



Infectious Disease Epidemiology Section
Office of Public Health,
Louisiana Dept of Health & Hospitals
800-256-2748 (24 hr number)
www.infectiousdisease.dhh.louisiana.gov

Case Definitions for Diseases of Public Health Importance

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Table of Contents

Arboviral Diseases	4
Amebiasis	7
Anthrax	8
Aseptic Meningitis	10
Bacterial Meningitis, Other	11
Botulism	12
Brucellosis	15
Campylobacter	16
Chagas Disease, Asymptomatic	17
Chagas Disease	18
Cholera	20
Coccidioidomycosis	21
Cryptosporidiosis	23
Cyclosporiasis	24
Dengue Fever	25
Diphtheria	28
Ehrlichiosis	29
Escherichia coli, Shiga toxin-producing	32
Giardiasis	34
Haemophilus influenzae	35
Hansen's Disease (Leprosy)	36
Hantavirus Pulmonary Syndrome	37
Hemolytic Uremic Syndrome	39
Hepatitis A, Acute	40
Hepatitis B, Acute	41
Hepatitis B, Chronic	42
Hepatitis B, Perinatal	43
Hepatitis C, Acute	44
Hepatitis C, Past or Present	45
Influenza A virus infections, Novel	46
Influenza Associated Pediatric Mortality	48
Kawasaki Syndrome	50
Legionellosis	51
Leptospirosis	53
Listeriosis	54
Lyme Disease	55
Malaria	58
Measles	60
Meningococcal Disease	62
Mumps	63
Pertussis	66
Plague	67

Poliovirus infection, nonparalytic	68
Poliomyelitis, paralytic	69
Psittacosis	70
Q Fever	72
Rabies, Animal	75
Rabies, Human	76
Reye Syndrome	77
Rheumatic Fever	78
Rocky Mountain Spotted Fever	79
Rubella	81
Rubella, Congenital	83
Salmonellosis	86
Severe Acute Respiratory Syndrome	87
Shigellosis	88
Smallpox	89
Staph aureus Invasive, MRSA	91
Staph aureus Pneumonia, MRSA	92
Staph aureus, VISA/VRSA	93
Streptococcus Disease, Invasive, Group A	94
Streptococcus Disease, Invasive, Group B	95
Streptococcus pneumoniae, invasive disease	96
Streptococcal Toxic-Shock Syndrome	97
Tetanus	99
Toxic-Shock Syndrome	100
Trichinosis	101
Tularemia	102
Typhoid Fever	103
Varicella (Chickenpox)	104
Vibriosis (Non-cholera <i>Vibrio spp.</i>)	105
Viral Hemorrhagic Fever	106
Yellow Fever	108

Neuroinvasive and Non-Neuroinvasive Domestic Arboviral Diseases

(includes diseases caused by California serogroup viruses; eastern and western equine encephalitis viruses; and Powassan, St. Louis encephalitis, and West Nile viruses)

2004 Case Definition

Clinical description

Arboviral infections may be asymptomatic or may result in febrile illnesses of variable severity sometimes associated with central nervous system (CNS) involvement. When the CNS is affected, clinical syndromes include aseptic meningitis, myelitis and encephalitis, which are clinically indistinguishable from similar syndromes caused by other viruses. Arboviral meningitis is usually characterized by fever, headache, stiff neck, and pleocytosis in cerebrospinal fluid. Arboviral myelitis is usually characterized by fever and acute bulbar or limb paresis or flaccid paralysis. Arboviral encephalitis is usually characterized by fever, headache, and altered mental status ranging from confusion to coma with or without additional signs of brain dysfunction. Less common neurological syndromes can include cranial and peripheral neuritis or other neuropathies, including Guillain-Barré syndrome.

Non-neuroinvasive syndromes caused by these usually neurotropic arboviruses can rarely include myocarditis, pancreatitis, or hepatitis. In addition, they may cause febrile illnesses (e.g., West Nile fever [WNF]) that are non-localized, self-limited illnesses with headache, myalgias, arthralgias, and sometimes accompanied by skin rash or lymphadenopathy. Laboratory-confirmed arboviral illnesses lacking documented fever can occur, and overlap among the various clinical syndromes is common.

Clinical criteria for diagnosis

Cases of arboviral disease are classified either as neuroinvasive or non-neuroinvasive, according to the following criteria:

Neuroinvasive disease requires the presence of fever and at least one of the following, as documented by a physician and in the absence of a more likely clinical explanation:

- Acutely altered mental status (e.g., disorientation, obtundation, stupor, or coma), or
- Other acute signs of central or peripheral neurologic dysfunction (e.g., paresis or paralysis, nerve palsies, sensory deficits, abnormal reflexes, generalized convulsions, or abnormal movements), or
- Pleocytosis (increased white blood cell concentration in cerebrospinal fluid [CSF]) associated with illness clinically compatible with meningitis (e.g., headache or stiff neck).

Non-neuroinvasive disease requires, at minimum, the presence of documented fever, as measured by the patient or clinician, the absence of neuroinvasive disease (above), and the absence of a more likely clinical explanation for the illness. Involvement of non-neurological organs (e.g., heart, pancreas, liver) should be documented using standard clinical and laboratory criteria.

Laboratory criteria for diagnosis

Cases of arboviral disease are also classified either as confirmed or probable, according to the following laboratory criteria:

Confirmed case :

- Four-fold or greater change in virus-specific serum antibody titer, or
- Isolation of virus from or demonstration of specific viral antigen or genomic sequences in tissue, blood, CSF, or other body fluid, or
- Virus-specific immunoglobulin M (IgM) antibodies demonstrated in CSF by antibody-capture enzyme immunoassay (EIA), or
- Virus-specific IgM antibodies demonstrated in serum by antibody-capture EIA and confirmed by demonstration of virus-specific serum immunoglobulin G (IgG) antibodies in the same or a later specimen by another serologic assay (e.g., neutralization or hemagglutination inhibition).

Probable case :

- Stable (less than or equal to a two-fold change) but elevated titer of virus-specific serum antibodies, or
- Virus-specific serum IgM antibodies detected by antibody-capture EIA but with no available results of a confirmatory test for virus-specific serum IgG antibodies in the same or a later specimen.

Case definition

A case must meet one or more of the above clinical criteria and one or more of the above laboratory criteria.

