

# Surveillance Case Definitions for *Select* Reportable Diseases in Florida

Florida Department of Health  
Bureau of Epidemiology












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## Case Definitions for Select Diseases and Conditions Under Public Health Surveillance

### Introduction

The importance of surveillance data collected on reportable disease cases cannot be overstated. Without such data, trends cannot be accurately monitored, unusual occurrences of diseases might not be detected, and the effectiveness of intervention activities cannot be evaluated. Uniform reporting criteria, in addition to the simplicity and timeliness of surveillance data, are fundamental to increasing the specificity of reporting and improving the comparability of information about diseases occurring in different regions of the state. This document provides updated uniform criteria for the local county public health departments to use when reporting Florida's notifiable infectious diseases.

The surveillance case definitions included in this document differ in their use of clinical, laboratory, and epidemiologic criteria to define cases. For example, some diseases require laboratory confirmation for diagnosis regardless of clinical symptoms, some diseases require both laboratory confirmation and clinical symptoms, and other diseases are diagnosed based on epidemiologic data alone. **To assist in laboratory diagnosis and epidemiologic investigation, there are certain diseases for which an isolate of the organism should, and in some cases must (as required by Chapter 64D-3, Florida Administrative Code), be sent to the Bureau of Public Health Laboratories (BPHL).** The need to have an isolate forwarded to BPHL is noted in the appropriate disease-specific case definitions.

**This document is intended for use by those working in epidemiology and disease control for the Florida Department of Health (DOH) at the state and county level.** While information in this document may be shared with clinicians, hospitals or laboratories, to aid in the reporting or investigating of cases the final classifying of cases, data entry and management within the state reportable disease surveillance system, Merlin, and final completion of case report forms will be performed by DOH. Substantial amounts of information, including laboratory tests, must be collected for many diseases before a final case classification is possible. **Since final case review and classification is performed at the state level using laboratory and clinical data, laboratory reports should be entered into Merlin and attached to cases at the county health department. Original paper results can also be attached as documents but should not replace data entry of laboratory results.** This list of diseases changes as additional diseases are incorporated to full electronic submission via Merlin.

Case report forms and requirements for diseases under public health surveillance in Florida are available on the Surveillance and Investigation Guidance website ([www.Floridahealth.gov/SurveillanceInvestigationGuide](http://www.Floridahealth.gov/SurveillanceInvestigationGuide)).


## List of Sterile and Non-Sterile Sites


Below is a list of common sterile and non-sterile sites. For additional questions, please contact the Bureau of Epidemiology.


**Non-sterile:** Bronchial wash, wound, eye, middle ear, sputum, stool, urine, superficial wound aspirates


**Sterile:** Blood; cerebrospinal fluid (CSF); pleural fluid (includes: chest fluid, thoracentesis fluid); peritoneal fluid (includes: abdominal fluid, ascites); pericardial fluid; bone (includes: bone marrow); joint fluid (includes: synovial fluid, fluid, needle aspirate, or culture of any specific joint: knee, ankle, elbow, hip, wrist); internal body sites (specimen obtained from surgery or aspirate from one of the following: lymph node, brain, heart, liver, spleen, vitreous fluid, kidney, pancreas, gallbladder, ovary, vascular tissue, muscle collected during debridement for necrotizing fasciitis)

## Notations

 **Suspect Immediately:** Report immediately, 24 hours a day, 7 days a week (24/7), by phone upon initial clinical suspicion or laboratory test order

 **Suspect Immediately During Business Hours:** Report immediately during normal business hours by phone upon initial clinical suspicion or laboratory test order

 **Immediately:** Report immediately 24 hours a day, 7 days a week (24/7), by phone upon diagnosis

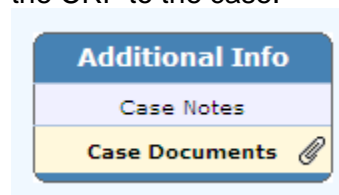
 Isolates or specimens are required to be submitted to the Bureau of Public Health Laboratories as required by Chapter 64D-3, *Florida Administrative Code*

## Merlin Extended Data Required

An electronic extended data screen is available in Merlin to capture disease-specific risk factors. Data on the extended data screens should be completed and submitted via Merlin. Paper case report forms (CRFs) are still available as a tool to assist in case investigation and interview, but are not required to be completed and attached to the case in Merlin.

## Paper Case Report Form (CRF) Required

An electronic extended data screen is not available in Merlin. A paper CRF must be completed to capture disease-specific risk factors. Paper CRFs should be scanned and attached to the corresponding case in Merlin in the “Case Documents” section (see screen shot below) by county health department staff (preferred). If a county health department is not able to scan and attach the CRF, they can be faxed to the Bureau of Epidemiology 850-414-6894 where staff will scan and attach the CRF to the case.





## How To Use Information In This Document

When applying case definitions in this document to classify cases, follow these steps:

- 1) Each case definition has core components:
  - Clinical criteria for case classification
  - Laboratory criteria for case classification
  - Epidemiological criteria for case classification
  - Case classification
  - Criteria to distinguish a new case from previous reports

Not every component will be applicable for every disease and not every component has been defined for every disease. “Not applicable” will appear if no criteria are defined.

- 2) The case classification of confirmed, probable or suspect will reference the clinical, laboratory, and epidemiological criteria. The criteria to distinguish a new case from previous reports will determine whether a new case should be created in Merlin or whether information should be entered for an existing case.
- 3) Review the **confirmed** case classification criteria. If these criteria are met, the case should be classified as confirmed, regardless of whether the probable or suspect criteria are also met.
- 4) If the confirmed case classification criteria are not met, then review the **probable** case classification criteria. If these criteria are met, the case should be classified as probable, regardless of whether suspect criteria are also met.
- 5) If the probable criteria are not met, then review the **suspect** case classification criteria. If these criteria are met, then the case should be classified as suspect. If these criteria are not met, the person does not meet the surveillance case definition. If a case has already been created in Merlin, set the Dx Status on the Basic Case screen to “Not a Case” and submit (do not delete the case).

Note that the case classification criteria should be re-evaluated each time new clinical or laboratory information becomes available.

These case definitions are to be used for identifying and classifying cases for reporting to the Department of Health, Bureau of Epidemiology. Terms used in case classifications are defined in the section **Definition of Terms Used in Case Classification** below.

### Definition of Terms Used in Case Classification

- **Clinically compatible illness:** A clinical syndrome generally compatible with the disease, as described in the clinical criteria for case classification.
- **Confirmed case:** A case that is classified as confirmed for reporting purposes.
- **Probable case:** A case that is classified as probable for reporting purposes.
- **Suspect case:** A case that is classified as suspected for reporting purposes.
- **Confirmatory clinical criteria:** Specified signs or symptoms consistent with the diagnosis and are part of the **confirmed** case classification. These are specified in the clinical criteria for case classification section of each case definition.

- **Presumptive clinical criteria:** Specified signs or symptoms consistent with the diagnosis and are part of the **probable** case classification. These are specified in the clinical criteria for case classification section of each case definition.
- **Supportive clinical criteria:** Specified signs or symptoms consistent with the diagnosis and are part of the **suspect** case classification. These are specified in the clinical criteria for case classification section of each case definition.
- **Confirmatory laboratory evidence:** Specified laboratory results that are consistent with the diagnosis and are part of the **confirmed** case classification. These are specified in the laboratory criteria for case classification section of each case definition.
- **Presumptive laboratory evidence:** Specified laboratory results that are consistent with the diagnosis and are part of the **probable** case classification. These are specified in the laboratory criteria for case classification section of each case definition.
- **Supportive laboratory evidence:** Specified laboratory results that are consistent with the diagnosis and are part of the **suspect** case classification. These are specified in the laboratory criteria for case classification section of each case definition.
- **Confirmatory epidemiological criteria:** Specified epidemiological factors that are part of the **confirmed** case classification. These are specified in the epidemiological criteria for case classification section of each case definition.
- **Presumptive epidemiological criteria:** Specified epidemiological factors that are part of the **probable** case classification. These are specified in the epidemiological criteria for case classification section of each case definition.
- **Supportive epidemiological criteria:** Specified epidemiological factors that are part of the **suspect** case classification. These are specified in the epidemiological criteria for case classification section of each case definition.
- **Epidemiologically linked case:** A case in which a) the patient has had contact with one or more persons who either have or had the disease, b) the patient has been exposed to a point source of infection (i.e., a single source of infection, such as an event leading to a foodborne-disease outbreak, to which all confirmed case-patients were exposed), or c) transmission of the agent by its usual modes of transmission is plausible.

## Diseases and Conditions

### Amebic Encephalitis (*Naegleria fowleri*, *Balamuthia mandrillaris*, *Acanthamoeba*)

Merlin disease code=13629 Amebic Encephalitis (*Naegleria fowleri*)  
 Merlin disease code=13625 Amebic Encephalitis (*Balamuthia mandrillaris*)  
 Merlin disease code=13621 Amebic Encephalitis (*Acanthamoeba*)  
 Case report form (CRF): [Primary Amebic Meningoencephalitis CRF](#)  
**PAPER CRF REQUIRED**

### ***Naegleria fowleri* Causing Primary Amebic Meningoencephalitis (PAM)**

#### Clinical criteria for case classification

An infection presenting as meningoencephalitis or encephalitis. The clinical presentation of PAM is like that of acute meningitis caused by other pathogens and symptoms include headache, nausea, vomiting, anorexia, fever, lethargy, and stiff neck. Disorientation, mental status changes, seizure activity, loss of consciousness, and ataxia may occur within hours of initial presentation.

#### Laboratory criteria for case classification

##### Confirmatory:

Detection of *N. fowleri* antigen or nucleic acid from a clinical specimen (e.g., direct fluorescent antibody, polymerase chain reaction, immunohistochemistry).

##### Presumptive:

Either of the following:

- Visualization of motile amebae in a wet mount of cerebrospinal fluid (CSF)
- **Or** culture of *N. fowleri* from a clinical specimen.

#### Epidemiological criteria for case classification

Not applicable.

#### Case classification

##### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

##### Probable:

A clinically compatible illness in a person with presumptive laboratory evidence.

#### Criteria to distinguish a new case from previous reports

Not applicable.

#### Comments

*N. fowleri* might cause clinically similar illness to bacterial meningitis, particularly in its early stages. Definitive diagnosis by a reference laboratory is required. Unlike *Balamuthia mandrillaris* and *Acanthamoeba* species, *N. fowleri* is commonly found in the CSF of patients with PAM. After the onset of symptoms, the disease progresses rapidly and usually results in death within 3 to 7 days. Patients presenting with the above clinical criteria and found to have a history of recreational freshwater exposure in the two weeks prior to presentation or are known to have performed nasal irrigation (e.g., use of a neti pot for treatment of sinus conditions or practice ritual ablution including nasal rinsing) in the absence of another explanation for their condition should be investigated further. Urgent confirmatory testing and treatment should be initiated.

## ***Balamuthia mandrillaris* Disease**

### **Clinical criteria for case classification**

An infection presenting as meningoencephalitis or encephalitis, disseminated disease (affecting multiple organ systems), or cutaneous disease. Granulomatous amebic encephalitis (GAE) can include general symptoms and signs of encephalitis such as early personality and behavioral changes, depressed mental status, fever, photophobia, seizures, nonspecific cranial nerve dysfunction, and visual loss. Painless skin lesions appearing as plaques a few millimeters thick and one to several centimeters wide have been observed in some patients, especially patients outside the U.S., preceding the onset of neurologic symptoms by 1 month to approximately 2 years.

### **Laboratory criteria for case classification**

#### Confirmatory:

Detection of *B. mandrillaris* antigen or nucleic acid or nucleic acid (e.g., PCR, immunohistochemistry) from a clinical specimen (e.g., tissue).

#### Supportive:

Culture of *B. mandrillaris* from a clinical specimen (e.g., tissue).

### **Epidemiological criteria for case classification**

Not applicable.

### **Case classification**

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

#### Suspect:

A clinically compatible illness in a person with supportive laboratory evidence.

### **Criteria to distinguish a new case from previous reports**

Not applicable.

### **Comments**

*B. mandrillaris* and Acanthamoeba species can cause clinically similar illnesses and might be difficult to differentiate using commonly available laboratory procedures. Definitive diagnosis by a reference laboratory is required. A negative test on CSF does not rule out *B. mandrillaris* infection because the organism is not commonly present in the CSF. Once the disease progresses to neurologic infection, it is generally fatal within weeks or months; however, a few patients have survived this infection. Patients presenting with the above clinical criteria who have received a solid organ transplant should be further investigated to determine if the infection was transmitted through the transplanted organ. An investigation of the donor should be initiated through notification of the organ procurement organization and transplant center.

## **Acanthamoeba Disease (Excluding Keratitis)**

### **Clinical criteria for case classification**

An infection presenting as meningoencephalitis or encephalitis, disseminated disease (affecting multiple organ systems), or cutaneous disease. *Acanthamoeba* species GAE presents similarly to *B. mandrillaris* GAE with early personality and behavioral changes, depressed mental status, fever, photophobia, seizures, nonspecific cranial nerve dysfunction, and visual loss. Skin lesions and sinus disease may also be seen.

### **Laboratory criteria for case classification**

#### Confirmatory:

Detection of *Acanthamoeba* species antigen or nucleic acid (e.g., PCR, immunohistochemistry) from a clinical specimen (e.g., tissue).

#### Supportive:

Culture of *Acanthamoeba* species from a clinical specimen (e.g., tissue).

### **Epidemiological criteria for case classification**

Not applicable.

### **Case classification**

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

#### Suspect:

A clinically compatible illness in a person with supportive laboratory evidence.

### **Criteria to distinguish a new case from previous reports**

Not applicable.

### **Comments**

*Acanthamoeba* species and *B. mandrillaris* can cause clinically similar illnesses and might be difficult to differentiate using commonly available laboratory procedures. Definitive diagnosis by a reference laboratory might be required. Several species of *Acanthamoeba* are associated with infection (i.e., *A. castellanii*, *A. culbertsoni*, *A. hatchetti*, *A. healyi*, *A. polyphaga*, *A. rhyodes*, *A. astonyxis*, *A. lenticulata*, and *A. divionensis*). A negative test on CSF does not rule out *Acanthamoeba* species infection because the organism is not commonly present in the CSF.

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## ! Anthrax

Merlin disease code=02200  
Case report form (CRF): None  
**CONTACT BUREAU OF EPIDEMIOLOGY**

### Background

Anthrax is a serious zoonotic disease caused by the toxin-producing bacterium *Bacillus anthracis*. Human cases of anthrax are uncommon in the U.S and other industrialized countries. Animal cases and environmental contamination in the U.S. are most frequently reported from midwestern and western states, particularly North and South Dakota, Texas, Minnesota, and Nevada. Worldwide, grazing animals such as cattle, sheep, and goats are the most commonly infected species. *Bacillus cereus*, a common soil bacterium with worldwide distribution, can also occasionally carry toxin genes found in *B. anthracis* and cause similar signs and symptoms. Groups at increased risk for exposure include people who handle animal products such as untreated animal hides (including some types of drum skins), veterinarians, livestock producers, travelers, laboratorians, injection drug users, and people in contact with soil in endemic areas. In the case of intentional release, mail handlers, military personnel, and response workers may also be at increased risk.

Anthrax illnesses and deaths are characterized into **several distinct clinical types** defined by route of exposure and clinical or post-mortem findings, including:

- **Cutaneous:** A painless skin lesion usually evolving during a period of 2–6 days from a papule, through a vesicular stage, to a depressed black eschar with surrounding edema. Fever, malaise, and lymphadenopathy may accompany the lesion.
- **Ingestion oropharyngeal:** A painless mucosal lesion in the oral cavity or oropharynx, cervical adenopathy and edema, pharyngitis, fever, and possibly septicemia.
- **Ingestion gastrointestinal:** Severe abdominal pain and tenderness, nausea, vomiting, hematemesis, bloody diarrhea, anorexia, fever, abdominal swelling, and septicemia.
- **Inhalation:** A brief prodrome resembling a viral respiratory illness, followed by development of hypoxia and dyspnea or acute respiratory distress with resulting cyanosis and shock, often with radiographic evidence of mediastinal widening or pleural effusion.
- **Injection:** Usually presents as a severe soft tissue infection manifested as significant edema or bruising after an injection. No eschar is apparent, and pain is often not described. Nonspecific symptoms such as fever, shortness of breath, or nausea are sometimes the first indication of illness. Occasionally patients present with meningeal or abdominal involvement. A coagulopathy is not unusual.
- **Systemic disseminated:** Can occur with any of the types/routes of exposure listed above and include fever or hypothermia, tachycardia, tachypnea, hypotension, and leukocytosis. One or more of these signs are usually present in patients with ingestion, inhalational and injection anthrax and may be present in up to a third of patients with cutaneous anthrax.
- **Anthrax meningitis:** May complicate any type of anthrax listed above, and may also be a primary manifestation. Primary symptoms include fever, headache (often severe), nausea, vomiting and fatigue. Meningitis signs/symptoms (e.g., headache, stiff neck, vomiting, and dizziness), altered mental status, and other neurological signs such as seizures and focal signs are usually present. Most patients with anthrax meningitis have cerebrospinal fluid (CSF) abnormalities consistent with bacterial meningitis, and the CSF is often described as hemorrhagic.

### Clinical criteria for case classification

One or more of the following:

- One or more **specific** sign or symptom compatible with cutaneous, ingestion, inhalational, or injection anthrax; systemic involvement; or anthrax meningitis:
  - Painless or pruritic papular or vesicular lesion or eschar which may be surrounded by erythema,
  - **Or** blood in CSF,
  - **Or** evidence of pleural effusion,
  - **Or** evidence of mediastinal widening on imaging;
- **Or** two or more **non-specific** symptoms and signs:
  - Abdominal pain,
  - **Or** abnormal lung sounds,
  - **Or** altered mental status,
  - **Or** ascites,
  - **Or** cough,
  - **Or** dyspnea,
  - **Or** fever,
  - **Or** headache,
  - **Or** hypotension,
  - **Or** localized edema,
  - **Or** meningitis signs/symptoms (e.g., headache, stiff neck, vomiting, and dizziness),
  - **Or** nausea/vomiting (may be bloody),
  - **Or** sore throat,
  - **Or** tachycardia;
- **Or** both of the following:
  - A death of unknown cause
  - **And** organ involvement consistent with anthrax, including one or more of the following lesions:
    - Eschar;
    - **Or** epidermal or dermal necrosis;
    - **Or** dermal hemorrhage, perivascular inflammation, and vasculitis;
    - **Or** enlarged, necrotic, and hemorrhagic lymph nodes;
    - **Or** hemorrhagic ulcers in the terminal ileum and caecum with mesenteric hemorrhagic lymphadenitis, and peritonitis;
    - **Or** hemorrhagic mediastinal lymphadenitis with pleural effusion;
    - **Or** petechial hemorrhage of abdominal organs;
    - **Or** hemorrhagic meningitis.

### Laboratory criteria for case classification

Confirmatory for *Bacillus anthracis* or *Bacillus cereus* expressing anthrax toxins:

One or more of the following:

- Culture and identification from a clinical specimen by the Laboratory Response Network (LRN);
- **Or** demonstration of *B. anthracis* antigens in tissues by immunohistochemical (IHC) staining using both *B. anthracis* cell wall and capsule monoclonal antibodies;
- **Or** evidence of a fourfold rise in antibodies to protective antigen between acute and convalescent sera or a fourfold change in antibodies to protective antigen in paired convalescent sera using Centers for Disease Control and Prevention (CDC) quantitative anti-PA IgG enzyme-linked immunosorbent assay testing in an unvaccinated person;

- **Or** detection of *B. anthracis* or anthrax toxin genes by LRN-validated polymerase chain reaction (PCR) or sequencing in clinical specimens collected from a normally sterile site (such as blood or CSF) or lesion of other affected tissue (skin, pulmonary, reticuloendothelial [e.g., lymph nodes, liver, spleen], or gastrointestinal);
- **Or** detection of lethal factor (LF) in clinical serum specimens by LF mass spectrometry.

Presumptive for *Bacillus anthracis* or *Bacillus cereus* expressing anthrax toxins:

Either of the following:

- Gram stain demonstrating Gram-positive rods, square-ended, in pairs or short chains
- **Or** positive result on a test with established performance in a CLIA-accredited laboratory.

### Epidemiological criteria for case classification

One or more of the following:

- Exposure to environment, food, animal, material, or object that is suspect or confirmed to be contaminated with *B. anthracis*;
- **Or** exposure to the same environment, food, animal, material, or object as another person who has laboratory-confirmed anthrax;
- **Or** consumption of the same food as another person who has laboratory-confirmed anthrax.

### Case classification

Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

Probable:

Either of the following:

- A clinically compatible illness in a person with presumptive laboratory evidence
- **Or** a clinically compatible illness in a person with epidemiological criteria.

Suspect:

A clinically compatible illness in a person for whom an anthrax test was ordered, but who has no epidemiological criteria relating to anthrax.

### Criteria to distinguish a new case from previous reports

A new case should be created for any case not previously reported to public health authorities.

### Comments

- ✉ **Any isolates from cases or suspected cases must be sent to the Bureau of Public Health Laboratories. Detection of a suspected case is a PUBLIC HEALTH EMERGENCY and requires immediate reporting to the Bureau of Epidemiology at 850-245-4401. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## Arboviral Diseases (Neuroinvasive and Non-Neuroinvasive)

Merlin disease code=06250 California serogroup Virus Neuroinvasive Disease  
 Merlin disease code=06251 California serogroup Virus Non-Neuroinvasive Disease  
 Merlin disease code=06220 Eastern Equine Encephalitis Neuroinvasive Disease  
 Merlin disease code=06221 Eastern Equine Encephalitis Non-Neuroinvasive Disease  
 Merlin disease code=06230 St. Louis Encephalitis Neuroinvasive Disease  
 Merlin disease code=06231 St. Louis Encephalitis Non-Neuroinvasive Disease  
 Merlin disease code=06620 Venezuelan Equine Encephalitis Neuroinvasive Disease !  
 Merlin disease code=06621 Venezuelan Equine Encephalitis Non-Neuroinvasive Disease !  
 Merlin disease code=06630 West Nile Virus Neuroinvasive Disease  
 Merlin disease code=06631 West Nile Virus Non-Neuroinvasive Disease  
 Merlin disease code=06210 Western Equine Encephalitis Neuroinvasive Disease  
 Merlin disease code=06211 Western Equine Encephalitis Non-Neuroinvasive Disease  
 Merlin disease code=06000 Arboviral Disease, Other  
 Case report form (CRF): [Florida Confidential Vector-borne Disease Infection CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

Arthropod-borne viruses (arboviruses) are transmitted to humans primarily through the bites of infected mosquitoes, ticks, sand flies, or midges. Other modes of transmission for some arboviruses include blood transfusion, organ transplantation, perinatal transmission, breastfeeding, and laboratory exposures.

More than 130 arboviruses are known to cause human disease. Most arboviruses of public health importance belong to one of three virus genera: *Flavivirus*, *Alphavirus*, and *Orthobunyavirus*.

Most arboviral infections are asymptomatic. Clinical disease ranges from mild febrile illness to severe encephalitis. Other clinically compatible symptoms of arbovirus disease may include headache, myalgia, rash, arthralgia, vertigo, vomiting, paresis, altered mental status, seizures, limb weakness, or nuchal rigidity. For the purposes of surveillance and reporting, based on their clinical presentation, arboviral disease cases are often categorized into two primary groups: neuroinvasive disease and non-neuroinvasive disease.

#### **Neuroinvasive disease**

Many arboviruses cause neuroinvasive disease such as aseptic meningitis, encephalitis, or acute flaccid paralysis (AFP). These illnesses are usually characterized by the acute onset of fever with headache, myalgia, stiff neck, or cerebrospinal fluid (CSF) pleocytosis (increase in white blood cell count). AFP may result from anterior ("polio") myelitis, peripheral neuritis, or post-infectious peripheral demyelinating neuropathy (i.e., Guillain-Barré syndrome). Less common neurological manifestations, such as cranial nerve palsies, also occur.

#### **Non-neuroinvasive disease**

Most arboviruses are capable of causing an acute systemic febrile illness (e.g., West Nile fever) that may include headache, myalgia, arthralgia, rash, or gastrointestinal symptoms. Some viruses also can cause more characteristic clinical manifestations, such as severe polyarthralgia or arthritis due to chikungunya, Zika, Mayaro, Ross River, and O'nyong-nyong viruses.

## Clinical criteria for case classification

Clinically compatible illness for arboviral disease is defined below.

### ***Neuroinvasive disease***

An illness characterized by both of the following:

- Meningitis with pleocytosis, encephalitis, AFP, or other acute signs of central or peripheral neurologic dysfunction, as documented by a physician
- **And** absence of a more likely clinical explanation.

### ***Non-neuroinvasive disease***

An illness characterized by all of the following:

- Fever (chills) as reported by the patient or a health care provider,
- **And** absence of neuroinvasive disease,
- **And** absence of a more likely clinical explanation.

## Laboratory criteria for case classification

### ***Neuroinvasive disease***

#### Confirmatory:

One or more of the following:

- Isolation of virus from, or demonstration of specific viral antigen or nucleic acid in tissue, blood, CSF, or other body fluid (e.g., culture, immunohistochemistry [IHC], polymerase chain reaction [PCR])\*;
- **Or** fourfold or greater change in virus-specific quantitative antibody titers in paired sera (e.g., enzyme immunoassay [EIA], microsphere immunoassay [MIA], immunofluorescence assay [IF]);
- **Or** both of the following:
  - Virus-specific IgM antibodies in serum or CSF (e.g., EIA, MIA, IF)
  - **And** confirmatory virus-specific neutralizing antibodies in the same or a later specimen (e.g., plaque reduction neutralization test [PRNT]);
- **Or** both of the following:
  - Virus-specific IgM antibodies in CSF (e.g., EIA, MIA, IF)
  - **And** negative, equivocal, or indeterminate result for other IgM antibodies in CSF for arboviruses endemic to the region where exposure occurred.

#### Presumptive:

Virus-specific IgM antibodies in serum or CSF (e.g., EIA, MIA, IF).

#### Supportive:

One or more of the following:

- Both of the following:
  - Positive WNV NAT from blood bank screening
  - **And** Isolation of virus from, or demonstration of specific viral antigen or nucleic acid in, tissue, blood, or other body fluid (e.g., culture, IHC, PCR) by a state public health laboratory (PHL) or the Centers for Disease Control and Prevention (CDC);
- **Or** both of the following:
  - Positive WNV NAT from blood bank screening
  - **And** Virus-specific IgM antibodies in serum or CSF (e.g., EIA, MIA, IF);

- **Or** all of the following:
  - Positive WNV NAT from blood bank screening,
  - **And** absence of a negative PCR from a PHL or the CDC,
  - **And** absence of a negative result for WNV IgM antibodies (e.g., EIA, MIA, IF).

### ***Non-neuroinvasive disease***

#### Confirmatory:

One or more of the following:

- Isolation of virus from, or demonstration of specific viral antigen or nucleic acid in, tissue, blood, or other body fluid, **excluding CSF** (e.g., culture, IHC, PCR)\*;
- **Or** fourfold or greater change in virus-specific quantitative antibody titers in paired sera (e.g., EIA, MIA, IF);
- **Or** both of the following:
  - Virus-specific IgM antibodies in serum (e.g., EIA, MIA, IF)
  - **And** confirmatory virus-specific neutralizing antibodies in the same or a later specimen (e.g., PRNT).

\*Excluding West Nile virus (WNV) nucleic acid test (NAT) from blood bank screening.

#### Presumptive:

Virus-specific IgM antibodies in serum (e.g., EIA, MIA, IF).

#### Supportive:

One or more of the following:

- Both of the following:
  - Positive WNV NAT from blood bank screening
  - **And** isolation of virus from, or demonstration of specific viral antigen or nucleic acid in, tissue, blood, or other body fluid (e.g., culture, IHC, PCR) by a state public health laboratory (PHL) or the Centers for Disease Control and Prevention (CDC);
- **Or** both of the following:
  - Positive WNV NAT from blood bank screening
  - **And** virus-specific IgM antibodies in serum or CSF (e.g., EIA, MIA, IF);
- **Or** all of the following:
  - Positive WNV NAT from blood bank screening,
  - **And** absence of a negative PCR from a PHL or the CDC,
  - **And** absence of a negative result for WNV IgM antibodies (e.g., EIA, MIA, IF).

### **Epidemiological criteria for case classification**

Not applicable.

### **Case classification**

#### ***Neuroinvasive disease***

##### Confirmed:

An illness clinically compatible with neuroinvasive disease in a person with confirmatory laboratory evidence.

Probable:

An illness clinically compatible with neuroinvasive disease in a person with presumptive laboratory evidence.

Suspect:

An illness clinically compatible with neuroinvasive disease in a person with supportive laboratory evidence.

***Non-neuroinvasive disease***Confirmed:

An illness clinically compatible with non-neuroinvasive disease in a person with confirmatory laboratory evidence.

Probable:

An illness clinically compatible with non-neuroinvasive disease in a person with presumptive laboratory evidence.

Suspect:

A person with confirmatory, presumptive, or supportive laboratory evidence.

**Criteria to distinguish a new case from previous reports**

Not applicable.

**Comments**

Note that in Florida, WNV and St. Louis encephalitis virus (SLEV) are endemic and testing should be performed for both viruses. Testing for rule out of other flaviviruses, such as dengue or Zika viruses, may be considered based on epidemiologic risk factors (e.g., travel, clinical presentation, geographic location). Chikungunya testing may also be recommended for some non-neuroinvasive disease cases.

**Interpreting arboviral laboratory results**

- **Serologic cross-reactivity:** In some instances, arboviruses from the same genus produce cross-reactive antibodies. In geographic areas where two or more closely related arboviruses occur, serologic testing for more than one virus may be needed and results compared to determine the specific causative virus. For example, such testing might be needed to distinguish antibodies resulting from infections (or vaccinations) within genera, e.g., flaviviruses such as West Nile, St. Louis encephalitis, Powassan, dengue, yellow fever, or Japanese encephalitis viruses.
- **Rise and fall of IgM antibodies:** For most arboviral infections, IgM antibodies are generally first detectable at 3 to 8 days after onset of illness and persist for 30 to 90 days, but longer persistence has been documented (e.g., up to 500 days for West Nile virus). Serum collected within 8 days of illness onset may not have detectable IgM and testing should be repeated on a convalescent-phase specimen to rule out arboviral infection in those with a compatible clinical syndrome.
- **Persistence of IgM antibodies:** Arboviral IgM antibodies may be detected in some patients months or years after their acute infection, particularly WNV. Therefore, the presence of these virus-specific IgM antibodies may signify a past infection and be unrelated to the current acute illness. Finding virus-specific IgM antibodies in CSF or a fourfold or greater change in virus-specific antibody neutralizing titers between acute- and convalescent-phase serum specimens provides additional laboratory evidence that the arbovirus was the likely cause of the patient's recent illness. Clinical and epidemiologic history also should be carefully considered.

- **Persistence of IgG and neutralizing antibodies:** Arboviral IgG and neutralizing antibodies can persist for many years following a symptomatic or asymptomatic infection. Therefore, the presence of these antibodies alone is only evidence of previous infection and clinically compatible illnesses with the presence of IgG, but not IgM, should be evaluated for other etiologic agents with the exception of some dengue infections. In addition, a virus neutralization test (PRNT) is required to differentiate virus specific IgG within the flavivirus family although commercial laboratories often incorrectly report IgG results for a specific flavivirus. For instance, EIA results reported as positive for WNV IgG antibody should actually be reported as being positive for flavivirus antibody IgG.
- **Other information to consider:** Vaccination history, detailed travel history, date of onset of symptoms, and knowledge of potentially cross-reactive arboviruses known to circulate in the geographic area should be considered when interpreting results.
- **Differentiating between dengue and WNV infections in patients with positive flavivirus labs**
  - WNV IgM titers are negative or low positive in dengue fever patients (or vice versa); however the WNV IgG can be quite elevated in dengue patients since IgG strongly cross-reacts between flaviviruses.
  - Neuroinvasive disease is relatively uncommon with dengue infections and more likely to be WNV infection than dengue. Confusion differentiating WNV and dengue infections is most likely in patients without symptoms of neuroinvasive disease (fever patients).
  - Travel to a dengue endemic country in the 2 weeks prior to febrile illness onset or travel of a household member to a dengue endemic country in the 4 weeks prior to patient illness should increase suspicion of dengue.
  - Joint pain is often much more severe in cases of dengue fever compared to WNV fever.
  - Thrombocytopenia and leukopenia are more common in cases of dengue fever compared to WNV fever.

### Imported arboviral diseases

Human disease cases due to dengue, chikungunya, or yellow fever viruses are nationally notifiable to CDC using specific case definitions. However, many other exotic arboviruses (e.g., Zika, Japanese encephalitis, tick-borne encephalitis, Venezuelan equine encephalitis, and Rift Valley fever viruses) are important public health risks for the U.S. as competent vectors exist that could allow for sustained transmission upon establishment of imported arboviral pathogens. Health-care providers and public health officials should maintain a high index of clinical suspicion for cases of potentially exotic or unusual arboviral etiology, particularly in international travelers. If a suspected case occurs, it should be reported to the appropriate local/state health agencies and CDC. Arboviral encephalitis cannot be distinguished clinically from other central nervous system infections.

For additional information about arboviral disease, see the most recent Surveillance and Control of Selected Arthropod-Borne Diseases in Florida Guidebook ([www.floridahealth.gov/%5C/diseases-and-conditions/mosquito-borne-diseases/index.html](http://www.floridahealth.gov/%5C/diseases-and-conditions/mosquito-borne-diseases/index.html)).

 **Acute and convalescent sera from reported cases must be sent to the Bureau of Public Health Laboratories for confirmatory testing.**

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## Arsenic Poisoning

Merlin disease code=98080

Case report form (CRF): [Acute Arsenic Poisoning CRF](#)

PAPER CRF REQUIRED

### Clinical criteria for case classification

Arsenic intoxication may affect multiple organ systems. Acute exposure to toxic amounts of arsenic may include signs and symptoms such as vomiting, abdominal pain, diarrhea, light-headedness, headache, weakness, and lethargy. These signs and symptoms may rapidly lead to dehydration, hypotension, pulmonary edema, congestive heart failure, and shock. Different clinical manifestations might follow, including dysrhythmias (prolonged QT, T-wave changes), altered mental status, and multisystem organ failure which may ultimately lead to death.

### Laboratory criteria for case classification

Elevated inorganic or total urinary arsenic levels (>50 µg/L total for a 24-hr urine) as determined by laboratory test.

If laboratory results for urine are reported in µg As/g creatinine (mcg/g creat) and are >15 µg/g creatinine, then results must be converted to µg As/Liter of urine using the following formula and conversion factor.

$$\frac{\text{_____}}{\text{given}} (\mu\text{g As/g creat}) \times \frac{\text{_____}}{\text{given}} (\text{mg creat/dL}) \times 0.01 = \frac{\text{_____}}{\text{calculated}} (\mu\text{g As/Liter urine})$$

Positive total arsenic laboratory results from specimens taken within 72 hours of consumption of seafood are **not** acceptable.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

#### Probable:

A clinically compatible illness in a person with a high index of suspicion (patient's exposure history regarding location and time) or the case is epidemiologically linked to a confirmed case.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Most cases of arsenic-induced toxicity in humans are due to exposure to inorganic arsenic. Humans may be exposed to organic arsenicals used in agriculture or those found in fish and shellfish. Organic arsenic found in fish is not believed to be toxic. Total arsenic tests do not distinguish between organic and inorganic arsenic (the more toxic form). For this reason, positive total arsenic laboratory test results from specimens taken within 72 hours of consumption of seafood do not meet the laboratory criteria for diagnosis. If this person is symptomatic, please recommend to have health care provider retest after 3-5 days of no fish consumption. Because total arsenic tests do not distinguish between the organic arsenic and inorganic arsenic, speciation is recommended.

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## Babesiosis

Merlin disease code=08882  
 Case report form (CRF): [Babesiosis CRF](#)  
**PAPER CRF REQUIRED**

### Clinical criteria for case classification

Babesiosis is a parasitic disease caused by intraerythrocytic (living inside red blood cells [RBCs]) protozoa of the *Babesia* genus (*Babesia microti* and other species). *Babesia* are transmitted in nature through the bites of infected ticks but can also be acquired through contaminated blood components from asymptomatic parasitemic donors or, more rarely, transplacentally. *Babesia* infection can range from subclinical to life-threatening. Clinical manifestations, if any, can include hemolytic anemia and nonspecific influenza-like signs and symptoms (e.g., fever, chills, sweats, headache, myalgia, arthralgia, malaise, fatigue, generalized weakness). Splenomegaly, hepatomegaly, or jaundice may be evident. In addition to signs of hemolytic anemia, laboratory findings may include thrombocytopenia, proteinuria, hemoglobinuria, and elevated levels of liver enzymes, blood urea nitrogen, and creatinine. Risk factors for severe babesiosis include asplenia (no spleen), advanced age, and other causes of impaired immune function or serious health conditions (e.g., HIV, malignancy, corticosteroid therapy, liver or kidney disease). Some immunosuppressive therapies or conditions may cause the patient to be afebrile. Severe cases can be associated with marked thrombocytopenia, disseminated intravascular coagulation, low or unstable blood pressure, acute respiratory distress, myocardial infarction, renal failure, hepatic compromise, altered mental status, and death. Recurrence can occur, particularly in those who are or become immunosuppressed.

