	32. Legionellosis	58. **SMALLPOX**
7. Campylobacteriosis	33. Leishmaniasis	59. Spotted Fever Rickettsiosis
8. Chikungunya Virus Disease	34. Leprosy	60. Syphilis
9. *Chlamydia trachomatis*	35. Leptospirosis	61. Tetanus
10. Cholera 01 or 0139	36. Listeriosis	62. Toxic Shock Syndrome
11. Coccidioidomycosis	37. Lyme disease	63. Trichinellosis
12. Cold Weather Injuries	38. Malaria	64. Trypanosomiasis
13. COVID-19 Associated Hospitalization or Death	39. Measles	65. **TUBERCULOSIS**
14. Cryptosporidiosis	40. **MENINGOCOCCAL DISEASE**	66. **TULAREMIA**
15. Cyclosporiasis	41. Mumps	67. Typhoid Fever
16. Dengue Virus Infection	42. Norovirus Infection	68. Typhus Fever
17. **DIPHTHERIA**	43. **NOVEL AND VARIANT INFLUENZA**	69. Varicella
18. Escherichia coli, Shiga toxin producing	44. **OUTBREAK OR DISEASE CLUSTER**	70. Yellow Fever
19. Ehrlichiosis and Anaplasmosis	45. **PERTUSSIS**	71. Zika Virus Infection
20. Filarial Infections	46. **PLAGUE**	List any other locally reportable conditions below:
21. Giardiasis	47. Poliomyelitis	
22. Gonorrhea	48. Post-Exposure Prophylaxis (PEP) against Rabies	
23. Haemophilus influenzae, Invasive	49. Q Fever	
24. Hantavirus Disease	50. **RABIES, HUMAN**	
25. Heat Illness	51. Relapsing Fever	
26. **HEMORRHAGIC FEVER, VIRAL**	52. Rift Valley Fever	

For questions, please contact: dha.apg.Pub-Health-A.mbx.disease-epidemiologyprogram13@health.mil
Link to DRSi: https://drsi.health.mil/adrsi/
DRSi Resources: https://phc.amedd.army.mil/topics/healthsurv/de/Pages/DRSiResources.aspx

*Note: See Lead Poisoning, Pediatric reporting guidance https://www.health.mil/Military-Health-Topics/Health-Readiness/AFHSD/Reports-and-Publications

DHA Defense Health Agency ® PUBLIC HEALTH

INSTRUCTIONAL GUIDE
RME Process: From MHS Genesis to DRSi

Purpose	To provide DoD healthcare providers and public health personnel with step-by-step guidelines to submit RMEs into the Disease Reporting System internet (DRSi).
Policy	These guidelines apply to DoD medical personnel in accordance with DoD Directive 6490.02E and applicable state, territory, and host nation laws. Military Health System (MHS) GENESIS is required to submit information in a timely manner for RMEs.
Responsibilities	The military treatment facility's (MTF) Preventive Medicine (PM) department or equivalent (i.e., Public Health Flights) will ensure that RME posters are displayed in any locations in which RMEs are identified (i.e., emergency departments, laboratories, ordering provider workstations, etc.). To request RME posters, send an email to dha.apg.pub-health-a.mbx.disease-epidemiologyprogram13@health.mil.
	Clinicians will be trained on identifying RMEs and know how to contact the local MTF PM department or equivalent with an emphasis on outbreaks and diseases of public health significance.
	RME reporters will be clearly identified at each installation and will maintain regular communication with local hospitals and public health agencies to ensure appropriate tracking and reporting of RMEs per state guidelines.
DHA Strategic Plan	Priority #2: Building a modernized, integrated, and resilient healthcare delivery system. This mechanism of surveillance ensures readiness and force health protection through continuous monitoring, early detection, prevention, and control of outbreaks.
DRSi Help Desk Contact Information	**COMM**: (410) 417-2377 **DSN**: 867-2377 **Email**: dha.apg.Pub-Health-A.mbx.disease-epidemiologyprogram13@health.mil
Helpful Resources	**Armed Forces Medical Events Guidelines and Case Definitions:** Armed Forces Reportable Medical Events (health.mil)
	DRSi User Guide: Disease Reporting System internet (DRSi) User Guide (health.mil)
	DRSi Resources webpage: DRSi Resources - Defense Centers for Public Health - Aberdeen
	Communicable Disease Toolkit: Communicable Disease Toolkit - Defense Centers for Public Health - Aberdeen

What is an RME?
An RME is defined as "an inherent, significant threat to public health and military operations" (Armed Forces Health Surveillance Division [AFHSD], 2022). All RME case definitions and guidelines can be found in the *Armed Forces Medical Events Guidelines and Case Definitions* document (AFHSD, 2022).

What is DRSi?
DRSi is the DoD's official repository for RMEs and is the primary system used by the Defense Health Agency- Public Health to conduct disease and outbreak detection. Furthermore, it is a vital tool in initiating a prompt public health investigation and outbreak response.

What is the Discern Reporting Portal (DRP):
The application "P0630 Discern Reporting Portal" is embedded within MHS GENESIS and allows users to tailor and create reports with information from MHS GENESIS. Utilizing the DRP, users can create lists of labs supporting or confirming RMEs and use the information to report the RMEs in DRSi.

What is MHS GENESIS?
MHS GENESIS is the modern electronic health record for the MHS, providing a single health record for Service Members, veterans, and family members.

What is PowerChart?
The application "P0630 PowerChart" is embedded within MHS GENESIS and is part of the patient's electronic health record. This can be used to verify patient lab results, immunization records, and to determine if a patient was hospitalized.

What is the Electronic Surveillance System for the Early Notification of Community-Based Epidemics (ESSENCE)?
ESSENCE "monitors and provides alerts for unusual increases in the occurrence of health events around the globe" (DHA, 2023). It supports early detection and monitoring of health events through the collection of real-time biosurveillance data from MHS GENESIS, including outpatient health records, pharmacy prescriptions, laboratory results, and radiology reports (DHA, 2023). ESSENCE can be used as an optional cross-check tool and mechanism to assess for outbreaks.