Comment

Because closely related arboviruses exhibit serologic cross-reactivity, positive results of serologic tests using antigens from a single arbovirus can be misleading. In some circumstances (e.g., in areas where two or more closely related arboviruses occur, or in imported arboviral disease cases), it may be epidemiologically important to attempt to pinpoint the infecting virus by conducting cross-neutralization tests using an appropriate battery of closely related viruses. This is essential, for example, in determining that antibodies detected against St. Louis encephalitis virus are not the result of an infection with West Nile (or dengue) virus, or vice versa, in areas where both of these viruses occur. Because dengue fever and West Nile fever can be clinically indistinguishable, the importance of a recent travel history and appropriate serologic testing cannot be overemphasized. In some persons, West Nile virus-specific serum IgM antibody can wane slowly and be detectable for more than one year following infection. Therefore, in areas where West Nile virus has circulated in the recent past, the co-existence of West Nile virus-specific IgM antibody and illness in a given case may be coincidental and unrelated. In those areas, the testing of serially collected serum specimens assumes added importance.

The seasonality of arboviral transmission is variable and depends on the geographic location of exposure, the specific cycles of viral transmission, and local climatic conditions. Reporting should be etiology-specific (see below; the six diseases printed in bold are nationally reportable to CDC):

- **St. Louis encephalitis virus disease**
- **West Nile virus disease**

- **Powassan virus disease**
- **Eastern equine encephalitis virus disease**
- **Western equine encephalitis virus disease**
- **California serogroup virus disease** (includes infections with the following viruses: California encephalitis, Jamestown Canyon, Keystone, La Crosse, snowshoe hare, and trivittatus)

Note: Due to the continued risk of unintentional or intentional introduction of exotic arboviruses into the United States (e.g., Venezuelan equine encephalitis virus), or the reemergence of indigenous epidemic arboviruses (e.g., St. Louis encephalitis and western equine encephalitis viruses), physicians and local public health officials should maintain a high index of clinical suspicion for cases of potential exotic or unusual arboviral etiology, and consider early consultation with arboviral disease experts at state health departments and CDC.

Louisiana Epi Comments:

Regional Office:

- Collect H&P, labwork from hospital and forward to central office epi.
- The form listed in the Epi Manual only needs to be completed if a sample is submitted to the OPH laboratory.

Central Office:

- Forward clinical information to Arboviral coordinator.

Amebiasis (*Entamoeba histolytica*)

1990 Case Definition

Clinical description

Infection of the large intestine by *Entamoeba histolytica* may result in an illness of variable severity ranging from mild, chronic diarrhea to fulminant dysentery. Infection also may be asymptomatic. Extraintestinal infection also can occur (e.g., hepatic abscess).

Laboratory criteria for diagnosis

Intestinal amebiasis

Demonstration of cysts or trophozoites of *E. histolytica* in stool or
Demonstration of trophozoites in tissue biopsy or ulcer scrapings by culture or histopathology

Extraintestinal amebiasis

Demonstration of *E. histolytica* trophozoites in extraintestinal tissue

Case classification

Confirmed, intestinal amebiasis: a clinically compatible illness that is laboratory confirmed

Confirmed, extraintestinal amebiasis: a parasitologically confirmed infection of extraintestinal tissue, or among symptomatic persons (with clinical or radiographic findings consistent with extraintestinal infection), demonstration of specific antibody against *E. histolytica* as measured by indirect hemagglutination or other reliable immunodiagnostic test (e.g., enzyme-linked immunosorbent assay)

Comment

Asymptomatic intestinal carriage of *E. histolytica* should not be reported. Among asymptomatic persons, a positive serologic test does not necessarily indicate extraintestinal amebiasis.

Anthrax (*Bacillus anthracis*)

2010 Case Definition

Clinical description

Cutaneous Anthrax: An acute illness, or post-mortem examination revealing a painless skin lesion developing over 2 to 6 days from a papular through a vesicular stage into a depressed black eschar with surrounding edema. Fever, malaise and lymphadenopathy may accompany the lesion.

Inhalation Anthrax: An acute illness, or post-mortem examination revealing a prodrome resembling a viral respiratory illness, followed by hypoxia, dyspnea or acute respiratory distress with resulting cyanosis and shock. Radiological evidence of mediastinal widening or pleural effusion is common.

Gastrointestinal Anthrax: An acute illness, or post-mortem examination revealing severe abdominal pain and tenderness, nausea, vomiting, hematemesis, bloody diarrhea, anorexia, fever, abdominal swelling and septicemia.

Oropharyngeal Anthrax: An acute illness, or post-mortem examination revealing a painless mucosal lesion in the oral cavity or oropharynx, with cervical adenopathy, edema, pharyngitis, fever, and possibly septicemia.

Meningeal Anthrax: An acute illness, or post-mortem examination revealing fever, convulsions, coma, or meningeal signs. Signs of another form will likely be evident as this syndrome is usually secondary to the above syndromes.

Case classification

Suspected: An illness suggestive of one of the known anthrax clinical forms. No definitive, presumptive, or suggestive laboratory evidence of *B. anthracis*, or epidemiologic evidence relating it to anthrax.

Probable:

A clinically compatible illness that does not meet the confirmed case definition, but with one of the following:

- Epidemiological link to a documented anthrax environmental exposure;
- Evidence of *B. anthracis* DNA (for example, by LRN-validated polymerase chain reaction) in clinical specimens collected from a normally sterile site (such as blood or CSF) or lesion of other affected tissue (skin, pulmonary, reticuloendothelial, or gastrointestinal);
- Positive result on testing of clinical serum specimens using the Quick ELISA Anthrax-PA kit;
- Detection of Lethal Factor (LF) in clinical serum specimens by LF mass spectrometry
- Positive result on testing of culture from clinical specimens with the RedLine Alert test.

Confirmed:

A clinically compatible illness with one of the following:

- Culture and identification of *B. anthracis* from clinical specimens by the Laboratory Response Network (LRN);

Demonstration of *B. anthracis* antigens in tissues by immunohistochemical staining using both *B. anthracis* cell wall and capsule monoclonal antibodies;
Evidence of a four-fold 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 ELISA testing;
Documented anthrax environmental exposure AND evidence of *B. anthracis* DNA (for example, by LRN-validated polymerase chain reaction) in clinical specimens collected from a normally sterile site (such as blood or CSF) or lesion of other affected tissue (skin, pulmonary, reticuloendothelial, or gastrointestinal).