### Laboratory criteria for case classification

#### Confirmatory:

One or more of the following:

- Identification of *Babesia* organisms within RBCs by light microscopy in a Giemsa, Wright, or Wright-Giemsa–stained blood smear;
- **Or** detection of *B. microti* DNA in a whole blood specimen by polymerase chain reaction (PCR);
- **Or** detection of *Babesia* species genomic sequences in a whole blood specimen by PCR;
- **Or** isolation of *Babesia* organisms from a whole blood specimen by animal inoculation.

#### Presumptive:

One or more of the following:

- Indirect fluorescent antibody (IFA) titer  $\geq 1:256$  for *B. microti* total immunoglobulin (Ig) or IgG antibody,
- **Or** IFA titer  $\geq 1:64$  for *B. microti* total Ig or IgG antibody in **epidemiologically linked blood donors and recipients**,
- **Or** positive IgG immunoblot for *B. microti*,
- **Or** IFA titer  $\geq 1:256$  for *B. divergens* total Ig or IgG antibody,
- **Or** IFA titer  $\geq 1:512$  for *B. duncani* total Ig or IgG antibody.

## Epidemiological criteria for case classification

Either of the following:

- A person who spent time in tick habitats in endemic areas (northeastern, north central, or western U.S. states) at least one week and to up to a year prior to identification and reporting of clinical criteria
- **Or transfusion-linked epidemiologic criteria:** evidence of transfusion transmission between a blood donor and recipient where either the donor or recipient is a confirmed or probable babesiosis case and **all** of the following are met:
  - **Transfusion recipient:**
    - Received one or more RBC or platelet transfusions within one 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.
  - **Blood donor:**
    - 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.

## Case classification

### Confirmed:

A person with any clinical criteria (fever, anemia, thrombocytopenia, chills, sweats, headache, myalgia, or arthralgia), epidemiologic criteria, and confirmatory laboratory evidence.

### Probable:

Either of the following:

- A person with objective clinical criteria (fever, anemia, or thrombocytopenia), epidemiologic criteria, and presumptive laboratory evidence
- **Or** a blood donor or recipient meeting the transfusion-linked epidemiologic criteria with any laboratory evidence.

### Suspect case:

A person with any laboratory evidence and no clinical information available (no medical record or patient interview).

## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

Differentiation between *Plasmodium* and *Babesia* organisms on peripheral blood smears can be difficult. Confirmation of the diagnosis of babesiosis by a reference laboratory is strongly encouraged, especially for patients without residence in or travel to areas known to be endemic for babesiosis. Obtaining travel history for the past year is essential for either disease.



A positive *Babesia* IFA result for immunoglobulin M (IgM) is insufficient for diagnosis and case classification of babesiosis in the absence of a positive IFA result for IgG (or total Ig). If the IgM result is positive but the IgG result is negative, a follow-up blood specimen drawn at least one week after the first should be tested. If the IgG result remains negative in the second specimen, the IgM result likely was a false positive.

When interpreting IFA IgG or total Ig results, it is helpful to consider factors that may influence the relative magnitude of *Babesia* titers (e.g., timing of specimen collection relative to exposure or illness onset, the patient's immune status, the presence of clinically manifest versus asymptomatic infection). In immunocompetent persons, active or *recent* *Babesia* infections that are symptomatic are generally associated with relatively high titers (although antibody levels may be below the detection threshold early in the course of infection); titers can then persist at lower levels for more than a year. In persons who are immunosuppressed or who have asymptomatic *Babesia* infections, active infections can be associated with lower titers.

*B. microti* is the most frequently identified agent of human babesiosis in the United States; most reported tick-borne cases have been acquired in parts of northeastern and north-central regions. Sporadic U.S. cases caused by other *Babesia* agents include *B. duncani* (formerly the WA1 parasite) and related organisms (CA1-type parasites) in several western states as well as parasites characterized as "*B. divergens* like" (MO1 and others) in various states. Serologic and molecular tests available for *B. microti* infection do not typically detect these other *Babesia* agents.

Blood-borne transmission of *Babesia* is not restricted by geographic region or season. The epidemiologic linkage criteria for transfusion transmission that are described here provide a low threshold for asymptomatic donor or recipient cases to be considered probable cases for surveillance purposes and are not intended to be regulatory criteria. Transfusion investigations entail laboratory testing for evidence of *Babesia* infection in recipients and donors as well as epidemiologic assessments of the plausibility of blood- and tick-borne transmission.

 **Whole blood (purple top tube) and unstained whole blood smear from all confirmed cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## Botulism

Merlin disease code=00510 Botulism, Foodborne !  
 Merlin disease code=00511 Botulism, Infant  
 Merlin disease code=00513 Botulism, Wound !  
 Merlin disease code=00512 Botulism, Other !  
 Case report forms (CRFs):  
 1. [Botulism Alert Summary](#)  
 2. [National Outbreak Reporting System CDC Form 52.13](#) (Foodborne only)  
**PAPER CRF REQUIRED**

### Background

Botulism has several distinct clinical forms:

- Foodborne: An illness caused by ingestion of botulinum toxin with variable severity. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.
- Infant: An illness of infants <12 months of age, characterized by constipation, poor feeding, and “failure to thrive” that may be followed by progressive weakness, impaired respiration, and death.
- Wound: An illness resulting from toxin produced by *Clostridium botulinum* that has infected a wound. A history of a fresh, contaminated wound during the 2 weeks before onset of symptoms should be present. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.
- Other, Unspecified: An illness in a patient aged  $\geq 12$  months of age who has no history of ingestion of suspect food and has no wounds. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

### Botulism, Foodborne

#### Clinical criteria for case classification

Ingestion of botulinum toxin results in an illness of variable severity. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

#### Laboratory criteria for case classification

Either of the following:

- Detection of botulinum toxin in a clinical specimen or food for foodborne botulism
- **Or** isolation of *Clostridium botulinum* from a clinical specimen.

#### Epidemiological criteria for case classification

##### Confirmatory:

A person who ate the same food as persons who have laboratory-confirmed botulism.

##### Presumptive:

A person with an epidemiological link, e.g., ingestion of a home-canned food within the 48 hours prior to onset.

#### Case classification

##### Confirmed:

One of the following:

- A clinically compatible illness in a person with laboratory evidence
- **Or** a clinically compatible illness in a person with confirmatory epidemiologic criteria.

Probable:

A clinically compatible illness in a person with presumptive epidemiologic criteria.

**Criteria to distinguish a new case from previous reports**

Not applicable.

**Comments**

Note that this is one of the few diseases in which an epi-linked case without laboratory confirmation is considered confirmed.

- ✉ **Specimens (food or clinical) must be sent to Bureau of Public Health Laboratories for laboratory diagnosis (toxin testing) from suspected cases of botulism and must be cleared through the Bureau of Epidemiology (850) 245-4401. Heptavalent botulinum antitoxin is available through the Bureau at the above telephone number, 24 hours per day. This condition has been identified as a potential bioterrorism agent by the CDC.**

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***Botulism, Infant*****Clinical criteria for case classification**

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

**Laboratory criteria for case classification**

Either of the following:

- Detection of botulinum toxin in stool or serum
- **Or** isolation of *Clostridium botulinum* from stool.

**Epidemiological criteria for case classification**

Not applicable.

**Case classification**Confirmed:

A clinically compatible illness in a child <1 year old with laboratory evidence.

**Criteria to distinguish a new case from previous reports**

Not applicable.

**Comments**

- ✉ **Specimens (food or clinical) must be sent to Bureau of Public Health Laboratories for laboratory diagnosis (toxin testing) from suspected cases of botulism and must be cleared through the Bureau of Epidemiology (850) 245-4401. Heptavalent botulinum antitoxin is available through the Bureau at the above telephone number, 24 hours per day. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## **Botulism, Wound**

### **Clinical criteria for case classification**

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.

### **Laboratory criteria for case classification**

Either of the following:

- Detection of botulinum toxin in serum
- **Or** isolation of *Clostridium botulinum* from wound.

### **Epidemiological criteria for case classification**

A person with both of the following:

- No suspected exposure to contaminated food **and**
- **And** either of the following:
  - A history of a fresh, contaminated wound during the 2 weeks before onset of symptoms
  - **Or** a history of injection drug use within the 2 weeks before onset of symptoms.

### **Case classification**

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence and epidemiological criteria

#### Probable:

A clinically compatible illness in a person who epidemiological criteria.

### **Criteria to distinguish a new case from previous reports**

Not applicable.

### **Comments**

- ✉ **Specimens (food or clinical) must be sent to Bureau of Public Health Laboratories for laboratory diagnosis (toxin testing) from suspected cases of botulism and must be cleared through the Bureau of Epidemiology (850) 245-4401. Heptavalent botulinum antitoxin is available through the Bureau at the above telephone number, 24 hours per day. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## **Botulism, Other**

### **Clinical criteria for case classification**

An illness in a patient aged  $\geq 12$  months of age who has no history of ingestion of suspect food and has no wounds. Common symptoms are diplopia, blurred vision, and bulbar weakness. Symmetric paralysis may progress rapidly.

### **Laboratory criteria for case classification**

Either of the following:

- Detection of botulinum toxin in clinical specimen
- **Or** isolation of *Clostridium botulinum* from clinical specimen.

### **Epidemiological criteria for case classification**

A person  $\geq 1$  year old with no history of ingestion of suspect food and no wounds.

### **Case classification**


Confirmed:

A clinically compatible illness in a person with laboratory evidence and epidemiologic criteria.

### **Criteria to distinguish a new case from previous reports**

Not applicable.

### **Comments**

 **Specimens (food or clinical) must be sent to Bureau of Public Health Laboratories for laboratory diagnosis (toxin testing) from suspected cases of botulism and must be cleared through the Bureau of Epidemiology (850) 245-4401. Heptavalent botulinum antitoxin is available through the Bureau at the above telephone number, 24 hours per day. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## ! Brucellosis

Merlin disease code=02300  
Case report form (CRF): [Brucellosis CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

A pleomorphic illness generally characterized by acute or insidious onset of intermittent or persistent fever. Other symptoms may include night sweats, arthralgia, fatigue, anorexia, weight loss, headache, myalgia, endocarditis, orchitis, epididymitis, hepatomegaly, splenomegaly, abdominal pain, arthritis, meningitis and/or spondylitis. Pain in a single joint may be present in chronic infections; a single tissue abscess, and aneurysm in large blood vessels has also been reported.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Isolation of *Brucella* sp. from a clinical specimen
- **Or** fourfold or greater rise in *Brucella* agglutination titer between acute- and convalescent-phase serum specimens obtained  $\geq 2$  weeks apart and studied at the same laboratory.

#### Presumptive:

Either of the following:

- Detection of *Brucella* DNA in a clinical specimen by polymerase chain reaction (PCR)
- **Or** *Brucella* total antibody titer  $\geq 160$  by standard tube agglutination test (SAT) or *Brucella* microagglutination test (BMAT) in one or more serum specimens obtained after onset of symptoms.

### Epidemiological criteria for case classification

A person who is epidemiologically linked to a confirmed brucellosis case.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

#### Probable:

Either of the following:


- A clinically compatible illness in a person with epidemiologic criteria
- **Or** a clinically compatible illness in a person with presumptive laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Exposure risk factors include involvement with slaughtering, dressing, or butchering of potentially infected animals such as feral hogs, consumption of unpasteurized dairy products or undercooked meat from infected animals, and laboratory exposure to *Brucella* culture without using aerosol precautions. Follow-up should occur to identify any potential exposures among laboratory staff.

 **Any available isolates of the organism must be sent to the Bureau of Public Health Laboratories for confirmation and speciation. This condition has been identified as a potential bioterrorism agent by the CDC.**

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# Campylobacteriosis

Merlin disease code=03840  
Case report form (CRF): None  
**NO CRF REQUIRED**

## Background

An illness of variable severity commonly manifested by diarrhea, abdominal pain, nausea, and sometimes vomiting. The organism may also rarely cause extra-intestinal infections such as bacteremia, meningitis, or other focal infections.

## Clinical criteria for case classification

One or more of the following:

- Abdominal pain,
- **Or** diarrhea,
- **Or** nausea,
- **Or** vomiting.

## Laboratory criteria for case classification

### Confirmatory:

Isolation of *Campylobacter* in a clinical specimen.

### Presumptive:

Detection of *Campylobacter* in a clinical specimen using a culture-independent diagnostic test.

### Supportive:

One of the following:

- Detection of *Campylobacter* in a clinical specimen using non-isolate based sequencing,
- **Or** detection of antibodies to *Campylobacter* in a clinical specimen using a serologic test,
- **Or** a laboratory test with a methodology not previously mentioned.

## Epidemiological criteria for case classification

Either of the following:

- A person who is epidemiologically linked to a confirmed campylobacteriosis case
- **Or** a person who is epidemiologically linked to a probable campylobacteriosis case with laboratory evidence.

## Case classification

### Confirmed:

A person with confirmatory laboratory evidence.

### Probable:

Either of the following:

- A clinically compatible illness in a person with presumptive laboratory evidence
- **Or** a clinically compatible illness in a person with epidemiological criteria.

### Suspect:

A person with supportive laboratory evidence.

**Criteria to distinguish a new case from previous reports**

A new case should be created when a positive laboratory result is received more than 30 days after the most recent positive laboratory result associated with a previously reported infection in the same individual.

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## Carbon Monoxide Poisoning

Merlin disease code=98600

Case report form (CRF): [Carbon Monoxide Poisoning Reporting Form](#)

**MERLIN EXTENDED DATA REQUIRED**

### Background

There is no consistent constellation of signs and symptoms resulting from acute carbon monoxide (CO) poisoning, nor are there any pathognomonic clinical signs or symptoms which would unequivocally indicate a case of acute CO poisoning. The clinical presentation of acute CO poisoning varies depending on the duration and magnitude of exposure and between individuals with the same degree of exposure or the same venous carboxyhemoglobin (COHb) level.

The most common signs and symptoms include headache, nausea, fatigue (lethargy), weakness, abdominal discomfort/pain, confusion, and dizziness. Other signs and symptoms may include visual disturbances including blurred vision, numbness and tingling, ataxia, irritability, agitation, chest pain, shortness of breath (dyspnea), palpitations, seizures, and loss of consciousness.

### Clinical criteria for case classification

#### Presumptive:

Either of the following:

- Loss of consciousness
- **Or** death.

#### Supportive:

A person with signs or symptoms consistent with carbon monoxide poisoning, which may include one or more of the following:

- Elevated pulse CO-oximetry measurement,
- **Or** headache,
- **Or** nausea
- **Or** vomiting,
- **Or** abdominal pain,
- **Or** fatigue,
- **Or** weakness,
- **Or** confusion,
- **Or** dizziness,
- **Or** irritability,
- **Or** shortness of breath,
- **Or** chest pain.

### Laboratory criteria for case classification

***For a person who does not smoke or a child <14 years old whose smoking status is unknown***

#### Confirmatory:

COHb level  $\geq 5.0\%$ .

#### Supportive:

COHb level  $\geq 2.5\%$  and  $< 5.0\%$ .

***For a person who smokes or a person ≥14 years old whose smoking status is unknown***Confirmatory:

COHb level >12.0%.

Presumptive:

COHb level ≥9.0% and ≤12.0%.

Supportive:

COHb level ≥7.0% and <9.0%.

*Note:* Laboratory criteria are not met if elevated COHb levels are due to chronic obstructive lung disease, hemolysis or smoking in the absence of another external source of CO exposure.

**Exposure criteria for case classification**

Exposure evidence that is provided by the patient is sufficient for meeting exposure evidence criteria.

Confirmatory:

A person who had an exposure to an elevated level of CO based on a dedicated or multi-gas meter/instrument (e.g., fire department notation) for a known duration that is consistent with CO poisoning.

Presumptive:

Either of the following:

- A person who was in a location where a CO detector's alarm sounded
- **Or** a person who had onset of CO-related symptoms associated physically and temporally with a CO-emitting source (e.g., gasoline-powered generator, power washer, malfunctioning furnace, fire).

**Epidemiological criteria for case classification**

A person who is epidemiologically linked to a confirmed CO poisoning case (i.e., was present and exposed in the same CO exposure event).

**Case classification**

Intentional exposure related to suicide and attempted suicide are not reportable.

Confirmed:

Either of the following:

- A person with confirmatory laboratory evidence
- **Or** a person with presumptive or supportive clinical evidence and confirmatory exposure evidence.

Probable:

One of the following:

- A person with presumptive laboratory evidence,
- **Or** a person with presumptive clinical evidence and presumptive exposure evidence,
- **Or** a person with presumptive or supportive clinical evidence and epidemiologic criteria.

Suspect:

Either of the following:

- A person with supportive laboratory evidence
- **Or** a person with supportive clinical evidence and presumptive exposure evidence.

### Criteria to distinguish a new case from previous reports

A new Merlin case should be created when there is either:

- New exposure to CO from different exposure source
- **Or** repeated exposure as defined by having the same exposure source as previous occurrence where the criteria used to designate a case has been resolved prior to repeat exposure.

A new Merlin case should not be created when there are multiple reports for the same person for the same episode, such as when there are multiple COHb lab test results or when a patient receives multiple hyperbaric treatments following a single poisoning event.

### Comments

The acceptance of CO environmental monitoring data is at the discretion of the public health investigator/official. The quality of environmental monitoring data is dependent on the capabilities and limitations of the monitoring equipment and the equipment users. False positive environmental monitoring data is possible (e.g., some CO sensor technologies are known to be cross-sensitive when exposed to other chemicals such as hydrogen sulfide). Please contact the Florida Department of Health Radon and Indoor Air Program Office at (850) 245-4288 or (800) 543-8279 for assistance with the interpretation of CO environmental monitoring data.

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## ! \* Chikungunya Fever

Merlin disease code=06540 Chikungunya Fever, Imported

Merlin disease code=06540 Chikungunya Fever, Locally Acquired !

Case report form (CRF): [Florida Confidential Vector-borne Disease Infection CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

Acute phase symptoms include a sudden onset of continuous or intermittent high fever (usually  $>102^{\circ}$  F) with severe joint pain in  $>2$  joints. Tendons may also be involved. Joint and tendon pain commonly involve the hands and feet, is usually bilateral, and often is accompanied by swelling. Other joints may be involved and back pain is reported in up to 50% of cases. Maculopapular rash is reported in approximately half of all patients, usually 2-5 days after fever onset. Other symptoms may include headache, fatigue, depression, nausea, vomiting, and muscle pain. Mild thrombocytopenia, leukopenia, and elevated liver function tests may be reported.

Relapse of joint and tendon pain can occur after initial improvement of clinical signs; relapse is most common 1-3 months after symptom onset. Some patients have prolonged fatigue and depression lasting weeks or months.

### Laboratory criteria for case classification

#### Confirmatory:

One or more of the following:

- Isolation of virus from, or demonstration of specific viral antigen or nucleic acid in tissue, blood, CSF, or other body fluid (e.g., culture, immunohistochemistry [IHC], polymerase chain reaction [PCR]);
- **Or** fourfold or greater change in virus-specific quantitative antibody titers in paired sera (e.g., enzyme immunoassay [EIA], microsphere immunoassay [MIA], immunofluorescence assay [IF]);
- **Or** both of the following:
  - Virus-specific IgM antibodies in serum
  - **And** confirmatory virus-specific neutralizing antibodies in the same or a later specimen (e.g., plaque reduction neutralization [PRNT]).

#### Presumptive:

Both of the following:

- Virus-specific IgM antibodies (e.g., EIA, MIA, IF) in serum
- **And** absence of negative virus-specific IgM antibodies (e.g., EIA, MIA, IF) from a state public health laboratory.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

#### Probable:

A clinically compatible illness in a person with presumptive laboratory evidence.

**Suspect:**

A person with confirmatory or presumptive laboratory evidence.

**Criteria to distinguish a new case from previous reports**


Not applicable.

**Comments**

Chikungunya fever and dengue fever are difficult to differentiate clinically. Maculopapular rash is more frequent in chikungunya fever and polyarthralgia or pain in a chikungunya fever case is often more localized in joints and tendons, particularly the hands and feet, and may be associated with visible swelling. Signs of shock or hemorrhage are much less commonly reported for chikungunya fever compared to dengue fever. It is also important to note that chikungunya fever and dengue fever can occur as co-infections.

Suspect cases of chikungunya or dengue fever should have specimens submitted for appropriate testing (PCR or EIA/IF) for both viruses.

For additional information about arboviral disease, see the most recent Surveillance and Control of Selected Arthropod-Borne Diseases in Florida Guidebook ([www.floridahealth.gov/%5C/diseases-and-conditions/mosquito-borne-diseases/index.html](http://www.floridahealth.gov/%5C/diseases-and-conditions/mosquito-borne-diseases/index.html)).

 **Acute and convalescent sera from reported cases without recent (2 weeks prior to symptom onset) international travel must be sent to the Bureau of Public Health Laboratories for confirmatory testing.**

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## ! Cholera (*Vibrio cholerae* Type O1)

Merlin disease code=00190 Cholera (*Vibrio cholerae*, Type-O1)  
 Case report form (CRF): [Cholera and Other Vibrio Illness Surveillance Report](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

An illness of variable severity that is characterized by diarrhea and/or vomiting; severity is variable.

### Laboratory criteria for case classification

Either of the following:

- Isolation of **toxigenic** (i.e., cholera toxin-producing) *Vibrio cholerae* O1 or O139 from stool or vomitus
- **Or** serologic evidence of recent infection (testing performed at the CDC).

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Illnesses caused by strains of *V. cholerae* other than toxigenic *V. cholerae* O1 or O139 should not be reported as cases of cholera. The etiologic agent of a case of cholera should be reported as either *V. cholerae* O1 or *V. cholerae* O139.

Infections due to *V. cholerae* non-O1 should be reported as vibriosis (*Vibrio cholerae* type non-O1) (Merlin disease code=00198).

- ✉ **Any available isolates of the organism must be sent to the Bureau of Public Health Laboratories for confirmation and serotyping. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## Ciguatera Fish Poisoning

Merlin disease code=98809

Case report forms (CRFs):

1. [Ciguatera CRF](#)

2. [National Outbreak Reporting System CDC Form 52.13](#)

**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

Symptoms include abdominal cramps, nausea, vomiting, diarrhea, numbness and paresthesia of lips and tongue, paresthesias of the extremities, metallic taste, arthralgia, myalgia, blurred vision. Paradoxical temperature sensation is sometimes seen. The illness is associated with the consumption of reef or bottom-dwelling fish such as barracuda, amberjack, grouper, or snapper.

### Laboratory criteria for case classification

Detection of ciguatoxin in implicated fish is strongly suggestive, but is not necessary for case confirmation.

### Epidemiological criteria for case classification

A person with a history of fish consumption in the 24 hours before onset of symptoms.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with epidemiologic criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Even single sporadic cases should be reported as a single-case outbreak to the regional environmental epidemiologist. Testing for the toxin in implicated fish is available from the FDA. Contact your [Regional Environmental Epidemiologist](#) for information.

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## Creutzfeldt-Jakob Disease (CJD)

Merlin disease code=04610

Case report form (CRF): [Creutzfeldt-Jakob Disease Worksheet](#)

**PAPER CRF REQUIRED**

### Background

A progressive uniformly fatal dementia characterized by myoclonus, visual or cerebellar signs, akinetic mutism, and pyramidal or extrapyramidal signs.

### Clinical criteria for case classification

#### Confirmatory:

A clinically compatible illness.

#### Presumptive:

All of the following:

- Progressive dementia,
- **And** a clinical duration to death <2 years,
- **And** at least 2 of the following clinical features:
  - Myoclonus
  - Visual or cerebellar signs
  - Pyramidal or extrapyramidal signs
  - Akinetic mutism,
- **And** no alternative diagnosis suggested during routine investigation.

### Laboratory criteria for case classification

#### Confirmatory:

Diagnosed by one or more of the following:

- Standard neuropathological techniques,
- **Or** immunocytochemical testing,
- **Or** Western blot confirmed protease-resistant prion protein,
- **Or** presence of scrapie-associated fibrils conducted on brain tissue.

#### Presumptive:

Positive real-time quaking induced conversion (RT-QuIC) in cerebrospinal fluid (CSF) or other tissues.

#### Supportive:

One or more of the following:

- Positive 14-3-3 CSF assay,
- **Or** typical electroencephalogram (EEG) (periodic sharp wave complexes),
- **Or** high signal in caudate/putamen on magnetic resonance imaging (MRI) brain scan or at least two cortical regions (temporal, parietal, occipital) either on diffusion-weighted imaging (DWI) or fluid attenuated inversion recovery (FLAIR).

### Epidemiological criteria for case classification

Not applicable.



## Case classification

### Confirmed:

A person with confirmatory clinical criteria and confirmatory laboratory evidence.

### Probable:

Either of the following:

- A person with confirmatory or presumptive clinical criteria and presumptive laboratory evidence
- **Or** a person with presumptive clinical criteria and supportive laboratory evidence.

### Suspect:

A person with presumptive clinical criteria.

## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

Cases under the age of 55 years old should be evaluated for the variant form of CJD. Brain tissue for diagnosis and CSF for RT-QuIC and 14-3-3 assays should be sent to the National Prion Disease Pathology Surveillance Center at Case Western Reserve University. Information about the center and shipping instructions can be found on their web site: [www.cjdsurveillance.com](http://www.cjdsurveillance.com). Please notify Bureau of Epidemiology to assist with case evaluation and laboratory testing.

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# Cryptosporidiosis

Merlin disease code=13680  
 Case report form (CRF): [Risk Factor for Cryptosporidium](#)  
**MERLIN EXTENDED DATA OPTIONAL**

## Background

An illness characterized by diarrhea, abdominal cramps, anorexia (loss of appetite), or vomiting. Asymptomatic infections do occur, but asymptomatic persons are not considered clinically compatible). The disease can be prolonged and life-threatening in severely immunocompromised persons.

## Clinical criteria for case classification

Both of the following:

- Diarrhea
- **And** one or more of the following:
  - Abdominal cramps,
  - **Or** anorexia (loss of appetite),
  - **Or** vomiting.

## Laboratory criteria for case classification

### Confirmatory:

One or more of the following:

- Demonstration of *Cryptosporidium* by microscopy and staining,
- **Or** detection of *Cryptosporidium*-specific nucleic acid by polymerase chain reaction (PCR),
- **Or** detection of *Cryptosporidium* by enzyme immunoassay (EIA),
- **Or** detection of *Cryptosporidium* by immunofluorescence assay (IF) (e.g., direct fluorescent antibody [DFA], indirect fluorescent antibody [IFA]).

### Presumptive:

One or more of the following:

- Detection of *Cryptosporidium* antigen by immunochromatographic card/rapid card test,
- **Or** detection of *Cryptosporidium* by unspecified immunoassay (IA),
- **Or** a laboratory test of unknown method.

## Epidemiological criteria for case classification

A person who is epidemiologically linked to a confirmed cryptosporidiosis case.

## Case classification

### Confirmed:

A person with confirmatory laboratory evidence.

### Probable:

Either of the following:

- A person with presumptive laboratory evidence
- **Or** a clinically compatible illness in a person with epidemiological criteria.

## Criteria to distinguish a new case from previous reports

Not applicable.

**Comments**

Persons who have a diarrheal illness and are epidemiologically linked to a probable case because that individual was only diagnosed with cryptosporidiosis by an immunochromatographic card/rapid card test or unknown test method cannot be classified as probable cases.

When available, species designation and molecular characterization should be reported.

In cases linked to animals, testing of asymptomatic animals may be considered. Please call the Bureau of Epidemiology at (850) 245-4401 to discuss.

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## Cyclosporiasis

Merlin disease code=00720

Case report forms (CRFs):

- 1) [Cyclosporiasis Surveillance CRF](#)
- 2) [National Hypothesis Generating Questionnaire](#)

**MERLIN EXTENDED DATA REQUIRED**

**NATIONAL HYPOTHESIS GENERATING QUESTIONNAIRE REQUIRED for cases with onset dates between May and August**

### Clinical criteria for case classification

An illness of variable severity caused by the protozoan *Cyclospora cayetanensis* and commonly characterized by watery diarrhea (most common), loss of appetite, weight loss, abdominal bloating and cramping, increased flatus, nausea, and fatigue. Vomiting and low-grade fever also may be noted. Relapses and asymptomatic infections can occur.

### Laboratory criteria for case classification

Either of the following:

- Demonstration of *Cyclospora* oocysts (by morphologic criteria or by demonstration of sporulation) in stool, duodenal/jejunal aspirates, or small-bowel biopsy
- **Or** demonstration of *Cyclospora* DNA (by polymerase chain reaction) in stool, duodenal/jejunal aspirates, or small-bowel biopsy.

### Epidemiological criteria for case classification

A person who is epidemiologically linked to a confirmed cyclosporiasis case.

### Case classification

Confirmed:

A person with laboratory evidence.

Probable:

A clinically compatible illness in a person with epidemiological criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

-  **Permanent slides from reported and suspect cases must be sent to the Bureau of Public Health Laboratories.**

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## !\* Dengue Fever and Severe Dengue Fever

Merlin disease code=06100 Dengue Fever, Imported

Merlin disease code=06100 Dengue Fever, Locally Acquired !

Merlin disease code=06101 Dengue Fever, Severe

Case report form (CRF): [Florida Confidential Vector-borne Disease Infection CRF](#)

**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

#### *Dengue fever*

- Fever as reported by the patient or health care provider.
- One or more of the following signs and symptoms may be present (not required):
  - Nausea/vomiting,
  - **Or** rash,
  - **Or** headache,
  - **Or** retro-orbital pain or ocular pain,
  - **Or** myalgia,
  - **Or** arthralgia (joint pain),
  - **Or** thrombocytopenia (platelet numbers of  $<200,000/\text{mm}^3$ ),
  - **Or** leukopenia (a total white blood cell count of  $<5,000/\text{mm}^3$ ),
  - **Or** abdominal pain or tenderness,
  - **Or** persistent vomiting,
  - **Or** mucosal bleeding at any site (e.g., gums, urinary tract),
  - **Or** liver enlargement  $>2$  centimeters.

#### *Severe dengue (including dengue hemorrhagic fever [DHF] and dengue shock syndrome [DSS])*

- Fever as reported by the patient or health care provider
- **And** one or more of the following:
  - Hypovolemic shock with respiratory distress,
  - **Or** pleural effusion (fluid around the lungs),
  - **Or** pericardial effusion (fluid around the heart),
  - **Or** ascites (abdominal fluid),
  - **Or** elevated hematocrit value for patient age and sex (often with rapid decrease in platelet count),
  - **Or** severe bleeding from the gastrointestinal tract (e.g., hematemesis, melena) or vagina (menorrhagia) as defined by requirement for medical intervention including intravenous fluid resuscitation or blood transfusion,
  - **Or** elevated aspartate aminotransferase (AST) or alanine aminotransferase (ALT)  $\geq 1,000$  U/L,
  - **Or** impaired level of consciousness and/or diagnosis of encephalitis, encephalopathy, or meningitis,
  - **Or** heart or other organ involvement including myocarditis, cholecystitis, and pancreatitis.

### Laboratory criteria for case classification

#### Confirmatory:

One or more of the following:

- Isolation of dengue virus (DENV) from or demonstration of dengue-specific arboviral antigen or genomic sequences in tissue, blood, cerebrospinal fluid (CSF), or other body fluid by culture, polymerase chain reaction (PCR), or immunohistochemistry (IHC);

- **Or** Demonstration of a fourfold rise in plaque reduction neutralization test (PRNT) end point titer (as expressed by the reciprocal of the last serum dilution showing a 90% reduction in plaque counts compared to the virus infected control) between DENV and other flaviviruses tested in a convalescent serum specimen;
- **Or** Both of the following:
  - Seroconversion from dengue IgM-negative in an acute phase specimen collected  $\leq 5$  days after symptom onset to dengue IgM-positive in a convalescent-phase specimen collected  $\geq 5$  days after symptom onset (e.g., enzyme immunoassay [EIA], microsphere immunoassay [MIA], immunofluorescence assay [IF])
  - **And** negative or indeterminate for Zika IgM antibodies (e.g., EIA, MIA, or IF);
- **Or** Both of the following:
  - Seroconversion from dengue IgG-negative in an acute phase specimen collected  $\leq 5$  days after symptom onset to dengue IgG-positive in a convalescent-phase specimen collected  $\geq 5$  days after symptom onset (e.g., EIA, MIA, IF)
  - **And** negative or indeterminate for Zika IgM antibodies (e.g., EIA, MIA, or IF);
- **Or** Both of the following:
  - Virus-specific IgM antibodies (e.g., EIA, MIA, or IF) in CSF
  - **And** negative result for other IgM antibodies in CSF for arboviruses endemic to the region where exposure occurred.

Presumptive:

All of the following:

- Virus-specific IgM antibodies (e.g., EIA, MIA, or IF) in serum or CSF,
- And no other testing for arboviruses endemic to the region where exposure occurred,
- And more than 90 days from most recent previous dengue infection.

### **Epidemiological criteria for case classification**

A person who is epidemiologically linked to a confirmed or probable dengue fever case.

### **Case classification**

Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

Probable:

A clinically compatible illness in a person with presumptive laboratory evidence.

Suspect:

Either of the following:

- A clinically compatible illness in a person with epidemiological criteria
- **Or** a person with confirmatory or presumptive laboratory evidence.

### **Criteria to distinguish a new case from previous reports**

Not applicable.

### **Comments**

Cases meeting the criteria for severe dengue fever (including DHF and DSS) should be reported as severe dengue fever (Merlin disease code=06101), not as dengue fever (Merlin disease code=06100).

Zika EIA or PCR is recommended to rule out Zika virus infection. If a case also tests positive for Zika IgM antibodies, please see the flavivirus disease and infection case definition.

### Dengue re-infection

There are four DENV serotypes. DENV infection results in long-lasting immunity to symptomatic infection with that particular DENV serotype. However, it is possible to be re-infected with any of the remaining DENV serotype. CDC estimates approximately 20% of dengue cases that have been previously exposed to another DENV serotype may have transient or no significant elevation in dengue IgM titers, making identification of such cases extremely difficult without PCR testing on the acute specimen. An individual with a dengue re-infection may show elevated IgG titers but no IgM titers. During an epidemiological investigation, it is important to ask if there has been any lifetime travel to a dengue endemic country; first dengue infection may have occurred years prior and with few or no symptoms.

### Differentiating between DENV and West Nile virus (WNV) infections in patients with positive flavivirus labs

- WNV IgM titers are negative or low positive in dengue fever patients (or vice versa); however the WNV IgG can be quite elevated in dengue patients since IgG strongly cross-reacts between flaviviruses.
- Neuroinvasive disease is relatively uncommon with dengue infections and more likely to be WNV infection than dengue. Confusion differentiating WNV and dengue infections is most likely in patients without symptoms of neuroinvasive disease (fever patients).
- Travel to a dengue endemic country in the two weeks prior to febrile illness onset or travel of a household member to a dengue endemic country in the four weeks prior to patient illness should increase suspicion of dengue.
- Joint pain is often much more severe in cases of dengue fever compared to WNV fever.
- Thrombocytopenia and leukopenia are more common and severe in cases of dengue fever compared to WNV fever.

### Guide to Interpretation and Classification of Common Dengue Laboratory Tests

Laboratory test	Days post-onset of specimen collection	Interpretation of positive result	Explanation
Real-time PCR	≤ 5 days	Confirmatory (*Note)	Patient viremic while febrile; days 0-7
IgM (paired specimens, acute and convalescent)	≤ 5 days for acute specimen, > 5 days for convalescent. (ideally 2 weeks apart)	Confirmatory	Negative IgM in an acute specimen followed by a positive IgM in a convalescent specimen
IgG (paired specimens, acute and convalescent)	≤ 5 days for acute specimen, > 5 days for convalescent. (ideally 2 weeks apart)	Confirmatory	Negative IgG in an acute specimen followed by a positive IgG in a convalescent specimen <b>or</b> fourfold increase in titer between acute and convalescent specimen and confirmed by PRNT
IgM (single serum specimen)	> 5 days	Probable	IgM can remain positive for ≥ 3 months in cases of acute dengue infection
*Note: Only PCR for dengue or IgM EIA-based antibody test can be used for diagnosis of dengue in single serum specimens			

NB: Previous flavivirus infections and the high prevalence of dengue IgG antibody in some populations (e.g., those resident in, or long-term visitors of dengue endemic countries) complicate interpretation of dengue serological test results. Therefore, a single serum specimen tested using a dengue-specific IgG or combined IgM/IgG (“all antibody”) test is generally not helpful for diagnosis of confirmed or probable cases of dengue. For this reason suspect cases are defined clinically and epidemiologically, without IgG or combined IgG/IgM serological testing.