INSTRUCTIONAL GUIDE
RME Process: From MHS Genesis to DRSi

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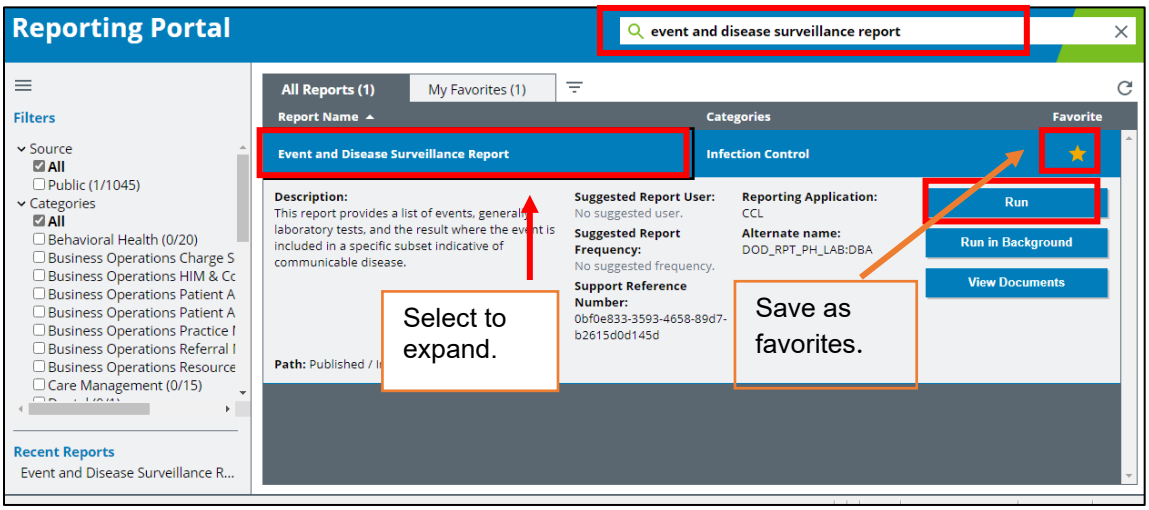
INSTRUCTIONAL GUIDE
RME Process: From MHS Genesis to DRSi

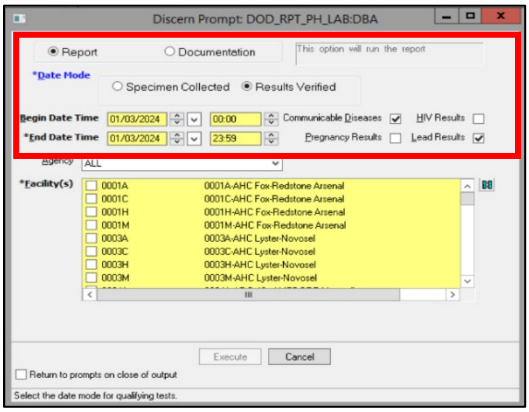
STEP 1 DRP:
Physicians/ordering providers will input lab orders into MHS GENESIS patient charts. Labs will result in MHS GENESIS; the DRP will then pull those results. The DRP should be checked daily for your reporting unit(s).

1. Open the MHS GENESIS desktop application.
2. Open the "P0630 Discern Reporting Portal" application.

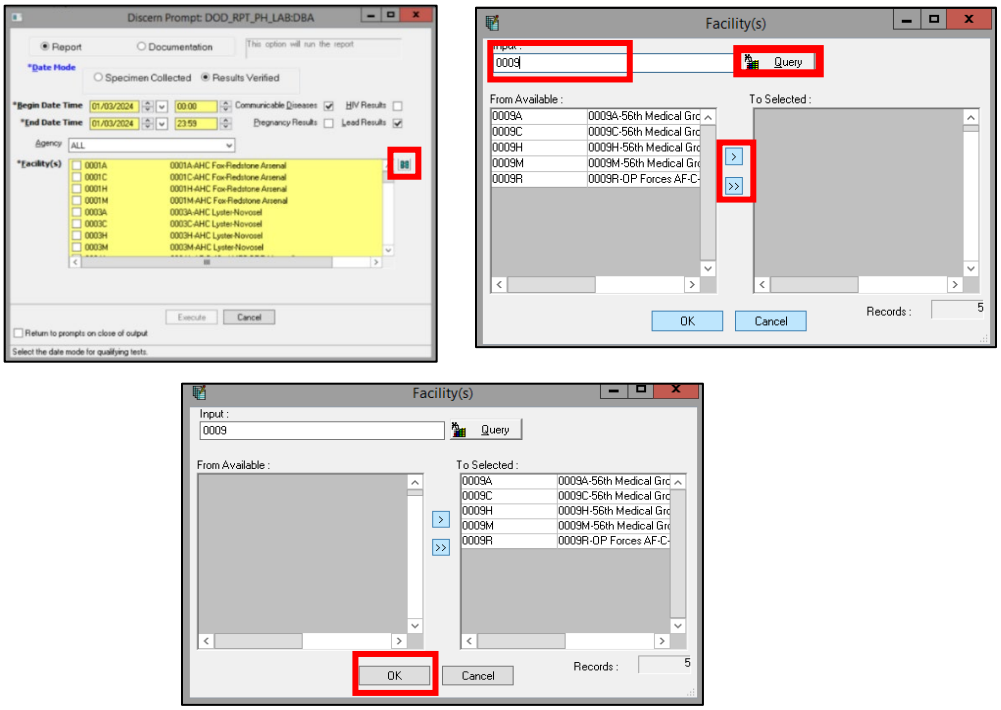
3. Type "Event and Disease Surveillance Report" into the search box at the top, right-hand corner of the screen. Expand the report by selecting on its name, then proceed to select "Run." You can save the report to your favorites by selecting the star icon on the right-hand side of the report listing.



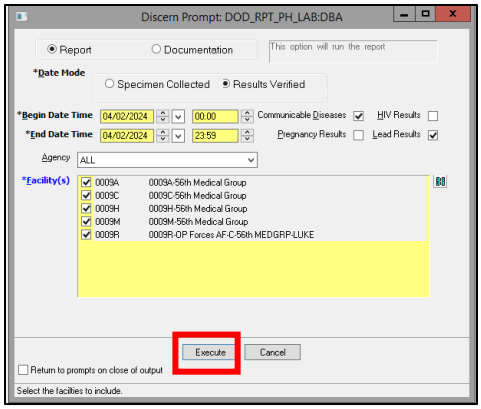
4. A DRP prompt window will appear. Do the following:
   a. Select “Report” at the top of the window.
   b. For Date Mode, select “Results Verified.”
   c. Input Begin Date Time and End Date Time. NOTE: This will bring up all labs resulted in that specific timeframe. The Begin Date Time should be the day prior to running the report at “00:00,” End Date Time should be the day prior to running the report at “23:59.”
   d. Uncheck the boxes for “Pregnancy Results” and “HIV Results” as they are not RMEs.



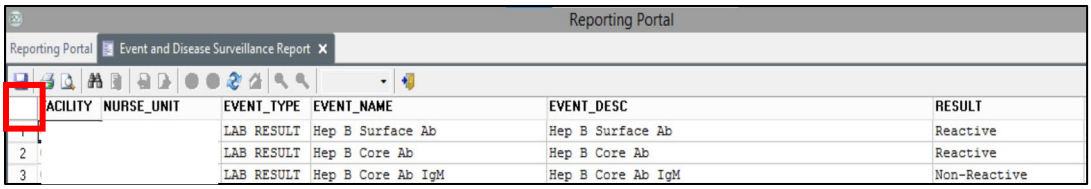
   e. Select on the filter icon located to the right of the Facility(s) category.
   f. This action will trigger a prompt window. Enter your facility DMIS ID in the Input box and select “Query.” All relevant facilities will be displayed. Select the “>>” icon to transfer all associated facilities to the To Selected field or select the “>” icon to transfer specific facilities to the To Selected field. Then, select “OK” to close the prompt window.