Louisiana Epi Comments

Regional Office:

- Notify Central Office Epi Immediately

Central Office:

- Consult with Epi Manager, State Epi or BT coordinator

Aseptic Meningitis

1990 Case Definition

Clinical description

A syndrome characterized by acute onset of meningeal symptoms, fever, and cerebrospinal fluid pleocytosis, with bacteriologically sterile cultures. (See Encephalitis, Arboviral.)

Laboratory criteria for diagnosis

No evidence of bacterial or fungal meningitis

Case classification

Confirmed: a clinically compatible illness diagnosed by a physician as aseptic meningitis, with no laboratory evidence of bacterial or fungal meningitis

Comment

Aseptic meningitis is a syndrome of multiple etiologies, but many cases are caused by a viral agent

Bacterial Meningitis, Other

1996 Case Definition

Clinical description

Bacterial 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 diagnosis

Isolation of a bacterial species from the cerebrospinal fluid

Case classification

Confirmed: a clinically compatible case that is either laboratory confirmed or is accompanied by a positive blood culture

Comment

Cases of bacterial meningitis caused by *Haemophilus influenzae*, *Neisseria meningitidis*, group A *Streptococcus*, and *Listeria monocytogenes* should be reported to CDC's National Notifiable Diseases Surveillance System under the disease codes specific for these organisms. Only cases of bacterial meningitis caused by organisms other than those specified should be reported as cases of "bacterial meningitis, other."

Botulism - 1996 (*Clostridium botulinum*)

Case Definition

- Foodborne
 - Infant
 - Wound
 - Other
-

Botulism, Foodborne

Clinical description

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 diagnosis

Detection of botulinum toxin in serum, stool, or patient's food, or

Isolation of *Clostridium botulinum* from stool

Case classification

Probable: a clinically compatible case with an epidemiologic link (e.g., ingestion of a home-canned food within the previous 48 hours)

Confirmed: a clinically compatible case that is laboratory confirmed or that occurs among persons who ate the same food as persons who have laboratory-confirmed botulism

Botulism, Infant

Clinical description

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

Laboratory criteria for diagnosis

Detection of botulinum toxin in stool or serum, or

Isolation of *Clostridium botulinum* from stool

Case classification

Confirmed: a clinically compatible case that is laboratory-confirmed, occurring in a child aged less than 1 year

Botulism, Wound

Clinical description

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

Laboratory criteria for diagnosis

Detection of botulinum toxin in serum, or

Isolation of *Clostridium botulinum* from wound

Case classification

Confirmed: a clinically compatible case that is laboratory confirmed in a patient who has no suspected exposure to contaminated food and who has a history of a fresh, contaminated wound during the 2 weeks before onset of symptoms

Botulism, Other

Clinical description

See Botulism, Foodborne.

Laboratory criteria for diagnosis

Detection of botulinum toxin in clinical specimen, or

Isolation of *Clostridium botulinum* from clinical specimen

Case classification

Confirmed: a clinically compatible case that is laboratory confirmed in a patient aged greater than or equal to 1 year who has no history of ingestion of suspect food and has no wounds

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.
- Provide physician with CDC Foodborne Branch (for children and adults) or California Infant Botulism Program (for infants) contact information:
 - CDC's Foodborne and Diarrheal Diseases Branch
 - Days: (404)639-2206
 - Nights/Weekends: (404)639-2888
 - California Infant Botulism Treatment and Prevention Program
 - On-call physician: (510)231-7600
- CDC's antitoxin release form to be completed by treating physician only if release of antitoxin is approved.

Central Office:

- Inform Epi Manager or State Epi.
- Follow-up with CDC or California to obtain case determination information.

Brucellosis (*Brucella spp.*)

2010 Case Definition

Clinical description

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

Laboratory criteria for diagnosis

Definitive

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

Presumptive

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

Case classification

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

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

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

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.
- Complete Brucellosis form and forward to central office epi.

Central Office:

- Inform BT coordinator, Epi Manager or State Epi.
- Submit form to BT coordinator.

Campylobacter Infection (*Campylobacter spp.*)

1990 Case Definition

Clinical description

An infection that may result in diarrheal illness of variable severity

Laboratory criteria for diagnosis

Isolation of *Campylobacter* from any clinical specimen

Case classification

Probable: a clinically compatible case that is epidemiologically linked to a confirmed case

Confirmed: a case that is laboratory confirmed

Comment

Only confirmed cases are reported to the laboratory-based surveillance system managed by the Foodborne and Diarrheal Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC.

Chagas Disease, Asymptomatic

2007 Case Definition*

Description

Chagas Disease is caused by the parasite *Trypanosoma cruzi*, which is transmitted to animals and people by insect vectors that are found only in the Americas. There are two phases of Chagas disease: the acute phase and the chronic phase. Both phases can be symptom free or life threatening.

Laboratory criteria for diagnosis

- Positive on two types of serological assays in parallel, OR
- Positive on 12 specific bands of immunoblotting assay (IBA) for preserved protein antigen (Ag PP). Bands: 140, 100, 85, 78, 59, 57, 46, 35, 27, 23, 20 & 18 kDa, OR
- Demonstration of the trypanosome in blood, OR
- PCR positive, OR
- Isolation of *Trypanosoma cruzi* from a clinical specimen

Case classification

Suspect: A case that is positive on a single serologic assay

Confirmed: A case that is laboratory confirmed

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.

Central Office:

- Inform State Veterinarian.

*Louisiana Case Definition

Chagas Disease

2007 Case Definition*

Description

Chagas Disease is caused by the parasite *Trypanosoma cruzi*, which is transmitted to animals and people by insect vectors that are found only in the Americas. There are two phases of Chagas disease: the acute phase and the chronic phase. Both phases can be symptom free or life threatening.

Clinical case definition:

An illness characterized by one or more of the following:

Acute Disease

- An erythematous and indurated lesion at the site of an insect bite, OR
- Romaña's sign (peri-orbital edema, usually unilateral), OR
- Fever and edema of face or extremities, OR
- Hepatomegaly or splenomegaly, OR
- Lymphadenopathy

Chronic Disease

- Cardiac: cardiomyopathy, congestive heart failure, or other cardiac rhythm abnormalities
- Intestinal: megaesophagus, megacolon or other gastrointestinal tract dysfunction

Laboratory criteria for diagnosis

- Positive on two types of serological assays in parallel, OR
- Positive on 12 specific bands of immunoblotting assay (IBA) for preserved protein antigen (Ag PP). Bands: 140, 100, 85, 78, 59, 57, 46, 35, 27, 23, 20 & 18 kDa, OR
- Demonstration of the trypanosome in blood, OR
- PCR positive, OR
- Isolation of *Trypanosoma cruzi* from a clinical specimen

Case classification

Suspect: A case that meets the clinical case definition for acute OR chronic disease and is positive on a single serologic assay

Confirmed: A case that meets the clinical case definition for acute OR chronic disease and is laboratory confirmed

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.