- ✉ **Acute and convalescent sera from people with infections believed to be Florida-acquired must be sent to the Bureau of Public Health Laboratories (BPHL). Acute sera from people with infections believed to be acquired outside Florida should also be sent to BPHL.**

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## ! Diphtheria

Merlin disease code=03290  
Case report form (CRF): [Diphtheria Worksheet](#)  
**PAPER CRF REQUIRED**

### Clinical criteria for case classification

#### Confirmatory:

Either of the following:

- Both of the following:
  - Upper respiratory tract illness
  - **And** an adherent membrane of the nose, pharynx, tonsils, or larynx
- Or Infection of a non-respiratory anatomical site (e.g., skin, wound, conjunctiva, ear, genital mucosa).

#### Supportive:

In the absence of a more likely diagnosis, both of the following:

- Upper respiratory tract illness
- **And** an adherent membrane of the nose, pharynx, tonsils, or larynx.

### Laboratory criteria for case classification

#### Confirmatory:

Both of the following:

- Isolation of *Corynebacterium diphtheriae* from the nose or throat, if person has respiratory tract illness with adherent membrane, or site of non-respiratory anatomical infection
- **And** confirmation of toxin production.

#### Supportive:

Histopathologic diagnosis.

### Epidemiological criteria for case classification

A person with direct contact with a case of diphtheria with laboratory evidence.

### Case classification

#### Confirmed:

Either of the following:

- A person with confirmatory clinical criteria and confirmatory laboratory evidence
- **Or** a person with confirmatory clinical criteria and epidemiological criteria.

#### Suspect:

Either of the following:

- A person with supportive clinical criteria
- **Or** a person with supportive laboratory criteria.


### Criteria to distinguish a new case from previous reports

Individuals without evidence of clinical criteria as described by the diphtheria surveillance case definition but for whom toxin-producing *C. diphtheriae* is confirmed via laboratory testing (isolation and toxigenicity testing by modified Elek test or other validated test capable of confirming toxin-production)

should not be classified as cases. These individuals are considered carriers of the bacteria and are not reportable.

### Comments

- Cases of laboratory-confirmed, non-toxin-producing *C. diphtheriae* (respiratory or non-respiratory) should not be reported as diphtheria cases.
- Negative laboratory results may be sufficient to rule-out a diagnosis of diphtheria; however, clinicians should carefully consider all lab results in the context of the patient's vaccination status, antimicrobial treatment, and other risk factors.
- PCR and MALDI-TOF diagnostics for *C. diphtheriae*, when used alone, do not confirm toxin production. When used, these tests should always be combined with a test that confirms toxin production, such as the Elek test.

 **All *C. diphtheriae* isolates, regardless of association with disease, must be sent to the Bureau of Public Health Laboratories.**

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## Ehrlichiosis/Anaplasmosis

Merlin disease code=08381 Anaplasmosis, HGA (*A. phagocytophilum*)  
 Merlin disease code=08382 Ehrlichiosis, HME (*E. chaffeensis*)  
 Merlin disease code=08383 Ehrlichiosis (*E. ewingii*)  
 Merlin disease code=08384 Ehrlichiosis/Anaplasmosis, Undetermined  
 Case report form (CRF): [Tick-Borne Rickettsial Disease CRF](#)  
**PAPER CRF REQUIRED**

### Background

A tick-borne illness characterized by acute onset of fever with headache, myalgia, nausea, vomiting, rash, anemia, leukopenia, thrombocytopenia, or elevated hepatic transaminases. Intracytoplasmic bacterial aggregates (morulae) may be visible in the leukocytes of some patients.

### Clinical criteria for case classification

Both of the following:

- Acute onset of fever
- **And** one or more of the following:
  - Headache,
  - **Or** myalgia,
  - **Or** nausea,
  - **Or** vomiting,
  - **Or** rash,
  - **Or** malaise,
  - **Or** anemia,
  - **Or** leukopenia,
  - **Or** thrombocytopenia,
  - **Or** elevated hepatic transaminases.

### Laboratory criteria for case classification

#### ***Ehrlichia chaffeensis* infection, human monocytic ehrlichiosis (HME)**

##### Confirmatory:

One or more of the following:

- Serological evidence of a fourfold change in IgG-specific antibody titer to *E. chaffeensis* antigen by indirect immunofluorescence assay (IFA) between paired serum specimens (one taken in first week of illness and a second 2-4 weeks later),
- **Or** detection of *E. chaffeensis* DNA in a clinical specimen via polymerase chain reaction (PCR),
- **Or** demonstration of *E. chaffeensis* antigen in a biopsy or autopsy specimen by immunohistochemistry (IHC),
- **Or** isolation of *E. chaffeensis* from a clinical specimen in cell culture.

##### Presumptive:

Single elevated IgG antibody reactive with *E. chaffeensis* antigen by IFA, enzyme immunoassay (EIA), dot-EIA, or assays in other formats (CDC uses an IFA IgG cutoff of >1:64 and does not use IgM test results independently as diagnostic support criteria).

#### ***Ehrlichia ewingii* infection**

##### Confirmatory:

*E. ewingii* DNA detected in a clinical specimen via amplification of a specific target by PCR (note that the organism has never been cultured so antigens are not available).

***Anaplasma phagocytophilum* infection, human granulocytic anaplasmosis (HGA)**Confirmatory:

One or more of the following:

- Serological evidence of a fourfold change in IgG-specific antibody titer to *A. phagocytophilum* antigen by IFA in paired serum specimens (one taken in first week of illness and a second 2-4 weeks later),
- **Or** Detection of *A. phagocytophilum* DNA in a clinical specimen via amplification of a specific target by PCR,
- **Or** Demonstration of anaplasma antigen in a biopsy/autopsy specimen by IHC,
- **Or** Isolation of *A. phagocytophilum* from a clinical specimen in cell culture.

Presumptive:

Single elevated IgG antibody reactive with *A. phagocytophilum* antigen by IFA, enzyme immunoassay (EIA), dot-EIA, or assays in other formats (CDC uses an IFA IgG cutoff of  $\geq 1:64$  and does not use IgM test results independently as diagnostic support criteria).

**Human ehrlichiosis/anaplasmosis, undetermined**Presumptive:

Identification of morulae in the cytoplasm of neutrophils or eosinophils by microscopic examination.

**Epidemiological criteria for case classification**

Exposure is defined as having been in potential tick habitats within the 14 days before onset of symptoms. A history of a tick bite is not required.

**Case classification**Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

Probable:

A clinically compatible illness in a person with presumptive laboratory evidence.

Suspect:

A person presumptive laboratory evidence but no clinical information available.

**Criteria to distinguish a new case from previous reports**

Not applicable.

**Comments**

There are at least three species of bacteria, all intracellular, responsible for ehrlichiosis/anaplasmosis in the U.S.: *E. chaffeensis* (found primarily in monocytes), *A. phagocytophilum*, and *E. ewingii* (found primarily in granulocytes). The clinical signs of disease that result from infection with these agents are similar, and the range distributions of the agents overlap, so testing for one or more species may be indicated. Serologic cross-reactions may occur among tests for these etiologic agents.

Four sub-categories of confirmed or probable ehrlichiosis/anaplasmosis should be reported: 1) human ehrlichiosis caused by *E. chaffeensis*, 2) human ehrlichiosis caused by *E. ewingii*, 3) human anaplasmosis caused by *A. phagocytophilum*, or 4) human ehrlichiosis/anaplasmosis, undetermined. Cases reported in the undetermined sub-category can only be reported as “probable” because the cases are only weakly supported by ambiguous laboratory test results. Problem cases for which sera

demonstrate elevated antibody IFA responses to more than a single infectious agent are usually resolvable by comparing the levels of the antibody responses, the greater antibody response generally being that directed at the actual agent involved. Tests of additional sera and further evaluation via the use of PCR, IHC, and isolation via cell culture may be needed for further clarification. Cases involving persons infected with more than a single etiologic agent, while possible, are extremely rare and every effort should be undertaken to resolve cases that appear as such (equivalent IFA antibody titers) via other explanations.

Current commercially available EIA tests are not quantitative, cannot be used to evaluate changes in antibody titer, and hence are not useful for serological confirmation. Furthermore, IgM tests are not always specific and the IgM response may be persistent. Therefore, IgM tests are not strongly supported for use in serodiagnosis of acute disease.

 **Acute and convalescent sera from reported and suspect cases should be acquired on all cases and sent to the Bureau of Public Health Laboratories.**

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## ! Flavivirus Disease and Infection

Merlin disease code=07000

Case report form (CRF): [Florida Confidential Vector-borne Disease Infection CRF](#)

**MERLIN EXTENDED DATA REQUIRED**

### Background

Viruses in the genus *Flavivirus* can be highly cross-reactive, particularly among exotic arboviruses such as dengue virus (DENV) and Zika virus (ZIKV). In some individuals, IgM antibody testing cannot differentiate between the two infections and IgG antibodies strongly cross-react between flaviviruses. Previous flavivirus infections may further complicate result interpretation and is common in some populations (e.g., those residing in or long-term visitors to dengue endemic countries). Even the completion of plaque reduction neutralization testing (PRNT), often considered the gold standard of flavivirus diagnostics, may not provide a definitive result. Other flaviviruses with potential cross-reactivity include other exotic arboviruses such as yellow fever virus and Japanese encephalitis virus, as well as arboviruses endemic to Florida, such as West Nile virus (WNV) and St. Louis encephalitis virus (SLEV), may also cross-react with DENV or ZIKV.

### Clinical criteria for case classification

A person with one or more of the following not explained by another etiology:

- Clinically compatible illness that includes one or more of the following:
  - Fever (measured or reported),
  - **Or** rash,
  - **Or** arthralgia,
  - **Or** conjunctivitis,
  - **Or** nausea/vomiting,
  - **Or** retro-orbital pain or ocular pain,
  - **Or** headache,
  - **Or** myalgia,
  - **Or** thrombocytopenia (platelet numbers of  $<200,000/\text{mm}^3$ ),
  - **Or** leukopenia (a total white blood cell count of  $<5,000/\text{mm}^3$ ),
  - **Or** abdominal pain or tenderness,
  - **Or** persistent vomiting,
  - **Or** mucosal bleeding at any site (e.g., gums, urinary tract),
  - **Or** liver enlargement  $>2$  centimeters;
- **Or** complication of pregnancy including either of the following:
  - Fetal loss
    - Or** fetus or neonate with congenital microcephaly, congenital intracranial calcifications, other structural brain or eye abnormalities, or other congenital central nervous system-related abnormalities including defects such as clubfoot or multiple joint contractures;
- **Or** Guillain-Barré syndrome (GBS) meeting Brighton Collaboration level 1, 2, or 3 or other neurologic manifestations.

## Laboratory criteria for case classification

Supportive:

### ***For locally acquired cases:***

- All of the following:
  - Positive enzyme immunoassay (EIA), microsphere immunofluorescence assay (MIA), or immunofluorescent assay (IF) for ZIKV IgM antibodies in serum or CSF by a state public health laboratory (PHL) or the Centers for Disease Control and Prevention (CDC),
  - **And** positive EIA, MIA, or IF for IgM antibodies to DENV (or other flaviviruses endemic to the region where the exposure occurred) by a PHL or CDC,
  - **And** no PRNT performed;
- **Or** all of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF by a PHL or CDC,
  - **And** positive EIA, MIA, or IF for IgM antibodies to DENV (or other flaviviruses endemic to the region where the exposure occurred) by a PHL or CDC,
  - **And** positive neutralizing antibody titers by PRNT against ZIKV by a PHL or CDC,
  - **And** positive neutralizing antibody titers by PRNT against DENV (or other flaviviruses endemic to the region where the exposure occurred) by a PHL or CDC.

### ***For imported cases:***

- All of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF,
  - **And** positive EIA, MIA, or IF for IgM antibodies to DENV (or other flaviviruses endemic to the region where the exposure occurred),
  - **And** no PRNT performed;
- **Or** all of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF,
  - **And** positive EIA, MIA, or IF for IgM antibodies to DENV (or other flaviviruses endemic to the region where the exposure occurred),
  - **And** positive neutralizing antibody titers by PRNT against ZIKV,
  - **And** positive neutralizing antibody titers by PRNT against DENV (or other flaviviruses endemic to the region where the exposure occurred).

## Epidemiological criteria for case classification

All of the following:

- An illness that is clinically indistinguishable between flaviviruses;
- **And** a person who is not epidemiologically linked to a confirmed or probable case of a known flavivirus (e.g., ZIKV, DENV, WNV, SLEV, yellow fever virus);
- **And** one or more of the following:
  - Resides in or past travel to an area with known transmission of more than one flavivirus,
  - **Or** Likely vector exposure in an area with suitable seasonal and ecological conditions for potential local vectorborne transmission,
  - **Or** Receipt of blood or blood products within 30 days of symptom onset,
  - **Or** Receipt of organ or tissue transplant within 30 days of symptom onset.

## Case classification

### ***Flavivirus disease***

#### Suspect:

A clinically compatible illness in a person with supportive laboratory evidence and epidemiological criteria.

### ***Flavivirus infection***

#### Suspect:


A person with supportive laboratory evidence and epidemiological criteria.

## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

Due to the cross-reactivity seen among flaviviruses, it is important to ask if there has been any lifetime travel to a flavivirus-endemic country or vaccination for yellow fever or Japanese encephalitis viruses. Testing for other relevant flaviviruses at the Bureau of Public Health Laboratories (BPHL) will occur when applicable. Individuals with neuroinvasive symptoms and no reported travel should be evaluated for WNV and SLEV infection.

 **Acute and convalescent specimens from people with infections believed to be Florida-acquired must be sent to BPHL. Acute specimens from people with infections believed to be acquired outside Florida do not need to be forwarded to BPHL unless the specimen is from a pregnant women, infant, or possible GBS case.**

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## Giardiasis, Acute

Merlin disease code=00710

Case report form (CRF): [Giardiasis Extended Data](#)

**MERLIN EXTENDED DATA OPTIONAL**

### Background

An illness caused by the protozoan *Giardia lamblia* (also known as *G. intestinalis* or *G. duodenalis*) and characterized by diarrhea, abdominal cramps, nausea, vomiting, fever, anorexia, bloating, weight loss, or malabsorption. Asymptomatic infections are common, but asymptomatic cases do not meet the surveillance case definition.

### Clinical criteria for case classification

One or more of the following:

- Diarrhea,
- **Or** abdominal cramps,
- **Or** nausea,
- **Or** vomiting,
- **Or** fever,
- **Or** anorexia (loss of appetite),
- **Or** bloating,
- **Or** weight loss,
- **Or** malabsorption.

### Laboratory criteria for case classification

One or more of the following:

- Identification of *G. lamblia* cysts or trophozoites (e.g., microscopic detection),
- **Or** detection of *Giardia* nucleic acid (e.g., polymerase chain reaction [PCR]),
- **Or** detection of *G. lamblia* antigen by immunodiagnostic test (e.g., unspecified immunoassay [IA], enzyme immunoassay [EIA], immunofluorescence assay [IF], direct fluorescent antibody [DFA], indirect fluorescent antibody [IFA]).

### Epidemiological criteria for case classification

A person who is epidemiologically linked to a confirmed giardiasis case.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

#### Probable:

A clinically compatible illness in a person with epidemiological criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

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## ! Glanders (*Burkholderia mallei*)

Merlin disease code=02400  
Case report form (CRF): None  
**NO CRF REQUIRED**

### Clinical criteria for case classification

The types of infection include localized, pus forming cutaneous infections, pulmonary infections, bloodstream infections, and chronic suppurative infections of the skin. Generalized symptoms of glanders include fever, muscle aches, chest pain, muscle tightness, and headache. Additional symptoms have included excessive tearing of the eyes, light sensitivity, and diarrhea.

- Localized infections: if there is a cut or scratch in the skin, a localized infection with ulceration will develop within 1 to 5 days at the site where the bacteria entered the body. Swollen lymph nodes may also be apparent. Infections involving the mucous membranes in the eyes, nose, and respiratory tract will cause increased mucous production from the affected sites.
- Pulmonary infections: in pulmonary infections, pneumonia, pulmonary abscesses, and pleural effusion can occur. Chest X-rays will show localized infection in the lobes of the lungs.
- Bloodstream infections: glanders bloodstream infections are usually fatal within 7 to 10 days.

### Laboratory criteria for case classification

Isolation of *Burkholderia mallei* from blood, sputum, urine, or skin lesions. Serologic assays are not available.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

- ✉ **Isolates from all cases must be sent to the Bureau of Public Health Laboratories. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## ! *Haemophilus influenzae* Invasive Disease

Merlin disease code= 03841

Case report form (CRF): [Active Bacterial Core Surveillance CRF](#)

**MERLIN EXTENDED DATA REQUIRED (for cases <5 years old)**

### Clinical criteria for case classification

Invasive disease may manifest as pneumonia, bacteremia, meningitis, epiglottitis, septic arthritis, cellulitis, or purulent pericarditis; less common infections include endocarditis and osteomyelitis.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Isolation of *H. influenzae* from a normally sterile body site (e.g., cerebrospinal fluid [CSF], blood, joint fluid, pleural fluid, pericardial fluid)
- **Or** detection of *H. influenzae*-specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., blood or CSF), using polymerase chain reaction (PCR).

#### Presumptive:

Detection of *H. influenzae* type b antigen in CSF.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A person with confirmatory laboratory evidence.

#### Probable:

Meningitis in a person with presumptive laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

***H. influenzae* invasive disease cases in people ≥5 years old are only reportable for laboratories participating in electronic laboratory reporting (ELR).** Cases in people ≥5 years old will be automatically created and reported in Merlin based on ELR results, and will not require symptoms to meet the case definition. For case reports in people ≥5 years old received from health care providers or via paper laboratory results, cases do not need to be investigated or created in Merlin; however, county health departments can choose to enter and report these cases.

Cases in children <5 years old are reportable for all laboratories and health care providers. All cases in children <5 years old need to be investigated and reported, regardless of the method through which the case reports were received. **Extended data in Merlin is only required for those cases in people <5 years old.**

Positive antigen test results from urine or serum specimens are unreliable for diagnosis of *H. influenzae* disease and should not be used as a basis for case classification.

Serotype should be determined for all *H. influenzae* isolates because Hib vaccines protect against serotype b organisms only. This testing is especially important for children <5 years of age to determine possible vaccine failure or failure to vaccinate. Positive antigen test results from urine or serum specimens are unreliable for diagnosis of *H. influenzae* disease. Sputum cultures are not confirmatory as sputum is not obtained from a sterile site.

 **Isolates or specimens from cases in people <5 years old must be sent to the Bureau of Public Health Laboratories for typing to determine if they are type b.**



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## Hansen's Disease (Leprosy)

Merlin disease code=03090

Case report form (CRF): [Leprosy Surveillance Report](#)

PAPER CRF REQUIRED

### Clinical criteria for case classification

A chronic bacterial disease characterized by the involvement primarily of skin as well as peripheral nerves and the mucosa of the upper airway. Clinical forms of Hansen disease represent a spectrum reflecting the cellular immune response to *Mycobacterium leprae*. The following characteristics are typical of the major forms of the disease:

- *Tuberculoid*: 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*: 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)*: skin lesions characteristic of both the tuberculoid and lepromatous forms
- *Indeterminate*: Early lesions, usually hypopigmented macules, without developed tuberculoid or lepromatous features but with definite identification of acid-fast bacilli in Fite stained sections.

### Laboratory criteria for case classification

#### Confirmatory:

Both of the following (skin biopsy needed for definitive diagnosis):

- Absence of growth of mycobacteria on conventional media (if done)
- **And** either of the following:
  - Demonstration of acid-fast bacilli in skin or dermal nerve from a biopsy of skin a lepromatous lesion using Fite stain
  - **Or** identification of noncaseating granulomas with peripheral nerve involvement.

#### Supportive:

Polymerase chain reaction (PCR) for *M. leprae* DNA

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

#### Suspect:

A clinically compatible illness in a person with supportive laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

A newly available PCR test from the National Hansen's Disease Program (NHDP) can provide important epidemiologic exposure information. Please be sure to create and attach any PCR results to the case.

Contact the Bureau of Epidemiology for assistance with case assessment and laboratory testing.

There are no serological tests or skin test other than a biopsy of a lepromatous lesion. Testing can be completed at the NHDP Clinical Laboratory. Contact information for the NHDP: (800)-642-2477, [www.hrsa.gov/hansens](http://www.hrsa.gov/hansens).

NHDP also has support services:

- **Free antibiotics for leprosy treatment** shipped to physicians.
- **Free consultations** for physicians treating complicated patients,
- **Free pathologic review of skin biopsy** and consultation concerning **molecular techniques** for identification of *M. leprae*.
- **Free educational materials** for health care professionals and patients to improve understanding of the disease, and to prevent injury and disability.
- **Surgical care and rehabilitation** for those referred for complicated (digit or limb threatening) wounds or reconstruction of correctable deformity resulting from Hansen's disease.

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## Hantavirus Infection

Merlin disease code=07869 Hantavirus Pulmonary Syndrome  
 Merlin disease code=07870 Hantavirus Infection, Non-Pulmonary Syndrome  
 Case report form (CRF): [Hantavirus Pulmonary Syndrome CRF](#)  
**PAPER CRF REQUIRED**

### Clinical criteria for case classification

Hantavirus pulmonary syndrome (HPS) is a febrile illness (i.e., temperature >101.0°F or >38.3°C) with a prodrome consisting of fever, chills, myalgia, headache, and gastrointestinal symptoms, followed by the abrupt onset of respiratory distress and hypotension.

Non-pulmonary syndrome (NPS) hantavirus infection is a febrile illness with non-specific viral symptoms including fever, chills, myalgia, headache, and gastrointestinal symptoms. Typical clinical laboratory findings include hemoconcentration, left shift in the white blood cell count, neutrophilic leukocytosis, thrombocytopenia, and circulating immunoblasts.

### Clinical criteria for case classification

#### **HPS**

Both of the following:

- Illness characterized by acute onset of fever >101.0°F or >38.3°C
- **And** one or more of the following clinical features:
  - Bilateral diffuse interstitial edema,
  - **Or** clinical diagnosis of acute respiratory distress syndrome (ARDS),
  - **Or** radiographic evidence of noncardiogenic pulmonary edema,
  - **Or** an unexplained respiratory illness resulting in death,
  - **Or** health care record contains a diagnosis of hantavirus pulmonary syndrome,
  - **Or** death certificate lists hantavirus pulmonary syndrome as a cause of death or a significant condition contributing to death.

#### **NPS hantavirus infection**

Both of the following:

- Illness characterized by acute onset of fever >101.0°F or >38.3°C
- **And** the **absence** of all the following clinical features:
  - Bilateral diffuse interstitial edema,
  - And clinical diagnosis of ARDS,
  - And radiographic evidence of noncardiogenic pulmonary edema,
  - And an unexplained respiratory illness resulting in death.

### Laboratory criteria for case classification

One or more of the following:

- Detection of hantavirus-specific (Sin Nombre virus [SNV]) IgM or rising titers of hantavirus-specific IgG,
- **Or** detection of hantavirus-specific (SNV) ribonucleic acid (RNA) in clinical specimens by polymerase chain reaction (PCR),
- **Or** detection of hantavirus antigen by immunohistochemistry (IHC) in lung biopsy or autopsy tissues.

## Epidemiological criteria for case classification

Not applicable.

## Case classification

### **HPS**

#### Confirmed:

Illness clinically compatible with HPS in a person with laboratory evidence.

### **NPS hantavirus infection**

#### Confirmed:

Illness clinically compatible with NPS hantavirus infection in a person with laboratory evidence.

## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

Because the clinical illness is nonspecific and ARDS is common, a screening case definition can be used to determine which patients to test. In general, a predisposing medical condition (e.g., chronic pulmonary disease, malignancy, trauma, burn, and surgery) is a more likely cause of ARDS than HPS, and patients who have these underlying conditions and ARDS need not be tested for hantavirus.

Commercial laboratories typically run a hantavirus enzyme immunoassay (EIA) screening test which lacks specificity and generates false positive results. Therefore, it is important to request results for the SNV-specific EIA which commercial labs routinely run on any specimen that first tests positive for hantavirus on the screening test. The SNV-specific EIA test is more specific and if positive, supports pursuing confirmatory testing at the Bureau of Public Health Laboratories (BPHL).

✉ **Any available specimens must be sent to BPHL for confirmatory testing. Requests for clinical specimens to be sent to the CDC for diagnostic testing must be cleared through the Bureau of Epidemiology and assigned a tracking number; specimens must be routed through BPHL. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## Hemolytic Uremic Syndrome (HUS)

Merlin disease code=42000  
Case report form (CRF): None  
**NO MERLIN EXTENDED DATA REQUIRED**

### Background

Hemolytic uremic syndrome (HUS) is characterized by the acute onset of microangiopathic hemolytic anemia, renal injury, and low platelet count. Thrombotic thrombocytopenic purpura (TTP) is also characterized by these features but can include central nervous system (CNS) involvement and 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).

### Clinical criteria for case classification

#### Confirmatory:

An acute illness diagnosed as HUS or TTP within three weeks after onset of an episode of acute or bloody diarrhea.

#### Presumptive:

An acute illness diagnosed as HUS or TTP.

### Laboratory criteria for case classification

#### Confirmatory:

All of the following:

- Anemia (acute onset),
- **And** microangiopathic changes (i.e., presence of schistocytes, keratocytes, helmet cells, echinocytes, or burr cells) on peripheral blood smear,
- **And** renal injury (acute onset) evidenced by either hematuria, proteinuria, or elevated creatinine level (i.e.,  $\geq 1.0$  mg/dL in a child aged <13 years or  $\geq 1.5$  mg/dL in a person aged  $\geq 13$  years, or  $\geq 50\%$  increase over baseline).

#### Presumptive:

Both of the following:

- Anemia (acute onset)
- **And** renal injury (acute onset) evidenced by either hematuria, proteinuria, or elevated creatinine level (i.e.,  $\geq 1.0$  mg/dL in a child aged <13 years or  $\geq 1.5$  mg/dL in a person aged  $\geq 13$  years, or  $\geq 50\%$  increase over baseline).

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A person with confirmatory clinical criteria and confirmatory laboratory evidence.

#### Probable:

Either of the following:

- A person with presumptive clinical criteria and confirmatory laboratory evidence
- **Or** a person with confirmatory clinical criteria and presumptive laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

A low platelet count can usually, but not always, be detected early in the illness, but it may then become normal or even high. If a platelet count obtained within 7 days after onset of the acute gastrointestinal illness is not  $<150,000/\text{mm}^3$ , other diagnoses should be considered.

Some investigators consider HUS and TTP to be part of a continuum of disease. Therefore, criteria for diagnosing TTP on the basis of CNS involvement and fever are not provided because cases diagnosed clinically as postdiarrheal TTP also should meet the criteria for HUS. These cases are reported as postdiarrheal HUS.

Most diarrhea-associated HUS is caused by Shiga toxin-producing *Escherichia coli* (STEC), most commonly *E. coli* O157.

If a person meets the case definition for both Shiga toxin-producing *E. coli* (STEC) (Merlin code=00800) and HUS (Merlin code=4200), a case should be created and reported for each condition in Merlin.

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## Hepatitis A

Merlin disease code=07010  
Case report form (CRF): [Viral Hepatitis CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

Hepatitis A is a vaccine-preventable, communicable disease of the liver caused by the hepatitis A virus (HAV). Symptoms most commonly include fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, abdominal pain, or dark urine followed in a few days by jaundice.

### Clinical criteria for case classification

All of the following:

- Discrete onset of any sign or symptom consistent with acute viral hepatitis;
- **And** one or more of the following:
  - Jaundice,
  - **Or** bilirubin level  $\geq 3.0$  mg/dL,
  - **Or** serum alanine aminotransferase (ALT) level  $>200$  IU/L;
- **And** the absence of a more likely diagnosis.

### Laboratory criteria for case classification

#### Confirmatory:

Positive nucleic acid amplification test (NAAT) for HAV RNA (e.g., PCR or genotyping) in the absence of a negative IgM antibody to HAV (IgM anti-HAV) or NAAT result from a public health laboratory.

#### Presumptive:

Positive IgM anti-HAV.

### Epidemiological criteria for case classification

A person who is epidemiologically linked to a confirmed hepatitis A case (i.e., household or sexual contact with an infected person during the 15–50 days before the onset of symptoms).

### Case classification

#### Confirmed:

One of the following:

- A person with confirmatory laboratory evidence,
- **Or** a person with clinical criteria and presumptive laboratory evidence,
- **Or** a person with clinical criteria and epidemiological criteria.

### Criteria to distinguish a new case from previous reports

Hepatitis A is usually self-limiting and does not result in chronic infection. However, up to 10% of people infected with HAV may experience a relapse during the 6 months after acute illnesses. Do not create a new Merlin case for positive HAV results received within 6 months of an existing case.

### Comments

A hepatitis A case should not be created in Merlin if there is an alternate more likely diagnosis.

Report all available liver enzyme results for every case under liver function tests (Merlin disease code=00000).

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## Hepatitis B, Acute

Merlin disease code=07030  
Case report form (CRF): [Viral Hepatitis CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

An acute illness caused by hepatitis B virus (HBV) with discrete onset of symptoms consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, abdominal pain) and either jaundice or elevated liver enzymes (serum alanine aminotransferase [ALT] level >100 IU/L).

A documented negative hepatitis B surface antigen (HBsAg) result followed within 180 days by a positive result (either HBsAg HBV e antigen [HBeAg]; or nucleic acid test for HBV DNA, including quantitative, qualitative, and genotype testing [HBV NAT]) does not require an acute presentation to meet the surveillance case definition.

### Clinical criteria for case classification

#### Confirmatory:

Both of the following:

- Discrete onset of symptoms
- **And** either of the following:
  - Jaundice
  - **Or** elevated liver enzymes (ALT level >100 IU/L).

#### Presumptive:

Discrete onset of symptoms.

Hepatitis B, chronic cases (Merlin disease code=07032) that meet any of the criteria below will be flipped to hepatitis B, acute (Merlin disease code=07030) for investigation (if the person is determined to be asymptomatic or symptoms cannot be determined, the case will flip back to hepatitis B, chronic):

- Bilirubin  $\geq$ 3.0 mg/dL,
- **Or** ALT >1000 IU/L,
- **Or** positive IgM anti-HBc,
- **Or** a person <18 years old.

### Laboratory criteria for case classification

#### Confirmatory:

(1) Both of the following with confirmatory clinical criteria:

- Positive HBsAg >4 weeks after last dose of HBV vaccine
- **And** if done, positive IgM antibody to HBV core antigen (IgM anti-HBc).

(2) With no clinical criteria:

Negative HBsAg followed within 180 days by a positive result (either HBsAg, HBeAg, or HBV NAT).

#### Presumptive:

Positive IgM anti-HBc.

## Epidemiological criteria for case classification

Either of the following:

- A child  $\leq 24$  months old whose mother is known not to be infected with HBV
- **Or** a person  $>24$  months old who is epidemiologically linked to a confirmed acute or chronic hepatitis B case.

## Case classification

### Confirmed:

Either of the following:

- A child  $\leq 24$  months old with confirmatory clinical criteria, confirmatory laboratory evidence (1), and epidemiological criteria;
- **Or** a child  $\leq 24$  months old with confirmatory laboratory evidence (2) and epidemiological criteria;
- **Or** a person  $>24$  months old with confirmatory clinical criteria and confirmatory laboratory evidence (1);
- **Or** a person  $>24$  months old with confirmatory laboratory evidence (2).

### Probable:

One of the following:

- A child  $\leq 24$  months old with presumptive clinical criteria, presumptive laboratory evidence, and epidemiological criteria;
- **Or** a person  $>24$  months old with presumptive clinical criteria and presumptive laboratory evidence;
- **Or** a person  $>24$  months old with presumptive clinical criteria and epidemiological criteria.

## Criteria to distinguish a new case from previous reports

If a person has a previous diagnosis or Merlin case of acute or chronic hepatitis B, a new acute hepatitis B case should **not** be created.

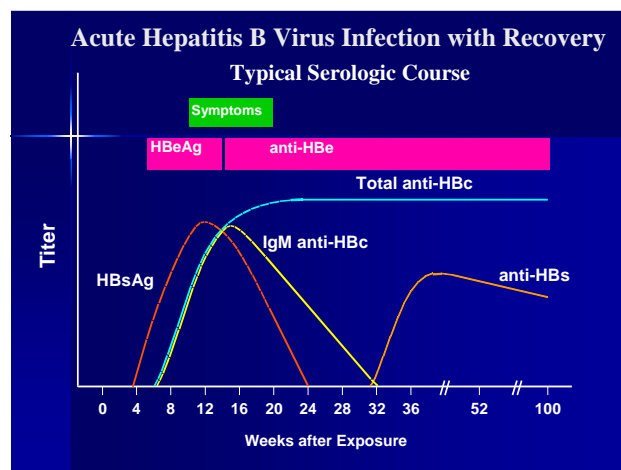
## Comments

Multiple laboratory tests indicative of HBV infection may be performed simultaneously on the same patient specimen as part of a "hepatitis panel." Testing performed in this manner may lead to seemingly discordant results (e.g., a negative HBsAg result and positive HBV DNA result on the same specimen). For the purposes of this case definition, any positive result among the laboratory tests mentioned above is acceptable, regardless of other testing results from the same specimen collection date. Negative HBeAg results and negative HBV DNA results do not confirm the absence of HBV infection.

Report all available liver enzyme results for every case under liver function tests (Merlin disease code=00000).

See graphic for additional information related to the serological course of disease.

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## Hepatitis B, Chronic

Merlin disease code=07032

Case report form (CRF): [Viral Hepatitis CRF](#)

**NO CRF REQUIRED**

### Background

Persons with chronic hepatitis B virus (HBV) infection may have no evidence of liver disease or may have a spectrum of disease ranging from chronic hepatitis to cirrhosis or liver cancer. Persons with chronic infection may be asymptomatic. Note that a nucleic acid test for HBV DNA (HBV NAT) includes quantitative, qualitative, and genotype testing.

### Clinical criteria for case classification

Hepatitis B, chronic cases (Merlin disease code=07032) that meet any of the criteria below will be flipped to hepatitis B, acute (Merlin disease code=07030) for investigation (if the person is determined to be asymptomatic or symptoms cannot be determined, the case will flip back to hepatitis B, chronic):

- Bilirubin  $\geq 3.0$  mg/dL,
- **Or** ALT  $> 1000$  IU/L,
- **Or** positive IgM anti-HBc,
- **Or** a person  $< 18$  years old.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Any combination of the following tests performed  $\geq 180$  days apart:
  - Positive HBV surface antigen (HBsAg)
  - Positive HBV e antigen (HBeAg)
  - Positive HBV NAT
- **Or** both of the following:
  - Negative IgM antibodies to HBV core antigen (IgM anti-HBc)
  - **And** one of the following:
    - Positive HBsAg,
    - **Or** positive HBeAg,
    - **Or** positive HBV NAT.

#### Presumptive:

One or more of the following:

- Positive HBsAg,
- **Or** positive HBeAg,
- **Or** positive HBV NAT.

### Epidemiological criteria for case classification

A child  $\leq 24$  months old whose mother is known not to be infected with HBV.

## Case classification

### Confirmed:

Either of the following:

- A person  $\leq 24$  months old with confirmatory laboratory evidence and epidemiological criteria
- **Or** a person  $> 24$  months old with confirmatory laboratory evidence.

### Probable:

Either of the following:

- A person  $\leq 24$  months old with presumptive laboratory evidence and epidemiological criteria who does not meet the case definition for acute hepatitis B
- **Or** a person  $> 24$  months old with presumptive laboratory evidence who does not meet the case definition for acute hepatitis B.

## Criteria to distinguish a new case from previous reports

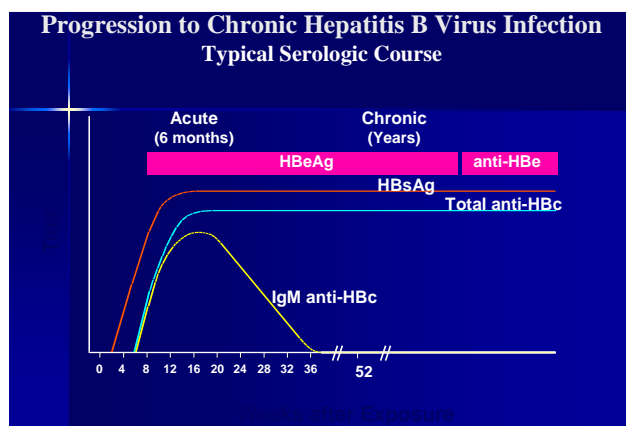
If a person has a previous diagnosis or Merlin case of chronic hepatitis B case, a new chronic hepatitis B case should **not** be created.