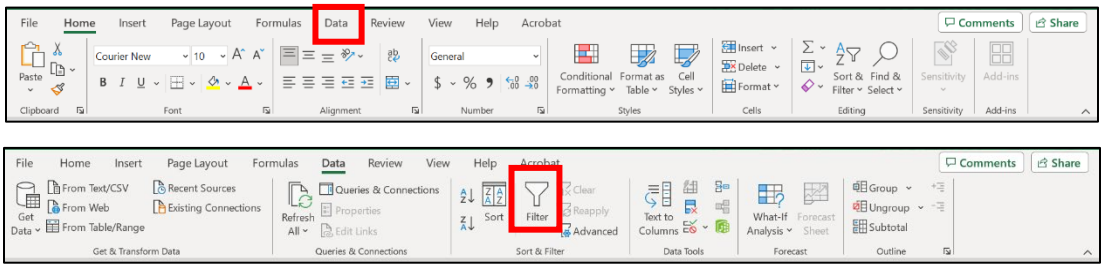
5. Ensure you can see your selected facility(s) in the Facility(s) field of the original prompt window. Select “Execute” in the DRP prompt window.



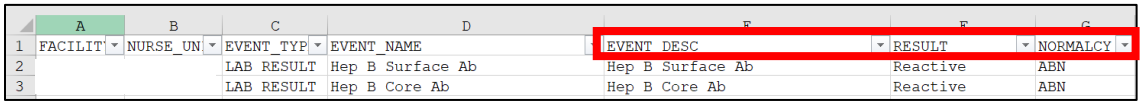
6. When the report populates select the box in the top left-hand corner of the table, which will select all cells. To copy the selected cells right-click and hover over “Edit” then select “Copy.” Then open a new Excel document and paste the cells in the new document.



7. Select all of the cells in the new excel document. Go to the “Data” tab and select “Filter.” This will create filters for the columns.

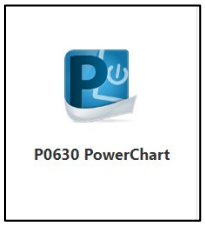


8. Select the down arrow for the NORMALCY column and only select “ABN,” “CRIT,” and “(Blanks).” This will show the possible RMEs based upon the laboratory results or diagnosis.
9. Select the down arrow for the RESULTS column and de-select “NEGATIVE,” “NEG,” “NON-REACTIVE,” “TNP,” “NOT DETECTED,” “INVALID,” and “NONE SEEN.” This will ensure that only positive results will show.
10. Select the down arrow for the EVENT_DESC column and de-select any non-RMEs. NOTE: Consult the current Armed Forces Reportable Medical Events Guidelines and Case Definitions document for required RME information.



STEP 2 PowerChart:

1. Open the MHS GENESIS desktop application.
2. Open the application "P0630 PowerChart."

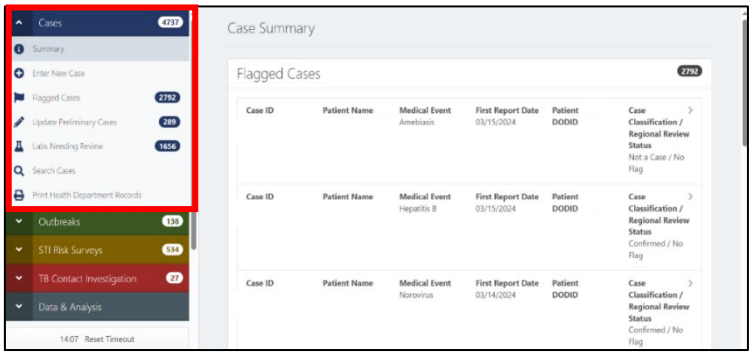


3. Select "Patient" at the top of the screen and then select "Search."
4. Search for the patient using their DODID. NOTE: The DODID can be pulled from the DRP report under the "EDIPI" column.
5. A list of patient encounters will be populated, select the encounter you are looking to verify based upon the "Event_DT_TM" column in the DRP report.
6. Each MTF may record and verify RMEs differently. Some of the options you may use to verify RMEs are listed below.
    a. Go to the "Summary" tab at the top of the patient chart and review the clinical notes to verify if the patient was hospitalized. These notes may also include signs and symptoms of disease. NOTE: There may not be any clinical notes listed under this tab.
    b. On the left-hand menu select "Documentation." Scroll to the corresponding date for the encounter you are trying to verify and identify any documentation to confirm hospitalization and/or signs and symptoms. NOTE: Some examples of documents that may be used for this verification include those labeled as "Discharge," "Intake," or "Clinical Note." This is not a comprehensive list.
    c. On the left-hand menu select the "Immunization" tab to verify the patient's immunizations.
    d. On the left-hand menu select "Results Review" and then select the "Labs-Recent" tab to verify the lab results if necessary.

STEP 3 DRSi:

NOTE: For first time DRSi users, refer to page 8 of the DRSi User Guide for registration instructions.

1. Login to DRSi.
2. **Report new case**
    a. Go to the "Cases" module on the left side navigation bar and select "Enter New Case."



i. Enter the DODID associated with the patient or sponsor of the new case and select the "Find Patient by DODID" icon.
   1. If the patient already has a registered profile: The patient's information and their linked family members will be displayed. Scroll through the list and find the correct patient you are looking for and select "Select Patient." Once complete, skip to "Confirm patient demographics"
   2. If the patient does NOT have a DRSi profile: A message will say "No patient was found for this search. Do you want to register a new Sponsor or a new Family Member?" with the options "Register Sponsor" or "Register Family Member."
      a. To register a new sponsor:
         i. Select "Register Sponsor."
         ii. Enter all of the sponsor information "DODID, sponsor name, date of birth (DOB), race, gender, rank, duty status, service branch, duty station, and any contact information." **The DODID cannot be changed after this step.**
            1. Some of this information can be pulled from the DRP including DODID, race, DOB, duty status, and service branch. NOTE: DODID will be under the "EDIPI" column in the DRP report.
         iii. Once all information is entered correctly select "Submit and Continue." A prompt window will appear, select "Accept."
      b. To register a new family member (dependents only):
         i. Select "Register Family Member."
         ii. Select "Find Sponsor" and enter the sponsor's DODID. Verify that the sponsor is correct and select "Add Family Member." If sponsor is not registered skip to "To register a new family member AND new sponsor"
         iii. Enter the sponsors and dependent's DODID, full name, gender, DOB, address, phone number, and email. Also include the sponsor's rank, duty status, and service branch. **The DODID cannot be changed after this step.**
         iv. Once all information is entered correctly, select "Submit and Continue." A prompt window will appear select "Accept."
      c. To register a new family member AND new sponsor:
         i. Select "Register Family Member."
         ii. Enter DODID of the sponsor, if sponsor is not found select "Register Family Member with New Sponsor."
         iii. Enter the sponsor's and dependent's DODID, full name, gender, DOB, address, phone number, and email. Also include the sponsor's rank, duty status, and service branch. **The DODID cannot be changed after this step.**
         iv. Once all information is entered correctly select "Submit and Continue." A Prompt window will appear, select "Accept."