Central Office:

- Inform State Veterinarian.

***Louisiana Case Definition**

Cholera (*Vibrio cholerae*)

1996 Case Definition

Clinical description

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

Laboratory criteria for diagnosis

Isolation of toxigenic (i.e., cholera toxin-producing) *Vibrio cholerae* O1 or O139 from stool or vomitus, or

Serologic evidence of recent infection

Case classification

Confirmed: a clinically compatible illness that is laboratory confirmed

Comment

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. Only confirmed cases should be reported to NNDSS by state health departments.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete CDC form.
- Request submission of specimen to OPH laboratory.

Central Office:

- Notify and submit form to Foodborne Coordinator.

Coccidioidomycosis (*Coccidioides spp.*, Valley fever)

2008 Case Definition

Clinical Description

Infection may be asymptomatic or may produce an acute or chronic disease. Although the disease initially resembles an influenza-like or pneumonia-like febrile illness primarily involving the bronchopulmonary system, dissemination can occur to multiple organ systems.

Clinical case definition

An illness characterized by one or more of the following:

- Influenza-like signs and symptoms (e.g., fever, chest pain, cough, myalgia, arthralgia, and headache)
- Pneumonia or other pulmonary lesion, diagnosed by chest radiograph
- Erythema nodosum or erythema multiforme rash
- Involvement of bones, joints, or skin by dissemination
- Meningitis
- Involvement of viscera and lymph nodes

Laboratory Criteria for Diagnosis

A confirmed case must meet at least one of the following laboratory criteria for diagnosis:

Cultural, histopathologic, or molecular evidence of presence of *Coccidioides* species, or Positive serologic test for coccidioidal antibodies in serum, cerebrospinal fluid, or other body fluids by:

1. Detection of coccidioidal immunoglobulin M (IgM) by immunodiffusion, enzyme immunoassay (EIA), latex agglutination, or tube precipitin, or
2. Detection of coccidioidal immunoglobulin G (IgG) by immunodiffusion, EIA, or complement fixation, or

Coccidioidal skin-test conversion from negative to positive after onset of clinical signs and symptoms

Case Classification

Confirmed: A case that meets the clinical case definition and is laboratory confirmed.

References:

1. Pappagianis D, Zimmer BL. Serology of coccidioidomycosis. Clin Microbiol Rev 1990 Jul;3(3):247-68.
2. Chiller TM, Galgiani JN, Stevens DA. Coccidioidomycosis. Infect Dis Clin North Am 2003 Mar;17(1):41-57, viii.

3. Valdivia L, Nix D, Wright M, et al. Coccidioidomycosis as a common cause of community acquired pneumonia. *Emerg Infect Dis* 2006 Jun;12(6):958-62.
4. Saubolle MA. Laboratory Aspects in the Diagnosis of Coccidioidomycosis. *Ann N Y Acad Sci* 2007 Mar 15.

Cryptosporidiosis (*Cryptosporidium*)

2009 Case Definition

Clinical description

An illness characterized by watery diarrhea, abdominal cramps, loss of appetite, low-grade fever, nausea and vomiting. The disease can be prolonged and life-threatening in severely immunocompromised persons.

Laboratory criteria for diagnosis

Laboratory-confirmed cryptosporidiosis shall be defined as the detection of a member of the genus *Cryptosporidium* by one of the following methods:

1. Organisms in stool, intestinal fluid, or tissue samples or biopsy specimens
2. in intestinal fluid or small-bowel biopsy specimens, or
3. Antigens in stool or intestinal fluid, or
4. Nucleic acid by PCR in stool, intestinal fluid, or tissue samples or biopsy specimens

Case classification

Confirmed: a case that meets the clinical description and at least one of the criteria for laboratory-confirmation as described above. When available, species designation and molecular characterization should be reported.

Probable: a case that meets the clinical description and that is epidemiologically linked to a confirmed case.

Cyclosporiasis (*Cyclospora cayetanensis*)

2010 Case Definition

Clinical description

An illness of variable severity caused by the protozoan parasite *Cyclospora cayetanensis*. The most common symptom is watery diarrhea. Other common symptoms include loss of appetite, weight loss, abdominal cramps/bloating, nausea, body aches, and fatigue. Vomiting and lowgrade fever also may be noted.

Laboratory criteria for diagnosis

Laboratory-confirmed cyclosporiasis shall be defined as the detection of *Cyclospora* organisms or DNA in stool, intestinal fluid/aspirate, or intestinal biopsy specimens.

Case classification

Probable: a case that meets the clinical description and that is epidemiologically linked to a confirmed case.

Confirmed: a case that meets the clinical description and at least one of the criteria for laboratory confirmation as described above.

Dengue Fever (Dengue Hemorrhagic Fever) (Dengue Shock Syndrome)

2010 Case Definition

Dengue Fever
Dengue Hemorrhagic Fever
Dengue Shock Syndrome

Laboratory criteria for diagnosis

Confirmatory

Isolation of dengue virus from or demonstration of specific arboviral antigen or genomic sequences in tissue, blood, cerebrospinal fluid (CSF), or other body fluid by polymerase chain reaction (PCR) test, immunofluorescence or immunohistochemistry, OR
Seroconversion from negative for dengue virus-specific serum Immunoglobulin M (IgM) antibody in an acute phase (≤ 5 days after symptom onset) specimen to positive for dengue-specific serum IgM antibodies in a convalescent-phase specimen collected ≥ 5 days after symptom onset, OR
Demonstration of a ≥ 4 -fold rise in reciprocal Immunoglobulin G (IgG) antibody titer or Hemagglutination inhibition titer to dengue virus antigens in paired acute and convalescent serum samples, OR
Demonstration of a ≥ 4 -fold rise in PRNT (plaque reduction neutralization test) 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 dengue viruses and other flaviviruses tested in a convalescent serum sample, OR
Virus-specific immunoglobulin M (IgM) antibodies demonstrated in CSF.