## Comments

Multiple laboratory tests indicative of chronic HBV infection may be performed simultaneously on the same patient specimen as part of a “hepatitis panel.” Testing performed in this manner may lead to seemingly discordant results e.g., HBsAg-negative and HBV DNA-positive. For the purposes of this case definition, any positive result among the three laboratory tests mentioned above is acceptable, regardless of other testing results from the same specimen collection date. Negative HBeAg results and HBV DNA levels below positive cutoff level do not confirm the absence of HBV infection.

Report all available liver enzyme results for every case under liver function tests (Merlin disease code=00000).

See graphic for additional information related to the serological course of disease.



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## Hepatitis B, Perinatal

Merlin disease code=07744  
Case report form (CRF): None  
**MERLIN EXTENDED DATA REQUIRED**

### Background

Perinatal hepatitis B virus (HBV) infection in a child  $\leq 24$  months of age may range from asymptomatic to fulminant hepatitis.

### Clinical criteria for case classification

Not applicable.

### Laboratory criteria for case classification

One or more of the following:

- Positive HBV surface antigen (HBsAg) result in a child  $\geq 1$  to  $\leq 24$  months of age  $> 4$  weeks after last dose of HBV vaccine,
- **Or** positive HBV e antigen (HBeAg) result in a child  $\geq 9$  to  $\leq 24$  months of age,
- **Or** positive nucleic acid test (NAT) for HBV DNA (including quantitative, qualitative, and genotype testing) in a child  $\geq 9$  to  $\leq 24$  months of age.

### Epidemiological criteria for case classification

#### Confirmatory:

A child born in the U.S. or in a U.S. territory to an HBV-positive mother.

#### Presumptive:

A child born in the U.S. or in a U.S. territory whose mother's HBV status is unknown, due to adoption or similar situations.

### Case classification

#### Confirmed:

A child with laboratory evidence and confirmatory epidemiologic criteria.

#### Probable:

A child with laboratory evidence and presumptive epidemiologic criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Infants born to HBV-infected mothers should receive hepatitis B immune globulin (HBIG) and the first dose of hepatitis B vaccine within 12 hours of birth, followed by the second and third doses of vaccine at 1 and 6 months of age, respectively. Post vaccination testing for HBsAg and antibody to hepatitis B surface antigen (anti-HBsAg) is recommended from 1 to 2 months following completion of the vaccine series, but not earlier than 9 months of age. If HBIG and the initial dose of vaccine are delayed for  $> 1$  month after birth, testing for HBsAg may determine if the infant is already infected. If the mother is known to not be infected with HBV, refer to the case definition for acute Hepatitis B.



Children ≤24 months old should only be reported as perinatal hepatitis B (Merlin disease code=07744), not acute hepatitis B (Merlin disease code=07032) or chronic hepatitis B (Merlin disease code=07030) **unless** the mother was known not to be infected with HBV. Test results prior to 1 month of age should not be used for classification.

If the mother of a child reported under this code was a resident of Florida during the pregnancy, the mother should be reported hepatitis B in pregnant women (Merlin disease code=07039) and under disease codes for hepatitis B, acute (Merlin disease code=07030) or hepatitis B, chronic (Merlin disease code=07032) as appropriate.

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## Hepatitis B, Pregnant Women

Merlin disease code=07039  
Case report form (CRF): [Viral Hepatitis CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

Acute or chronic illness, regardless of symptomatology, in which a woman tests positive for hepatitis B virus (HBV) during pregnancy.

### Clinical criteria for case classification

Not applicable.

### Laboratory criteria for case classification

One or more of the following:

- Positive HBV surface antigen (HBsAg),
- **Or** positive HBV e antigen (HBeAg),
- **Or** positive nucleic acid test (NAT) for HBV DNA (including quantitative, qualitative, and genotype testing).

### Epidemiological criteria for case classification

A pregnant woman.

### Case classification

Confirmed:

A pregnant woman with laboratory evidence.

### Criteria to distinguish a new case from previous reports

A new case should be created for each pregnancy.

### Comments

Mothers under this disease (Merlin disease code=07039) should **also** be reported as a separate case under disease codes for hepatitis B, acute (Merlin disease code=07030) or hepatitis B, chronic (Merlin disease code=07032) as appropriate.

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## Hepatitis C, Acute

Merlin disease code=07051  
 Case report form (CRF): [Viral Hepatitis CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

An acute illness with discrete onset of symptoms consistent with acute viral hepatitis (e.g., fever, headache, malaise, anorexia, nausea, vomiting, diarrhea, and abdominal pain) and either jaundice or elevated liver enzymes (serum alanine aminotransferase [ALT] level >200 IU/L) during the period of acute illness.

A documented negative hepatitis C virus (HCV) result followed within 365 days by a positive result (as described in the laboratory criteria for diagnosis) does not require an acute presentation to meet the surveillance case definition.

Nucleic acid tests for HCV RNA (HCV NAT) include quantitative, qualitative, or genotype testing. No HCV antigen tests are currently approved by FDA. These tests will be acceptable laboratory criteria if and when an FDA-approved test becomes available.

### Clinical criteria for case classification

Both of the following:

- Discrete onset of symptoms
- **And** either of the following:
  - Jaundice
  - **Or** elevated liver enzymes (ALT level >200 IU/L).

Hepatitis C, chronic cases (Merlin disease code=07054) that meet the following criteria will be reclassified as hepatitis C, acute (Merlin disease code=07051) for investigation (if the person is determined to be asymptomatic or symptoms cannot be determined, the case will flip back to hepatitis c, chronic):

- Bilirubin  $\geq$ 3.0 mg/dL,
- **Or** ALT level >1000 IU/L,
- **Or** a person <18 years old.

### Laboratory criteria for case classification

#### Confirmatory:

1. With clinical criteria, either of the following:
  - Positive HCV NAT
  - **Or** positive HCV antigen.
2. With no clinical criteria, either of the following:
  - For infants <1 year old, one or more of the following:
    - Positive HCV NAT,
    - **Or** HCV antigen,
    - **Or** HCV antibody (anti-HCV).
  - **Or** for people  $\geq$ 1 year old, one or more of the following:
    - Negative HCV NAT, HCV antigen, or anti-HCV result followed within 365 days by a positive HCV NAT or HCV antigen result;

- **Or** negative anti-HCV result followed within 365 days by a positive anti-HCV;
- **Or** both of the following:
  - Negative HCV NAT or HCV antigen result in the absence of positive anti-HCV result with the same or earlier specimen event date
  - **Followed within 365 days by** a positive anti-HCV result in the absence of a negative HCV NAT result with the same specimen event date.

Presumptive:

Both of the following:

- Positive anti-HCV
- **And** absence of a negative HCV NAT.

Not a case:

Both of the following:

- Positive anti-HCV
- **And** negative HCV NAT.

## Epidemiological criteria for case classification

Confirmatory:

One of the following:

1. A child  $\leq 3$  years old known to be exposed to HCV via a mechanism other than perinatal transmission (e.g., acquired via health care exposure or household contact),
2. **Or** a person  $>3$  years old with both of the following:
  - No previous diagnosis or Merlin case of acute hepatitis C in the past year
  - **And** no previous diagnosis or Merlin case of chronic hepatitis C,
3. **Or** a person  $>3$  years old with both of the following:
  - A previous case of acute or chronic hepatitis C with a positive HCV NAT result
  - **Followed by** 2 negative HCV NAT results  $\geq 30$  days apart,  $\geq 30$  days after the last positive HCV NAT result.

Presumptive:

A person  $>3$  years old with both of the following:

- A previous case of acute or chronic hepatitis C with a positive HCV NAT result
- **Followed by** 1 negative HCV NAT result  $\geq 30$  days after the last positive HCV NAT result.

## Case classification

Confirmed:

One of the following:

- A clinically compatible illness in a child  $\leq 3$  years old with confirmatory laboratory evidence (1) and confirmatory epidemiological criteria,
- **Or** a child  $\leq 3$  years old with confirmatory laboratory evidence (2) and confirmatory epidemiological criteria,
- **Or** a clinically compatible illness in a person  $>3$  years old with confirmatory laboratory evidence (1) and confirmatory epidemiological criteria,

- **Or** a person >3 years old with confirmatory laboratory evidence (2) and confirmatory epidemiological criteria.

#### Probable:

One of the following:

- A clinically compatible illness in a child  $\leq 3$  years old with presumptive laboratory evidence and confirmatory epidemiological criteria,
- **Or** a clinically compatible illness in a person >3 years old with presumptive laboratory evidence and confirmatory epidemiological criteria (2),
- **Or** a clinically compatible illness in a person >3 years old with confirmatory laboratory evidence (1) and presumptive epidemiological criteria,
- **Or** a person >3 years old with confirmatory laboratory evidence (2) and presumptive epidemiological criteria.

### **Criteria to distinguish a new case from previous reports**

**See epidemiological criteria for classification.** A new probable acute case may be re-classified as a confirmed acute case if a positive NAT for HCV RNA or a positive HCV antigen is reported within the same year. A confirmed acute case may be classified as a confirmed chronic case if a positive NAT for HCV RNA or a positive HCV antigen is reported one 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 NAT or antigen status).

#### **Reinfection**

For individuals with a previous acute or chronic hepatitis C with a positive HCV NAT result, a new confirmed acute case may be created for persons >3 years old when there are two negative HCV NAT results followed by a new positive HCV NAT result, each of which are  $\geq 30$  days apart. A new probable acute case may be created for persons >3 years old when there is a negative HCV NAT result after the last positive HCV NAT result, followed by a new positive HCV NAT result, each of which are  $\geq 30$  days apart.

### **Comments**

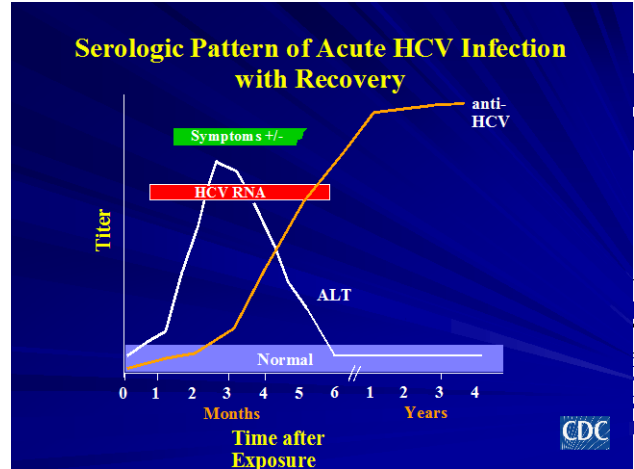
Infants and children  $\leq 3$  years old should only be reported as perinatal hepatitis C (Merlin disease code=07058), not acute hepatitis C (Merlin disease code=07051) or chronic hepatitis C (Merlin disease code=07054) **unless** there is evidence that the case was exposed to HCV via a mechanism other than perinatal transmission (e.g., was acquired via health care exposure). Test results prior to 2 months of age should not be used for classification.

Up to 20% of acute hepatitis C cases will be anti-HCV negative when reported because some (5%–10%) have not yet seroconverted and others (5%–10%) remain negative even with prolonged follow-up. Available serologic tests for anti-HCV do not distinguish between acute and chronic or past infection. Thus, other causes of acute hepatitis should be excluded for anti-HCV positive patients who have an acute illness compatible with viral hepatitis.

Report all available liver enzyme results for every case under liver function tests (Merlin disease code=00000).

See graphic for additional information related to the serological course of disease.

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## Hepatitis C, Chronic

Merlin disease code=07054  
 Case report form (CRF): [Viral Hepatitis CRF](#)  
**NO CRF REQUIRED**

### Background

Persons with chronic hepatitis C may have no evidence of liver disease or may have a spectrum of disease ranging from chronic hepatitis to cirrhosis or liver cancer. Most persons with chronic infection are asymptomatic.

Nucleic acid tests for HCV RNA (HCV NAT) include quantitative, qualitative, or genotype testing. No HCV antigen tests are currently approved by FDA. These tests will be acceptable laboratory criteria if and when an FDA-approved test becomes available.

### Clinical criteria for case classification

Hepatitis C, chronic cases (Merlin disease code=07054) that meet the following criteria will be reclassified as hepatitis C, acute (Merlin disease code=07051) for investigation (if the person is determined to be asymptomatic or symptoms cannot be determined, the case will flip back to hepatitis c, chronic):

- Bilirubin  $\geq 3.0$  mg/dL,
- **Or** ALT  $> 1000$  IU/L),
- **Or** a person  $< 18$  years old.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Positive HCV NAT
- **Or** positive HCV antigen.

#### Presumptive:

Both of the following:

- Positive HCV antibody (anti-HCV)
- **And** absence of a negative HCV NAT.

### Epidemiological criteria for case classification

#### Confirmatory:

A person who does not meet the case definition for acute hepatitis C and meets one of the following:

- A child  $\leq 3$  years old known to be exposed to HCV via a mechanism other than perinatal transmission (e.g., acquired via health care exposure or household contact),
- **Or** a person  $> 3$  years old with no previous diagnosis or Merlin case of chronic hepatitis C,
- **Or** a person  $> 3$  years with both of the following:
  - A previous case of chronic hepatitis C with a positive HCV NAT result
  - **Followed by** 2 negative HCV NAT results  $\geq 30$  days apart,  $\geq 30$  days after the last positive HCV NAT.

Presumptive:

A person >3 years old who does not meet the case definition for acute hepatitis C with both of the following:

- A previous case of chronic hepatitis C with a positive HCV NAT result
- **Followed by** 1 negative HCV NAT result  $\geq 30$  days after the last positive HCV NAT.

**Case classification**Confirmed:

A person  $\geq 1$  year old with confirmatory laboratory evidence and confirmatory epidemiological criteria.

Probable:

Either of the following:

- A person  $\geq 1$  year old with presumptive laboratory evidence and confirmatory epidemiological criteria
- **Or** a person >3 years old with confirmatory laboratory evidence and presumptive epidemiological criteria.

**Criteria to distinguish a new case from previous reports**

**See epidemiological criteria for classification.** If positive results are received for specimens collected more than 365 days after an acute hepatitis C case occurred, a new chronic hepatitis C case should be created. If a person has a previous chronic hepatitis C diagnosis or Merlin case, a new chronic hepatitis C case should **not** be created.

**Reinfection**

For individuals with a previous acute or chronic hepatitis C with a positive HCV NAT result, a new confirmed chronic case may be created for persons >3 years old when there are two negative HCV NAT results followed by a new positive HCV NAT result, each of which are  $\geq 30$  days apart. A new probable chronic case may be created for persons >3 years old when there is a negative HCV NAT after the last positive HCV NAT result, followed by a new positive HCV NAT result, each of which are  $\geq 30$  days apart.

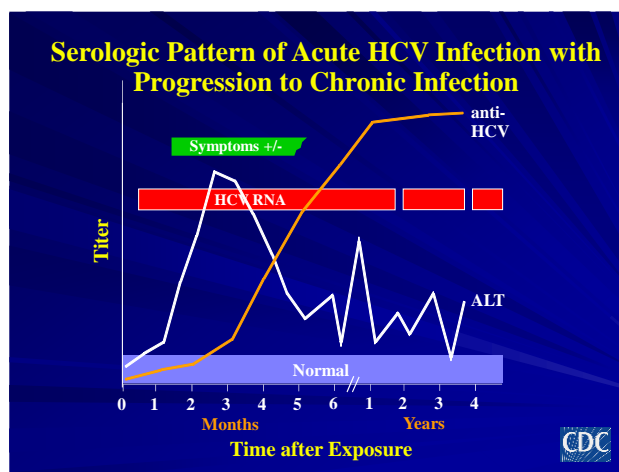
**Comments**

Children  $\leq 3$  years old should only be reported as perinatal hepatitis C (Merlin disease code=07058), not acute hepatitis C (Merlin disease code=07051) or chronic hepatitis C (Merlin disease code=07054) **unless** there is evidence that the case was exposed to HCV via a mechanism other than perinatal transmission (e.g., was acquired via health care exposure). Test results prior to 2 months of age should not be used for classification. Anti-HCV testing prior to 18 months of age should not be used for classification.

Report all available liver enzyme results for every case under liver function tests (Merlin disease code=00000).

See graphic for additional information related to the serological course of disease.

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## Hepatitis C, Perinatal

Merlin disease code=07058  
Case report form (CRF): None  
**NO CRF REQUIRED**

### Background

Perinatal hepatitis C virus (HCV) infection in pediatric patients may range from asymptomatic to fulminant hepatitis.

### Clinical criteria for case classification

Not applicable.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Positive nucleic acid test (NAT) for HCV RNA (including quantitative, qualitative, or genotype testing)
- **Or** positive HCV antigen test (if and when an FDA-approved test for HCV antigen is available).

#### Supportive:

Both of the following:

- Positive HCV antibody (anti-HCV)
- **And** the absence of a negative HCV NAT.

### Epidemiological criteria for case classification

A child  $\leq 36$  months old not known to be exposed to HCV via a mechanism other than perinatal transmission (e.g., not acquired via health care exposure or household contact). This would include situations where the mother's HCV infection status is unknown (e.g., closed adoptions).

### Case classification

#### Confirmed:

A child  $\geq 2$  months old and  $\leq 36$  months old with confirmatory laboratory evidence and epidemiologic criteria.

#### Probable:

A child  $< 2$  months old with confirmatory laboratory evidence and epidemiologic criteria.

#### Suspect:

A child  $\geq 2$  months old and  $\leq 36$  with supportive laboratory evidence and epidemiological criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

There is no safe and effective intervention known to prevent vertical transmission of HCV from mother to fetus or baby during pregnancy or childbirth. Approximately 75% of children who are vertically infected with HCV will develop chronic hepatitis C and should be referred for further evaluation and follow-up. HCV vertical transmission is higher in those who are born to HIV-infected mothers.

**Follow-up testing should be prioritized for all suspect cases to identify true perinatal infections.** Antibody testing alone can reflect the mother's infection rather than true infection in an infant. Follow-up should include contacting the primary care giver and provider to ensure confirmatory testing is conducted.

Children  $\leq 36$  months old should only be reported as perinatal hepatitis C (Merlin disease code=07058), not acute hepatitis C (Merlin disease code=07051) or chronic hepatitis C (Merlin disease code=07054) **unless** there is evidence that the case was exposed to HCV via a mechanism other than perinatal transmission (e.g., was acquired via health care exposure). Test results prior to 2 months of age should not be used for classification.

Event date should be based on earliest relevant laboratory test date within the 2 to 36 month window.

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## Hepatitis D

Merlin disease code=07052  
 Case report form (CRF): [Viral Hepatitis CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

An acute viral illness with discrete onset of symptoms and either jaundice or elevated liver enzymes. Symptoms most commonly include fatigue, abdominal pain, loss of appetite/anorexia, nausea, vomiting, or dark urine (tea colored). Illness is always associated with a coexistent hepatitis B infection. Hepatitis D virus (HDV) infection may occur as acute co-infection with hepatitis B virus (HBV), or as super-infection in persons with chronic HBV infection.

### Clinical criteria for case classification

#### Confirmatory:

Both of the following:

- Discrete onset of symptoms
- **And** either of the following:
  - Jaundice
  - **Or** elevated liver enzymes.

#### Presumptive:

Discrete onset of symptoms.

### Laboratory criteria for case classification

Both of the following:

- Either of the following as evidence of HBV infection:
  - Positive IgM antibody to HBV core antigen (IgM anti-HBc)
  - **Or** positive HBV surface antigen (HBsAg)
- **And** one or more of the following:
  - Positive IgM antibody to HDV (IgM anti-HDV),
  - **Or** positive HDV RNA by polymerase chain reaction (PCR),
  - **Or** positive total antibody (IgM and IgG) to HDV (anti-HDV).

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A person with confirmatory clinical criteria and laboratory evidence.

#### Probable:

A person with presumptive clinical criteria and laboratory evidence.

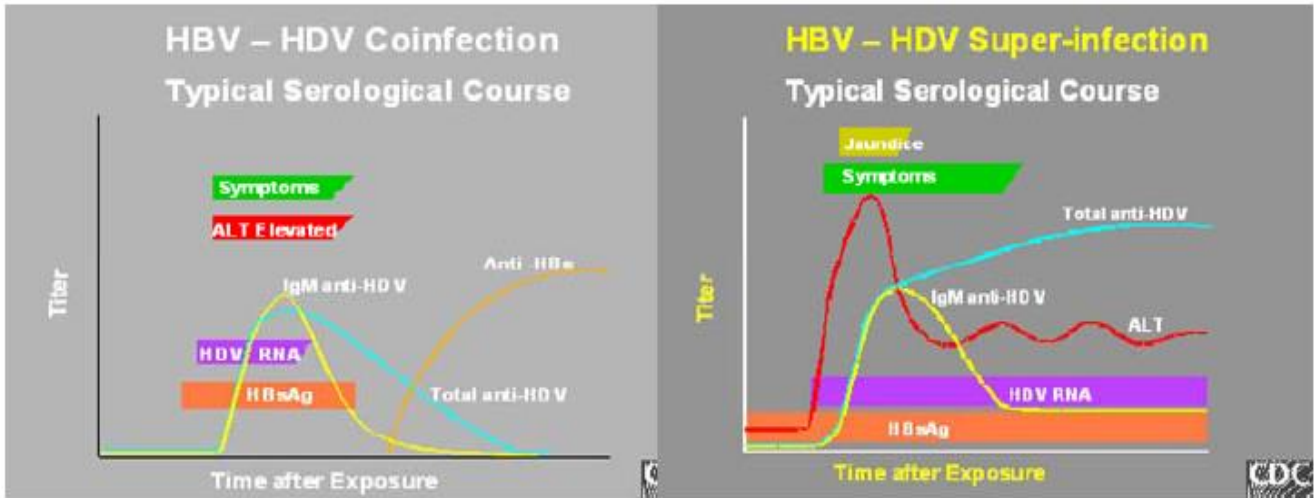
### Criteria to distinguish a new case from previous reports

Not applicable.

**Comments**

Report all available liver enzyme results for every case under liver function tests (Merlin disease code=00000).

See graphic for additional information related to the serological course of disease.



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## Hepatitis E

Merlin disease code=07053  
 Case report form (CRF): [Viral Hepatitis CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

An acute viral illness with discrete onset of symptoms and either jaundice or elevated liver enzymes. Symptoms most commonly include fatigue, abdominal pain, loss of appetite/anorexia, nausea, vomiting, or dark urine (tea colored).

### Clinical criteria for case classification

#### Confirmatory:

Both of the following:

- Discrete onset of symptoms
- **And** either of the following:
  - Jaundice
  - **Or** elevated liver enzymes.

#### Presumptive:

Discrete onset of symptoms.

### Laboratory criteria for case classification

Both of the following:

- One or more of the following as evidence of Hepatitis E virus (HEV) infection:
  - Positive IgM antibody to HEV (IgM anti-HEV),
  - **Or** positive HEV RNA by polymerase chain reaction (PCR),
  - **Or** positive total antibody (IgM and IgG) to HEV (anti-HEV)
- **And** all the following:
  - Absence of a positive IgM antibody to hepatitis A virus (IgM anti-HAV),
  - **And** absence of a positive IgM antibody to hepatitis B core antigen (IgM anti-HBc),
  - **And** absence of a positive hepatitis B virus surface antigen (HBsAg),
  - **And** absence of a positive hepatitis C virus antibody (anti-HCV).

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A person with confirmatory clinical criteria and laboratory evidence.

#### Probable:

A person with presumptive clinical criteria and laboratory evidence.

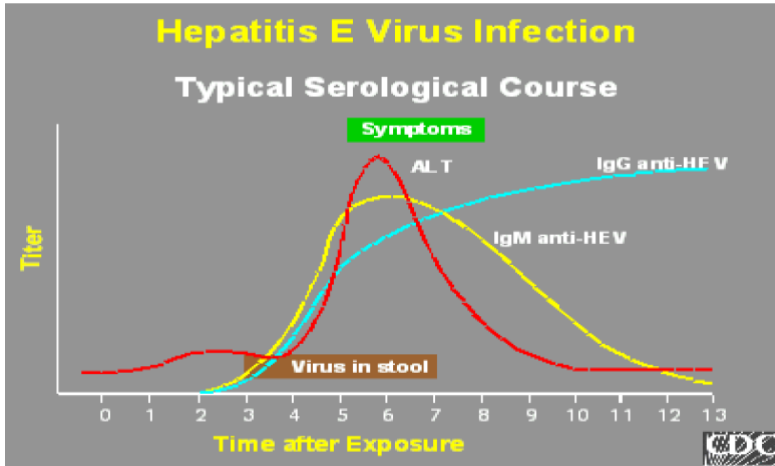
### Criteria to distinguish a new case from previous reports

Not applicable.

**Comments**

Report all available liver enzyme results for every case under liver function tests (Merlin disease code=00000).

See graphic for additional information related to the serological course of disease.



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# Hepatitis G

Merlin disease code=07059  
Case report form (CRF): [Viral Hepatitis CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

## Background

Persons with hepatitis G virus (HGV) infection may or may not have evidence of liver disease.

## Clinical criteria for case classification

Not applicable.

## Laboratory criteria for case classification

Positive HGV RNA (e.g., polymerase chain reaction [PCR]).

## Epidemiological criteria for case classification

Not applicable.

## Case classification

### Confirmed:

A person with laboratory evidence.

## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

The pathogenic role of HGV remains under investigation. HGV is mainly transmitted via blood. Infection has been documented in individuals that have received multiple blood transfusions or are intravenous drug users. It is estimated that frequency of infection is around 1-2% in healthy populations in the U.S. Epidemiologic research has shown that type 2 is prevalent in the U.S. Co-infection with hepatitis C virus is common.

Report all available liver enzyme results for every case under liver function tests (Merlin disease code=00000).

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## Herpes B Virus, Possible Exposure (B Virus)

Merlin disease code=07103  
Case report form (CRF): None  
**MERLIN EXTENDED DATA REQUIRED**

### Background

Any bite, scratch, or mucous membrane exposure to bodily fluids from a non-human primate (NHP) capable of transmitting herpes B virus (HBV), primarily macaque monkeys.

### Clinical criteria for case classification

Not applicable.

### Epidemiological criteria for case classification

Not applicable.

### Laboratory criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

Any person exposed to bodily fluids or tissue from an NHP capable of transmitting HBV via a bite, scratch, mucous membrane, or environmental exposure.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

All monkey bites, including those where rabies post-exposure prophylaxis (PEP) is not recommended, should be reported as herpes B virus, possible exposure (Merlin disease code=07103).

Exposures where rabies PEP is also recommended should be reported as herpes B virus, possible exposure (Merlin disease code=07103) **and** rabies, possible exposure (Merlin disease code=07101).

- National B Virus Laboratory: <http://www2.gsu.edu/~wwwvir/index.html> (titer testing is fee-based and can be ordered directly by health care providers)
- Guidelines for Prevention of and Therapy for Exposure to B Virus (Cercopithecine Herpesvirus 1): <http://cid.oxfordjournals.org/content/35/10/1191.full>

Macaque monkeys are the primary reservoir for HBV, however other species of NHP that are in direct contact with macaque monkeys can be infected. Monkey bites that involve NHP species other than macaques do not require HBV prophylaxis and serologic follow-up unless the NHP has had previous direct exposure to macaques. **HBV can migrate to the central nervous system within hours, therefore prompt wound cleansing followed by rapid initiation of anti-viral prophylaxis is recommended immediately following an exposure.** The value of initiating prophylaxis more than five days after an exposure is unknown. Similar to herpes simplex virus in humans, infected animals are infected for life, but virus shedding only occurs intermittently and is most likely to occur when the animal is stressed. There is no conclusive test that can definitively identify HBV negative animals or when infected animals are actively shedding virus.

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## ! Influenza A, Novel or Pandemic Strains

### Generic Case Definition

Merlin disease code=48790

Case report form (CRF): [Human Infection with Novel Influenza A Virus CRF](#)  
**CONTACT BUREAU OF EPIDEMIOLOGY**

#### Background

Human infections with novel influenza A viruses that can be transmitted from person to person may signal the beginning of an influenza pandemic. Rapid detection and reporting of human infections with novel influenza A viruses (viruses against which there is little to no pre-existing immunity) will facilitate prompt detection and characterization of influenza A viruses with pandemic potential and accelerate the implementation of effective public health responses.

#### Clinical criteria for case classification

An illness compatible with influenza virus infection (fever  $>100^{\circ}\text{F}$ , with cough or sore throat).

#### Laboratory criteria for case classification

A **human** case of infection with an influenza A virus subtype that is different from currently circulating human influenza H1 and H3 viruses. Novel subtypes include, but are not limited to, H2, H5, H7, and H9 subtypes. Influenza H1 and H3 subtypes originating from a non-human species or from genetic reassortment between animal and human viruses are also novel subtypes. Novel subtypes will be detected with methods available for detection of currently circulating human influenza viruses at state public health laboratories (e.g., real-time reverse transcriptase polymerase chain reaction [RT-PCR]). Confirmation that an influenza A virus represents a novel virus will be performed by the Centers for Disease Control and Prevention (CDC) influenza laboratory. Once a novel virus has been identified by CDC, confirmation may be made by public health laboratories following CDC-approved protocols for that specific virus, or by laboratories using a Food and Drug Administration-authorized test specific for detection of that novel influenza virus.

#### Epidemiological criteria for case classification

Both of the following:

- The patient has had contact with one or more persons who either have or had the disease
- **And** transmission of the agent by the usual modes of transmission is plausible.

A case may be considered epidemiologically linked to a laboratory-confirmed case if at least one case in the chain of transmission is laboratory-confirmed. Laboratory testing for the purposes of case classification should use methods mutually agreed upon by CDC and the Council of State and Territorial Epidemiologists (CSTE). Currently, only viral isolation, RT-PCR, gene sequencing, or a fourfold rise in strain-specific serum antibody titers are considered confirmatory.

#### Case classification

##### Confirmed:

A person infected with a novel influenza A virus confirmed by CDC's influenza laboratory or using methods agreed upon by CDC and CSTE.

##### Probable:

A person that meets the clinical criteria and is epidemiologically linked to a confirmed case, but for whom no laboratory testing for influenza virus infection has been performed or test results are inconclusive for a novel influenza A virus infection.

**Suspect:**

A person that meets the clinical criteria, pending laboratory confirmation. Any case of human infection with an influenza A virus that is different from currently circulating human influenza H1 and H3viruses is classified as a suspected case until the confirmation process is complete.

**Criteria to distinguish a new case from previous reports**

Not applicable.


**Comments**

**This is a generic case definition for novel influenza infection.** During an outbreak or pandemic situation such as for 2009 Novel Influenza A H1N1 event specific outbreak case definitions and reporting criteria will be developed. Please contact the Bureau of Epidemiology for the latest case definition during an outbreak or pandemic event.

For additional information about influenza or influenza surveillance, refer to the Bureau of Epidemiology Influenza website [www.floridahealth.gov/diseases-and-conditions/influenza/index.html](http://www.floridahealth.gov/diseases-and-conditions/influenza/index.html) or the CDC Influenza web site: [www.cdc.gov/flu/](http://www.cdc.gov/flu/).

On December 13, 2006, the United States formally accepted the revision of the International Health Regulations, referred to as IHR (2005) (<http://archive.hhs.gov/news/press/2006pres/20061213.html>). The IHR (2005) are an international legal instrument that governs the roles of the World Health Organization (WHO) and its member countries in identifying and responding to and sharing information about public health emergencies of international concern ([http://whqlibdoc.who.int/publications/2008/9789241580410\\_eng.pdf](http://whqlibdoc.who.int/publications/2008/9789241580410_eng.pdf)). The updated rules are designed to prevent and protect against the international spread of diseases, while minimizing interference with world travel and trade. The revised regulations add human infections with new influenza strains to the list of conditions that Member States must immediately report to WHO. An outbreak of infections with a new influenza A virus that demonstrates human-to-human transmission could signal the beginning of the next pandemic. Robust epidemiologic and laboratory surveillance systems are required for a coordinated public health response to infections with a novel influenza virus subtype. Early detection of an influenza virus with pandemic potential will permit identification of viral characteristics (e.g., genetic sequence, antiviral susceptibility, and virulence) that will affect clinical management and public health response measures. It should also facilitate development of a virus-specific vaccine and testing strategies.

All state public health laboratories have the capacity to test respiratory specimens for influenza viruses with sensitive and specific assays that can detect human and non-human influenza A viruses. They also have the capacity to subtype currently circulating human influenza A H1, H3, and avian H5 (Asian lineage) viruses. The detection or confirmation by a state public health laboratory of an influenza A virus that is unsubtypable with standard methods (e.g., real-time RT-PCR for human influenza A(H3) or (H1) viruses), or a non-human influenza virus (e.g., H5) from a human specimen, could be the initial identification of a virus with pandemic potential. Prompt notification of CDC by a state epidemiologist in conjunction with the public health laboratory will permit rapid confirmation of results and reporting to WHO. In addition, it will aid prompt viral characterization, and the development of virus-specific diagnostic tests.

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation. Approval to perform testing must be obtained through the Bureau of Epidemiology, available 24/7 via phone 850-245-4401.**

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## Influenza-Associated Pediatric Mortality

Merlin disease code=48700

Case report form (CRF): [Influenza-Associated Pediatric Mortality CRF](#)

**PAPER CRF REQUIRED**

### Clinical criteria for case classification

An influenza-associated death is defined for surveillance purposes as a death resulting from a clinically compatible illness that was confirmed to be influenza by an appropriate laboratory or rapid diagnostic test. There should be no period of complete recovery between the illness and death. Influenza-associated deaths in all persons aged <18 years should be reported.

A death should not be reported if:

1. There is no laboratory confirmation of influenza virus infection.
2. The influenza illness is followed by full recovery to baseline health status prior to death.
3. The death occurs in a person 18 years or older.
4. After review and consultation, there is an alternative agreed upon cause of death.

### Laboratory criteria for case classification

Influenza virus testing may be done on pre- or post-mortem clinical specimens, and include identification of influenza A or B virus infections by a positive result by one or more of the following:

- Influenza virus isolation in cell culture from respiratory specimens,
- **Or** reverse-transcriptase polymerase chain reaction (RT-PCR) testing of respiratory specimens,
- **Or** immunofluorescent antibody staining (direct or indirect) of respiratory specimens,
- **Or** rapid influenza diagnostic testing of respiratory specimens,
- **Or** immunohistochemical (IHC) staining for influenza viral antigens in respiratory tract tissue from autopsy specimens,
- **Or** fourfold rise in influenza hemagglutination inhibition (HI) antibody titer in paired acute and convalescent sera (single serum specimens are not interpretable).

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence who died.

Laboratory or rapid diagnostic test confirmation is required as part of the case definition; therefore, all reported deaths will be classified as confirmed.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

-  **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

**Please notify the Bureau of Epidemiology when investigating a case.**

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## Lead Poisoning

Merlin disease code=94890  
Case report form (CRF): None  
**MERLIN EXTENDED DATA REQUIRED**

### Background

Often asymptomatic, but may result in impaired neurobehavioral development, low IQ, slow nerve conduction, peripheral neuropathies, and encephalopathy.

### Clinical criteria for case classification

Not applicable.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Blood lead level  $\geq 5$   $\mu\text{g/dL}$  measured from a venous specimen
- **Or** blood lead level  $\geq 5$   $\mu\text{g/dL}$  measured from **two** capillary specimens, unknown specimens (i.e., venous or capillary), or a combination of capillary and unknown specimens taken **within 12 weeks** of one another.

#### Supportive:

Blood lead level  $\geq 5$   $\mu\text{g/dL}$  measured from a single capillary specimen or unknown specimen (i.e., venous or capillary).

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A person with confirmatory laboratory evidence.

#### Suspect:

A person with supportive laboratory evidence.

### Criteria to distinguish a new case from previous reports

Only one case should be created for any person tested, regardless of the number of results received or the blood lead level. All additional results received for that person will be associated with that case.

### Comments

All blood level lead tests are reportable in Florida. **Note that cases with blood lead levels  $\geq 5$  and  $< 10$   $\mu\text{g/dL}$  will be automatically created and reported as lead poisoning cases in Merlin. No follow-up is required on these cases and no extended data will be required.** Screening results  $< 5$   $\mu\text{g/dL}$  will be maintained in Merlin and a case will be created with a dx status of “not a case” for each person.

***The Childhood Lead Poisoning Screening and Case Management Guide*** is a resource available for CHD disease investigators and health care providers. It contains additional information on disease investigation, lead poisoning testing, case management, and requirements for environmental

investigations. This guide can be found at the following link: [www.floridahealth.gov/healthy-environments/lead-poisoning/ documents/childhood-leadpoisoning-screening-casemanagement-guide.pdf](http://www.floridahealth.gov/healthy-environments/lead-poisoning/documents/childhood-leadpoisoning-screening-casemanagement-guide.pdf).

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# Legionellosis

Merlin disease code=48280  
 Case report form (CRF): [Legionellosis CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

## Background

Legionellosis is associated with two clinically and epidemiologically distinct illnesses: Legionnaires' disease, which is characterized by fever, myalgia, cough, and clinical or radiographic pneumonia, and Pontiac fever, a milder illness without pneumonia.

## Clinical criteria for case classification

One or more of the following:

- Fever,
- **Or** myalgia,
- **Or** cough,
- **Or** pneumonia.