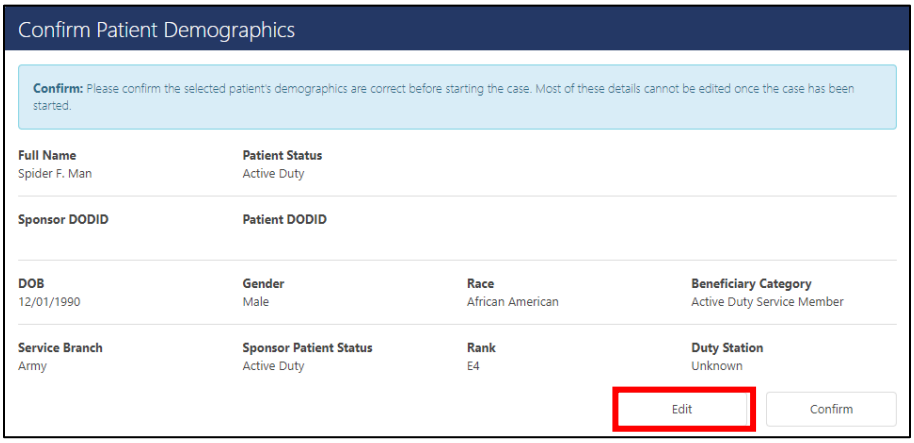
b. Confirm patient demographics.
NOTE: Skip to "If demographic information does not need to be updated" if new patient profile was just created.

i. Review patient demographics to ensure that all patient information is correct.
NOTE: All demographic edits must be made before a new case report is made.

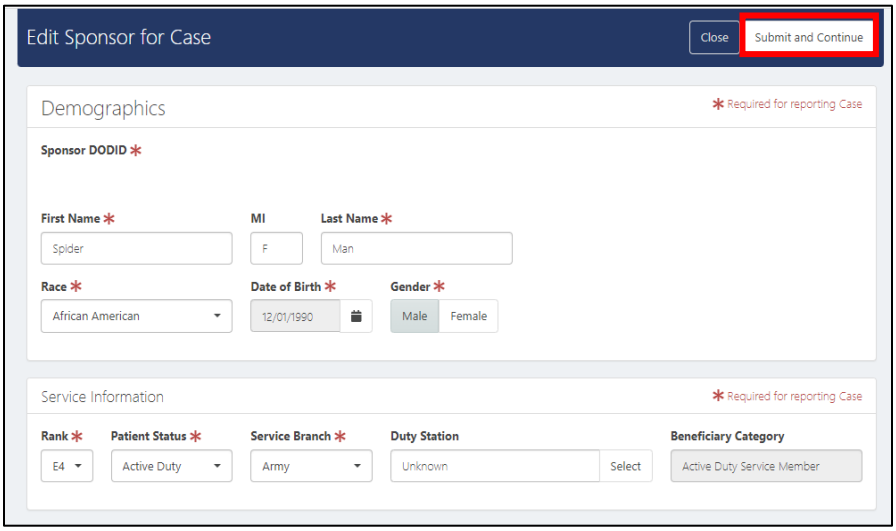
1. The following patient demographic information can be edited for existing patient profiles: name, DOB, gender, race, beneficiary category, service branch, duty status, rank, duty station.
2. The DODID cannot be edited for existing patient profiles. If these need to be updated refer to the "DRSi User Guide.

ii. <u>If demographic information needs to be updated</u>:

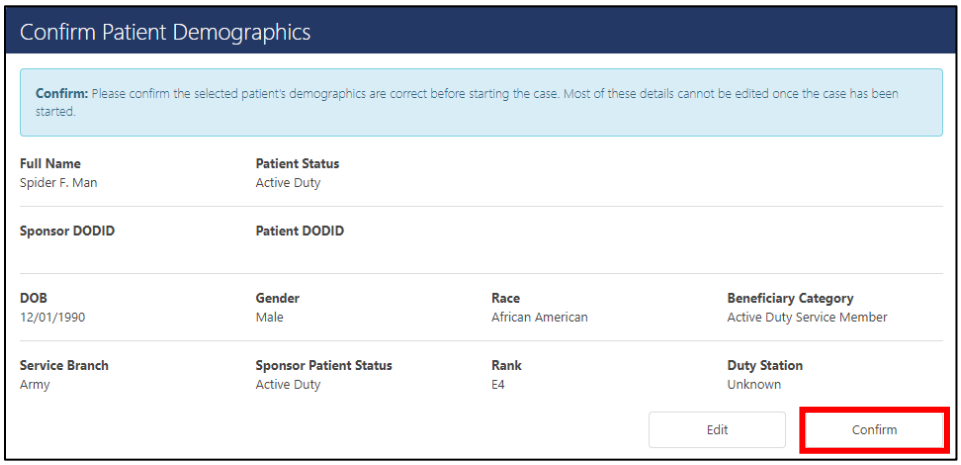
1. Select "Edit."



2. Once all edits have been made select, "Submit and Continue" at the top-right of the screen.



iii. If demographic information does not need to be updated:
1. Select "Confirm



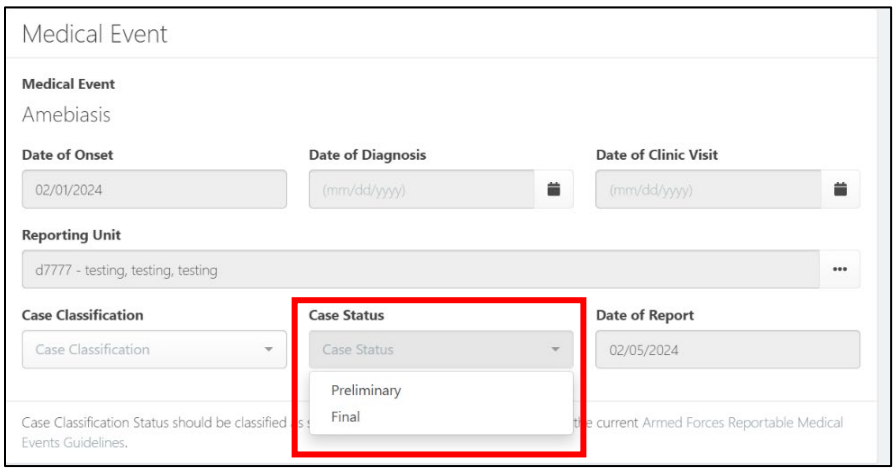
2. A list of recently reported cases will be displayed for the patient. Confirm that the case you want to report has not already been reported. NOTE: If the patent has already been reported for the RME, contact the DRSi Help Desk.

c. Create the MER
i. Select from the "Medical Event" drop-down list and select the RME you are reporting.
ii. Select the "Date of Onset" from the calendar icon. NOTE: The date of onset is when the patient first began having symptoms. If this is not applicable or it is unknown, then enter the date of the positive laboratory test or the date of diagnosis for the patient. The date cannot be changed after report is submitted.
iii. Select "Set Event Details."