Presumptive/Probable

Dengue-specific IgM antibodies present in serum with a P/N ratio ≥ 2 .

Exposure

Travel to a dengue endemic country or presence at location with ongoing outbreak within previous two weeks of dengue-like illness, OR
Association in time and place with a confirmed or probable dengue case.

Case classification

Suspected: A clinically compatible case of DF, DHF or DSS that is epidemiologically linked to a confirmed case

Probable: A clinically compatible case of DF, DHF, or DSS with laboratory results indicative of presumptive infection

Confirmed: A clinically compatible case of DF, DHF, or DSS with confirmatory laboratory results

Dengue Fever

Clinical description

Dengue fever (DF) is most commonly an acute febrile illness defined by the presence of fever and two or more of the following, retro-orbital or ocular pain, headache, rash, myalgia, arthralgia, leukopenia, or hemorrhagic manifestations (e.g., positive tourniquet test, petechiae; purpura/ecchymosis; epistaxis; gum bleeding; blood in vomitus, urine, or stool; or vaginal bleeding) but not meeting the case definition of dengue hemorrhagic fever. Anorexia, nausea, abdominal pain, and persistent vomiting may also occur but are not case-defining criteria for DF.

Dengue Hemorrhagic Fever (DHF)

Clinical description

Dengue hemorrhagic fever (DHF) is characterized by all of the following

- Fever lasting from 2-7 days
- Evidence of hemorrhagic manifestation or a positive tourniquet test
- Thrombocytopenia ($\leq 100,000$ cells per mm^3)
- Evidence of plasma leakage shown by hemoconcentration (an increase in hematocrit $\geq 20\%$ above average for age or a decrease in hematocrit $\geq 20\%$ of baseline following fluid replacement therapy), OR pleural effusion, or ascites or hypoproteinemia.

Dengue Shock Syndrome

Clinical description

Dengue shock syndrome (DSS) has all of criteria for DHF plus circulatory failure as evidenced by

- Rapid and weak pulse and narrow pulse pressure ($< 20\text{mm Hg}$), OR
- Age-specific hypotension and cold, clammy skin and restlessness

Comment

Asymptomatic Blood or Tissue Donor

Dengue virus - specific viral antigen or genomic sequences demonstrated in donated blood or organs during screening and confirmatory testing in the absence of symptoms in the donor.

Dengue viruses are members of the Flaviviridae and have sufficient antigenic similarity to yellow fever virus, Japanese encephalitis virus, and West Nile virus that previous infection or vaccination may raise cross-reactive serum antibodies. After a primary infection with a heterologous flavivirus, subsequent antibody testing by ELISA may produce false positive results for a different flavivirus. PRNT can often resolve cross-reactive serum antibodies in this situation and identify the infecting virus. However, high-titered cross-reactive antibody levels produced from multiple previous flavivirus infections cannot be resolved by PRNT. This demonstrates the complexity inherent in serological diagnosis and differentiation in populations living in regions where more than one flavivirus co-circulates. However, only a small

proportion of the US population has evidence of previous flavivirus infection (or vaccination) so that cross-reactive flavivirus antibodies should not be a significant limitation to dengue diagnosis among most US travelers. Among US residents, most testing for dengue is done through private clinical laboratories using IgM or IgG detection techniques.

Reference testing is available from CDC's Dengue Branch, Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, 1324 Calle Cañada, San Juan, PR 00920-3860, telephone 787-706-2399, fax 787-706-2496

Louisiana Epi Comments:

Regional Office:

- Consult with central office epi.
- Obtain history of travel.

Central Office:

- Inform Epi Manager or State Epi.

Diphtheria (*Corynebacterium diphtheriae*)

2010 Case Definition

Case classification

Probable :

In the absence of a more likely diagnosis, an upper respiratory tract illness with

an adherent membrane of the nose, pharynx, tonsils, or larynx; and
absence of laboratory confirmation; and
lack of epidemiologic linkage to a laboratory-confirmed case of diphtheria.

Confirmed:

An upper respiratory tract illness with an adherent membrane of the nose, pharynx, tonsils, or larynx;
and any of the following:

isolation of *Corynebacterium diphtheriae* from the nose or throat; or
histopathologic diagnosis of diphtheria; or
epidemiologic linkage to a laboratory-confirmed case of diphtheria.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.
- Contact investigation as per central office recommendation.

Central Office:

- Inform Epi Manager or State Epi.

Ehrlichiosis/Anaplasmosis

2008 Case Definition

Clinical presentation

A tick-borne illness characterized by acute onset of fever and one or more of the following symptoms or signs: headache, myalgia, malaise, anemia, leukopenia, thrombocytopenia, or elevated hepatic transaminases. Nausea, vomiting, or rash may be present in some cases. Intracytoplasmic bacterial aggregates (morulae) may be visible in the leukocytes of some patients.

Clinical evidence

Any reported fever and one or more of the following: headache, myalgia, anemia, leukopenia, thrombocytopenia, or any hepatic transaminase elevation.

Laboratory evidence

For the purposes of surveillance,

1. ***Ehrlichia chaffeensis* infection** (formerly included in the category Human Monocytic Ehrlichiosis [HME]):

Laboratory confirmed:

- o Serological evidence of a fourfold change in immunoglobulin G (IgG)-specific antibody titer to *E. chaffeensis* antigen by indirect immunofluorescence assay (IFA) between paired serum samples (one taken in first week of illness and a second 2-4 weeks later), **or**
- o Detection of *E. chaffeensis* DNA in a clinical specimen via amplification of a specific target by polymerase chain reaction (PCR) assay, **or**
- o Demonstration of ehrlichial antigen in a biopsy or autopsy sample by immunohistochemical methods, **or**
- o Isolation of *E. chaffeensis* from a clinical specimen in cell culture.

Laboratory supportive:

- o Serological evidence of elevated IgG or IgM antibody reactive with *E. chaffeensis* antigen by IFA, enzyme-linked immunosorbent assay (ELISA), dot-ELISA, 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.), **or**
- o Identification of morulae in the cytoplasm of monocytes or macrophages by microscopic examination.