## Laboratory criteria for case classification

### Confirmatory:

One or more of the following:

- Isolation of any *Legionella* organism from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluid (e.g., culture);
- **Or** detection of *Legionella pneumophila* serogroup 1 antigen in urine (e.g., antigen detection);
- **Or** fourfold or greater rise in antibody titer to either single *Legionella* species or multiple species (e.g., antibody titers).

### Supportive:

One or more of the following:

- Single elevated antibody titer to either single *Legionella* species or multiple species (e.g., antibody detection);
- **Or** detection of specific *Legionella* antigen or staining of the organism in respiratory secretions, lung tissue, or pleural fluid (e.g., antigen detection);
- **Or** detection of *Legionella* species by nucleic acid assay (e.g., polymerase chain reaction [PCR]).

## Epidemiological criteria for case classification

Not applicable.

## Case classification

### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

### Suspect:

A clinically compatible illness in a person with supportive laboratory evidence.

## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

Travel-associated: A case that has a history of spending at least one night away from home, either in the same country of residence or abroad, in the two weeks before onset of illness. **Indicate if the case is travel-associated in the case notes.**

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## Leptospirosis

Merlin disease code=10090  
Case report form (CRF): [Leptospirosis CRF](#)  
**PAPER CRF REQUIRED**

### Clinical criteria for case classification

Both of the following:

- Fever within the past two weeks
- **And** either of the following:
  - Two or more of the following:
    - Myalgia,
    - **Or** headache,
    - **Or** jaundice,
    - **Or** conjunctival suffusion without purulent discharge,
    - **Or** rash (i.e., maculopapular or petechial)
  - **Or** one or more of the following:
    - Aseptic meningitis,
    - **Or** gastrointestinal symptoms (e.g., abdominal pain, nausea, vomiting, diarrhea),
    - **Or** pulmonary complications (e.g., cough, breathlessness, hemoptysis),
    - **Or** cardiac arrhythmias,
    - **Or** electrocardiograph abnormalities,
    - **Or** renal insufficiency (e.g., anuria, oliguria),
    - **Or** hemorrhage (e.g., intestinal, pulmonary, hematuria, hematemesis),
    - **Or** jaundice with acute renal failure.

Symptoms may be biphasic. Clinical presentation may range from very mild to fatal illness and in early stages can be confused with influenza or other more common febrile illnesses.

### Laboratory criteria for case classification

#### Confirmatory:

One or more of the following:

- Isolation of *Leptospira* from a clinical specimen,
- **Or** fourfold or greater increase in *Leptospira* agglutination titer between acute- and convalescent-phase serum specimens,
- **Or** demonstration of *Leptospira* in a clinical specimen by direct immunofluorescence assay (DFA),
- **Or** *Leptospira* agglutination titer of  $\geq 800$  by microscopic agglutination test (MAT) in one or more serum specimens,
- **Or** detection of pathogenic *Leptospira* DNA (e.g., by polymerase chain reaction [PCR]) from a clinical specimen.

#### Presumptive:

One or more of the following:

- *Leptospira* MAT titer of  $\geq 200$  but  $< 800$  from one or more serum specimens,
- **Or** Demonstration of anti-*Leptospira* antibodies in a clinical specimen by indirect immunofluorescence assay (IFA),
- **Or** Demonstration of *Leptospira* in a clinical specimen by darkfield microscopy,
- **Or** Detection of IgM antibodies against *Leptospira* in an acute phase serum specimen.



## Epidemiological criteria for case classification

Not applicable.

## Case classification

### Confirmed:

A person with confirmatory laboratory evidence.

### Probable:

Either of the following:

- A clinically compatible illness in a person with presumptive laboratory evidence
- **Or** a clinically compatible illness in a person who is epidemiologically linked to a confirmed or probable case or exposure event (adventure race, triathlon, flooding, infected animal, etc. with associated laboratory-confirmed cases).

## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

Leptospirosis is shed in the urine of many wild and domestic animals including rodents, pigs, raccoons, deer, and dogs. Animal reservoirs are often healthy appearing. The organism can survive for extended periods in moist conditions and water and is transmitted through ingestion or contact with cuts.

Exposure risks include contact with contaminated water or infected animals (especially rodents) in the month prior to symptom onset. Laboratory testing should be routed through the Bureau of Public Health Laboratories after consultation with a central office environmental epidemiologist.

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## Listeriosis

Merlin disease code=02700  
 Case report form (CRF): [Listeria CRF \(Spanish\)](#)  
**MERLIN EXTENDED DATA REQUIRED**  
**PAPER CRF REQUIRED**

### Clinical criteria for case classification

#### Invasive listeriosis

- Systemic illness caused by *Listeria monocytogenes* manifests most commonly as bacteremia or central nervous system infection. Other manifestations can include pneumonia, peritonitis, endocarditis, and focal infections of joints and bones.
- Pregnancy-associated listeriosis has generally been classified as illness occurring in a pregnant woman or in an infant  $\leq 28$  days old. Listeriosis may result in pregnancy loss (fetal loss before 20 weeks gestation), intrauterine fetal demise ( $\geq 20$  weeks gestation), pre-term labor, or neonatal infection, while causing minimal or no systemic symptoms in the mother. Pregnancy loss and intrauterine fetal demise are considered to be maternal outcomes.
- Neonatal listeriosis commonly manifests as bacteremia, central nervous system infection, or 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 and 28 days).

#### Non-invasive *Listeria* infections

- *Listeria* infection manifesting as an isolate from a non-invasive clinical specimen suggestive of a non-invasive infection includes febrile gastroenteritis, urinary tract infection, and wound infection.

### Laboratory criteria for case classification

#### Confirmatory:

Isolation of *L. monocytogenes* from one of the following:

- A normally sterile site reflective of an invasive infection (excluding sources such as urine, stool, or external wounds);
- **Or** products of conception (e.g., chorionic villi, placenta, fetal tissue, umbilical cord blood, amniotic fluid) collected at the time of delivery for pregnancy loss, intrauterine fetal demise, or birth;
- **Or** a non-sterile neonatal specimen (e.g., meconium, tracheal aspirate, but not products of conception) collected within 48 hours of delivery.

#### Presumptive:

Detection of *L. monocytogenes* by culture-independent diagnostic testing from one of the following:

- A normally sterile site reflective of an invasive infection;
- **Or** products of conception collected at the time of delivery for pregnancy loss, intrauterine fetal demise, or birth;
- **Or** a non-sterile neonatal specimen collected within 48 hours of delivery.

#### Supportive:

Isolation of *L. monocytogenes* from a non-invasive clinical specimen (e.g., stool, urine, wound, or other specimen not specified in confirmatory laboratory criteria).

### Epidemiological criteria for case classification

One or more of the following:

- A neonate whose mother has confirmatory or presumptive laboratory evidence from products of conception
- **Or** both of the following:
  - A clinically compatible neonate
  - **Whose** mother has confirmatory or presumptive laboratory evidence from a normally sterile site,
- **Or** both of the following:
  - A mother who gave birth to a neonate with confirmatory or presumptive laboratory evidence
  - **And** the neonatal specimen was collected up to 28 days after birth.

### Case classification

#### Confirmed:

A person with confirmatory laboratory evidence.

#### Probable:

Either of the following:

- A person with presumptive laboratory evidence
- **Or** a mother or neonate with epidemiologic criteria.

#### Suspect:

A person with supportive laboratory evidence.

### Criteria to distinguish a new case from previous reports

There is currently insufficient data available to support a routine recommendation for criteria to distinguish a new case of listeriosis from prior reports or notifications. Duplicate or recurring reports of listeriosis in an individual should be evaluated on a case by case basis.

### Comments

Meningitis due to *L. monocytogenes* should be reported as listeriosis (Merlin disease code=02700) and not as bacterial or mycotic meningitis (Merlin disease code=32090).

 **Isolates from all cases must be sent to the Bureau of Public Health Laboratories.**

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## Lyme Disease

Merlin disease code=06959  
 Case report form (CRF): [Lyme Disease CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

This surveillance case definition was developed for national reporting of Lyme disease; it is not intended to be used in clinical diagnosis.

Lyme disease is a systemic, tick-borne disease with protean manifestations, including dermatologic, rheumatologic, neurologic, and cardiac abnormalities. The most common clinical marker for the disease is erythema migrans (EM), the initial skin lesion that occurs in 60%-80% of patients.

If **either** of the following are true, see **acute Lyme disease**:

- Symptom onset was within 30 days of laboratory testing
- **Or** a physician-diagnosed EM was observed.

If **either** of the following are true, see **late-manifestation Lyme disease**:

- Symptom onset was more than 30 days prior to laboratory testing and no physician-diagnosed EM was observed
- **Or** any of the following are reported: recurrent joint swelling, lymphocytic meningitis, cranial neuritis including Bell's palsy, radiculoneuropathy (radiating pain along a nerve, e.g., sciatica, symmetric or asymmetric numbness or tingling), encephalomyelitis, or second or third degree atrioventricular conduction defects.

### **Acute Lyme disease**

For purposes of surveillance, EM is defined as a skin lesion 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  $\geq 5$  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. **The diagnosis of EM must be made by a physician.** Laboratory confirmation is recommended for persons with no known exposure.

### **Late-manifestation Lyme disease**

For purposes of surveillance, late manifestations include any of the following when an alternate explanation is not found:

- *Musculoskeletal system*: Recurrent, brief attacks (weeks or months) of objective joint swelling in one or a few joints, sometimes followed by chronic arthritis in one or a few joints. Manifestations not considered as criteria for diagnosis include chronic progressive arthritis not preceded by brief attacks and chronic symmetrical polyarthritis. Additionally, arthralgia, myalgia, or fibromyalgia syndromes alone are not criteria for musculoskeletal involvement.
- *Nervous system*: Any of the following, alone or in combination: Lymphocytic meningitis; cranial neuritis, particularly facial palsy (may be bilateral); radiculoneuropathy; or, rarely, encephalomyelitis. Encephalomyelitis must be confirmed by demonstration of antibody production against *Borrelia burgdorferi* in the cerebrospinal fluid (CSF), evidenced by a higher titer of antibody

in CSF than in serum. Headache, fatigue, paresthesia, or mildly stiff neck alone, are not criteria for neurologic involvement.

- *Cardiovascular system*: Acute onset of high-grade (second degree or third degree) atrioventricular conduction defects that resolve in days to weeks and are sometimes associated with myocarditis. Palpitations, bradycardia, bundle branch block, or myocarditis alone are not criteria for cardiovascular involvement.

## Clinical criteria for case classification

### ***Acute Lyme disease***

#### Confirmatory:

Physician-diagnosed EM.

#### Presumptive:

All of the following:

- Physician-diagnosed Lyme disease in the absence of EM,
- **And** symptom onset within 30 days of laboratory testing,
- **And** no late clinical manifestations.

### ***Late-manifestation Lyme disease***

#### Confirmatory:

At least one musculoskeletal, nervous, or cardiovascular system late manifestation.

#### Presumptive:

Both of the following:

- Physician-diagnosed Lyme disease more than 30 days after symptom onset without EM
- **And** laboratory testing more than 30 days after symptom onset.

## Laboratory criteria for case classification

### ***Acute Lyme disease***

One or more of the following:

- IgG western blot is positive for 5 or more of the following bands: 18 kDa, 21-25 kDa (OspC), 28 kDa, 30 kDa, 39 kDa (BmpA), 41 kDa (Fla), 45 kDa, 58 kDa (not GroEL), 66kDa, or 93 kDa;
- **Or** culture positive for *B. burgdorferi*,
- **Or** all of the following:
  - Antibody positive or indeterminate for *B. burgdorferi* by enzyme immunoassay (EIA) or immunofluorescent (IF) assay,
  - **And** IgM western blot is positive for 2 or more of the 3 following bands: 21-25 kDa (OspC), 39 kDa (BmpA), or 41 kDa (Fla),
  - **And** symptom onset within 30 days of laboratory testing.

**Late-manifestation Lyme disease**

One or more of the following:

- IgG western blot is positive for 5 or more of the following bands: 18 kDa, 21-25 kDa (OspC), 28 kDa, 30 kDa, 39 kDa (BmpA), 41 kDa (Fla), 45 kDa, 58 kDa (not GroEL), 66kDa, or 93 kDa;
- **Or** antibody positive for *B. burgdorferi* by EIA or IF where the CSF titer is higher than the serum titer;
- **Or** culture positive for *B. burgdorferi*.

**Epidemiological criteria for case classification**

Exposure is defined as having been in wooded, brushy or grassy areas (i.e., potential tick habitats) in a county in which Lyme disease is endemic in the 30 days prior to symptom onset. A history of tick bite is not required. For surveillance purposes, Lyme disease is considered to be endemic in Florida.

Epidemiological criteria for classification for acute Lyme disease vary by whether exposure occurred in a state with high or low Lyme incidence. **Florida is considered a low incidence state.** Three-year average Lyme disease incidence by state can be obtained at [www.cdc.gov/lyme/stats/tables.html](http://www.cdc.gov/lyme/stats/tables.html).

Low incidence state:

States with a 3-year average incidence of <10 cases per 100,000 persons.

High incidence state:

States with a 3-year average incidence of ≥10 cases per 100,000 persons.

**Case classification****Acute Lyme disease**Confirmed:

Either of the following:

- A person with confirmatory acute clinical criteria and exposure in a high incidence state
- **Or** a person with confirmatory acute clinical criteria, acute laboratory evidence, and exposure in a low incidence state (such as Florida).

Probable:

A person with presumptive acute clinical criteria and acute laboratory evidence of infection.

Suspect:

Either of the following:

- A person with confirmatory acute clinical criteria without known exposure
- **Or** a person with acute laboratory evidence and no clinical information available (no medical record or patient interview).

**Late-manifestation Lyme disease**Confirmed:

A person with confirmatory late-manifestation clinical criteria and late-manifestation laboratory evidence.

Probable:

A person with presumptive late-manifestation clinical criteria and late-manifestation laboratory evidence of infection.

**Suspect:**

A person with late-manifestation laboratory evidence and no clinical information available (no medical record or patient interview).

**Criteria to distinguish a new case from previous reports**

Not applicable.

**Comments**

Lyme disease reports will not be considered cases if the medical provider specifically states this is not a case of Lyme disease, or the only symptom listed is "tick bite" or "insect bite."

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## Malaria

Merlin disease code=08460

Case report forms (CRFs):

1. [Malaria Case Surveillance Report](#)

2. [Indigenous Malaria Investigation Worksheet](#)

**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

Signs and symptoms are variable; however, most patients experience fever. In addition to fever, common associated symptoms include headache, back pain, chills, sweats, myalgia, nausea, vomiting, diarrhea, and cough. Untreated *Plasmodium falciparum* infection can lead to coma, renal failure, pulmonary edema, and death. The diagnosis of malaria should be considered for any person who has these symptoms and who has traveled to an area in which malaria is endemic. Asymptomatic parasitemia can occur among persons who have been long-term residents of areas in which malaria is endemic.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Detection of speciated or unspeciated malaria parasites by microscopy in thick or thin peripheral blood films by a state public health laboratory (PHL) or the Centers for Disease Control and Prevention (CDC)
- **Or** detection of *Plasmodium* species DNA in peripheral blood by nucleic acid test (e.g., polymerase chain reaction [PCR] test).

#### Supportive:

Either of the following:

- Detection of circulating malaria-specific antigens using rapid diagnostic test (RDT)
- **Or** detection of malaria parasites by microscopy in thick or thin peripheral blood films by a commercial laboratory.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A person (symptomatic or asymptomatic) with confirmatory laboratory evidence, diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country.

#### Suspect:

A person (symptomatic or asymptomatic) with supportive laboratory evidence diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country.



### Criteria to distinguish a new case from previous reports


A new case should be created for a subsequent infection in the same person caused by a different *Plasmodium* species. A person with a subsequent attack caused by the same species in the U.S. may indicate a relapsing infection or treatment failure caused by drug resistance.

### Comments

Reports of malaria parasites detected in thick or thin peripheral blood films should be accompanied by a determination of the species by morphologic criteria and a calculation of the percentage of red blood cells infected by asexual malaria parasites (parasitemia).

Cases also are classified according to the following World Health Organization categories:

- Autochthonous:
  - Indigenous: Malaria acquired by mosquito transmission in an area where malaria is a regular occurrence.
  - Introduced: Malaria acquired by mosquito transmission from an imported case in an area where malaria is not a regular occurrence.
- Imported: Malaria acquired outside a specific area (e.g., the U.S. and its territories).
- Induced: Malaria acquired through artificial means (e.g., blood transfusion, common syringes, malariotherapy).
- Relapsing: Renewed manifestation (i.e., of clinical symptoms or parasitemia) of malarial infection that is separated from previous manifestations of the same infection by an interval greater than any interval resulting from the normal periodicity of the paroxysms.
- Cryptic: An isolated case of malaria that cannot be epidemiologically linked to additional cases.

 **Permanent slides from all diagnosed and suspected cases must be sent to the Bureau of Public Health Laboratories.**

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## ! Measles (Rubeola)

Merlin disease code=05590

Case report form (CRF): [Measles Surveillance Worksheet](#)

**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for diagnosis

#### Confirmatory:

A febrile rash illness (temperature does not need to reach  $\geq 101.0^{\circ}\text{F}$  [ $>38.3^{\circ}\text{C}$ ] and rash does not need to last  $\geq 3$  days).

#### Presumptive:

An illness characterized by all the following:

- Generalized, maculopapular rash of  $\geq 3$  days,
- **And** temperature  $\geq 101.0^{\circ}\text{F}$  ( $\geq 38.3^{\circ}\text{C}$ ),
- **And** cough, coryza, or conjunctivitis.

### Laboratory criteria for case classification

One or more of the following:

- Isolation of measles virus<sup>1</sup> from a clinical specimen,
- **Or** detection of measles virus-specific nucleic acid<sup>1</sup> from a clinical specimen using polymerase chain reaction (PCR),
- **Or** IgG seroconversion<sup>1</sup> or a significant rise in measles IgG antibody<sup>1</sup> level between acute- and convalescent-phase specimens using any evaluated and validated method,
- **Or** positive serologic test for measles IgM antibody.<sup>1,2</sup>

<sup>1</sup>Not explained by MMR vaccination during the previous 6-45 days.

<sup>2</sup>Not otherwise ruled out by other confirmatory testing or more specific measles testing in a public health laboratory.

### Epidemiological criteria for case classification

A person who is epidemiologically linked to a laboratory-confirmed measles case.

### Case classification

#### Confirmed:

Either of the following:

- A person with confirmatory clinical criteria and laboratory evidence
- **Or** a person with confirmatory clinical criteria and epidemiological criteria.

#### Probable:

A person with presumptive clinical criteria in the absence of a more likely diagnosis and noncontributory or no measles laboratory testing.

### Criteria to distinguish a new case from previous reports

Not applicable.

## Comments


### Epidemiologic classification of internationally imported and U.S.-acquired cases

- **Internationally imported case:** An internationally imported case is defined as a case in which measles results from exposure to measles virus outside the U.S. as evidenced by at least some of the exposure period (7–21 days before rash onset) occurring outside the U.S. and rash onset occurring within 21 days of entering the U.S. and there is no known exposure to measles in the U.S. during that time. All other cases are considered U.S.-acquired.
- **U.S.-acquired case:** A U.S.-acquired case is defined as a case in which the patient had not been outside the U.S. during the 21 days before rash onset or was known to have been exposed to measles within the U.S.

#### U.S.-acquired cases are subclassified into four mutually exclusive groups:

- **Import-linked case:** Any case in a chain of transmission that is epidemiologically linked to an internationally imported case.
- **Imported-virus case:** A case for which an epidemiologic link to an internationally imported case was not identified, but for which viral genetic evidence indicates an imported measles genotype, i.e., a genotype that is not occurring within the U.S. in a pattern indicative of endemic transmission. An endemic genotype is the genotype of any measles virus that occurs in an endemic chain of transmission (i.e., lasting  $\geq 12$  months). Any genotype that is found repeatedly in U.S.-acquired cases should be thoroughly investigated as a potential endemic genotype, especially if the cases are closely related in time or location.
- **Endemic case:** A case for which epidemiological or virological evidence indicates an endemic chain of transmission. Endemic transmission is defined as a chain of measles virus transmission that is continuous for  $\geq 12$  months within the U.S.
- **Unknown source case:** A case for which an epidemiological or virological link to importation or to endemic transmission within the U.S. cannot be established after a thorough investigation. These cases must be carefully assessed epidemiologically to assure that they do not represent a sustained U.S.-acquired chain of transmission or an endemic chain of transmission within the U.S.

Internationally imported, import-linked, and imported-virus cases are considered collectively to be import-associated cases.

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## ! Melioidosis (*Burkholderia pseudomallei*)

Merlin disease code=02500  
Case report form (CRF): None  
**NO CRF REQUIRED**

### Clinical criteria for case classification

Clinical presentation of the disease varies on a case-by-case basis. The following characteristics are typical of melioidosis.

- An acute or chronic localized infection which may or may not include symptoms of fever and muscle aches. Such infection often results in ulcer, nodule, or skin abscess.
- An acute pulmonary infection with symptoms of high fever, headache, chest pain, anorexia, and general muscle soreness.
- A bloodstream infection with symptoms of fever, headache, respiratory distress, abdominal discomfort, joint pain, muscle tenderness, or disorientation.
- A disseminated infection with symptoms of fever, weight loss, stomach or chest pain, muscle or joint pain, and/or headache or seizure. Abscesses in the liver, lung, spleen, and prostate are often observed in patients diagnosed with disseminated infections; less frequently, brain abscesses may be seen.

### Laboratory criteria for case classification

#### Confirmatory:

Isolation of *Burkholderia pseudomallei* from blood, urine, sputum, pus, throat swabs, or swabs from organ abscesses or skin lesions.

#### Presumptive:

Either of the following:

- Evidence of a fourfold or greater rise in *B. pseudomallei* antibody titer by IHA between acute- and convalescent-phase serum specimens obtained greater than or equal to 2 weeks apart
- **Or** evidence of *B. pseudomallei* DNA (for example, by LRN-validated polymerase chain reaction) in a clinical specimen collected from a normally sterile site (blood) or lesion of other affected tissue (abscesses, wound).

### Epidemiological criteria for case classification

Either of the following:

- A person who has a history of travel to a melioidosis-endemic region
- **Or** a person who has a known exposure to *B. pseudomallei* as a result of intentional release or occupational risk (laboratory exposure).

### Case classification

#### Confirmed:

A person with confirmatory laboratory evidence.

#### Probable:

A clinically compatible illness in a person with epidemiological criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

- ✉ **Isolates or specimens from all cases must be sent to the Bureau of Public Health Laboratories. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## Meningitis, Bacterial or Mycotic

Merlin disease code=32090

Case report form (CRF): [Active Bacterial Core Surveillance CRF](#)

**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

Meningitis manifests most commonly with fever, headache, and a stiff neck; the disease may progress rapidly to shock and death. However, other manifestations may be observed.

### Laboratory criteria for case classification

One or more of the following:

- Isolation of a bacterial,<sup>1</sup> cryptococcal,<sup>2</sup> or fungal species from cerebrospinal fluid;
- **Or** isolation of bacterial<sup>1</sup> or fungal species from brain tissue;
- **Or** isolation of bacterial,<sup>1</sup> cryptococcal,<sup>2</sup> or fungal species from blood.

<sup>1</sup> **Excluding meningitis caused by *Haemophilus influenzae*, *Listeria monocytogenes*, *Neisseria meningitidis*, *Salmonella* species, *Streptococcus pneumoniae*, or other individually reportable bacterial diseases.** Please report these cases according to their appropriate case definitions using the specific disease codes.

<sup>2</sup> **Excluding meningitis caused by *Cryptococcus neoformans* or an unspecified *Cryptococcus* species.** Culture-confirmed *Cryptococcus gattii* meningitis cases should be reported.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

Confirmed:

A clinically compatible illness in a person with laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

See the case definitions for *Haemophilus influenzae*, invasive disease (Merlin disease code=03841); listeriosis (Merlin disease code=02700) caused by *Listeria monocytogenes*; meningococcal disease caused by *Neisseria meningitidis* (Merlin disease code=03630); *Streptococcus pneumoniae*, invasive disease (Merlin disease code=04823, 04830); and salmonellosis (Merlin disease code=00300) caused by *Salmonella* species to report cases of meningitis caused by these species.

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## ! Meningococcal Disease

Merlin disease code=03630  
Case report form (CRF): [Active Bacterial Core Surveillance CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

Meningococcal disease manifests most commonly as meningitis or meningococemia that may progress rapidly to purpura fulminans, shock, and death. Other manifestations might be observed.

### Clinical criteria for case classification

Clinical purpura fulminans in the absence of a positive blood culture.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Isolation of *Neisseria meningitidis* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF], or less commonly, synovial, pleural, or pericardial fluid) or from purpuric lesions
- **Or** detection of *N. meningitidis*-specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., blood or CSF) using a polymerase chain reaction (PCR).

#### Presumptive:

Either of the following:

- Detection of *N. meningitidis* antigen in formalin-fixed tissue by immunohistochemistry (IHC)
- **Or** detection of *N. meningitidis* antigen in CSF by latex agglutination.

#### Supportive:

Gram-negative diplococci, not yet identified, from a normally sterile site (e.g., blood or CSF).

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A person with confirmatory laboratory evidence.

#### Probable:

A person with presumptive laboratory evidence.

#### Suspect:

Either of the following:

- Clinical purpura fulminans in the absence of a positive blood culture
- **Or** a person with supportive laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Positive antigen test results from urine or serum specimens are unreliable for diagnosing meningococcal disease. Sputum cultures are not considered confirmatory, as sputum is not obtained from a normally sterile site.

 **Isolates of *N. meningitidis* must be sent to the Bureau of Public Health Laboratories for determination of serogroup.**

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## Mercury Poisoning

Merlin disease code=94899  
Case report form (CRF): [Mercury Poisoning CRF](#)  
**PAPER CRF REQUIRED**

### Clinical criteria for case classification

The clinical presentation of mercury poisoning varies depending upon the form of mercury (elemental, organic or inorganic) as well as the route of exposure and the dose if ingested. Any organ system may be affected.

The signs and symptoms of acute exposure to mercury may vary depending on the form of mercury (elemental or inorganic). For elemental mercury, acute toxicity might result in fever, fatigue, and clinical signs of pneumonitis. For inorganic mercury, symptoms might include profuse vomiting and diarrhea that is often bloody, followed by hypovolemic shock, oliguric (decreased urine production) renal failure, and possibly death. Delayed toxicity symptoms (>1 month) are typical of organic mercury poisoning and usually involve the central nervous system. These symptoms might include paresthesias, headaches, ataxia, dysarthria (motor speech disorder), visual field constriction, blindness, and hearing impairment.

### Laboratory criteria for case classification

One or more of the following:

- $\geq 10$  micrograms per liter ( $\mu\text{g/L}$ ) of urine,
- **Or**  $\geq 10$  micrograms per liter ( $\mu\text{g/L}$ ) of whole blood,
- **Or**  $\geq 5$  micrograms per gram ( $\mu\text{g/g}$ ) of hair.

No definitive correlation exists between either blood or urine mercury levels or mercury toxicity. Urine mercury levels are not useful in evaluating organic mercury poisonings.

### Epidemiological criteria for case classification

Either of the following:

- A person with a high index of suspicion (patient's exposure history regarding location and time)
- **Or** a person who is epidemiologically linked to a confirmed mercury poisoning case.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

#### Probable:

A clinically compatible illness in a person with epidemiological criteria.

### Criteria to distinguish a new case from previous reports

Not applicable

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## ! Middle East Respiratory Syndrome (MERS)

Merlin disease code=07992

Case report form (CRF): [MERS Coronavirus Person Screening Form](#)

PAPER CRF REQUIRED

**This case definition is subject to change.** Please see the Surveillance and Investigation Guidance website ([www.Floridahealth.gov/SurveillanceInvestigationGuide](http://www.Floridahealth.gov/SurveillanceInvestigationGuide)) for the current case definition.

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# Mumps

Merlin disease code=07290  
Case report form (CRF): None  
**MERLIN EXTENDED DATA REQUIRED**

## Background

An illness with acute onset of unilateral or bilateral tender, self-limited swelling of the parotid or other salivary gland(s) lasting at least 2 days; acute illness characterized by a mumps-associated complication such as aseptic meningitis, encephalitis, hearing loss, orchitis, oophoritis, parotitis or other salivary gland swelling, mastitis, or pancreatitis.

## Clinical criteria for case classification

### Confirmatory:

One or more of the following:

- Acute parotitis lasting at least 2 days,
- **Or** other salivary gland swelling lasting at least 2 days,
- **Or** aseptic meningitis,
- **Or** encephalitis,
- **Or** hearing loss,
- **Or** orchitis,
- **Or** oophoritis,
- **Or** mastitis,
- **Or** pancreatitis.

### Presumptive:

One or more of the following:

- Acute parotitis lasting at least 2 days,
- **Or** other salivary gland swelling lasting at least 2 days,
- **Or** orchitis,
- **Or** oophoritis.

### Supportive:

One or more of the following:

- Parotitis,
- **Or** acute salivary gland swelling,
- **Or** orchitis,
- **Or** oophoritis.

## Laboratory criteria for case classification

### Confirmatory:

Either of the following:

- Isolation of mumps virus in cell culture from clinical specimen (e.g., blood, urine, oral swab)
- **Or** detection of mumps nucleic acid (e.g., standard or real-time polymerase chain reaction [PCR]).

### Presumptive:

Positive anti-mumps IgM antibody.

## Epidemiological criteria for case classification

A person who is epidemiologically linked to a confirmed or probable mumps case.

### Case classification

#### Confirmed:

A person with confirmatory clinical criteria and confirmatory laboratory evidence.

#### Probable:

Either of the following:

- A person with presumptive clinical criteria and presumptive laboratory evidence in the absence of a more likely diagnosis
- **Or** a person with presumptive clinical criteria and epidemiological criteria in the absence of a more likely diagnosis.

#### Suspect:

Either of the following:

- A person with confirmatory or presumptive laboratory evidence without clinical criteria
- **Or** a person with supportive clinical criteria without confirmatory or presumptive laboratory evidence in the absence of a more likely diagnosis.

## Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

#### Epidemiologic classification of internationally imported and U.S.-acquired cases

- **Internationally imported case:** An internationally imported case is defined as a case in which mumps results from exposure to mumps virus outside the U.S. as evidenced by at least some of the exposure period (12-25 days before onset of parotitis or other mumps-associated complications) occurring outside the U.S. and onset of parotitis or other mumps-associated complications within 25 days of entering the U.S. and no known exposure to mumps in the U.S. during that time. All other cases are considered U.S.-acquired cases.
- **U.S.-acquired case:** A U.S.-acquired case is defined as a case in which the patient had not been outside the U.S. during the 25 days before onset of parotitis or other mumps-associated complications or was known to have been exposed to mumps within the U.S.

#### **U.S.-acquired cases are subclassified into four mutually exclusive groups:**

- **Import-linked case:** Any case in a chain of transmission that is epidemiologically linked to an internationally imported case.
- **Imported-virus case:** A case for which an epidemiologic link to an internationally imported case was not identified but for which viral genetic evidence indicates an imported mumps genotype, i.e., a genotype that is not occurring within the U.S. in a pattern indicative of endemic transmission. An endemic genotype is the genotype of any mumps virus that occurs in an endemic chain of transmission (i.e., lasting  $\geq 12$  months). Any genotype that is found repeatedly in U.S.-acquired cases should be thoroughly investigated as a potential endemic genotype, especially if the cases are closely related in time or location.

- **Endemic case:** A case for which epidemiological or virological evidence indicates an endemic chain of transmission. Endemic transmission is defined as a chain of mumps virus transmission continuous for  $\geq 12$  months within the U.S.
- **Unknown source case:** A case for which an epidemiological or virological link to importation or to endemic transmission within the U.S. cannot be established after a thorough investigation. These cases must be carefully assessed epidemiologically to assure that they do not represent a sustained U.S.-acquired chain of transmission or an endemic chain of transmission within the U.S.

Internationally imported, import-linked, and imported-virus cases are considered collectively to be import-associated cases.

With previous contact with mumps virus either through vaccination (particularly with 2 doses) or natural infection, serum mumps IgM test results may be negative; IgG test results may be positive at initial blood draw and viral detection in RT-PCR or culture may have low yield. Therefore, mumps cases should not be ruled out by negative laboratory results. Serologic tests should be interpreted with caution, as false positive and false negative results are possible with IgM tests.

Currently, there is insufficient information to determine whether any mumps strains are endemic to the U.S. or to distinguish endemic from non-endemic strains.

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## Neurotoxic Shellfish Poisoning

Merlin disease code=98800  
Case report form (CRF): None  
**NO CRF REQUIRED**

### Clinical criteria for case classification

Onset is within a few minutes to a few hours after consumption of epidemiologically implicated shellfish (typically clams, mussels, oysters, whelks and certain gastropods). Symptoms include tingling and numbness of lips, mouth, fingers, and toes; muscular aches; ataxia, and dizziness and usually accompanied by diarrhea, vomiting and/or nausea. Symptoms sometimes include reversal of hot and cold sensations; pupil dilation; and respiratory distress. Illness is self-limited and generally milder than paralytic shellfish poisoning; some patients have required ICU support for respiratory distress. Duration is from a few hours to a few days.

### Laboratory criteria for case classification

Detection of toxin (brevetoxin) in epidemiologically implicated shellfish.

### Epidemiological criteria for case classification

Either of the following:

- A person who consumed shellfish with a positive laboratory finding (brevetoxin)
- **Or** a person who consumed shellfish from areas where other toxic shellfish have been found or where red tide is documented (shellfish beds closed in region by Florida Department of Agriculture and Consumer Services).

### Case classification

#### Confirmed:

A clinically compatible illness in a person with epidemiological criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Contact your [Regional Environmental Epidemiologist](#) for information.

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## Pertussis

Merlin disease code=03390  
Case report form (CRF): [Pertussis Surveillance Worksheet](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

- A. Acute cough illness of any duration.
- B. Cough illness lasting  $\geq 2$  weeks.
- C. One or more of the following signs and symptoms:
  - Paroxysms of coughing,
  - **Or** inspiratory "whoop",
  - **Or** posttussive vomiting,
  - **Or for infants <1 year old only:** apnea, with or without cyanosis.

### Laboratory criteria for case classification

- D. Isolation of *Bordetella pertussis* by culture from clinical specimen.
- E. Positive polymerase chain reaction (PCR) for *B. pertussis*.

### Epidemiological criteria for case classification

- F. A person who is epidemiologically linked to a confirmed pertussis case.
- G. A person who is epidemiologically linked to a PCR-confirmed probable infant pertussis case.

### Case classification

#### Confirmed:

One of the following:

- A person with an acute cough illness of any duration (A) with isolation of *B. pertussis* by culture from a clinical specimen (D),
- **Or** a person with a cough illness lasting  $\geq 2$  weeks (B) with one at least other symptom (C) and positive PCR for *B. pertussis* (E),
- **Or** a person with a cough illness lasting  $\geq 2$  weeks (B) with one at least other symptom (C) who is epidemiologically linked to a confirmed case (F).

#### Probable:

One of the following

- A person with a cough illness lasting  $\geq 2$  weeks (B) with at least one other symptom (C),
- **Or** a person with a cough illness lasting  $\geq 2$  weeks (B) with at least one other symptom (C) who is epidemiologically linked to a PCR-confirmed probable infant case (G),
- **Or for infants <1 year old only:** An infant with an acute cough illness of any duration (A) with at least one other symptom (C) and positive PCR for *B. pertussis* (E),
- **Or for infants <1 year old only:** An infant with an acute cough illness of any duration (A) with at least one other symptom (C) who is epidemiologically linked to a confirmed case (F),
- **Or for infants <1 year old only:** An infant with an acute cough illness of any duration (A) with at least one other symptom (C) who is epidemiologically linked to a PCR-confirmed probable infant case (G).

**Criteria to distinguish a new case from previous reports**

Not applicable.

**Comments**

The clinical criteria above are appropriate for endemic or sporadic cases. In outbreak settings, a case may be defined as a cough illness lasting  $\geq 2$  weeks (as reported by a health professional). Because direct fluorescent antibody testing of nasopharyngeal secretions has been demonstrated in some studies to have low sensitivity and variable specificity,<sup>1,2</sup> such testing should not be relied on as a criterion for laboratory confirmation. Serologic testing (IgM and IgG) for pertussis is available in some areas but is not standardized and, therefore, should not be relied on as a criterion for laboratory confirmation.

1. Broome CV, Fraser DW, English WJ. Pertussis--diagnostic methods and surveillance. In: Manclark CR, Hill JC, eds. International Symposium on Pertussis. Bethesda, MD: US Department of Health, Education, and Welfare, Public Health Service, National Institutes of Health, 1979; DHEW publication no. (NIH)79-1830:19-22.
2. Halperin SA, Bortolussi R, Wort AJ. Evaluation of culture, immunofluorescence, and serology for the diagnosis of pertussis. *J Clin Microbiol* 1989;27:752-7.