1. The system will review existing cases to check for any duplicate reports. If a duplicate report is identified, review, and if needed contact the DRSi Help Desk.
2. NOTE: To determine if RMEs should be reported more than once within 30 days of initial report review the Armed Forces Reportable Medical Events Guidelines and Case Definitions for guidance. If you are still unsure, contact your DRSi Help Desk.

iv. Enter all information available in the MER. Complete as much as possible under the Medical Event, Laboratory Tests, Event Related Questions, and Comments section.

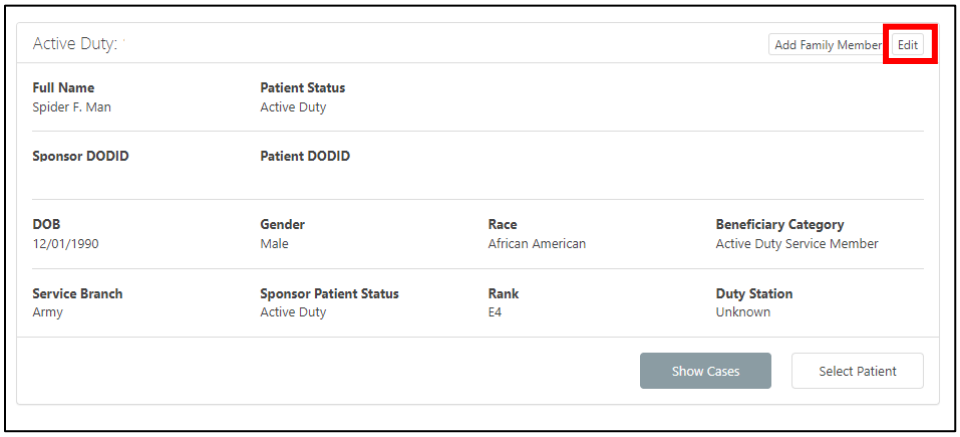
1. If you are still gathering information about a case, set the Case Status to "Preliminary." This will ensure that the case is available to update later. If report is finished, set the Case Status to "Final."



2. After reviewing all information for accuracy, select "Submit."

3. Edit Patient Demographics

a. Go to the "Cases" module and select "Enter New Case."
b. Search for patient using their DODID.
c. Once you find the correct patient, select "Edit" in the top right-hand corner.

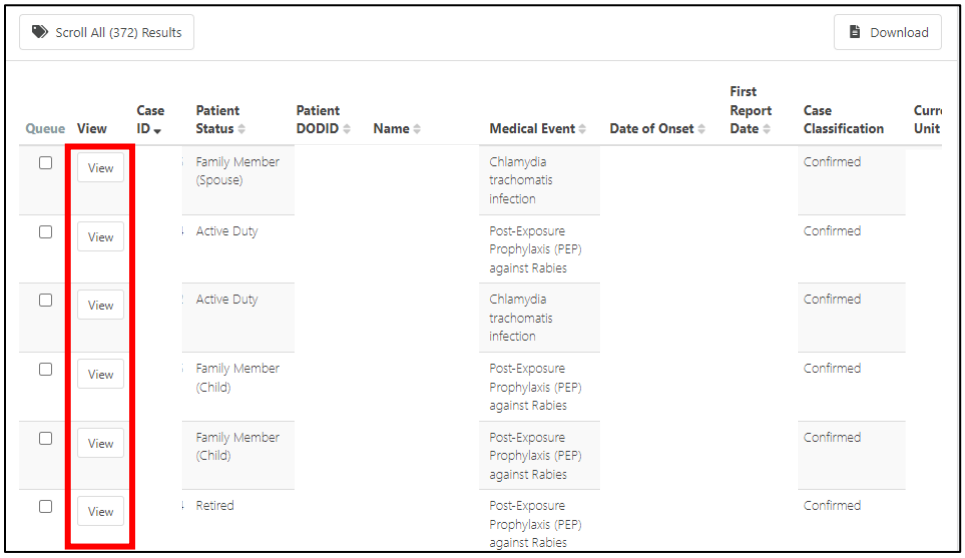


d. Update any demographic information. Once that is completed select "Submit and Continue."
e. The system will bring you to the "Create Medical Event" page, if no case needs to be reported for that patient, then select the "Summary" tab in the "Cases" module to end the process. If case does need to be reported refer back to "Create the MER."

4. **Update Preliminary Cases**
   Cases should only be marked as "Preliminary" if additional information is still being gathered about the case. Most cases are expected to be updated to "Final" within 1 week of the first report date; some cases may take longer to investigate.

   a. In the "Case Module" on the left-hand navigation bar select "Update Preliminary Cases."

   b. If the case does not appear on the main screen, apply search criteria for the desired preliminary case and select "Search." If you want to apply new search criteria, select the "X" to the right of the "Search" icon before entering the new criteria. You can sort the cases by selecting the column titles in the table. If no criteria is applied, then the default sorting will be by most recent MER Case ID.
   c. Open the preliminary case by selecting the "View" icon. NOTE: If no cases are shown that means there are no active preliminary cases in the unit that the reporter has access to.



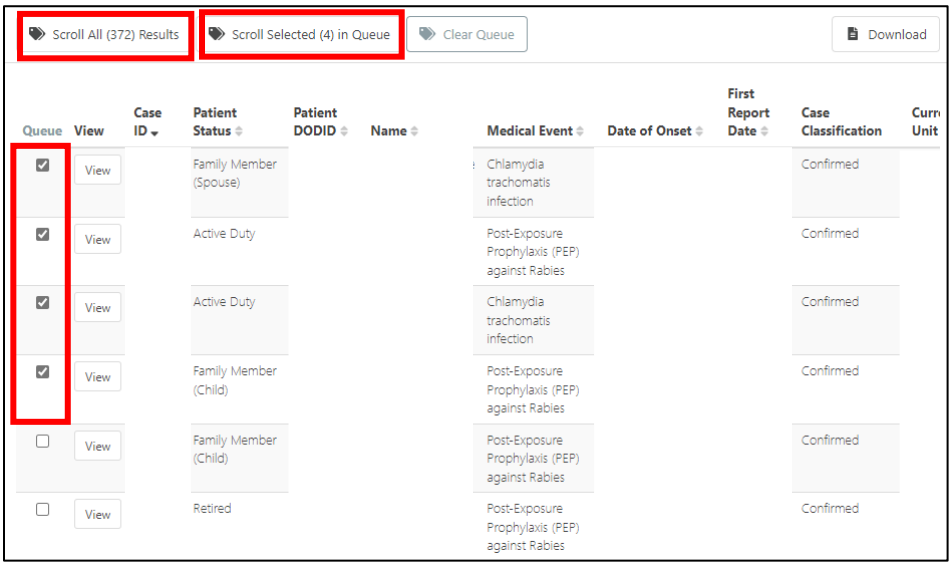
   d. Update and edit the case as needed.
      i. If all case information has been gathered and entered, change the "Case Status" to "Final." When finished select "Submit." NOTE: Once a case has been changed to "Final" it will be moved from the "Preliminary Cases" module.