2. ***Ehrlichia ewingii* infection** (formerly included in the category Ehrlichiosis [unspecified, or other agent]):

Laboratory confirmed:

- Because the organism has never been cultured, antigens are not available. Thus, *Ehrlichia ewingii* infections may only be diagnosed by molecular detection methods: *E. ewingii* DNA detected in a clinical specimen via amplification of a specific target by polymerase chain reaction (PCR) assay.
3. ***Anaplasma phagocytophilum* infection** (formerly included in the category Human Granulocytic Ehrlichiosis [HGE]):

Laboratory confirmed:

- Serological evidence of a fourfold change in IgG-specific antibody titer to *A. phagocytophilum* antigen by indirect immunofluorescence assay (IFA) in paired serum samples (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 polymerase chain reaction (PCR) assay, **or**
- Demonstration of anaplasma antigen in a biopsy/autopsy sample by immunohistochemical methods, **or**
- Isolation of *A. phagocytophilum* from a clinical specimen in cell culture.

Laboratory supportive:

- Serological evidence of elevated IgG or IgM antibody reactive with *A. phagocytophilum* antigen by IFA, enzyme-linked immunosorbent Assay (ELISA), dot-ELISA, 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.), **or**
- Identification of morulae in the cytoplasm of neutrophils or eosinophils by microscopic examination.

4. **Human ehrlichiosis/anaplasmosis – undetermined:**
- See case classification

Exposure

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

Case Classification

Confirmed: A clinically compatible case (meets clinical evidence criteria) that is laboratory confirmed.

Probable: A clinically compatible case (meets clinical evidence criteria) that has supportive laboratory results. For ehrlichiosis/anaplasmosis – an undetermined case can only be classified as probable. This occurs when a case has compatible clinical criteria with laboratory evidence to support ehrlichia/anaplasma infection, but not with sufficient clarity to definitively place it in one of the categories previously described. This may include the identification of morulae in white cells by microscopic examination in the absence of other supportive laboratory results.

Suspect: A case with laboratory evidence of past or present infection but no clinical information available (e.g. a laboratory report).

Comment

There are at least three species of bacteria, all intracellular, responsible for ehrlichiosis/ anaplasmosis in the United States: *Ehrlichia chaffeensis*, found primarily in monocytes, and *Anaplasma phagocytophilum* and *Ehrlichia 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 *Ehrlichia chaffeensis*, 2) human ehrlichiosis caused by *E. ewingii*, 3) human anaplasmosis caused by *Anaplasma phagocytophilum*, or 4) human ehrlichiosis/anaplasmosis - undetermined. Cases reported in the fourth 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 ELISA 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.

References

Dumler JS. Barbet AF. Bekker CP. Dasch GA. Palmer GH. Ray SC. Rikihisa Y. Rurangirwa FR. 2001. Reorganization of genera in the families Rickettsiaceae and Anaplasmataceae in the order Rickettsiales: unification of some species of *Ehrlichia* with *Anaplasma*, *Cowdria* with *Ehrlichia* and *Ehrlichia* with *Neorickettsia*, descriptions of six new species combinations and designation of *Ehrlichia equi* and 'HGE agent' as subjective synonyms of *Ehrlichia phagocytophila*. International Journal of Systematic & Evolutionary Microbiology. 51(Pt 6):2145-2165. Medline UI: 11760958

Louisiana Epi Comments

Regional Office:

- Complete CDC form and forward to central office.

Central Office:

- Consult with Epi Manager for case classification.
- Forward form to CDC.

***Escherichia coli*, Shiga toxin-producing (STEC)**

2005 Case Definition

Clinical description

An infection of variable severity characterized by diarrhea (often bloody) and abdominal cramps. Illness may be complicated by hemolytic uremic syndrome (HUS) or thrombotic thrombocytopenic purpura (TTP); asymptomatic infections also may occur and the organism may cause extraintestinal infections.

Laboratory criteria for diagnosis

- Isolation of Shiga toxin-producing *Escherichia coli* from a clinical specimen. *Escherichia coli* O157:H7 isolates may be assumed to be Shiga toxin-producing. For all other *E. coli* isolates, Shiga toxin production or the presence of Shiga toxin genes must be determined to be considered STEC.

Case classification

Suspect: A case of postdiarrheal HUS or TTP (see HUS case definition), or identification of Shiga toxin in a specimen from a clinically compatible case without the isolation of the Shiga toxin-producing *E. coli*.

Probable:

- A case with isolation of *E. coli* O157 from a clinical specimen, without confirmation of H antigen or Shiga toxin production,

OR

- A clinically compatible case that is epidemiologically linked to a confirmed or probable case,

OR

- Identification of an elevated antibody titer to a known Shiga toxin-producing *E. coli* serotype from a clinically compatible case.

Confirmed: A case that meets the laboratory criteria for diagnosis. When available, O and H antigen serotype characterization should be reported.

Comment

For users of the legacy National Electronic Telecommunications System for Surveillance (NETSS), laboratory-confirmed isolates are also reported via the Public Health Laboratory Information System (PHLIS), which is managed by the Foodborne and Diarrheal Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC. The National Electronic Disease Surveillance System (NEDSS) or NEDSS compatible systems will eventually replace PHLIS and NETSS; users of NEDSS or compatible systems which report to CDC should not report via PHLIS.

Both asymptomatic infections and infections at sites other than the gastrointestinal tract, if laboratory confirmed, are considered confirmed cases that should be reported.

Louisiana Epi Comments

Regional Office:

- Complete STEC form and forward to central office epi

Central Office:

- Forward form to Foodborne Coordinator.

Giardiasis (*Giardia lamblia*)

1997 Case Definition

Clinical description

An illness caused by the protozoan *Giardia lamblia* and characterized by diarrhea, abdominal cramps, bloating, weight loss, or malabsorption. Infected persons may be asymptomatic.

Laboratory criteria for diagnosis

Demonstration of *G. lamblia* cysts in stool, or

Demonstration of *G. lamblia* trophozoites in stool, duodenal fluid, or small-bowel biopsy, or

Demonstration of *G. lamblia* antigen in stool by a specific immunodiagnostic test (e.g., enzyme-linked immunosorbent assay)

Case classification

Probable: a clinically compatible case that is epidemiologically linked to a confirmed case

Confirmed: a case that is laboratory confirmed

***Haemophilus influenzae* (Invasive Disease) (*H. influenzae*)**

1997 Case Definition

Clinical description

Invasive disease caused by *Haemophilus influenzae* may produce any of several clinical syndromes, including meningitis, bacteremia, epiglottitis, or pneumonia.