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## Pesticide-Related Illness and Injury, Acute

Merlin disease code=09894

Case report form (CRF): [Pesticide Incident Monitoring CRF](#)

**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

Any acute adverse health effect resulting from exposure to a pesticide product (defined under the Federal Insecticide Fungicide and Rodenticide Act [FIFRA<sup>1</sup>] with the exception that disinfectants are excluded) including health effects due to an unpleasant odor, injury from explosion of a product, inhalation of smoke from a burning product, and allergic reaction.

Symptoms typically involve one or more of the following:

- Systemic signs or symptoms (including respiratory, gastrointestinal, allergic, and neurological signs/symptoms),
- **Or** Dermatologic lesions,
- **Or** Ocular lesions.

### Laboratory criteria for case classification

One or more of the following:

- Detection of pesticide, pesticide metabolite(s), or toxic response to pesticide in clinical specimen (e.g., blood, urine), which may include one or more of the following:
  - Detection above laboratory reference range of pesticide or pesticide metabolite(s) in clinical specimen,
  - **Or** detection of biochemical response to pesticide in clinical specimen,
  - **Or** at least 20% decrease in plasma or red blood cell (RBC) cholinesterase (ChE) levels relative to non-exposed baseline blood specimens,
  - **Or** plasma or RBC ChE level >15% below the laboratory reference range in the absence of baseline specimens;
- **Or** detection of pesticide in environmental sample (e.g., foliage residue, analysis of suspect liquid);
- **Or** detection of pesticide on clothing or equipment used by the case subject.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

Provided below (criteria A, B, and C). Scores are either 1 or 2, and are assigned based on all available evidence. The classification matrix follows the criteria section (Table 1). The matrix provides the case classification categories and the criteria scores needed to place the case into a specific category.

Confirmed and probable cases (see the classification matrix) are reportable. Suspect (i.e., possible and suspicious) cases are only reportable for only occupationally (work-related) exposed or cluster (two or more related cases) associated cases.



A. Documentation of Pesticide Exposure:

A1. Laboratory, clinical, or environmental evidence corroborates exposure (at least one of the following must be satisfied to receive a score of A1):

- Analytical results from foliage residue, clothing residue, air, soil, water, or biologic samples.
- Observation of residue and/or contamination (including damage to plant material from herbicides) by a trained professional<sup>2</sup>.
- Biologic evidence of exposure (e.g., response to administration of an antidote such as 2-PAM, Vitamin K, or repeated doses of atropine).
- Documentation by a licensed health care professional of a characteristic eye injury or dermatological effects at the site of direct exposure to pesticide product.
- Clinical description by a licensed health care professional of two or more post-exposure health effects (at least one of which is a sign) characteristic for the pesticide.

A2. Evidence of exposure based solely upon written or verbal report (at least one of the following must be satisfied to receive a score of A2):

- Report by case.
- Report by witness.
- Written records of application.
- Observation of residue and/or contamination (including damage to plant material from herbicides) by someone other than a trained professional.
- Other evidence suggesting that exposure occurred.

B. Documentation of Adverse Health Effect

B1. Two or more new post-exposure abnormal signs and/or test/laboratory findings reported by a licensed health care professional (this is B1 score).

B2. At least one of the following must be satisfied to receive a score of B2:

- Two or more new post-exposure abnormal signs reported (when new post-exposure signs and test/laboratory findings are insufficient to satisfy a B1 score, they can be used in lieu of symptoms towards satisfying a B2 score).
- Any new illness or exacerbation of pre-existing illness diagnosed by a licensed physician, but information on signs, symptoms, and/or test findings are not available or are insufficient for a B.1 or B.2. score.

C. Evidence Supporting a Causal Relationship Between Pesticide Exposure and Health Effects

C1. Causal relationship between pesticide exposure and health effects exists (at least one of the following must be satisfied to receive a score of C1):

- Health effects (in criteria B) are characteristic for the pesticide and the temporal relationship between exposure and health effects is plausible.
- Health effects (in criteria B) are consistent with an exposure-health effect relationship based upon the known toxicology (i.e., exposure dose, symptoms, and temporal relationship) of the putative agent from commonly available toxicology texts, government publications, information supplied by the manufacturer, or two or more case series or positive epidemiologic studies published in peer-review literature.

C2. Insufficient toxicological information is available to determine causal relationship between exposure and health effects. This includes circumstances where minimal human health effects

data are available, or where there are less than two published case series or positive epidemiologic studies linking health effects to exposure to the particular pesticide product/ingredient or class of pesticides (this is C2 score).

Table 1 - Case Classification Matrix\*

CLASSIFICATION CATEGORIES					
CLASSIFICATION CRITERIA	Confirmed Case	Probable Case		Suspect Case	
				Possible Case	Suspicious Case
A. Exposure	A.1	A.1	A.2	A.2	A.1 or A.2
B. Health Effects	B.1	B.2	B.1	B.2	B.1 or B.2
C. Causal Relationship	C.1	C.1	C.1	C.1	C.2

\*Suspect (i.e., possible and suspicious) cases which are not part of a cluster (two or more related cases) or occupationally related pesticide exposures (typically limited household exposures) no longer need to be reported.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

The Florida Poison Control Network (800-222-1222) can provide emergency information to physicians and the public. For information regarding Florida pesticide laws and regulations, contact the Florida Department of Agriculture and Consumer Services, Bureau of Compliance Monitoring at 850-488-3314. For information regarding this case definition, contact the Bureau of Epidemiology.

For information concerning regulation and use of pesticides, contact the U.S. EPA's Office of Pesticide Programs at 703-305-5336. For information concerning Florida pesticide laws and regulations, contact the Florida Department of Agriculture and Consumer Services, Bureau of Pesticides at 850-617-7917.

1. Pesticides are defined under FIFRA as any substance or mixture of substances intended to prevent, destroy, repel or mitigate insects, rodents, nematodes, fungi, weeds, microorganisms, or any other form of life declared to be a pest by the Administrator of the U.S. EPA and any substance or mixture of substance intended for use as a plant regulator, defoliant, or desiccant. Pesticides include herbicides, insecticides, rodenticides, fungicides, disinfectants, wood treatment products, growth regulators, insect repellents, etc.
2. Trained professional may be a plant pathologist, agricultural inspector, agricultural extension agent, industrial hygienist, or any other licensed or academically trained specialist with expertise in plant pathology and/or environmental effects of pesticides. A licensed pesticide applicator may also be considered a trained professional.

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## ! Plague

Merlin disease code=02000 Plague, Bubonic  
 Merlin disease code=02050 Plague, Pneumonic  
 Case report form (CRF): [Plague Case Investigation Report](#)  
**CONTACT BUREAU OF EPIDEMIOLOGY**

### Clinical criteria for case classification

Plague is transmitted to humans by fleas or by direct exposure to infected tissues or respiratory droplets. The disease is characterized by fever, chills, headache, malaise, prostration, and leukocytosis.

The disease manifests in one or more of the following principal clinical forms:

- Regional lymphadenitis (bubonic plague).
- Septicemia without an evident bubo (septicemic plague).
- Plague pneumonia, resulting from hematogenous spread in bubonic or septicemic cases (secondary pneumonic plague) or inhalation of infectious droplets (primary pneumonic plague).
- Pharyngitis and cervical lymphadenitis resulting from exposure to larger infectious droplets or ingestion of infected tissues (pharyngeal plague).

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Isolation of *Y. pestis* from a clinical specimen
- **Or** fourfold or greater change in serum antibody titer to *Y. pestis* F1 antigen.

#### Presumptive:

Either of the following:

- Detection of F1 antigen in a clinical specimen by fluorescent assay
- **Or** elevated serum antibody titer(s) to *Yersinia pestis* fraction 1 (F1) antigen (without documented fourfold or greater change) in a patient with no history of plague vaccination.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

#### Probable:

A clinically compatible illness in a person with presumptive laboratory evidence.

#### Suspect:

A clinically compatible illness in a person without presumptive or confirmatory laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

- ✉ **Isolates or specimens from any case or suspect case must be sent to the Bureau of Public Health Laboratories for confirmation. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## ! Poliomyelitis, Nonparalytic

Merlin disease code=04520  
Case report form (CRF): None  
CONTACT BUREAU OF EPIDEMIOLOGY

### Background

Most poliovirus infections are asymptomatic or cause mild febrile disease. Poliovirus infections occasionally cause aseptic meningitis and one out of 200 infections from poliovirus type 1 results in paralytic poliomyelitis, characterized by acute onset of flaccid paralysis that is typically asymmetric and associated with a prodromal fever. Poliovirus is spread through fecal material, oral secretions, some aerosols, and fomites.

### Clinical criteria for case classification

Not applicable.

### Laboratory criteria for case classification

#### Confirmatory:

Poliovirus isolate identified in an appropriate clinical specimen (e.g., stool, cerebrospinal fluid, oropharyngeal secretions), with confirmatory typing and sequencing performed by the CDC Poliovirus Laboratory, as needed.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A person with laboratory evidence.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

This case definition applies only to poliovirus infections found in asymptomatic persons or those with mild, nonparalytic disease (e.g., those with a nonspecific febrile illness, diarrhea, or aseptic meningitis). Isolation of *polioviruses* from persons with acute paralytic poliomyelitis should continue to be reported as “paralytic poliomyelitis 04590”.

In 2005, a vaccine-derived poliovirus (VDPV) type 1 was identified in a stool specimen obtained from an immunodeficient Amish infant and, subsequently, from 4 other children in 2 other families in the infant’s central Minnesota community<sup>1</sup>. Epidemiological and laboratory investigations determined that the VDPV had been introduced into the community about 3 months before the infant was identified and that there had been virus circulation in the community. Investigations in other communities in Minnesota and nearby states and Canada did not identify any additional infections or any cases of paralytic poliomyelitis.

Although oral poliovirus vaccine (OPV) is still widely used in most countries, inactivated poliovirus vaccine (IPV) replaced OPV in the U.S. in 2002<sup>2</sup>. Therefore, the Minnesota poliovirus infections were the result of importation of a vaccine-derived poliovirus into the U.S. and the first time a VDPV has

been shown to circulate in a community in a developed country. Circulating VDPVs commonly revert to a wild poliovirus phenotype and have increased transmissibility and high risk for paralytic disease; they have recently caused polio infections and outbreaks of paralytic poliomyelitis in several countries<sup>3</sup>.

Contacts between persons in communities with low polio vaccination coverage pose the potential for transmission of polioviruses and outbreaks of paralytic poliomyelitis.

Because of the success of the routine childhood immunization program in the U.S. and the Global Polio Eradication Initiative, polio has been eliminated in the Americas since 1991. Because the U.S. has used IPV exclusively since 2000, the occurrence of any poliovirus infections in the U.S. is a cause for concern. Reflecting the global concern for poliovirus importations into previously polio-free countries, the World Health Assembly, W.H.O., has added circulating poliovirus to the notifiable events in the International Health Regulations (IHR).<sup>4</sup>

1. CDC. Poliovirus infections in four unvaccinated children – Minnesota, August-October 2005. *MMWR*; 54(41); 1053–1055.
2. CDC. Poliomyelitis prevention in the U.S. Updated recommendations from the Advisory Committee on Immunization Practices (ACIP). *MMWR* 2000;49(No. RR-5).
3. Kew OM, Sutter RW, de Gourville EM, Dowdle WR, Pallansch MA. Vaccine-derived polioviruses and the endgame strategy for global polio eradication. *Ann Rev Microbiol* 2005;59;587-635.
4. CDC. Brief report. Conclusions and recommendations of the Advisory Committee on Poliomyelitis Eradication — Geneva, Switzerland, October 2005. *MMWR* 2005;54;1186-8.

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## **! Poliomyelitis, Paralytic**

Merlin disease code=04590  
Case report form (CRF): None  
**CONTACT BUREAU OF EPIDEMIOLOGY**

### **Clinical criteria for case classification**

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.

### **Laboratory criteria for case classification**

Not applicable.

### **Epidemiological criteria for case classification**

Not applicable.

### **Case classification**

#### Confirmed:

A clinically compatible illness in which the patient has a neurologic deficit 60 days after onset of initial symptoms, has died, or has unknown follow-up status.

#### Probable:

A clinically compatible illness.

### **Criteria to distinguish a new case from previous reports**

Not applicable.

### **Comments**

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## Psittacosis (Ornithosis)

Merlin disease code=07390

Case report form (CRF): [Psittacosis Human Case Surveillance Report](#)

PAPER CRF REQUIRED

### Clinical criteria for case classification

An illness characterized by fever, chills, headache, photophobia, cough, and myalgia.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Isolation of *Chlamydia psittaci* from respiratory secretions
- **Or** fourfold or greater increase in antibody against *C. psittaci* by complement fixation (CF) or microimmunofluorescence (MIF) to a reciprocal titer of  $\geq 32$  between paired acute and convalescent phase serum specimens obtained at least 2-4 weeks apart.

#### Supportive:

Either of the following:

- Presence of IgM antibody against *C. psittaci* by MIF greater or equal 1:32 in at least one serum specimen obtained after onset of symptoms
- **Or** detection of *C. psittaci* DNA in a respiratory specimen (e.g. sputum, pleural fluid or tissue) via amplification of a specific target by polymerase chain reaction (PCR).

### Epidemiological criteria for case classification

Epidemiologic risk factors include exposure to a *C. psittaci* confirmed infected bird's feces or secretions, exposure to same dried bird feces or secretions as a confirmed case, and bird owners, pet shop employees, veterinarians, poultry plant workers and others exposed to birds and their secretions. Cultures of *C. psittaci* pose an aerosol exposure risk to laboratory workers. Follow up should be conducted with the laboratory to identify any potential lab exposures.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

#### Probable:

Either of the following:

- A clinically compatible illness in a person with supportive laboratory evidence
- **Or** a clinically compatible illness in a person who is epidemiologically linked to a confirmed case.

#### Suspect:

Clinically compatible illness in a person with history of close contact with a *C. psittaci* positive bird or its feces or secretions within 2 weeks of symptom onset and no alternative agreed upon diagnosis.

### Criteria to distinguish a new case from previous reports

Not applicable.



## Comments

The serologic findings by CF also may occur as a result of infection with *Chlamydia pneumoniae* or *Chlamydia trachomatis*. Results from MIF and CF should be interpreted with caution due to possible cross reactivity with *C. pneumoniae* and *C. trachomatis*. To increase the reliability of test results, acute- and convalescent-phase serum specimens should be analyzed at the same time in the same laboratory. A real-time polymerase chain reaction (PCR) has been developed and validated in avian specimens but has not yet been validated for use in humans.

Mitchell SL, BJ Wolff, WL Thacker, PG Ciembor, CR Gregory, KDE Everett, BW Ritchie, JM Winchell 2008. Genotyping of *Chlamydophila psittaci* by real-time PCR and high resolution melt analysis. J. Clin. Microbiol. 47:175-181.

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation. Specimens will be forwarded on to CDC for testing in outbreak settings. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## Q Fever, Acute (*Coxiella burnetii*)

Merlin disease code=08301  
Case report form (CRF): [Q Fever CRF](#)  
**PAPER CRF REQUIRED**

### Background

Acute fever usually accompanied by rigors, myalgia, malaise, and a severe retrobulbar headache. Fatigue, night-sweats, dyspnea, confusion, nausea, diarrhea, abdominal pain, vomiting, non-productive cough, and chest pain have also been reported. Severe disease can include acute hepatitis, atypical pneumonia with abnormal radiograph, and meningoencephalitis. Pregnant women are at risk for fetal death and abortion. Clinical laboratory findings may include elevated liver enzyme levels, leukocytosis, and thrombocytopenia. Asymptomatic infections may also occur.

### Clinical criteria for case classification

Both of the following:

- Acute fever
- **And** one or more of the following:
  - Rigors,
  - **Or** severe retrobulbar headache,
  - **Or** acute hepatitis,
  - **Or** pneumonia,
  - **Or** elevated liver enzyme levels.

### Laboratory criteria for case classification

#### Confirmatory:

One or more of the following:

- Serological evidence of a fourfold change in IgG-specific antibody titer to *Coxiella burnetii* phase II antigen by indirect immunofluorescence assay (IFA) between paired serum specimens, (CDC suggests one taken during the first week of illness and a second 3-6 weeks later, antibody titers to phase I antigen may be elevated or rise as well),
- **Or** detection of *C. burnetii* DNA in a clinical specimen via amplification of a specific target by polymerase chain reaction (PCR),
- **Or** demonstration of *C. burnetii* in a clinical specimen by immunohistochemistry (IHC),
- **Or** isolation of *C. burnetii* from a clinical specimen by culture.

#### Presumptive:

Either of the following:

- Single supportive IFA IgG titer of  $\geq 1:128$  to phase II antigen (phase I titers may be elevated as well)
- **Or** serologic evidence of elevated phase II IgG or IgM antibody reactive with *C. burnetii* antigen by enzyme immunoassay (EIA), dot-EIA, or latex agglutination.

Note: For acute testing, CDC uses in-house IFA IgG testing (cutoff of  $\geq 1:128$ ), preferring simultaneous testing of paired specimens, and does not use IgM results for routine diagnostic testing.

### Epidemiological criteria for case classification

Not applicable.

## Case classification

### Confirmed:

A person with confirmatory laboratory evidence that either meets clinical case criteria or is epidemiologically linked to a case with laboratory evidence.

### Probable:

A clinically compatible acute illness that has supportive presumptive evidence for past or present acute disease (antibody to Phase II antigen) but does not have confirmatory laboratory evidence.


## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

Serologic profiles of pregnant women infected with acute Q fever during gestation may progress frequently and rapidly to those characteristic of chronic infection.

Exposure is usually via aerosol, is broadly interpreted, and may be unknown, but often includes the presence of goats, sheep, or other livestock, especially during periods of parturition. Direct contact with animals is not required, and variable incubation periods may be dose dependent.

 **Acute and convalescent sera from reported and suspect cases must be sent to the Bureau of Public Health Laboratories. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## Q Fever, Chronic (*Coxiella burnetii*)

Merlin disease code=08302  
Case report form (CRF): [Q Fever CRF](#)  
PAPER CRF REQUIRED

### Background

Infection that persists for more than 6 months. Potentially fatal endocarditis may evolve months to years after acute infection, particularly in persons with underlying valvular disease. Infections of aneurysms and vascular prostheses have been reported. Immunocompromised individuals are particularly susceptible. Rare cases of chronic hepatitis without endocarditis, osteomyelitis, osteoarthritis, and pneumonitis have been described.

### Clinical criteria for case classification

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.

### Laboratory criteria for case classification

#### Confirmatory:

One or more of the following:

- Serological evidence of IgG antibody to *Coxiella burnetii* phase I antigen  $\geq 1:800$  by indirect immunofluorescence assay (IFA) (while phase II IgG titer will be elevated as well; phase I titer is higher than the phase II titer),
- **Or** detection of *C. burnetii* DNA in a clinical specimen via amplification of a specific target by polymerase chain reaction (PCR),
- **Or** demonstration of *C. burnetii* antigen in a clinical specimen by immunohistochemistry (IHC),
- **Or** isolation of *C. burnetii* from a clinical specimen by culture.

#### Presumptive:

Antibody titer to *C. burnetii* phase I IgG antigen  $\geq 1:128$  and  $< 1:800$  by IFA.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible chronic illness with confirmatory laboratory evidence for chronic infection.

#### Probable:

A clinically compatible chronic illness with presumptive laboratory evidence for past or present chronic infection (antibody to Phase I antigen).

### Criteria to distinguish a new case from previous reports


Not applicable.

## Comments

Specimens from suspected chronic patients should be evaluated for IgG titers to both phase I and phase II antigens. Current commercially available EIA tests (which test only for phase 2) are not quantitative, cannot be used to evaluate changes in antibody titer, and hence are not useful for serological confirmation. IgM tests are not strongly supported for use in serodiagnosis of acute disease, as the response may not be specific for the agent (resulting in false positives) and the IgM response may be persistent. Complement fixation (CF) tests and other older test methods are neither readily available nor commonly used.

Serologic test results must be interpreted with caution, because baseline antibodies acquired as a result of historical exposure to Q fever may exist, especially in rural and farming areas.

Exposure is usually via aerosol, is broadly interpreted, and may be unknown (especially for chronic infection), but often includes the presence of goats, sheep, or other livestock, especially during periods of parturition. Direct contact with animals is not required, and variable incubation periods may be dose dependent.

 **Acute and convalescent sera from reported and suspect cases must be acquired and sent to the Bureau of Public Health Laboratories. This condition has been identified as a potential bioterrorism agent by the CDC.**

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 **Rabies, Animal**

Merlin disease code=07102  
Case report form (CRF): [Animal Bite Report](#)  
**PAPER CRF REQUIRED**

**Clinical criteria for case classification**

Not applicable.

**Laboratory criteria for case classification**

Either of the following:

- Isolation of rabies virus (in cell culture or in a laboratory animal)
- **Or** a positive direct fluorescent antibody test (preferably performed on central nervous system tissue).

**Epidemiological criteria for case classification**

Not applicable.

**Case classification**Confirmed:

A case that is laboratory-confirmed in an animal.

**Criteria to distinguish a new case from previous reports**

Not applicable.

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## Rabies, Human

Merlin disease code=07100  
Case report form (CRF): None  
**CONTACT BUREAU OF EPIDEMIOLOGY**

### **Clinical criteria for case classification**

Rabies is an acute encephalomyelitis that almost always progresses to coma or death within 10 days after the first symptom.

### **Laboratory criteria for case classification**

One or more of the following:

- Detection by direct fluorescent antibody of viral antigens in a clinical specimen (preferably the brain or the nerves surrounding hair follicles in the nape of the neck),
- **Or** isolation (in cell culture or in a laboratory animal) of rabies virus from saliva, cerebrospinal fluid (CSF), or central nervous system tissue,
- **Or** identification of a rabies-neutralizing antibody titer  $\geq 5$  (complete neutralization) in the serum or CSF of an unvaccinated person.

### **Epidemiological criteria for case classification**

Not applicable.

### **Case classification**

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

### **Criteria to distinguish a new case from previous reports**

Not applicable.

### **Comments**

Laboratory confirmation by all of the above methods is strongly recommended. CDC requests the following specimens: CSF, serum, or saliva (not sputum), biopsy of skin from the back of the neck just above hairline. Neck biopsy and saliva specimens should be sent packed in dry ice.

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## ! Rabies, Possible Exposure

Merlin disease code=07101

Case report form (CRF): [Confidential Rabies Post Exposure Prophylaxis](#)

**MERLIN EXTENDED DATA REQUIRED**

### Background

A rabies exposure is considered any bite, scratch, or other contact in which saliva or nervous tissue of a suspect or known rabid animal enters an open or fresh wound, or comes in contact with mucous membranes by entering the eye, mouth, or nose of another animal or person

### Clinical criteria for case classification

Not applicable.

### Laboratory criteria for case classification

Not applicable.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

Bite or other significant exposure of a human by a confirmed or suspected rabid animal, including non-human primates.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Only bites or other exposures where rabies post-exposure prophylaxis (PEP) is recommended should be reported as rabies, possible exposure (Merlin disease code=07101). Do not report animal bites where PEP is not recommended. However, please report the following exceptions: if PEP is not recommended but the patient still requests to receive PEP, and if you are unable to determine whether PEP was recommended for a particular case. For these exceptions, please use the Case Notes in Merlin to explain the particular situation.

All *monkey* bites, including those where PEP is not recommended, should be reported as herpes B virus, possible exposure (Merlin disease code=07103).

The Rabies Prevention and Control in Florida Guidebook is updated annually and should be considered the most up-to-date resource for rabies related questions. To locate the guidebooks, please visit the following website: [www.floridahealth.gov/diseases-and-conditions/rabies/index.html](http://www.floridahealth.gov/diseases-and-conditions/rabies/index.html).

Page 34 includes the definition and interpretation of what constitutes a rabies exposure.

Page 35 includes information regarding risk assessment of potential exposures.

Page 37 provides a patient management chart with a bulleted summary.

Additional information can be found on the website: [www.floridahealth.gov/diseases-and-conditions/rabies/index.html](http://www.floridahealth.gov/diseases-and-conditions/rabies/index.html).

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## ! Ricin Toxin Poisoning

Merlin disease code=98830  
Case report form (CRF): None  
**NO CRF REQUIRED**

### Clinical criteria for case classification

- Inhalation: Inhalation of ricin typically leads to cough and respiratory distress followed by pulmonary edema, respiratory failure, and multi-system organ dysfunction. Weakness and influenza-like symptoms of fever, myalgia, and arthralgia might also be reported.
- Ingestion: Ingestion of ricin would cause internal bleeding of the stomach and intestines that would lead to vomiting and bloody diarrhea. This may be followed by hypovolemic shock and multisystem organ dysfunction. Weakness and influenza-like symptoms, fever, myalgia, and arthralgia, might also be reported.
- Injection (data are limited): Low doses of intravenous ricin may result in influenza-like symptoms of fatigue and myalgia. Pain at the injection site. Depending on dose, may progress to multi-organ failure.
- Skin and eye exposure: Ricin is unlikely to be absorbed through skin. Contact with ricin powders or products may cause redness and pain of the skin and eyes.
- Death from ricin poisoning could take place depending on the route of exposure (inhalation, ingestion, or injection) and the dose received.

### Laboratory criteria for case classification

#### Environmental:

Detection of ricin in environmental samples.

#### Biologic:

Detection of ricinine in urine specimens.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

#### Probable:

A clinically compatible illness in a person with either a high index of suspicion (reliable intelligence or patient history) for ricin exposure or an epidemiologic link to a case with laboratory evidence.

A case can be confirmed in the absence of laboratory testing if either a predominant amount of clinical and nonspecific laboratory evidence of a particular chemical is present or if there is 100% certainty of the etiology of the agent.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

- ☒ **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## Rocky Mountain Spotted Fever and Spotted Fever Rickettsiosis

Merlin disease code=08309

Case report form (CRF): [Tick-Borne Rickettsial Disease CRF](#)

**MERLIN EXTENDED DATA REQUIRED**

### Background

Spotted fever rickettsioses are a group of tick-borne infections caused by some members of the genus *Rickettsia*. Rocky Mountain spotted fever (RMSF) is an illness caused by *Rickettsia rickettsii*, a bacterial pathogen transmitted to humans through contact with ticks. *Dermacentor* species of ticks are most commonly associated with infection, including *Dermacentor variabilis* (the American dog tick), *Dermacentor andersoni* (the Rocky Mountain wood tick), and more recently *Rhiphicephalus sanguineus* (the brown dog tick). Disease onset occurs 3-14 days following a tick bite. Age-specific illness is highest for children and older adults. Illness is characterized by acute onset of fever, and may be accompanied by headache, malaise, myalgia, nausea/vomiting, or neurologic signs; a macular or maculopapular rash appears 4-7 days following onset in many (~80%) patients, often present on the palms and soles. RMSF may be fatal in as many as 20% of untreated cases, and severe, fulminant disease can occur. In addition to RMSF, human illness associated with other spotted fever group *Rickettsia* species, including infection with *Rickettsia parkeri* (associated with *Amblyomma maculatum* ticks), *Rickettsia amblyommi*, and *Rickettsia africae* have also been reported. In these patients, clinical presentation appears similar to, but may be milder than, RMSF; the presence of an eschar at the site of tick attachment is useful for differentiating between *R. parkeri* or *R. africae* and most other spotted fever rickettsioses from *R. rickettsii*. Serologic tests for RMSF can cross-react with spotted fever *Rickettsia* (SFR) species.

### Clinical criteria for case classification

Any reported fever or chills **and** one or more of the following: rash, eschar, headache, muscle aches, anemia, thrombocytopenia, or any hepatic transaminase elevation.

### Laboratory criteria for case classification

#### Confirmatory:

One or more of the following:

- Serological evidence of a fourfold change in IgG-specific antibody titer reactive with *Rickettsia rickettsii* or other SFR antigen by indirect immunofluorescence assay (IFA) between paired serum specimens (one taken in the first week of illness and a second 2-4 weeks later),
- **Or** detection of *R. rickettsii* or other SFR DNA in a clinical specimen via amplification of a specific target by polymerase chain reaction (PCR),
- **Or** demonstration of SFR antigen in a biopsy or autopsy specimen by immunohistochemistry (IHC),
- **Or** isolation of *R. rickettsii* or other SFR from a clinical specimen in cell culture.

#### Presumptive:

Single elevated IgG antibody reactive with *R. rickettsii* or other SFR antigen by IFA, enzyme immunoassay (EIA), dot-EIA, or latex agglutination.

### Epidemiological criteria for case classification

Exposure is defined as having been in potential tick habitats within the past 14 days before onset of symptoms. Occupation and travel history should be recorded if relevant to exposure. A history of a tick bite is not required.

## Case classification

### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

### Probable:

A clinically compatible illness in a person with presumptive laboratory evidence.

### Suspect:

A person with presumptive laboratory evidence but no clinical information available.

## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

Acute illness is best detected by PCR and IHC methods in skin biopsy specimens, and occasionally by PCR in appropriate whole blood specimens taken during the first week of illness, prior to antibiotic treatment. Serology can also be employed for detection, however an antibody response may not be detectable in initial specimens, and paired acute and convalescent specimens are essential for confirmation.

Current commercially available EIA tests are not quantitative, cannot be used to evaluate changes in antibody titer, and hence are not useful for serological confirmation. IgM tests are not strongly supported for use in serodiagnosis of acute disease, as the response may not be specific for the agent (resulting in false positives) and the IgM response may be persistent. Complement fixation (CF) tests and other older test methods are neither readily available nor commonly used. CDC uses in-house IFA IgG testing (cutoff of  $\geq 1:64$ ), preferring simultaneous testing of paired specimens, and does not use IgM results for routine diagnostic testing.

Recently, a growing number of case reports have included commercial laboratory results as supportive evidence. For example, the previous case definitions have used the word “antibody.” A review of testing protocols and reagents distributed to the state laboratories reveal that these existing tests were specific for IgG-class immunoglobulins. With the increased availability of IgM testing at commercial laboratories, it becomes necessary to clarify the traditional meaning of the word “antibody” as used in all previous definitions and routinely used by rickettsial laboratories. The use of IgM is less supported by scientific evidence, and actually is complicated by false negatives when IgG is present and false positives when rheumatoid factor or cross-reactive, non-rickettsial, antibodies are present. Thus, IgM testing cannot be recommended for confirmation of cases at this time.

 **Acute and convalescent sera from reported cases must be sent to the Bureau of Public Health Laboratories for confirmatory testing.**

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## ! Rubella

Merlin disease code=05690  
 Case report form (CRF): [Rubella Surveillance Worksheet](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

An illness that has all the following characteristics without a more compelling diagnosis:

- Acute onset of generalized maculopapular rash,
- **And** temperature greater than 99.0 F (greater than 37.2 C), if measured,
- **And** arthralgia/arthritis, lymphadenopathy, or conjunctivitis.

### Laboratory criteria for case classification

One or more of the following:

- Isolation of rubella virus,
- **Or** detection of rubella virus-specific nucleic acid by polymerase chain reaction (PCR),
- **Or** positive serologic test for rubella IgM antibody,<sup>1,2</sup>
- **Or** IgG seroconversion<sup>1</sup> or a significant rise between acute- and convalescent-phase titers in serum rubella IgG antibody level by any standard serologic assay.

<sup>1</sup> Not explained by MMR vaccination during the previous 6-45 days.

<sup>2</sup> Not otherwise ruled out by a more specific testing in a public health laboratory.

### Epidemiological criteria for case classification

A person who is epidemiologically linked to a rubella case with laboratory evidence.

### Case classification

#### Confirmed:

Either of the following:

- A person with laboratory evidence, excluding asymptomatic pregnant women who have no risk factors for disease
- **Or** a clinically compatible illness in a person with epidemiologic criteria.

#### Probable:

In the absence of another known cause, a clinically compatible illness in a person who is not epidemiologically linked to a case with laboratory evidence, and has noncontributory or no serologic or virologic testing.

#### Suspect:

In the absence of another known cause, any generalized rash illness of acute onset that does not meet the criteria for probable or confirmed rubella.

### Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

Pregnant women that are rubella IgM positive without compatible symptoms or risk factors for rubella infection should **not** be reported as a rubella case. Confirmatory testing at BPHL for these situations is not recommended. If such a case is entered in Merlin, it should be submitted with a dx status of “not a case”.

### Epidemiologic classification of internationally imported and U.S.-acquired cases

- **Internationally imported case:** An internationally imported case is defined as a case in which rubella results from exposure to rubella virus outside the U.S. as evidenced by at least some of the exposure period (12–23 days before rash onset) occurring outside the U.S. and the onset of rash within 23 days of entering the U.S. and no known exposure to rubella in the U.S. during that time. All other cases are considered U.S.-acquired cases.
- **U.S.-acquired case:** A U.S.-acquired case is defined as a case in which the patient had not been outside the U.S. during the 23 days before rash onset or was known to have been exposed to rubella within the U.S.
  - U.S.-acquired cases are subclassified into four mutually exclusive groups:**
    - **Import-linked case:** Any case in a chain of transmission that is epidemiologically linked to an internationally imported case.
    - **Imported-virus case:** A case for which an epidemiologic link to an internationally imported case was not identified but for which viral genetic evidence indicates an imported rubella genotype, i.e., a genotype that is not occurring within the U.S. in a pattern indicative of endemic transmission. An endemic genotype is the genotype of any rubella virus that occurs in an endemic chain of transmission (i.e., lasting  $\geq 12$  months). Any genotype that is found repeatedly in U.S.-acquired cases should be thoroughly investigated as a potential endemic genotype, especially if the cases are closely related in time or location.
    - **Endemic case:** A case for which epidemiological or virological evidence indicates an endemic chain of transmission. Endemic transmission is defined as a chain of rubella virus transmission continuous for  $\geq 12$  months within the U.S.
    - **Unknown source case:** A case for which an epidemiological or virological link to importation or to endemic transmission within the U.S. cannot be established after a thorough investigation. These cases must be carefully assessed epidemiologically to assure that they do not represent a sustained U.S.-acquired chain of transmission or an endemic chain of transmission within the U.S.

Serum rubella IgM test results that are false positives have been reported in persons with other viral infections (e.g., acute infection with Epstein-Barr virus [infectious mononucleosis], recent cytomegalovirus infection, and parvovirus infection) or in the presence of rheumatoid factor. Patients who have laboratory evidence of recent measles infection are excluded.

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## ! Rubella, Congenital Syndrome

Merlin disease code=77100

Case report form (CRF): [Congenital Rubella Syndrome CRF](#)

**PAPER CRF REQUIRED**

### Clinical criteria for case classification

An illness usually manifesting in infancy resulting from rubella infection in utero and characterized by signs or symptoms from the following categories:

- Cataracts/congenital glaucoma, congenital heart disease (most commonly patent ductus arteriosus, or peripheral pulmonary artery stenosis), loss of hearing, pigmentary retinopathy.
- Purpura, splenomegaly, jaundice, microcephaly, mental retardation, meningoencephalitis, radiolucent bone disease.

### Laboratory criteria for case classification

One or more of the following:

- Isolation of rubella virus, **or**
- **Or** demonstration of rubella-specific IgM antibody,
- **Or** detection of rubella virus-specific nucleic acid by polymerase chain reaction (PCR),
- **Or** infant rubella antibody level that persists at a higher level and for a longer period than expected from passive transfer of maternal antibody (i.e., rubella titer that does not drop at the expected rate of a twofold dilution per month).

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

#### Probable:

A person with either of the following in the absence of another known cause:

- Any two complications listed in the 1<sup>st</sup> bullet of the clinical criteria for classification
- **Or** one complication from the 1<sup>st</sup> bullet and one from the 2<sup>nd</sup> bullet of the clinical criteria for classification.

#### Suspect:

A person with some compatible clinical findings but not does not meet the criteria for a probable case.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

#### **Epidemiologic classification of internationally imported and U.S.-acquired cases**

Congenital Rubella Syndrome cases will be classified epidemiologically as internationally imported or U.S.-acquired, according to the source of infection in the mother, using the definitions below, which parallel the classifications for rubella cases.

- **Internationally imported case:** To be classified as an internationally imported CRS case, the mother must have acquired rubella infection outside the U.S. or in the absence of documented rubella infection, the mother was outside the U.S. during the period when she may have had exposure to rubella that affected her pregnancy (from 21 days before conception and through the first 24 weeks of pregnancy).
- **U.S.-acquired case:** A U.S.-acquired case is one in which the mother acquired rubella from an exposure in the U.S.