5. Queuing, Opening, and Editing Multiple Cases

a. Queueing and Opening Cases:

i. If you need to review multiple cases at one time, select the check box under the "Queue" for each desired case.

ii. Once all cases are selected, select the "Scroll Selected (#) in Queue" at the top of the table to view all the MERs. If you want to select and review all MERs, select "Scroll All Results" at the top of the table.



b. Editing Cases in a Queue:

i. Apply changes to the specific cases as needed.

ii. Update the case status to "Final" if all necessary information has been collected and entered.

iii. Select "Submit" once case is updated.

iv. Use the queue navigation at the bottom of the screen to move through the selected cases. Either use the "Next" icon to move to the next listed case or select the drop-down menu and select the specific case you would like to review next.

v. Select "Close Queue" when you are finished editing the cases.

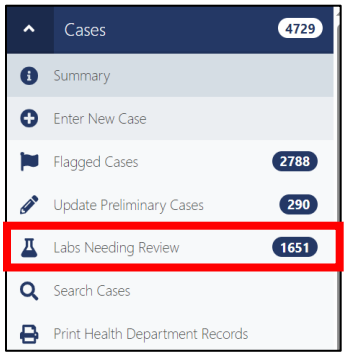
6. **Flagged Cases**
   If a regional reviewer flags a case submitted by your reporting unit, it will now appear in the "Flagged Cases" module with notes regarding what edits need to be made. As a reporter you should be checking the "Flagged Cases" module periodically. If no cases are shown, then that means that all case questions/comments have been addressed.

   a. In the "Case Module" on the left-hand navigation bar select "Flagged Cases."

   b. If the case does not appear on the main screen, apply search criteria for the desired preliminary case and select "Search." If you want to apply new search criteria, select the "X" to the right of the "Search" icon before entering the new criteria. You can sort the cases by selecting the column titles in the table. If no criteria is applied, then the default sorting will be by most recent MER case ID.
   c. Open the flagged case by selecting the "View" icon.
   d. Review the comments/questions from regional reviewer and apply any edits. NOTE: The contact information for the reviewer will be included if any further clarification is needed before edits can be made. Questions can be answered directly in the "Comments" box.
   e. Select "Submit" and the case will be sent back to reviewer. Reviewer will either close the case or flag it again if there are any more comments/questions. Refer back to "Step "Queuing, Opening, and Editing Multiple Cases" for information on how to Queue, Open, and Edit multiple flagged cases.

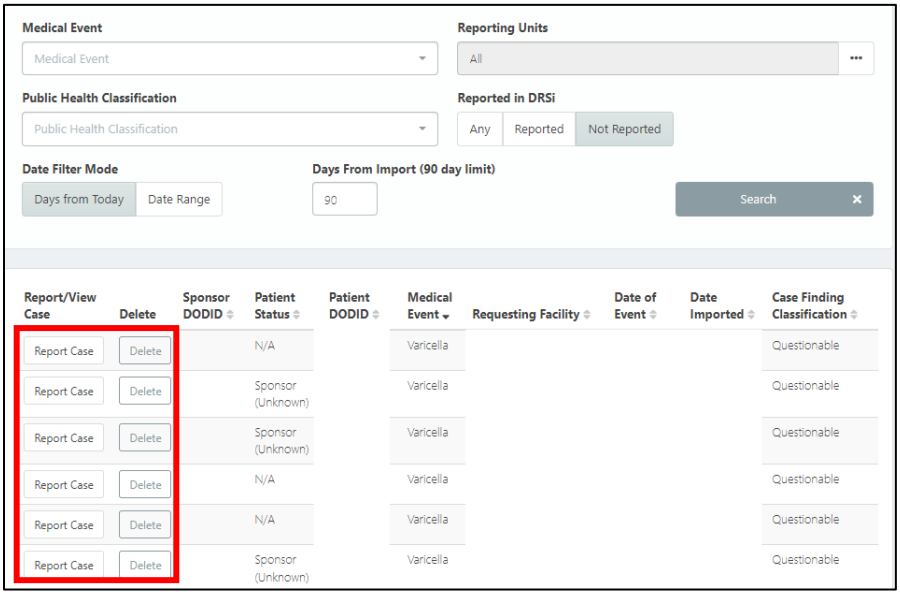
7. **Labs Needing Review (LNR)**
   As a reporter you should review the "Labs Needing Review" list every day to either report the case if applicable or remove the case if it does not meet the case definition, it was incorrectly uploaded into the LNR, or was already reported.

   a. In the "Case Module" on the left-hand navigation bar select "Labs Needing Review."



   b. If the case does not appear on the main screen, apply search criteria for the wanted labs and select "Search." If you want to apply new search criteria, select the "X" to the right of the "Search" icon before entering the new criteria. If no search criteria, just select "Search." You can sort the cases by selecting the column titles in the table. NOTE: If a match is found between the RME and DODID the lab will be uploaded into the "Reported" portion of the LNR. If a match is not found, then the lab is not reported and will appear in the "Not Reported" list in the LNR.
      i. Under the "Case Finding Classification" a case will be identified as either "Questionable" or "Highly Likely." "Questionable" cases are cases where the lab may or may not be reportable. "Highly Likely" cases are cases where a lab is very likely to be reportable. NOTE: You must review <u>every</u> lab before reporting as the results may suggest a case but do not guarantee a case. Even if a case is a "Highly Likely" it could still be for an incorrect patient or repeat results. Review all lab results before reporting a case.
   c. If a lab result is reportable select the "Report Case" icon under the "Report/View Case" column.
      i. <u>If the patient is not registered in DRSi:</u> The system will walk you through how to register a new patient. The RME and onset date must be entered at the top of the page. NOTE: The onset date will default to the lab certification date however, this can be edited if necessary.

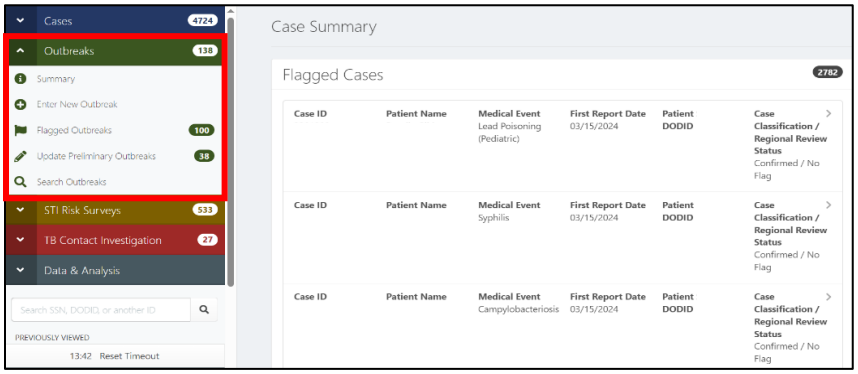
ii. If the patient has already been registered in DRSi: Edit the onset date, if necessary.