Laboratory criteria for diagnosis

Isolation of *H. influenzae* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, less commonly, joint, pleural, or pericardial fluid)

Case classification

Probable: a clinically compatible case with detection of *H. influenzae* type b antigen in CSF

Confirmed: a clinically compatible case that is laboratory confirmed

Comment

Positive antigen test results from urine or serum samples are unreliable for diagnosis of *H. influenzae* disease.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Contact investigation.
- Request submission of specimen to OPH laboratory.

Central Office:

- Inform Epi Manager or State Epi.

Hansen's Disease (Leprosy) (*Mycobacterium leprae*)

1997 Case Definition

Clinical description

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's 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 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

Borderline (dimorphous): skin lesions characteristic of both the tuberculoid and lepromatous forms

Indeterminate: early lesions, usually hypopigmented macules, without developed tuberculoid or lepromatous features

Laboratory criteria for diagnosis

Demonstration of acid-fast bacilli in skin or dermal nerve, obtained from the full-thickness skin biopsy of a lepromatous lesion

Case classification

Confirmed: a clinically compatible case that is laboratory confirmed

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.

Hantavirus Pulmonary Syndrome (Hantavirus Disease) (HPS)

2010 Case Definition

Clinical description

Hantavirus pulmonary syndrome (HPS), commonly referred to as hantavirus disease, is a febrile illness characterized by bilateral interstitial pulmonary infiltrates and respiratory compromise usually requiring supplemental oxygen and clinically resembling acute respiratory disease syndrome (ARDS). The typical prodrome consists of 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 case definition

An illness characterized by one or more of the following clinical features:

- A febrile illness (i.e., temperature greater than 101.0° F [greater than 38.3° C]) corroborated by bilateral diffuse interstitial edema or a clinical diagnosis of acute respiratory distress syndrome (ARDS) or radiographic evidence of noncardiogenic pulmonary edema, or unexplained respiratory illness resulting in death, and occurring in a previously healthy person
- An unexplained respiratory illness resulting in death, with an autopsy examination demonstrating noncardiogenic pulmonary edema without an identifiable cause

Laboratory criteria for diagnosis

- Detection of hantavirus-specific immunoglobulin M or rising titers of hantavirus-specific immunoglobulin G, or
- Detection of hantavirus-specific ribonucleic acid sequence by polymerase chain reaction in clinical specimens, or
- Detection of hantavirus antigen by immunohistochemistry

Case classification

Confirmed: a clinically compatible case that is laboratory confirmed

Comment

Laboratory testing should be performed or confirmed at a reference laboratory. 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.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete CDC form and forward to central office epi

Central Office:

- Consult with state vet.
- Submission of forms to CDC may be in conjunction with sample submission.

Hemolytic Uremic Syndrome, Post-diarrheal

1996 Case Definition

Clinical description

Hemolytic uremic syndrome (HUS) is characterized by the acute onset of microangiopathic hemolytic anemia, renal injury, and low platelet count. Thrombotic thrombocytopenic purpura (TTP) also is 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).

Laboratory criteria for diagnosis

The following are both present at some time during the illness:

Anemia (acute onset) with microangiopathic changes (i.e., schistocytes, burr cells, or helmet cells) on peripheral blood smear and
Renal injury (acute onset) evidenced by either hematuria, proteinuria, or elevated creatinine level (i.e., greater than or equal to 1.0 mg/dL in a child aged less than 13 years or greater than or equal to 1.5 mg/dL in a person aged greater than or equal to 13 years, or greater than or equal to 50% increase over baseline)

Note: 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 less than 150,000/mm³, other diagnoses should be considered.

Case classification

Probable: An acute illness diagnosed as HUS or TTP that meets the laboratory criteria in a patient who does not have a clear history of acute or bloody diarrhea in preceding 3 weeks or

An acute illness diagnosed as HUS or TTP, that a) has onset within 3 weeks after onset of an acute or bloody diarrhea and b) meets the laboratory criteria except that microangiopathic changes are not confirmed

Confirmed: an acute illness diagnosed as HUS or TTP that both meets the laboratory criteria and began within 3 weeks after onset of an episode of acute or bloody diarrhea

Comment

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.

Acute Hepatitis A

2000 Case Definition

Clinical criteria

An acute illness with

- discrete onset of symptoms (e.g. fatigue, abdominal pain, loss of appetite, intermittent nausea, vomiting), and
- jaundice or elevated serum aminotransferase levels (ALT >400)

Laboratory criteria

- IgM antibody to hepatitis A virus (anti-HAV) positive

Case Classification

Confirmed: A case that meets the clinical case definition and is laboratory confirmed or a case that meets the clinical case definition and occurs in a person who has an epidemiologic link with a person who has laboratory-confirmed hepatitis A (i.e., household or sexual contact with an infected person during the 15-50 days before the onset of symptoms).

Comment:

To date, asymptomatic individuals who are IgM anti-HAV positive have not been included as reportable cases. However, these cases do represent incident infections and it is expected that as rates of acute disease continue to decline, the case definition will be expanded to include newly infected individuals identified on the basis of laboratory results alone. When the case definition is expanded to include asymptomatic HAV infections, these cases will need to be distinguished from symptomatic cases to ensure accurate interpretation of surveillance data.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete hepatitis A details in RDD.
- Contact investigation.

Central Office:

- Inform Epi Manager or State Epi.

Hepatitis B, Acute

2000 Case Definition

Clinical case definition

An acute illness with a) discrete onset of symptoms **and** b) jaundice or elevated serum aminotransferase levels (ALT >400)

Laboratory criteria for diagnosis:

IgM antibody to hepatitis B core antigen (anti-HBc) positive
or hepatitis B surface antigen (HBsAg) positive
IgM anti-HAV negative (if done)

Case classification

Confirmed: a case that meets the clinical case definition and is laboratory confirmed

Louisiana Epi Comments

- Complete hepatitis B details in RDD.

Chronic Hepatitis B Virus

2007 Case Definition

Clinical description

Persons with chronic 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.

Laboratory criteria for diagnosis

IgM antibodies to hepatitis B core antigen (anti-HBc) negative AND a positive result on one of the following tests: hepatitis B surface antigen (HBsAg), hepatitis B e antigen (HBeAg), or hepatitis B virus (HBV) DNA

OR

HBsAg positive or HBV DNA positive or HBeAg positive two times at least 6 months apart (Any combination of these tests performed 6 months apart is acceptable.)