**U.S.-acquired cases are subclassified into four mutually exclusive groups:**

- **Import-linked case:** Any case in a chain of transmission that is epidemiologically linked to an internationally imported case.
- **Import-virus case:** A case for which an epidemiologic link to an internationally imported case was not identified but for which viral genetic evidence indicates an imported rubella genotype, i.e., a genotype that is not occurring within the U.S. in a pattern indicative of endemic transmission. An endemic genotype is the genotype of any rubella virus that occurs in an endemic chain of transmission (i.e., lasting  $\geq 12$  months). Any genotype that is found repeatedly in U.S.-acquired cases should be thoroughly investigated as a potential endemic genotype, especially if the cases are closely related in time or location.
- **Endemic case:** A case for which epidemiological or virological evidence indicates an endemic chain of transmission. Endemic transmission is defined as a chain of rubella virus transmission continuous for  $\geq 12$  months within the U.S.
- **Unknown source case:** A case for which an epidemiological or virological link to importation or to endemic transmission within the U.S. cannot be established after a thorough investigation. These cases must be carefully assessed epidemiologically to assure that they do not represent a sustained U.S.-acquired chain of transmission or an endemic chain of transmission within the U.S.

Internationally imported, import-linked, and imported-virus cases are considered collectively to be import-associated cases.

A person with laboratory evidence of infection, but without any clinical signs or symptoms is **not** reportable.

In probable cases, cataracts and congenital glaucoma are interpreted as a single complication. In cases classified as infection only, if any compatible signs or symptoms (e.g., hearing loss) are identified later, the case should be reclassified as confirmed.

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## **Salmonella Paratyphi Infection**

Merlin disease code=00210

Case report form (CRF): [Typhoid and Paratyphoid Fever Surveillance Report](#)

**MERLIN EXTENDED DATA REQUIRED**

### **Background**

An infection caused by *Salmonella* serotypes Paratyphi A, B (tartrate negative), or C that is often characterized by insidious onset of sustained fever, headache, malaise, anorexia, relative bradycardia, constipation or diarrhea, and nonproductive cough; however, mild and atypical infections may occur. Carriage of *S. Paratyphi* A, B (tartrate negative), or C may be prolonged.

### **Clinical criteria for case classification**

One or more of the following:

- Fever,
- **Or** diarrhea,
- **Or** abdominal cramps,
- **Or** constipation,
- **Or** anorexia,
- **Or** relative bradycardia.

### **Laboratory criteria for case classification**

#### Confirmatory:

Isolation of *S. Paratyphi* A, B (tartrate negative), or C from a clinical specimen.

#### Presumptive:

Detection of *S. Paratyphi* A, B (tartrate negative), or C in a clinical specimen using a culture-independent diagnostic test.

#### Supportive:

Detection of antibodies to *S. Paratyphi* A, B (tartrate negative), or C in a clinical specimen using a serologic test.

### **Epidemiological criteria for case classification**

Either of the following:

- A person who is epidemiologically linked to a confirmed *Salmonella* Paratyphi infection case
- **Or** a person who is epidemiologically linked to a probable *Salmonella* Paratyphi infection case with laboratory evidence.

### **Case classification**

#### Confirmed:

A person with confirmatory laboratory evidence.

#### Probable:

One of the following:

- A clinically compatible illness in a person with presumptive laboratory evidence
- **Or** a clinically compatible illness in a person with epidemiological criteria.

#### Suspect:

A person with supportive laboratory evidence.



### Criteria to distinguish a new case from previous reports


A new case should be created when either:

- A positive laboratory result is received more than 365 days after the most recent positive laboratory result associated with a previously reported case in the same person
- **Or** two or more different serotypes are identified in one or more specimens from the same person.

### Comments

Infections with *S.* serotypes Paratyphi A, B (tartrate negative), or C should only be reported as *Salmonella* Paratyphi infection (Merlin disease code=00210) and not as salmonellosis (Merlin disease code=00300) or *Salmonella* Typhi infection (Merlin disease code=00200).

Infections with *S.* Paratyphi B (tartrate positive) should only be reported as salmonellosis (Merlin disease code=00300) and not as *Salmonella* Paratyphi infection (Merlin disease code=00210) or *Salmonella* Typhi infection (Merlin disease code=00200).

 **Isolates or specimens from all confirmed and probable cases must be sent to the Bureau of Public Health Laboratories in Jacksonville (BPHL-Jacksonville) for confirmation.** Serum specimens from suspect cases should not be forwarded to BPHL-Jacksonville.

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## **Salmonella Typhi Infection**

Merlin disease code=00200

Case report form (CRF): [Typhoid and Paratyphoid Fever Surveillance Report](#)

**MERLIN EXTENDED DATA REQUIRED**

### **Background**

An infection caused by *Salmonella* serotype Typhi that is often characterized by insidious onset of sustained fever, headache, malaise, anorexia, relative bradycardia, constipation or diarrhea, and nonproductive cough; however, mild and atypical infections may occur. Carriage of *S. Typhi* may be prolonged.

### **Clinical criteria for case classification**

One or more of the following:

- Fever,
- **Or** diarrhea,
- **Or** abdominal cramps,
- **Or** constipation,
- **Or** anorexia,
- **Or** relative bradycardia.

### **Laboratory criteria for case classification**

#### Confirmatory:

Isolation of *S. Typhi* from a clinical specimen.

#### Presumptive:

Detection of *S. Typhi* in a clinical specimen using a culture-independent diagnostic test.

#### Supportive:

Detection of antibodies to *S. Typhi* in a clinical specimen using a serologic test.

### **Epidemiological criteria for case classification**

Either of the following:

- A person who is epidemiologically linked to a confirmed *Salmonella* Typhi infection case
- **Or** a person who is epidemiologically linked to a probable *Salmonella* Typhi infection case with laboratory evidence.

### **Case classification**

#### Confirmed:

A person with confirmatory laboratory evidence.

#### Probable:

One of the following:

- A clinically compatible illness in a person with presumptive laboratory evidence
- **Or** a clinically compatible illness in a person with epidemiological criteria.

#### Suspect:


A person with supportive laboratory evidence.

### Criteria to distinguish a new case from previous reports

A new case should be created when a positive laboratory result is received more than 365 days after the most recent positive laboratory result associated with a previously reported case in the same person.

### Comments

Infection with *S. Typhi* should only be reported as *Salmonella Typhi* infection (Merlin disease code=00200) and not as salmonellosis (Merlin disease code=00300) or *Salmonella Paratyphi* infection (Merlin disease code=00210).

 **Isolates or specimens from all confirmed and probable cases must be sent to the Bureau of Public Health Laboratories in Jacksonville (BPHL-Jacksonville) for confirmation.** Serum specimens from suspect cases should not be forwarded to BPHL-Jacksonville.

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# Salmonellosis

Merlin disease code=00300  
 Case report form (CRF): [Salmonellosis CRF](#)  
**MERLIN EXTENDED DATA OPTIONAL**

## Background

An illness of variable severity commonly manifested by diarrhea, abdominal pain, nausea, and sometimes vomiting. Asymptomatic infections may occur, and the organism may cause extra-intestinal infections.

## Clinical criteria for case classification

One or more of the following:

- Abdominal pain,
- **Or** Diarrhea,
- **Or** Fever,
- **Or** Vomiting.

## Laboratory criteria for case classification

### Confirmatory:

Isolation of *Salmonella* from a clinical specimen.

### Presumptive:

Detection of *Salmonella* in a clinical specimen using a culture-independent diagnostic test.

### Supportive:

One of the following:

- Detection of *Salmonella* in a clinical specimen using non-isolate based sequencing,
- **Or** detection of antibodies to *Salmonella* in a clinical specimen using a serologic test,
- **Or** a laboratory test with a methodology not previously mentioned.

## Epidemiological criteria for case classification

Either of the following:

- A person who is epidemiologically linked to a confirmed salmonellosis case
- **Or** a person who is epidemiologically linked to a probable salmonellosis case with laboratory evidence.

## Case classification

### Confirmed:

A person with confirmatory laboratory evidence. When available, O and H antigen serotype characterization should be reported.

### Probable:

Either of the following:

- A person with presumptive laboratory evidence
- **Or** a clinically compatible illness in a person with epidemiological criteria.

### Suspect:

A person with supportive laboratory evidence.

## Criteria to distinguish a new case from previous reports

A new case should be created when either:

- A positive laboratory result is received more than 365 days after the most recent positive laboratory result associated with a previously reported case in the same individual
- **Or** two or more different serogroups/serotypes are identified in one or more specimens from the same individual (each serogroup/serotype should be reported as a separate case).

## Comments

Asymptomatic infections and infections at sites other than the gastrointestinal tract with any laboratory evidence are considered cases and should be reported.

Infections with *Salmonella* serotype Paratyphi B (tartrate positive) should be reported as salmonellosis (Merlin disease code=00300) and not as *Salmonella* Paratyphi infection (Merlin disease code=00210) or *Salmonella* Typhi infection (Merlin disease code=00200).

Infections with *Salmonella* serotypes Paratyphi A, B (tartrate negative), or C should be reported as *Salmonella* Paratyphi infection (Merlin disease code=00210), not as salmonellosis (Merlin disease code=00300).

Infections with *Salmonella* serotype Typhi should be reported as *Salmonella* Typhi infection (Merlin disease code=00200), not as salmonellosis (Merlin disease code=00300).

Serogroup and serotype information is critical to understanding the epidemiology of salmonellosis in Florida and all details should be entered accurately and appropriately into Merlin. Additional characterization of *Salmonella* isolates will be performed by the Bureau of Public Health Laboratories (BPHL).

 **Isolates or specimens from all cases must be sent to BPHL for confirmation.**

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## Saxitoxin Poisoning (Paralytic Shellfish Poisoning)

Merlin disease code=98840  
Case report form (CRF): None  
**NO CRF REQUIRED**

### Clinical criteria for case classification

A person with circumoral paresthesia; numbness or tingling of the face, arms, and legs; ataxia; respiratory distress; headache; dizziness; weakness; nausea; or vomiting. Onset is 15 minutes to 10 hours following the consumption of puffer fish. Illness can also be linked to consumption of molluscan shellfish from non-Florida waters such as from northern Pacific and other cold water sources (not known to be present in molluscan shellfish in Florida at this time). In severe cases, muscle paralysis and respiratory failure occur, with death occurring in 2 to 25 hours. Cases associated with Florida puffer fish consumption experience milder symptoms and fewer hospitalizations.

### Laboratory criteria for case classification

Toxin detection in urine or food sample.

### Epidemiological criteria for case classification

Either of the following:

- A person who is epidemiologically linked to a confirmed saxitoxin poisoning case
- **Or** a person with a history of exposure to puffer fish or non-Florida molluscan shellfish.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

#### Probable:

A clinically compatible illness in a person with epidemiological criteria.

#### Suspect:

A clinically compatible illness in a person whose history of exposure to puffer fish or non-Florida molluscan shellfish is unknown.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Contact your [Regional Environmental Epidemiologist](#) for information.

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## Scombroid Poisoning

Merlin disease code=91000  
Case report forms (CRFs): None  
**NO CRF REQUIRED**

### Background

Symptoms of scombroid poisoning include tingling or burning in or around the mouth or throat, rash, hives, itching of the skin, drop in blood pressure, headache, dizziness, nausea, vomiting, diarrhea, asthmatic-like constriction of air passages, heart palpitations, and respiratory distress. Symptoms can occur within a few minutes to a few hours of consumption and last from 12 hours to a few days and occur after consumption of fish known to produce histamine.

### Clinical criteria for case classification

One or more of the following symptoms:

- Tingling or burning in or around mouth or throat,
- **Or** Rash,
- **Or** Hives,
- **Or** Itching,
- **Or** Drop in blood pressure,
- **Or** Headache,
- **Or** Dizziness,
- **Or** Nausea,
- **Or** Vomiting,
- **Or** Diarrhea,
- **Or** Asthmatic-like constriction of air passages,
- **Or** Heart palpitations,
- **Or** Respiratory distress.

### Laboratory criteria for case classification

Not applicable.

### Epidemiological criteria for case classification

A person with a history of consuming fish known to produce histamine in the 2 hours before onset of symptoms.

### Case classification

Confirmed:

A clinically compatible illness in a person with epidemiologic criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Even single sporadic cases should be reported as a single-case outbreak to the regional environmental epidemiologist. Testing for the toxin in implicated fish is available from the Florida Department of Agriculture and Consumer Services. Contact your [Regional Environmental Epidemiologist](#) for information.

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## ! Severe Acute Respiratory Syndrome (SARS)

Merlin disease code= 07982  
 Case report form (CRF): [International SARS CRF](#)  
**PAPER CRF REQUIRED**

### Clinical criteria for case classification

Early illness:

- Presence of two or more of the following: fever (might be subjective), chills, rigors, myalgia, headache, diarrhea, sore throat, rhinorrhea.

Mild-to-moderate respiratory illness:

- Temperature of >100.4° F (>38° C)
- **And** one or more clinical findings of lower respiratory illness (e.g., cough, shortness of breath, difficulty breathing).

Severe respiratory illness:

- Meets clinical criteria of mild-to-moderate respiratory illness
- **And** one or more of the following findings:
  - Radiographic evidence of pneumonia,
  - **Or** Acute respiratory distress syndrome,
  - **Or** Autopsy findings consistent with pneumonia or acute respiratory distress syndrome without an identifiable cause.

### Laboratory criteria for case classification

Tests to detect SARS-CoV are being refined, and their performance characteristics assessed; therefore, criteria for laboratory diagnosis of SARS-CoV are changing. One or more of the following are the general criteria for laboratory confirmation of SARS-CoV:

- Detection of serum antibody to SARS-CoV by a test validated by CDC (e.g., enzyme immunoassay [EIA]),
- **Or** isolation in cell culture of SARS-CoV from a clinical specimen,
- **Or** detection of SARS-CoV RNA by a reverse-transcription polymerase chain reaction (RT-PCR) test validated by CDC and with subsequent confirmation in a reference laboratory (e.g., CDC).

### Epidemiological criteria for case classification

Possible exposure to SARS-associated coronavirus (SARS-CoV):

One or more of the following exposures in the 10 days before onset of symptoms:

- Travel to a foreign or domestic location with documented or suspected recent transmission of SARS-CoV
- **Or** close contact with a person with mild-to-moderate or severe respiratory illness and with history of travel in the 10 days before onset of symptoms to a foreign or domestic location with documented or suspected recent transmission of SARS-CoV.



**Likely exposure to SARS-CoV:**

One or more of the following exposures in the 10 days before onset of symptoms:

- Close contact with a confirmed case of SARS-CoV disease
- **Or** close contact with a person with mild-moderate or severe respiratory illness for whom a chain of transmission can be linked to a confirmed case of SARS-CoV disease in the 10 days before onset of symptoms.

**Exclusion criteria**

A person may be excluded as a SARS report under investigation (SARS RUI), including as a CDC-defined probable SARS-CoV case, if one or more of the following applies:

- An alternative diagnosis can explain the illness fully.
- Antibody to SARS-CoV is undetectable in a serum specimen obtained >28 days after onset of illness.
- The case was reported on the basis of 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.

**Case classification*****SARS Report Under Investigation (RUI)***

- Reports in persons from areas where SARS is not known to be active:
  - SARS RUI-1: Patients with severe illness compatible with SARS in groups likely to be first affected by SARS-CoV7 if SARS-CoV is introduced from a person without clear epidemiologic links to known cases of SARS-CoV disease or places with known ongoing transmission of SARS-CoV.
- Reports in persons from areas where SARS activity is occurring:
  - SARS RUI-2: Patients who meet the current clinical criteria for mild-to-moderate illness and the epidemiologic criteria for possible exposure (spring 2003 CDC definition for suspect cases).
  - SARS RUI-3: Patients who meet the current clinical criteria for severe illness and the epidemiologic criteria for possible exposure (spring 2003 CDC definition for probable cases).
  - SARS RUI-4: Patients who meet the clinical criteria for early or mild-moderate illness and the epidemiologic criteria for likely exposure to SARS-CoV.

***SARS-CoV disease classification*****Confirmed:**

A clinically compatible illness (i.e., early, mild-to-moderate, or severe) in a person with laboratory evidence.

**Probable:**

A person who meets the clinical criteria for severe respiratory illness and the epidemiologic criteria for likely exposure to SARS-CoV.

**Criteria to distinguish a new case from previous reports**

Not applicable.

## Comments

Information regarding the current criteria for laboratory diagnosis of SARS-CoV is available at [www.cdc.gov/sars/index.html](http://www.cdc.gov/sars/index.html).

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## Shiga Toxin-Producing *Escherichia coli* (STEC) Infection

Merlin disease code=00800  
Case report form (CRF): [STEC Case Report](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

An infection of variable severity characterized by diarrhea (often bloody) and abdominal cramps. Illness may be complicated by hemolytic uremic syndrome (HUS). Some clinicians still use the term thrombotic thrombocytopenic purpura (TTP) for adults with post-diarrheal HUS.

### Clinical criteria for case classification

#### Presumptive:

Either of the following:

- Abdominal cramps
- **Or** diarrhea.

#### Supportive:

Diagnosis of post-diarrheal HUS (TTP).

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Isolation of *E. coli* O157:H7 from a clinical specimen
- **Or** both of the following:
  - Detection of Shiga toxin or Shiga toxin genes in a clinical specimen using a culture-independent diagnostic test (CIDT)
  - **And** isolation of *E. coli* from a clinical specimen.

#### Presumptive:

Both of the following:

- Isolation of *E. coli* O157 from a clinical specimen without confirmation of H antigen
- **And** no known detection of Shiga toxin or Shiga toxin genes in a clinical specimen using a CIDT.

#### Supportive:

One or more of the following:

- Identification of an elevated antibody titer against a known Shiga toxin-producing serogroup of *E. coli*,
- **Or** detection of *E. coli* O157 or STEC/enterohemorrhagic *E. coli* (EHEC) in a clinical specimen using a CIDT,
- **Or** both of the following:
  - Detection of Shiga toxin or Shiga toxin genes in a clinical specimen using a CIDT
  - **And** no known isolation of *Shigella* from a clinical specimen.

### Epidemiological criteria for case classification

Either of the following:

- A person who is epidemiologically linked to a confirmed STEC infection case
- **Or** a person who is epidemiologically linked to a probable STEC infection case with laboratory evidence.

## Case classification

### Confirmed:

A person with confirmatory laboratory evidence.

### Probable:

One of the following:

- A person with presumptive laboratory evidence,
- **Or** a person with presumptive clinical criteria and supportive laboratory evidence,
- **Or** a person with presumptive clinical criteria and epidemiological criteria.

### Suspect:

Either of the following:

- A person with supportive laboratory evidence
- **Or** a person with supportive clinical criteria.

## Criteria to distinguish a new case from previous reports

A new case should be created when either:

- A positive laboratory result is received more than 180 days after the most recent positive laboratory result associated with a previously reported case in the same individual
- **Or** two or more different serogroups/serotypes are identified in one or more specimens from the same individual (each serogroup/serotype should be reported as a separate case).

## Comments


Asymptomatic infections and infections at sites other than the gastrointestinal tract in people with confirmatory laboratory evidence or presumptive laboratory evidence are considered STEC cases and should be reported.

Although infections with Shiga toxin-producing organisms in the U.S. are primarily caused by STEC, in recent years an increasing number of infections are due to Shiga toxin-producing *Shigella*. People with Shiga toxin or Shiga toxin genes detected using a CIDT and *Shigella* isolated from a clinical specimen should not be reported as an STEC case.

Due to the variable sensitivities and specificities of CIDT methods and the potential for degradation of Shiga toxin in a specimen during transit, discordant results may occur between clinical and public health laboratories. People with Shiga toxin or Shiga toxin genes detected using a CIDT who do not have *Shigella* isolated from a clinical specimen should be classified as a suspect or probable case, regardless of whether detection of Shiga toxin or Shiga toxin genes is confirmed by a public health laboratory.

People with STEC infections who develop HUS should be reported as STEC (Merlin disease code=00800) and HUS (Merlin disease code=42000). A laboratory result that reports only "*E. coli*" does not indicate STEC.

**STEC laboratory results can be difficult to interpret. For paper laboratory results, please create a Merlin lab result and attach a scanned copy of the paper laboratory result.**

 **Isolates from all cases of STEC must be sent to the Bureau of Public Health Laboratories in Jacksonville (BPHL-Jacksonville) for confirmation and typing. All Shiga toxin, Shiga toxin gene, *E. coli* O157 gene, enterohemorrhagic *E. coli* (EHEC), or STEC-positive specimens must be sent to BPHL-Jacksonville for confirmation and additional testing.**

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# Shigellosis

Merlin disease code=00490  
 Case report form (CRF): [Shigellosis CRF](#)  
**MERLIN EXTENDED DATA OPTIONAL**

## Background

An illness of variable severity commonly manifested by diarrhea, fever, nausea, cramps, and tenesmus. Asymptomatic infections may occur.

## Clinical criteria for case classification

One or more of the following:

- Abdominal cramps,
- **Or** diarrhea,
- **Or** fever,
- **Or** vomiting.

## Laboratory criteria for case classification

### Confirmatory:

Isolation of *Shigella* from a clinical specimen.

### Presumptive:

Detection of *Shigella* or *Shigella*/EIEC\* in a clinical specimen using a culture-independent diagnostic test.

### Supportive:

One of the following:

- Detection of *Shigella* in a clinical specimen using non-isolate based sequencing,
- **Or** detection of antibodies to *Shigella* in a clinical specimen using a serologic test,
- **Or** a laboratory test with a methodology not previously mentioned.

\* Some multiplex polymerase chain reaction (PCR) tests report “*Shigella*/EIEC”. EIEC stands for enteroinvasive *Escherichia coli*.

## Epidemiological criteria for case classification

Either of the following:

- A person who is epidemiologically linked to a confirmed shigellosis case
- **Or** a person who is epidemiologically linked to a probable shigellosis case with laboratory evidence.

## Case classification

### Confirmed:

A person with confirmatory laboratory evidence.

### Probable:

Either of the following:

- A person with presumptive laboratory evidence
- **Or** a clinically compatible illness in a person with epidemiological criteria.

### Suspect:

A person with supportive laboratory evidence.

**Criteria to distinguish a new case from previous reports**

A new case should be created when either:

- A positive laboratory result is received more than 90 days after the most recent positive laboratory result associated with a previously reported case in the same individual
- **Or** two or more different serotypes are identified in one or more specimens from the same individual (each serotype should be reported as a separate case).

**Comments**

Asymptomatic infections and infections at sites other than the gastrointestinal tract with any laboratory evidence are considered cases and should be reported.

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## ! Smallpox

Merlin disease code=05090  
Case report form (CRF): None  
**CONTACT BUREAU OF EPIDEMIOLOGY**

### Clinical criteria for case classification

#### Confirmatory:

Both of the following:

- Acute onset of fever  $\geq 101^{\circ}$  F ( $\geq 38.3^{\circ}$  C)
- **Followed by** a rash characterized by firm, deep seated vesicles or pustules in the same stage of development without other apparent cause.

#### Presumptive:

Presentations of smallpox that do not meet the classical confirmatory clinical criteria:

- Hemorrhagic type,
- **Or** flat type,
- **Or** *Variola sine eruptione*.

Detailed clinical description is available on the CDC web site: [www.cdc.gov/smallpox/clinicians/clinical-disease.html](http://www.cdc.gov/smallpox/clinicians/clinical-disease.html).

#### Supportive:

Generalized, acute vesicular or pustular rash illness with fever preceding development of rash by 1-4 days.

### Laboratory criteria for case classification

Either of the following:

- Polymerase chain reaction (PCR) identification of variola DNA in a clinical specimen
- **Or** isolation of smallpox (variola) virus from a clinical specimen (Level D laboratory only; confirmed by variola PCR).

### Epidemiological criteria for case classification

#### Confirmatory:

A person who is epidemiologically linked to a confirmed smallpox case with laboratory evidence.

#### Presumptive:

A person who is epidemiologically linked to a confirmed smallpox case.

### Case classification

#### Confirmed:

Either of the following:

- A person with laboratory evidence
- **Or** a person with confirmatory clinical criteria and confirmatory epidemiological criteria.

#### Probable:

A person with confirmatory or presumptive clinical criteria and presumptive epidemiological criteria.

#### Suspect:


A person with supportive clinical criteria.

**Criteria to distinguish a new case from previous reports**

Not applicable.

**Comments**

A case may be excluded as a suspect or probable smallpox case if an alternative diagnosis fully explains the illness or appropriate clinical specimens are negative for laboratory criteria for smallpox.

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## Staphylococcal Enterotoxin B Poisoning

Merlin disease code=38200  
Case report form (CRF): None  
**NO CRF REQUIRED**

### Clinical criteria for case classification

Staphylococcal enterotoxin B (SEB) is an exotoxin produced by *Staphylococcus aureus*. Clinical signs include nonspecific flu-like symptoms.

- General symptoms: Fever, chills, headache, myalgia, conjunctival injection, varying degrees of prostration, potentially septic shock, or death.
- Aerosolized exposure: Nonproductive cough for up to four weeks, retrosternal chest pain, and shortness of breath.
- Ingestion exposure: Nausea or vomiting and diarrhea.

### Laboratory criteria for case classification

SEB may be found in blood, urine, respiratory secretions, or nasal swabs for a short period of time and is detected by enzyme immunoassays (EIA) and chemiluminescence tests.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness that is diagnosed by clinical signs and epidemiology.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

- ✉ **Specimens from all cases must be sent immediately to the Bureau of Public Health Laboratories for confirmation. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## ***Staphylococcus aureus* Infection, Vancomycin Non-Susceptible**

Merlin disease code=38100 *S. aureus* Infection, Intermediate Resistance

Merlin disease code=38101 *S. aureus* Infection, Resistant

Case report form (CRF): None

**CONTACT BUREAU OF EPIDEMIOLOGY**

### **Clinical criteria for case classification**

*Staphylococcus aureus* can produce a variety of syndromes with clinical manifestations including skin and soft tissue infections, empyema, bloodstream infection, pneumonia, osteomyelitis, septic arthritis, endocarditis, sepsis, and meningitis. *S. aureus* may also colonize individuals who remain asymptomatic. The most frequent site of *S. aureus* colonization is the nares.

### **Laboratory criteria for case classification**

#### ***Intermediate Resistance (GISA/VISA):***

Isolation of *Staphylococcus aureus* from a clinical specimen with a minimum inhibitory concentration (MIC) 4-8 µg/ml to vancomycin.

#### ***Resistance (GRSA/VRSA):***

Isolation of *Staphylococcus aureus* from a clinical specimen with an MIC  $\geq$ 16 µg/ml to vancomycin.

### **Epidemiological criteria for case classification**

Not applicable.

### **Case classification**

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

### **Criteria to distinguish a new case from previous reports**

Not applicable.

### **Comments**

 **Isolates from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## ***Streptococcus pneumoniae* Invasive Disease**

Merlin disease code=04823 *S. pneumoniae* Invasive Disease, Drug-Resistant  
 Merlin disease code=04830 *S. pneumoniae* Invasive Disease, Drug-Susceptible  
 Case report form (CRF): [S. pneumoniae Surveillance Worksheet](#)  
**MERLIN EXTENDED DATA REQUIRED (for cases <6 years old)**

### **Background**

*Streptococcus pneumoniae* causes many clinical syndromes, depending on the site of infection (e.g., acute otitis media, pneumonia, bacteremia, or meningitis).

### **Clinical criteria for case classification**

Not applicable.

### **Laboratory criteria for case classification**

#### Confirmatory:

- Isolation of *S. pneumoniae* from a normally sterile site (e.g., blood, cerebrospinal fluid, joint fluid, pleural fluid, pericardial fluid)
- **And for resistant isolates:** intermediate- or high-level resistance of the *S. pneumoniae* isolate to at least one antimicrobial agent currently approved for use in treating pneumococcal infection.\*

#### Presumptive:

Identification of *S. pneumoniae* from a normally sterile body site by a culture-independent diagnostic test.

### **Epidemiological criteria for case classification**

Not applicable.

### **Case classification**

#### Confirmed:

A person with confirmatory laboratory evidence.

#### Probable:

A person with presumptive laboratory evidence.

### **Criteria to distinguish a new case from previous reports**

A new case should be created when a positive laboratory result is received on a specimen collected more than 30 days after the most recently collected positive specimen associated with a previously reported case in the same individual.

### **Comments**

**Report both resistant and non-resistant isolates. *S. pneumoniae* invasive diseases cases in people ≥6 years old are only reportable for laboratories participating in electronic laboratory reporting (ELR).** Cases in people ≥6 years old will be automatically created and reported in Merlin based on ELR results. For people ≥6 years old, case reports received from health care providers or via paper laboratory results do not need to be investigated or entered into Merlin; however, county health departments can choose to enter and report these cases.

All cases in children <6 years old are reportable for all laboratories and health care providers. All cases in children <6 years old need to be investigated and reported, regardless of the method through which the case reports were received. **Extended data in Merlin is only required for those cases in people <6 years old.**

\*Resistance defined by Clinical and Laboratory Standards Institute (CLSI) approved methods and CLSI-approved interpretive minimum inhibitory concentration (MIC) standards ( $\mu\text{g/mL}$ ) for *S. pneumoniae*. CLSI recommends that all invasive *S. pneumoniae* isolates found to be “possibly resistant” to beta-lactams (i.e., an oxacillin zone size of <20 mm) by oxacillin screening should undergo further susceptibility testing by using a quantitative MIC method acceptable for penicillin, extended-spectrum cephalosporins, and other drugs as clinically indicated.

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# Tetanus

Merlin disease code=03700  
Case report form (CRF): [Tetanus Surveillance Worksheet](#)  
**MERLIN EXTENDED DATA REQUIRED**

## Clinical criteria for case classification

Either of the following:

- Acute onset of hypertonia or painful muscular contractions (usually of the muscles of the jaw and neck) and generalized muscle spasms diagnosed as tetanus by a health care provider in the absence of a more likely diagnosis
- **Or** death with tetanus listed on the death certificate as the cause of death or a significant condition contributing to death.

## Laboratory criteria for case classification

Not applicable.

## Epidemiological criteria for case classification

Not applicable.

## Case classification

Probable:

A clinically compatible illness or death.

## Criteria to distinguish a new case from previous reports

Not applicable.

## Comments

There is no definition for “confirmed” tetanus.

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## Trichinellosis (Trichinosis)

Merlin disease code=12400

Case report form (CRF): [Trichinosis Surveillance CRF](#)

PAPER CRF REQUIRED

### Clinical criteria for case classification

A disease caused by ingestion of *Trichinella* larvae, usually through consumption of *Trichinella*-containing meat (or food contaminated with such meat) that has been inadequately cooked prior to consumption. The disease has variable clinical manifestations. Common signs and symptoms among symptomatic persons include eosinophilia, fever, myalgia, and periorbital edema.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Demonstration of *Trichinella* larvae in tissue obtained by muscle biopsy
- **Or** positive serologic test for *Trichinella* (e.g., enzyme immunoassay [EIA], immunofluorescence assay [IF]).

#### Presumptive:

- Demonstration of *Trichinella* larvae in the food item.

### Epidemiological criteria for case classification

Either of the following:

- A person who consumed a meat product in which the parasite was demonstrated
- **Or** a person who shared an epidemiologically implicated meal or ate an epidemiologically implicated meat product.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence (clinical specimen).

#### Probable:

A clinically compatible illness in a person with compatible exposure history.

#### Suspect:

A person with no clinically compatible illness with epidemiological criteria and a positive serologic test for *Trichinella* (and no known prior history of *Trichinella* infection).

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

In an outbreak setting, at least one clinical case must have laboratory evidence.

Epidemiologically implicated meals or meat products are defined as a meal or meat product that was consumed by a person who subsequently developed a clinically compatible illness that was laboratory-confirmed.

Negative serologic results may not accurately reflect disease status if blood was drawn less than 3-4 weeks from symptom onset (Wilson et. al, 2006).

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## ! Tularemia (*Francisella tularensis*)

Merlin disease code=02190

Case report form (CRF): [Tularemia Case Investigation Report](#)

PAPER CRF REQUIRED

### Clinical criteria for case classification

An illness characterized by several distinct forms, including the following:

- Ulceroglandular: Cutaneous ulcer with regional lymphadenopathy.
- Glandular: Regional lymphadenopathy with no ulcer.
- Oculoglandular: Conjunctivitis with preauricular lymphadenopathy.
- Oropharyngeal: Stomatitis or pharyngitis or tonsillitis and cervical lymphadenopathy.
- Pneumonic: Primary pulmonary disease.
- Typhoidal: Febrile illness without early localizing signs and symptoms.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Isolation of *Francisella tularensis* from a clinical or autopsy specimen
- **Or** fourfold or greater change in serum IgM or IgG titer to *F. tularensis* antigen (e.g., direct fluorescent antibody [DFA], enzyme immunoassay [EIA]) between acute and convalescent specimens.

#### Presumptive:

One or more of the following:

- Detection of *F. tularensis* in a clinical or autopsy specimen by immunofluorescence (IF) assay,
- **Or** detection of *F. tularensis* in a clinical or autopsy specimen by a polymerase chain reaction (PCR),
- **Or** both of the following:
  - Elevated serum IgM or IgG titer to *F. tularensis* antigen (e.g., DFA, EIA)
  - **And** no history of tularemia vaccination.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence.

#### Probable:

A clinically compatible illness in a person with presumptive laboratory evidence.

### Criteria to distinguish a new case from previous reports

Serial or subsequent cases of tularemia experienced by one individual should only be counted if there is an additional epidemiologically compatible exposure and new onset of symptoms. Because the duration of antibodies to *F. tularensis* is not known, mere presence of antibodies without a clinically compatible illness **and** an epidemiologically compatible exposure within 12 months of onset may not indicate a new infection, especially among persons who live in endemic areas.

## Comments

Follow up with laboratory staff to identify any possible exposures. Clinical diagnosis is supported by evidence or history of a tick or deerfly bite, exposure to tissues of a mammalian host of *F. tularensis* (e.g., rodent, rabbit, hare), exposure to potentially contaminated water, laboratory exposure, or residence in or recent travel to a *F. tularensis* endemic area. Tularemia cases are most commonly reported in the midwest, western, and northeastern U.S. states. *F. tularensis* infections acquired in Florida are uncommon.

 **Isolates or specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation. This condition has been identified as a potential bioterrorism agent by the CDC.**

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## ! Typhus Fever, Epidemic (*Rickettsia prowazekii*)

Merlin disease code=08000  
Case report form (CRF): None  
**NO CRF REQUIRED**

### Clinical criteria for case classification

Several distinct *Rickettsia* species cause typhus fevers in humans. Each agent produces disease with a distinct epidemiology, but all cause illness, usually with fever, headache, or rash, or a combination of these.

### Laboratory criteria for case classification

Either of the following:

- Demonstration of *Rickettsia prowazekii* species in tissues or body fluids
- **Or** fourfold change in specific antibody titers in sequential sera.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

Confirmed:

A clinically compatible illness in a person with laboratory evidence.

Probable:

A clinically compatible illness.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

✉ Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation. This condition has been identified as a potential bioterrorism agent by the CDC.

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## ! Vaccinia Disease

Merlin disease code=9990  
Case report form (CRF): None  
**CONTACT BUREAU OF EPIDEMIOLOGY**

### Clinical criteria for case classification

Vaccinia disease can present as any number of clinical manifestations ranging from self-limited responses to life-threatening events due to receiving or being inadvertently inoculated with vaccinia as a result of smallpox vaccination.

Clinical complications can include one or more of the following:

- **Eczema vaccinatum:** Characterized by localized or generalized popular, vesicular, or pustular rash, which can occur anywhere on the body, with a predilection for areas of previous atopic dermatitis (e.g., face, forearms, antecubital fossa, popliteal fossa). Rash onset may occur concurrently or shortly after development of the Smallpox vaccine lesion and is often accompanied by fever, malaise, lymphadenopathy and prostration or severe systemic illness.
- **Erythema multiforme major (Stevens-Johnsons Syndrome):** Characterized by systemic symptoms (fever, malaise, prostration) and involvement of 2 or more mucosal surfaces or 10% of the body surface area.
- **Fetal vaccinia (congenital vaccinia):** Characterized by skin lesions (e.g., vesicular, pustular, or ulcerative) and/or organ involvement in a newborn. The skin lesions are similar to those of generalized vaccinia or progressive vaccinia and can be confluent and extensive.
- **Post-vaccinial encephalitis or encephalomyelitis:** Characterized by onset of symptoms 6-15 days post-vaccination. Symptoms include any change in mental status (confusion, delirium, drowsiness, restlessness, disorientation, amnesia, seizures, loss of consciousness, coma) or sensorimotor function (altered sensation, weakness, paresis, aphasia, incontinence or urinary retention, obstinate constipation).
- **Progressive vaccinia:** Characterized by a painless progressive and ulcerating lesion at the vaccination site that does not heal, often with central necrosis, and with little or no inflammation.
- **Generalized vaccinia:** Characterized by disseminated maculopapular or vesicular rash, frequently on an erythematous base, usually occurring 6-9 days after first-time vaccination. Lesions may occur on any part of the body, most often on the trunk and abdomen, less commonly on the face and limbs. Though usually benign and self-limiting, can develop into severe systemic illness.
- **Inadvertent inoculation:** Characterized by extensive vesicular and pustular lesion(s) at a distant different location on the vaccinee, or anywhere on a close contact, which is not generalized but may involve a large contiguous area.
- **Ocular vaccinia:** Characterized by inflammation of peri-ocular soft tissue or the eye itself (blepharitis, conjunctivitis, keratitis, iritis).
- **Pyogenic (staphylococcal) infection:** Characterized by vesiculo-pustular lesion at the site of vaccination, often spreading peripherally in circumferential fashion, with clearing behind the advancing border. Bacterial lymphangitis and regional lymphadenitis may occur, but most often the lesions are solely superficial infections.
- **Streptococcal infections:** Characterized by a piled up eschar, heaping at the vaccination site. Lymphangitis occurs commonly as does edematous painful regional lymphadenitis.