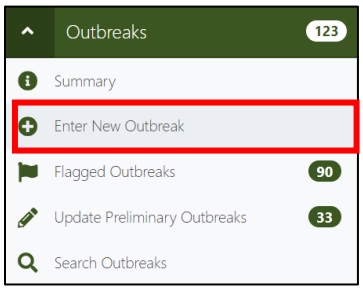


d. Fill out the case report with all available information. Once all information is entered, select "Submit."
e. To get back to the LNR, select the "Close" icon at the top of the case report page.
   i. The case that was just reported will no longer show up in the "Not Reported" list, instead it will appear for 90 days in the "Reported" list.
   ii. NOTE: Some cases may need to be deleted from the LNR list. Reasonable grounds to remove a case include: the case was already reported to DRSi, the case had a positive lab but does not meet the case definition for that RME per the Armed Forces Reportable Medical Events Guidelines and Case Definitions, or the lab record was incorrectly uploaded into the LNR list. You may be asked to provide an explanation as to why a case was deleted.

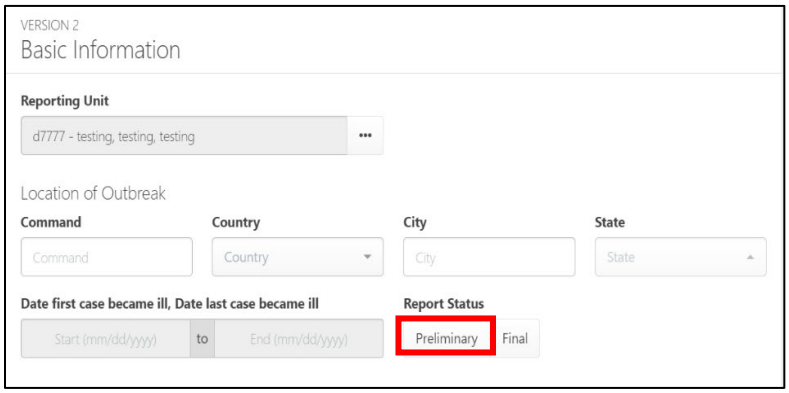
8. Entering a New Outbreak

a. In the "Outbreak Module" on the left-hand navigation bar select "Enter New Outbreak."





b. Complete as much of the report as possible under the "Basic Information," "Clinical and Epidemiological Information," "Exposure and Transmission," "Investigation and Control Methods," and "Additional Information."
   i. Under "Report Status" select "Preliminary."



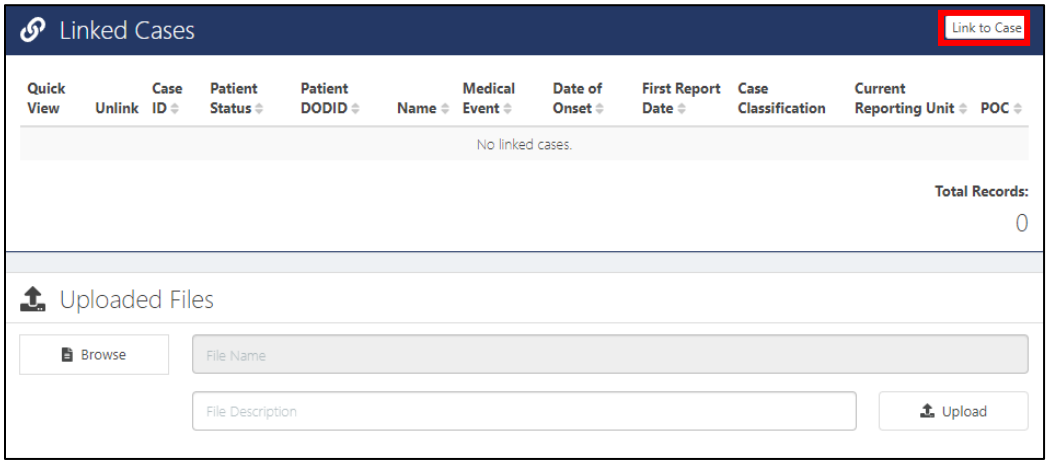
NOTE: Keep outbreak status as "Preliminary" until all relevant details have been completed and the investigation is finished. Once the status is update to "Final" it will be sent for review by the regional reviewers.

c. Select "Submit." After submitting the outbreak, users will have the ability to upload documents and link cases associated with the outbreak.

9. Linking Cases and Uploading Files to Existing Outbreak Reports

a. After submitting a new outbreak, scroll to the bottom of the outbreak report to find the "Linked Cases" and "Upload Files" sections.

b. <u>Linking Cases:</u>
   i. Select the "Link to Case" icon on the right.

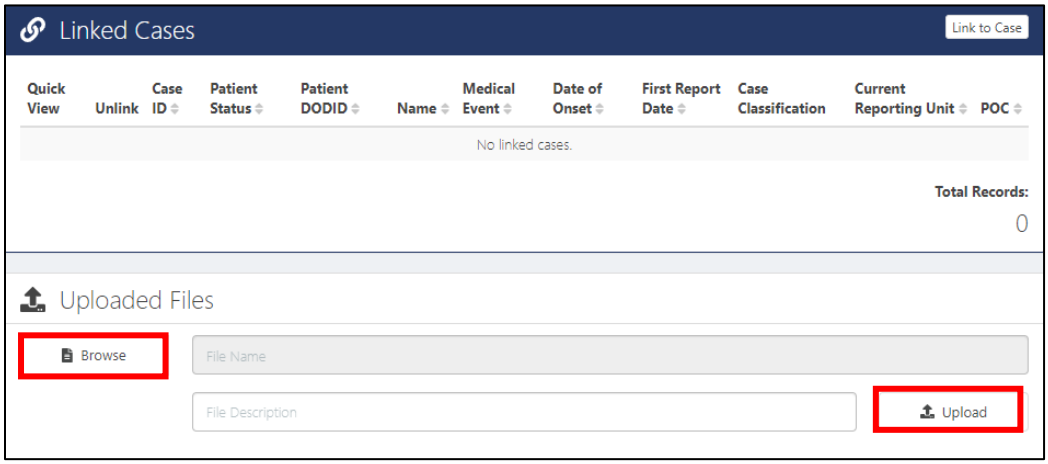


   ii. To search for specific individuals, enter the DODID or enter a list of Case IDs (enter a list by separating Case IDs by a comma and space). You can also search based on the Medical Event by specifying date ranges to find multiple case. Select "Search" once parameters are entered. If you want to apply new search parameters, select the "X" to the right of the "Search" icon before entering the new parameters.
   iii. A line list will be displayed. Select "Quick View" to see a preview of the MER.

iv. Select “Link Case” to link relevant cases to the outbreak. NOTE: After linking a case, it will no longer appear in the list. The linked case will appear in the outbreak report and in the associated MER. Cases can be unlinked anytime by selecting “Unlink” in the outbreak report or in the MER.

c. Uploading Files:

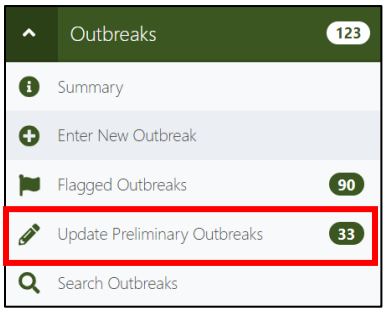
i. Select “Browse” and a file explorer will open.
ii. Find the file you want to attach to the case and select “Open.”
iii. The file will populate in the “Uploaded Files” section.
iv. Add a File Description then select “Upload” on the right. NOTE: Uploaded files can be downloaded or deleted at any time. It is not required to upload any files for an outbreak report.



10. Updating Preliminary Outbreaks

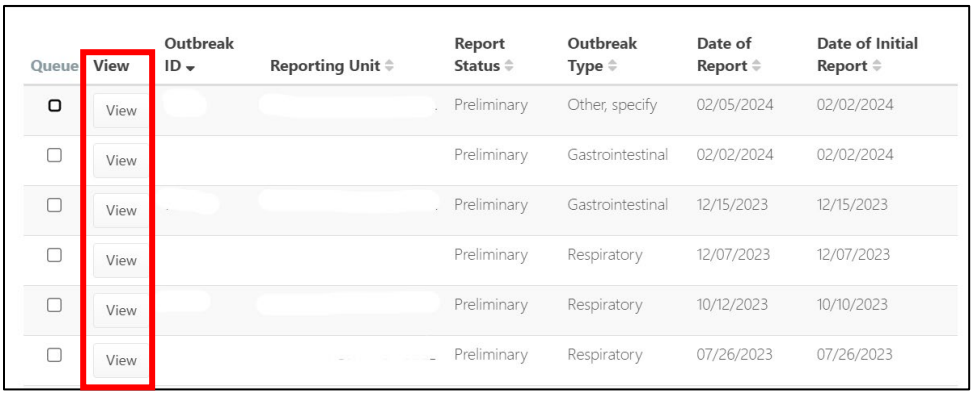
NOTE: Outbreaks marked as “Preliminary” inform reviewers that the outbreak investigation is ongoing. The “Preliminary” status allows reporting units to continue to make updates. Outbreaks are expected to spend a significant amount of time under “Preliminary” status.

a. In the “Outbreaks” module on the left-hand navigation bar select “Update Preliminary Outbreaks.”



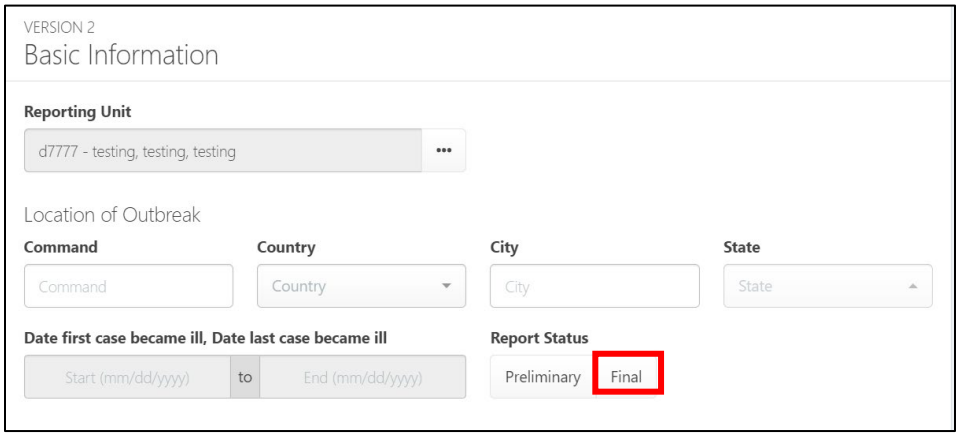
b. If the outbreak does not appear on the main screen, apply search criteria for the wanted outbreak and select “Search.” If you want to apply new search criteria, select the “X” to the right of the “Search” icon before entering the new criteria. You can sort the cases by selecting the column titles in the table. If no criteria is applied, then the default sorting will be by most recent Outbreak ID.

c. Open the outbreak report by selecting the “View” icon. NOTE: If no reports are shown, then that means there are no active preliminary outbreaks in the unit that the reporter has access to.



Queue	View	Outbreak ID	Reporting Unit	Report Status	Outbreak Type	Date of Report	Date of Initial Report
☐	View			Preliminary	Other, specify	02/05/2024	02/02/2024
☐	View			Preliminary	Gastrointestinal	02/02/2024	02/02/2024
☐	View			Preliminary	Gastrointestinal	12/15/2023	12/15/2023
☐	View			Preliminary	Respiratory	12/07/2023	12/07/2023
☐	View			Preliminary	Respiratory	10/12/2023	10/10/2023
☐	View			Preliminary	Respiratory	07/26/2023	07/26/2023

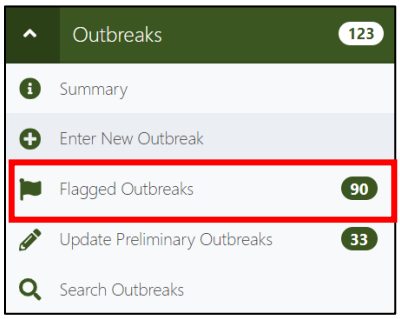
d. Update and edit the outbreak as needed.
   i. If all the information for the outbreak has been gathered and entered, change the "Report Status" to "Final." When the outbreak has been updated with all new relevant information select "Submit." NOTE: Once a report has been changed to "Final" it will be moved from the "Preliminary Outbreaks" module.



11. Flagged Outbreaks

NOTE: If a regional reviewer flags an outbreak submitted by your reporting unit, it will appear in the "Flagged Outbreaks" tab with notes regarding what edits need to be made.

a. In the "Outbreaks" module on the left-hand navigation bar select "Flagged Outbreaks."



b. If the flagged outbreak does not appear on the main screen, apply search criteria for the wanted flagged outbreak and select "Search." If you want to apply new search criteria, select the "X" to the right of the "Search" icon before entering the new criteria. You can sort the report by selecting the column titles in the table. If no criteria are applied, then the default sorting will be by most recent Outbreak ID.
c. Open the flagged case by selecting the "View" icon.
d. Review the comments/questions from the regional reviewer and apply any edits. NOTE: The contact information for the reviewer will be included if any further clarification is needed before edits can be made. Questions can be answered directly in the "Comments" box.
e. Select "Submit" and the case will be sent back to the reviewer. NOTE: The reviewer will either mark the report as "Approved" or flag it again if there are any more comments/questions.

STEP 4 ESSENCE:

1. The "MyEssence" tab at the top toolbar of the home screen will take you to the dashboard. For new users, this will be blank. You can add pre-existing queries by selecting "Library" and choosing the queries that are publicly shared or you can create your own. To start your dashboard, the recommended queries to select from the "Library" tab are: My COVID, RSV, Default RME, Default Syndromes by ICD.
    a. ESSENCE training materials and registration instructions can be found on the milSuite page at this link: https://www.milsuite.mil/book/groups/essence/pages/training.
2. Use ESSENCE as a tool to check for disease trends within your installation to track how disease counts have increased, decreased, or stayed constant over a period of time (ex: Epidemic Curve: a histogram that displays the number of new cases of disease that are occurring over time. An Epidemic Curve can show the timeline and course of an outbreak).

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Help Desk
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Reportable Medical Event (RME)
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