- **Enteric and anaerobic infections:** Characterized by purulence with or without extensive necrosis at the vaccination site. Necrotic fasciitis has also been encountered in some cases.
- **Other serious adverse events:** Serious to life-threatening events resulting in hospitalization, permanent disability, life-threatening illness, or death in a Smallpox vaccinee, or a close contact of a vaccinee.

### Laboratory criteria for case classification

None unless laboratory confirmation is indicated to distinguish from other infections or other pox.

### Epidemiological criteria for case classification

Not applicable.

### Case classification

#### Probable:

A person with clinical features compatible with the diagnosis where other causes are excluded and supportive information is available.

#### Suspect:

Either of the following:

- A person with clinical features compatible with the diagnosis where further investigation is required
- **Or** a person with clinical features compatible with the diagnosis where additional investigation of the case did not provide supporting evidence for the diagnosis and did not identify an alternative diagnosis.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## Varicella (Chickenpox)

Merlin disease code=05290

Case report form (CRF): [Varicella Surveillance Worksheet](#)

**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

An illness with acute onset of diffuse (generalized) maculo-papulovesicular rash without other apparent cause.

### Laboratory criteria for case classification

One or more of the following:

- Isolation of varicella virus from a clinical specimen,
- **Or** detection of varicella antigen by direct fluorescent antibody (DFA),
- **Or** detection of varicella-specific nucleic acid by polymerase chain reaction (PCR),
- **Or** fourfold rise in serum anti-varicella IgG antibody between acute- and convalescent-phase serum specimens.

### Epidemiological criteria for case classification

A person who is epidemiologically linked to a confirmed or probable varicella case.

### Case classification

Confirmed:

Either of the following:

- A clinically compatible illness in a person with laboratory evidence
- **Or** a clinically compatible illness in a person with epidemiological criteria.

Probable:

A clinically compatible illness.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Two probable cases that are epidemiologically linked would be considered confirmed, even in the absence of laboratory confirmation.

In vaccinated persons who develop varicella more than 42 days after vaccination (breakthrough disease), the disease is almost always mild with fewer than 50 skin lesions and shorter duration of illness. The rash may also be atypical in appearance (maculopapular with few or no vesicles). Laboratory confirmation of cases of varicella is available through the Bureau of Public Health Laboratories; laboratory confirmation should be obtained for fatal cases, in outbreak settings, and in other special circumstances. Genotyping at the Centers for Disease Control and Prevention is recommended for large outbreaks. Varicella IgM testing is not always available from commercial laboratories and is not recommended.

**Varicella cases should only be reported for cases of chickenpox. Herpes-zoster infections (shingles) are not reportable.**

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## Varicella (Chickenpox) Mortality

Merlin disease code= 05290  
Case report form (CRF): [Varicella Death Investigation Worksheet](#)  
**MERLIN EXTENDED DATA REQUIRED**  
**PAPER CRF REQUIRED**

### Clinical criteria for case classification

See varicella (chickenpox) case definition.

### Laboratory criteria for case classification

See varicella (chickenpox) case definition.

### Epidemiological criteria for case classification

See varicella (chickenpox) case definition.

### Case classification

#### Confirmed:

A confirmed case of varicella which contributes directly or indirectly to acute medical complications which result in death.

#### Probable:

A probable case of varicella which contributes directly or indirectly to acute medical complications which result in death.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

Cases of varicella infection that resulted in death should be reported under the reporting code for varicella (disease code 05290) in Merlin with the date of death listed in the case information. It should be noted in the Merlin case notes that infection due to varicella was determined as the cause of death.

Laboratory confirmation of cases of varicella is available through the Bureau of Public Health Laboratories; laboratory confirmation should be obtained for fatal cases.

The additional varicella Death Investigation Worksheet must still be filled out and attached to the case in Merlin or sent to Bureau of Epidemiology. Please see case definition for varicella (chickenpox) in order to classify a case of varicella infection that did not result in death.

**Varicella mortality should only be reported for cases of chickenpox. Herpes-zoster infections (shingles) are not reportable.**

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## Vibriosis (Excluding *Vibrio cholerae* Type O1)

Merlin disease code=00196 Vibriosis (*Grimontia hollisae*) (formerly *Vibrio hollisae*)  
 Merlin disease code=00193 Vibriosis (Other *Vibrio* specie)  
 Merlin disease code=00195 Vibriosis (*Vibrio alginolyticus*)  
 Merlin disease code=00198 Vibriosis (*Vibrio cholerae* Type Non-O1)  
 Merlin disease code=00194 Vibriosis (*Vibrio fluvialis*)  
 Merlin disease code=00197 Vibriosis (*Vibrio mimicus*)  
 Merlin disease code=00540 Vibriosis (*Vibrio parahaemolyticus*)  
 Merlin disease code=00199 Vibriosis (*Vibrio vulnificus*)  
 Case report form (CRF): [Cholera and Other Vibrio Illness Surveillance Report](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

An infection of variable severity characterized by diarrhea and vomiting, primary septicemia, or wound infections. Asymptomatic infections may occur, and the organism may cause extra-intestinal infections.

### Laboratory criteria for case classification

#### Confirmatory:

Isolation of a species of the family Vibrionaceae (other than toxigenic *V. cholerae* O1 or O139, which is reported as cholera) from a clinical specimen.

#### Presumptive:

Detection of a species of the family Vibrionaceae (other than toxigenic *V. cholerae* O1 or O139, which is reportable as cholera) in a clinical specimen using a culture-independent diagnostic test.

### Epidemiological criteria for case classification

A person who is epidemiologically linked to a confirmed vibriosis case or a probable vibriosis case with laboratory evidence.

### Case classification

#### Confirmed:

A person with confirmatory laboratory evidence. Note that species identification and, if applicable, serotype designation (i.e., *V. cholerae* non-O1/non-O139 or *Grimontia hollisae*) should be reported.

#### Probable:

Either of the following:

- A person with presumptive laboratory evidence
- **Or** a clinically compatible illness in a person with epidemiological criteria.

### Criteria to distinguish a new case from previous reports

A new case should be created when either:

- A positive laboratory result is received more than 30 days after the most recent positive laboratory result associated with a previously reported case in the same individual
- **Or** two or more different species of the family Vibrionaceae are identified in one or more specimens from the same individual (each species should be reported as a separate case).

## Comments


Infections due to **toxigenic** *V. cholerae* O1 or O139 should **not** be reported as vibriosis, but **should** be reported as cholera (Merlin disease code=00190). If no species is reported, the case **should** be reported as other *Vibrio* species (Merlin disease code=00193). If species information subsequently becomes available, the case should be updated to the appropriate disease reporting code.

All cases that are reported as probable due to the CIDT should be reported as other *Vibrio* species (Merlin reporting code=00193). If the case is subsequently culture-confirmed, the case should be updated to a confirmed case of the appropriate disease reporting code.

Genera in the family *Vibrionaceae* (not all have been recognized to cause human illness) currently include: *Aliivibrio*, *Allomonas*, *Catenococcus*, *Enterovibrio*, *Grimontia*, *Listonella*, *Photobacterium*, *Salinivibrio*, and *Vibrio*.

**For paper laboratory results, please create a Merlin lab result and attach a scanned copy of the paper laboratory result. A copy of shellfish tags (where appropriate) should also be scanned and attached to the Merlin case.**

Contact your [Regional Environmental Epidemiologist](#) for additional information.

 **Isolates or specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation. The Florida Department of Agriculture and Consumer Services (FDACS) Molluscan Shellfish Program should be notified through your Regional Environmental Epidemiologist of any *Vibrio* infections thought to be associated with shellfish consumption.**

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## ! Viral Hemorrhagic Fever

Merlin disease code=6591 Crimean-Congo Hemorrhagic Fever !

Merlin disease code=6592 Ebola Hemorrhagic Fever !

Merlin disease code=6593 Guaranito Hemorrhagic fever !

Merlin disease code=6594 Junin Hemorrhagic Fever !

Merlin disease code=6595 Lassa Fever !

Merlin disease code=6596 Lujo Virus !

Merlin disease code=6597 Machupo Hemorrhagic Fever !

Merlin disease code=6598 Marburg Fever !

Merlin disease code=6599 Sabia-Associated Hemorrhagic Fever !

Case report form (CRF): None

**CONTACT BUREAU OF EPIDEMIOLOGY**

### Background

Diagnosis of viral hemorrhagic fever (VHF) must be made by a physician. Common presenting complaints are fever, myalgia, and prostration, with headache, pharyngitis, conjunctival injection, flushing, and gastrointestinal symptoms. This may be complicated by spontaneous bleeding, petechiae, hypotension and perhaps shock, edema, and neurologic involvement.

VHF can be caused by:

- Ebola virus
- Marburg virus
- Crimean-Congo hemorrhagic fever viruses
- Lassa virus
- Lujo virus
- New world arenaviruses (Guanarito, Machupo, Junin, Sabia viruses)

### Clinical criteria for case classification

Both of the following:

- Fever >40 °C
- **And** one or more of the following clinical findings:
  - Severe headache,
  - **Or** Muscle pain,
  - **Or** Erythematous maculopapular rash on the trunk with fine desquamation 3–4 days after rash onset,
  - **Or** Vomiting,
  - **Or** Diarrhea,
  - **Or** Pharyngitis (arenaviruses only),
  - **Or** Abdominal pain,
  - **Or** Bleeding not related to injury, **or**
  - **Or** Retrosternal chest pain (arenaviruses only),
  - **Or** Proteinuria (arenaviruses only),
  - **Or** Thrombocytopenia.



### Laboratory criteria for case classification

One or more of the following laboratory findings:

- Detection of VHF viral antigens in blood by enzyme immunoassay (EIA) antigen detection,
- **Or** VHF viral isolation in cell culture for blood or tissues,
- **Or** detection of VHF viral genes using reverse transcriptase polymerase chain reaction (RT-PCR) from blood or tissues,
- **Or** detection of VHF viral antigens in tissues by immunohistochemistry (IHC).

### Epidemiological criteria for case classification

One or more of the following exposures in the three weeks before onset of symptoms:

- Contact with blood or other body fluids of a patient with VHF,
- **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 within the past 3 weeks to semen from a confirmed acute or convalescent case of VHF within the 10 weeks of onset of symptoms.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with laboratory evidence.

#### Suspect:

A clinically compatible illness in a person with any of the epidemiologic linkage criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments

**Detection of a possible case requires immediate notification of the Bureau of Epidemiology which is available 24/7 at (850) 245-4401.**

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation by the CDC.**

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## ! Yellow Fever

Merlin disease code=06090

Case report form (CRF): [Florida Confidential Vector-borne Disease Infection CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Clinical criteria for case classification

One or more of the following, in the absence of a more likely etiology:

- Fever
- Jaundice
- Bilirubin  $\geq 3.0$  mg/dL

### Laboratory criteria for case classification

#### Confirmatory:

One or more of the following:

- Both of the following:
  - Isolation of virus from, or demonstration of specific viral antigen or nucleic acid in tissue, blood, cerebrospinal fluid (CSF), or other body fluid (e.g., culture, immunohistochemistry [IHC], polymerase chain reaction [PCR]),
  - **And** no history of yellow fever vaccination within 30 days before illness onset, unless there is molecular evidence of infection with wild-type yellow fever virus,
- **Or** both of the following:
  - Fourfold or greater change in virus-specific neutralizing antibody titers in paired sera (e.g., plaque reduction neutralization [PRNT]),
  - **And** no history of yellow fever vaccination within 30 days before illness onset,
- **Or** all of the following:
  - Virus-specific IgM antibodies in serum or CSF (e.g., enzyme immunoassay [EIA], microsphere immunoassay [MIA], immunofluorescence assay [IF]),
  - **And** confirmatory virus-specific neutralizing antibodies in the same or a later specimen (e.g., PRNT),
  - **And** no history of yellow fever vaccination.

#### Presumptive:

All of the following:

- Virus-specific IgM antibodies in serum or serum (e.g., EIA, MIA, IF),
- **And** negative, equivocal, or indeterminate result for IgM antibodies in serum or CSF for arboviruses endemic to the region where exposure occurred (e.g., EIA, MIA, IF),
- **And** no history of yellow fever vaccination.

#### Supportive:

One or more of the following:

- Both of the following:
  - Isolation of virus from, or demonstration of specific viral antigen or nucleic acid in tissue, blood, CSF, or other body fluid (e.g., culture, IHC, PCR)
  - **And** yellow fever vaccination within 30 days before illness onset with molecular evidence of infection with the vaccine strain;

- **Or** both of the following:
  - One of the following:
    - Isolation of virus from, or demonstration of specific viral antigen or nucleic acid in tissue, blood, CSF, or other body fluid (e.g., culture, IHC, PCR);
    - **Or** fourfold or greater change in virus-specific neutralizing antibody titers in paired sera (e.g., PRNT);
    - **Or** both of the following:
      - Virus-specific IgM antibodies in serum or CSF (e.g., EIA, MIA, IF)
      - **And** confirmatory virus-specific neutralizing antibodies in the same or a later specimen (e.g., PRNT);
    - **Or** both of the following:
      - Virus-specific IgM antibodies in serum or CSF (e.g., EIA, MIA, IF)
      - **And** negative, equivocal, or indeterminate result for IgM antibodies in serum or CSF for arboviruses endemic to the region where exposure occurred (e.g., EIA, MIA, IF);
  - **And** yellow fever vaccination within 30 days before illness onset where vaccine-associated illness could not be ruled out

### Epidemiological criteria for case classification

One or more of the following:

- Resides in or recent travel to an area with known yellow fever virus transmission,
- **Or** epidemiologically linked to a confirmed or probable case,
- **Or** likely vector exposure in an area with suitable seasonal and ecological conditions for potential local vector-borne transmission,
- **Or** receipt of blood or blood products within 30 days before illness onset,
- **Or** receipt of organ or tissue transplant within 30 days before illness onset.

### Case classification

#### Confirmed:

A clinically compatible illness in a person with confirmatory laboratory evidence and epidemiological criteria.

#### Probable:

A clinically compatible illness in a person with presumptive laboratory evidence and epidemiological criteria.

#### Suspect:

One of the following:

- A clinically compatible illness in a person with supportive laboratory evidence
- **Or** a person with confirmatory or presumptive laboratory evidence and epidemiological criteria.

### Criteria to distinguish a new case from previous reports

Not applicable.

### Comments


Cross-reaction with related flaviviruses (e.g., dengue, West Nile, yellow fever, Japanese encephalitis viruses) on serological tests is common and results may be difficult to interpret. Due to this cross

reactivity, it is important to ask if there has been any lifetime travel to a flavivirus-endemic country or vaccination for Japanese encephalitis virus.

Yellow fever vaccination history is essential to properly interpret yellow fever diagnostic test results. Following routine vaccination, yellow fever vaccine viral RNA can be detected in serum for up to 14 days, and IgM and neutralizing antibodies can persist for years. In addition, yellow fever vaccine-associated viscerotropic disease is a rare serious adverse event in which vaccine virus proliferates in multiple organs within weeks after vaccination; viral RNA and antigen can be detected in serum and tissues and may be indistinguishable from wild-type disease without additional testing.

Arboviral IgM antibodies may be detected in some patients months or years after their acute infection or vaccination. Therefore, the presence of these virus-specific IgM antibodies may signify a past infection and be unrelated to the current acute illness. Finding virus-specific IgM antibodies in CSF or a fourfold or greater change in virus-specific antibody neutralizing titers between acute- and convalescent-phase serum specimens provides additional laboratory evidence that the arbovirus was the likely cause of the patient's recent illness. Clinical and epidemiologic history also should be carefully considered.

Clinicians should also consider testing for dengue, chikungunya, and Zika viruses for suspected yellow fever cases. As testing capacity allows, specimens meeting the requirements for yellow fever virus PCR testing at the Bureau of Public Health Laboratories (BPHL) will also be tested for dengue, chikungunya, and Zika viruses as appropriate

 **Specimens from all cases must be sent to the Bureau of Public Health Laboratories for confirmation.**

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## ! \* Zika Virus Disease and Infection, Congenital

Merlin disease code=06012

Case report form (CRF): [Florida Confidential Vector-borne Disease Infection CRF](#)  
**MERLIN EXTENDED DATA REQUIRED**

### Background

Zika virus (ZIKV) is an emerging mosquito-borne virus that has spread rapidly across the Americas in 2015 and 2016. Only about 1 in 5 people infected with Zika virus are symptomatic and some patients may not have fever. ZIKV disease, dengue fever, and chikungunya fever are difficult to differentiate clinically. It is also important to note that co-infections with these viruses can occur. Subsequent investigations have demonstrated vertical transmission of ZIKV to the fetus in pregnant women. These in utero infections have been associated with the potential for devastating outcomes including microcephaly, other central nervous system (CNS) abnormalities, and spontaneous abortions. There is also an association with ZIKV infection and post-infection Guillain-Barré syndrome (GBS).

### Clinical criteria for case classification

A liveborn infant with congenital microcephaly, intracranial calcifications, structural brain or eye abnormalities, or other congenital CNS-related abnormalities not explained by another etiology.

### Laboratory criteria for case classification

#### Confirmatory:

Either of the following:

- Detection of ZIKV by culture, viral antigen, or viral RNA in fetal tissue, amniotic fluid, neonatal serum, cerebrospinal fluid (CSF), urine, or umbilical cord blood\* performed by a state public health laboratory (PHL) or the Centers for Disease Control and Prevention (CDC) in a specimen collected within 2 days of birth (or later if perinatal infection has been ruled out)
- **Or** all of the following:
  - Positive enzyme immunosorbent assay (EIA) or immunofluorescent assay (IFA) test for ZIKV IgM antibodies in neonatal serum, CSF, or umbilical cord blood\* collected within 2 days of birth (or later if perinatal infection has been ruled out);
  - **And** positive neutralizing antibody titers by plaque reduction neutralization test (PRNT) against ZIKV;
  - **And** negative neutralizing antibody titers by PRNT against dengue virus (DENV) or other flaviviruses endemic to the region where exposure occurred.

#### Presumptive:

- Both of the following:
  - Positive or equivocal EIA or IFA test for ZIKV IgM antibodies in neonatal serum, CSF, or umbilical cord blood\* collected within 2 days of birth (or later if perinatal infection has been ruled out)
  - **And** positive neutralizing antibody titers by PRNT against ZIKV;
- **Or** all of the following:
  - Positive or equivocal EIA or IFA test for ZIKV IgM antibodies in neonatal serum, CSF, or umbilical cord blood\* collected within 2 days of birth or later if perinatal infection has been ruled out;
  - **And** negative or equivocal EIA or IFA test for DENV IgM antibodies or IgM antibodies to other flaviviruses endemic to the region where the exposure occurred;
  - **And** no PRNT performed.

Supportive:

- All of the following:
  - Positive or equivocal EIA or IFA test for ZIKV IgM antibodies in neonatal serum, CSF, or umbilical cord blood;\*
  - **And** no DENV IgM testing performed;
  - **And** no PRNT performed;
  - **And** mother's test results do not rule out recent ZIKV infection;
- **Or** positive neutralizing antibody titers by PRNT against ZIKV in a sample collected  $\geq 18$  months after birth;
- **Or** both of the following:
  - Positive EIA or IFA for ZIKV IgM antibodies from a commercial laboratory
  - **And** no testing performed by a PHL or CDC on the same specimen;
- **Or** both of the following:
  - Positive ZIKV PCR by a commercial laboratory;
  - **And** no testing performed by a PHL or CDC on the same specimen.

Not a case:

One or more of the following:

- Both of the following:
  - Positive or equivocal EIA or IFA for ZIKV IgM antibodies by a commercial laboratory;
  - **And** negative or indeterminate EIA or IFA for ZIKV IgM antibodies by a PHL or CDC for the same specimen;
- **Or** all of the following:
  - Positive ZIKV PCR by a commercial laboratory;
  - **And** negative or equivocal PCR by a PHL or CDC;
  - **And** absence of a positive or equivocal EIA or IFA for ZIKV IgM antibodies by a PHL or CDC for the same specimen;
- **Or** positive neutralizing antibody titers by PRNT against ZIKV in a sample collected  $< 18$  months after birth;
- **Or** negative neutralizing antibody titers by PRNT against ZIKV;
- **Or** negative ZIKV PCR;
- **Or** negative or indeterminate EIA or IFA for ZIKV IgM antibodies;
- **Or** testing is otherwise determined to be falsely positive by case reviewer.

\*Note: While collection of umbilical cord blood was initially recommended, neonatal serum is the preferred specimen type. Umbilical cord blood should only be submitted for testing when no serum is available.

## Epidemiological criteria for case classification

### ***Mother***

One or more of the following:

- Resides in or recent travel to an area with known ZIKV transmission,
- **Or** sexual contact with a confirmed or probable case of ZIKV infection or person with recent travel to an area with known ZIKV transmission,
- **Or** receipt of blood or blood products within 30 days of symptom onset,
- **Or** receipt of organ or tissue transplant within 30 days of symptom onset,
- **Or** association in time and place with a confirmed or probable case,
- **Or** likely vector exposure in an area with suitable seasonal and ecological conditions for potential local vectorborne transmission.

### ***Infant***

Both of the following:

- Mother meets the epidemiological criteria
- **And** infant meets either of the following:
  - No travel to an area with known ZIKV transmission reported for the infant since birth if tested after 18 months
  - **Or** after reviewing postnatal travel history and 18-month test results, case reviewer determines low ZIKV exposure risk postnatally.

## Case classification

### ***Zika virus disease***

#### Confirmed:

Clinically compatible congenital disease in a neonate with confirmatory laboratory evidence whose mother meets the epidemiologic criteria.

#### Probable:

Clinically compatible congenital disease in a neonate with presumptive laboratory evidence whose mother meets the epidemiologic criteria.

#### Suspect:

Either of the following:

- Clinically compatible congenital disease in a neonate with supportive laboratory evidence whose mother meets the epidemiologic criteria
- **Or** clinically compatible congenital disease in a neonate with supportive laboratory evidence and the infant epidemiological criteria.

### ***Zika virus infection***

#### Confirmed:

A neonate with confirmatory laboratory evidence whose mother meets the epidemiologic criteria.

#### Probable:

A neonate with presumptive laboratory evidence whose mother meets the epidemiologic criteria.

**Suspect:**

Either of the following:

- A neonate with supportive laboratory evidence whose mother meets the epidemiologic criteria
- **Or** an infant with supportive laboratory evidence and the infant epidemiological criteria.

**Criteria to distinguish a new case from previous reports**

Not applicable.

**Comments**

As part of the complete evaluation of congenital microcephaly or other CNS birth defects, testing for other congenital infections such as syphilis, toxoplasmosis, rubella, cytomegalovirus infection, lymphocytic choriomeningitis virus infection, and herpes simplex virus infections should be considered. An assessment of potential genetic and other teratogenic causes of the congenital anomalies should also be performed.

Cross-reaction with related flaviviruses (e.g., dengue, West Nile, yellow fever, Japanese encephalitis viruses) on serological tests is common and results may be difficult to interpret. Due to this cross-reactivity, it is important to ask if there has been any lifetime travel by the mother to a flavivirus-endemic country or vaccination for yellow fever or Japanese encephalitis viruses. In addition, people with dengue infection often test positive for ZIKV IgM. It is also important to get the lifetime travel history for the infant, particularly if PRNT testing is going to be performed at 18 months of age to assess congenital exposure.

 **Specimens from infants with possible congenital infections should be sent to the Bureau of Public Health Laboratories.**

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## !\* Zika Virus Disease and Infection, Non-Congenital

Merlin disease code=06010

Case report form (CRF): [Florida Confidential Vector-borne Disease Infection CRF](#)

**MERLIN EXTENDED DATA REQUIRED**

### Background

Zika virus (ZIKV) is an emerging mosquito-borne virus that has spread rapidly across the Americas in 2015 and 2016. Only about 1 in 5 people infected with Zika virus are symptomatic and some patients may not have fever. ZIKV disease, dengue fever, and chikungunya fever are difficult to differentiate clinically. It is also important to note that co-infections with these viruses can occur. Subsequent investigations have demonstrated vertical transmission of ZIKV to the fetus in pregnant women. These in utero infections have been associated with the potential for devastating outcomes including microcephaly, other central nervous system abnormalities, and spontaneous abortions. There is also an association with ZIKV infection and post-infection Guillain-Barré syndrome (GBS).

### Clinical criteria for case classification

A person with one or more of the following not explained by another etiology:

- Clinically compatible illness that includes one or more of the following:
  - Fever (measured or reported),
  - **Or** rash,
  - **Or** arthralgia,
  - **Or** conjunctivitis;
- **Or** complication of pregnancy including one of the following:
  - Fetal loss
  - **Or** fetus or neonate with congenital microcephaly, congenital intracranial calcifications, other structural brain or eye abnormalities, or other congenital central nervous system-related abnormalities including defects such as clubfoot or multiple joint contractures;
- **Or** GBS meeting Brighton Collaboration level 1, 2, or 3 or other neurologic manifestations.

### Laboratory criteria for case classification

Confirmatory:

***For all locally acquired cases (including index, sporadic, and locally acquired via mosquito exposure after epidemiologic linkage or transmission in an area has been established), either of the following:***

- Detection of ZIKV by culture, viral antigen, or viral RNA in serum, CSF, tissue, or other specimen (e.g., urine, whole blood, amniotic fluid, semen) by a state public health laboratory (PHL) or the Centers for Disease Control and Prevention (CDC)
- **Or** all of the following:
  - Positive enzyme immunoassay (EIA), microsphere immunofluorescence assay (MIA), or immunofluorescent assay (IF) for ZIKV IgM antibodies in serum or CSF by a PHL or CDC,
  - **And** positive neutralizing antibody titers by plaque reduction neutralization test (PRNT) against ZIKV by a PHL or CDC,
  - **And** negative neutralizing antibody titers by PRNT against dengue virus (DENV) (or other flaviviruses endemic to the region where exposure occurred) by a PHL or CDC.

***For imported cases, either of the following:***

- Detection of ZIKV by culture, viral antigen, or viral RNA in serum, CSF, tissue, or other specimen (e.g., urine, whole blood, amniotic fluid, semen)
- **Or** all of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF;
  - **And** positive neutralizing antibody titers by PRNT against ZIKV;
  - **And** negative neutralizing antibody titers by PRNT against DENV (or other flaviviruses endemic to the region where exposure occurred).

**Presumptive:*****For index or sporadic cases acquired locally via mosquito exposure, all of the following:***

- Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF by a PHL or CDC;
- **And** positive neutralizing antibody titers by PRNT against ZIKV by a PHL or CDC;
- **And** absence of positive EIA, MIA, or IF for DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred).

***For cases acquired locally via mosquito exposure after epidemiologic linkage or transmission in an area has been established, one or more of the following:***

- All of the following:
  - Positive or equivocal EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF by a PHL or CDC;
  - **And** positive neutralizing antibody titers by PRNT against ZIKV by a PHL or CDC;
  - **And** absence of positive EIA, MIA, or IF for DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred).
- **Or** all of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF by a PHL or CDC;
  - **And** negative or equivocal EIA, MIA, or IF for DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred) by a PHL or CDC;
  - **And** absence of a negative neutralizing antibody titers by PRNT against ZIKV;
- **Or** both of the following:
  - Seroconversion from negative for ZIKV IgM antibodies in an acute-phase specimen to positive for ZIKV IgM antibodies in a convalescent-phase specimen by EIA, MIA, or IF in serum or CSF by a PHL or CDC
  - **And** negative or equivocal EIA, MIA, or IF for DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred) by a PHL or CDC;
- **Or** all of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF by a PHL or CDC;
  - **And** negative DENV polymerase chain reaction (PCR) by a PHL or CDC;
  - **And** negative or equivocal EIA, MIA, or IF for DENV IgM antibodies by a PHL or CDC;
  - **And** seroconversion from negative for DENV IgG antibodies in an acute-phase specimen to positive for DENV IgG antibodies in a convalescent-phase specimen by EIA, MIA, or IF by a PHL or CDC;
- **Or** all of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum;
  - **And** positive EIA, MIA, or IF for DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred);
  - **And** epidemiological linkage to a confirmed or probable ZIKV case.

***For imported cases in pregnant women, all of the following:***

- Positive or equivocal EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF;
- **And** positive neutralizing antibody titers by PRNT against ZIKV;
- **And** absence of positive EIA, MIA, or IF for DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred).

***For non-pregnant, imported cases, one or more of the following:***

- All of the following:
  - Positive or equivocal EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF;
  - **And** positive neutralizing antibody titers by PRNT against ZIKV;
  - **And** absence of positive EIA, MIA, or IF for DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred);
- **Or** both of the following:
  - Seroconversion from negative for ZIKV IgM antibodies in an acute-phase specimen to positive for ZIKV IgM antibodies in a convalescent-phase specimen by EIA, MIA, or IF in serum or CSF
  - **And** negative or equivocal EIA, MIA, or IF for DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred);
- **Or** all of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF;
  - **And** negative DENV PCR;
  - **And** negative or equivocal EIA, MIA, or IF for DENV IgM antibodies;
  - **And** seroconversion from negative for DENV IgG antibodies in an acute-phase specimen to positive for DENV IgG antibodies in a convalescent-phase specimen by EIA, MIA, or IF;
- **Or** all of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF;
  - **And** negative DENV PCR;
  - **And** negative or equivocal EIA, MIA, or IF for DENV IgM antibodies;
  - **And** positive for DENV IgG antibodies;
- **Or** all of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies in serum;
  - **And** positive EIA, MIA, or IF for DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred);
  - **And** epidemiological linkage to a confirmed or probable ZIKV case.

Supportive:***For locally acquired cases and imported cases in pregnant women, one or more of the following:***

- Both of the following:
  - Positive ZIKV PCR by a commercial laboratory
  - **And** no testing performed by a PHL or CDC on the same specimen
- **Or** both of the following:
  - Positive EIA, MIA, or IF for ZIKV IgM antibodies by a commercial laboratory
  - **And** no testing performed by a PHL or CDC on the same specimen.

**For all cases, one or more of the following:**

- All of the following:
  - Positive, equivocal, or indeterminate EIA, MIA, or IF for ZIKV IgM antibodies in serum or CSF;
  - **And** absence of positive DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred);
  - **And** absence of positive or negative neutralizing antibody titers by PRNT against ZIKV;
- **Or** both of the following:
  - Positive neutralizing antibody titers by PRNT against ZIKV
  - **And** absence of positive DENV IgM antibodies (or other flaviviruses endemic to the region where the exposure occurred);
- **Or** all of the following:
  - Positive ZIKV PCR by a commercial laboratory;
  - **And** negative or equivocal ZIKV PCR by a PHL or CDC for the same specimen;
  - **And** absence of a positive or equivocal EIA, MIA, or IF for ZIKV IgM antibodies by a PHL or CDC for the same specimen;
  - **And** no additional specimens collected;
- **Or** all of the following:
  - Positive or equivocal EIA, MIA, or IF for ZIKV IgM antibodies by a commercial laboratory;
  - **And** negative EIA, MIA, or IF for ZIKV IgM antibodies by a PHL or CDC for the same specimen;
  - **And** positive neutralizing antibody titers by PRNT against ZIKV.

Not a case:

One or more of the following:

- Both of the following:
  - Positive or equivocal EIA, MIA, or IF for ZIKV IgM antibodies by a commercial laboratory
  - **And** negative EIA, MIA, or IF for ZIKV IgM antibodies by a PHL or CDC for the same specimen;
- **Or** all of the following:
  - Positive ZIKV PCR by a commercial laboratory;
  - **And** negative or equivocal ZIKV PCR by a PHL or CDC;
  - **And** negative or indeterminate EIA, MIA, or IF for ZIKV IgM antibodies by a PHL or CDC for the same specimen;
  - **And** negative or indeterminate EIA, MIA, or IF for ZIKV IgM antibodies in a convalescent specimen collected 7 days to 12 weeks after the first specimen;
- **Or** negative ZIKV PCR;
- **Or** negative EIA, MIA, or IF for ZIKV IgM antibodies;
- **Or** testing is otherwise determined to be falsely positive by case reviewer.

## Epidemiological criteria for case classification

### General epidemiological criteria:

One or more of the following:

- Resides in or recent travel to an area with known ZIKV transmission,
- **Or** receipt of blood or blood products within 30 days of symptom onset,
- **Or** receipt of organ or tissue transplant within 30 days of symptom onset,
- **Or** epidemiologically linked to a confirmed or probable case,
- **Or** sexual contact with a confirmed or probable case of ZIKV infection or person with recent travel to an area with known ZIKV transmission,
- **Or** likely vector exposure in an area with suitable seasonal and ecological conditions for potential local vectorborne transmission.

### Confirmatory perinatal linkage:

A mother whose baby is a confirmed congenital Zika case.

### Presumptive perinatal linkage:

A mother whose baby is a probable congenital Zika case.

### Supportive perinatal linkage:

A mother whose baby is a suspect congenital Zika case.

## Case classification

### ***Zika virus disease***

#### Confirmed:

Either of the following:

- A clinically compatible illness in a person with confirmatory laboratory evidence and general epidemiological criteria
- **Or** a clinically compatible illness in a mother with confirmatory perinatal linkage.

#### Probable:

Either of the following:

- A clinically compatible illness in a person with presumptive laboratory evidence and general epidemiological criteria
- **Or** a clinically compatible illness in a mother with presumptive perinatal linkage.

#### Suspect:

Either of the following:

- A clinically compatible illness in a person with supportive laboratory evidence and general epidemiological criteria
- **Or** a clinically compatible illness in a mother with supportive perinatal linkage.

### ***Zika virus infection***

#### Confirmed:

Either of the following:

- A person with confirmatory laboratory evidence with general epidemiological criteria
- **Or** a mother with confirmatory perinatal linkage.

**Probable:**

Either of the following:

- A person with presumptive laboratory evidence with general epidemiological criteria
- **Or** a mother with presumptive perinatal linkage.

**Suspect:**

Either of the following:

- A person with supportive laboratory evidence and general epidemiological criteria
- **Or** a mother with supportive perinatal linkage.

**Criteria to distinguish a new case from previous reports**

Not applicable.

**Comments**

Cross-reaction with related flaviviruses (e.g., dengue, West Nile, yellow fever, Japanese encephalitis viruses) on serological tests is common and results may be difficult to interpret. Due to this cross-reactivity, it is important to ask if there has been any lifetime travel to a flavivirus-endemic country or vaccination for yellow fever or Japanese encephalitis viruses. In addition, people with dengue infection often test positive for ZIKV IgM.

Due to the cross-reactivity seen among flaviviruses, individuals testing positive for both ZIKV and DENV IgM should be reported as flavivirus disease and infection (Merlin disease code=07000). PRNT is not required to meet these criteria; however, if a PRNT is performed, there should be positive neutralizing antibody titers to both ZIKV and DENV. If an individual with flavivirus results is epidemiologically linked to a confirmed or probable ZIKV or DENV case, the case should not be reported as a flavivirus case.


Clinicians should also consider testing for dengue and chikungunya fever for suspect cases of ZIKV disease if fever was reported. As testing capacity allows, all specimens meeting the requirements for ZIKV disease PCR testing at the Bureau of Public Health Laboratories (BPHL) will also be tested for dengue and chikungunya viruses if the patient reported fever. All specimens collected in the first four days of illness and meeting standard requirements for dengue and chikungunya testing will also be tested for Zika virus by PCR if travel to a ZIKV disease endemic area is reported.

**Differentiating between ZIKV and DENV infections in PCR-negative patients with positive flavivirus labs**

- Conjunctivitis and pruritic rash are more common with ZIKV disease than dengue fever.
- Thrombocytopenia and leukopenia are more common and severe in cases of dengue fever compared to ZIKV disease.
- ZIKV is not known to cause severe syndromes that can be seen with DENV (dengue hemorrhagic fever or dengue shock syndrome).
- ZIKV IgM titers are usually positive in dengue fever patients. DENV IgM titers may or may not be positive in ZIKV disease patients. EIA IgM results from BPHL are not quantitative and the values derived from this assay cannot be compared between illnesses.
- For non-PCR positive cases, dengue fever cases should be created instead of ZIKV disease cases if one of the following is true:
  - The clinician ordered dengue testing, did not request Zika testing, and dengue IgM was positive;
  - **Or** the clinician ordered Zika testing and Zika IgM was negative, while dengue IgM was

positive;

- **Or** PRNT testing is positive for dengue and negative for Zika.

 **Acute and convalescent specimens from people with infections believed to be Florida-acquired should be sent to BPHL. Acute specimens from people with infections believed to be acquired outside Florida do not need to be forwarded to BPHL unless the specimen is from a pregnant woman, infant, or possible GBS case.**

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