Case classification

Confirmed: a case that meets either laboratory criteria for diagnosis

Probable: a case with a single HBsAg positive or HBV DNA positive or HBeAg positive lab result when no IgM anti-HBc results are available

Comment

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. Negative HBeAg results and HBV DNA levels below positive cutoff level do not confirm the absence of HBV infection.

Hepatitis, Viral, Perinatal Hepatitis B Virus Infection Acquired in the United States or U.S. Territories

1995 Case Definition

Clinical case definition

Perinatal hepatitis B in the newborn may range from asymptomatic to fulminant hepatitis.

Laboratory criteria for diagnosis:

Hepatitis B surface antigen (HBsAg) positive

Case classification

HBsAg positivity in any infant aged >1-24 months who was born in the United States or in U.S. territories to an HBsAg-positive mother

Comment

Infants born to HBsAg-positive mothers should receive hepatitis B immune globulin (HBIG) and the first dose of hepatitis B vaccine within 24 hours of birth, followed by the second and third doses of vaccine at 1 and 6 months of age, respectively. Postvaccination testing for HBsAg and anti-HBs (antibody to HBsAg) is recommended from 3 to 6 months following completion of the vaccine series. 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.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Notify Perinatal Hepatitis B coordinator
 - Cathy Scott ph (318)345-1700
 - Adrienne Mercadel ph (504)838-5300

Central Office:

- Inform Epi Manager.

Hepatitis C, virus infection, acute

2007 Case Definition

Clinical case definition

An acute illness with a discrete onset of any sign or symptom consistent with acute viral hepatitis (e.g., anorexia, abdominal discomfort, nausea, vomiting), and either a) jaundice, or b) serum alanine aminotransferase (ALT) levels >400 IU/L.

Laboratory criteria for diagnosis

One or more of the following three criteria:

1. Antibodies to hepatitis C virus (anti-HCV) screening-test-positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay as defined by CDC. (URL for the signal to cut-off ratios: http://www.cdc.gov/ncidod/diseases/hepatitis/c/sc_ratios.htm), **OR**
2. Hepatitis C Virus Recombinant Immunoblot Assay (HCV RIBA) positive, **OR**
3. Nucleic Acid Test (NAT) for HCV RNA positive

AND, meets the following two criteria:

1. IgM antibody to hepatitis A virus (IgM anti-HAV) negative, **AND**
2. IgM antibody to hepatitis B core antigen (IgM anti-HBc) negative

Case classification:

Probable*: A case that meets the clinical case definition and is anti-HCV screening-test-positive (e.g. EIA), **but**

- has not been verified by an additional more specific assay or the signal to cutoff ratio is unknown **OR**
- IgM anti-HAV and IgM anti-HBV/HBsAg results are unknown.

Confirmed: a case that meets the clinical case definition, is laboratory confirmed, and is not known to have chronic hepatitis C.

*Louisiana case classification

Louisiana Epi Comments

Regional Office:

- Complete hepatitis C details in RDD.

Hepatitis C, Chronic

2010 Case Definition

Clinical description

Most hepatitis C virus (HCV)-infected persons are asymptomatic; however, many have chronic liver disease, which can range from mild to severe including cirrhosis and liver cancer.

Laboratory criteria for diagnosis

- Anti – HCV positive (repeatedly reactive) by enzyme immunoassay (EIA) verified by at least one additional more specific assay, OR
- HCV- RIBA (recombinant immunoblot assay) positive, OR
- Nucleic Acid Test (NAT) for HCV RNA positive, OR
- Report of HCV genotype, OR
- Antibodies to hepatitis C virus (anti-HCV) screening-test-positive with a signal to cut-off ratio predictive of a true positive as determined for the particular assay and posted by CDC.¹

Case classification

*Suspect**: a case that is anti-HCV positive (repeat reactive) by EIA and does not have alanine aminotransferase (ALT or SGPT) values above the upper limit of normal (<50), and the anti-HCV EIA result has not been verified by an additional more specific assay or the signal to cutoff ratio is unknown OR a case that is anti-HCV screening test positive (by test methodology other than EIA) and the signal to cutoff ratio is unknown.

Probable: a case that is anti-HCV positive (repeat reactive) by EIA and has alanine aminotransferase (ALT or SGPT) values above the upper limit of normal (>50), but the anti-HCV EIA result has not been verified by an additional more specific assay or the signal to cut-off ratio is unknown.

Confirmed: a case that is laboratory confirmed and does not meet the case definition for acute hepatitis C.

* Louisiana case classification

Novel influenza A virus infections

2010 Case Definition

Clinical Description

An illness compatible with influenza virus infection (fever >100 degrees Fahrenheit with cough or sore throat).

Laboratory criteria for diagnosis

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 CDC's influenza laboratory

Exposure

Criteria for epidemiologic linkage:

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

OR

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

Case Classification

Suspected: A case meeting 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 H3 viruses is classified as a suspected case until the confirmation process is complete.

Probable: A case meeting the clinical criteria and epidemiologically linked to a confirmed case, but for which no confirmatory laboratory testing for novel influenza virus infection has been performed.

Confirmed: A case of human infection with a novel influenza A virus confirmed by CDC's 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 strain, or by laboratories using an FDA-authorized test specific for detection of that novel influenza strain.

Comment

Once a novel virus is identified by CDC, it will be nationally notifiable until CSTE in consultation with CDC determines that it is no longer necessary to report each case.

On December 13, 2006, the United States formally accepted the revision of the International Health Regulations, referred to as IHR (2005) (<http://www.hhs.gov/news/press/2006pres/20061213.html>). The IHR (2005) are an international legal instrument that governs the roles of the WHO and its member countries in identifying and responding to and sharing information about public health emergencies of international concern (http://www.who.int/csr/ihr/IHRWHA58_3-en.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 unsubtypeable with standard methods (e.g., real-time RT-PCR assays 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.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.

Central Office:

- Inform BT coordinator, Epi Manager or State Epi.

Influenza-Associated Pediatric Mortality

2004 Case Definition

Case Definition

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 diagnosis

Laboratory testing for influenza virus infection 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 at least one of the following:

Influenza virus isolation in tissue cell culture from respiratory specimens;
Reverse-transcriptase polymerase chain reaction (RT-PCR) testing of respiratory specimens;
Immunofluorescent antibody staining (direct or indirect) of respiratory specimens;
Rapid influenza diagnostic testing of respiratory specimens;
Immunohistochemical (IHC) staining for influenza viral antigens in respiratory tract tissue from autopsy specimens;
Four-fold rise in influenza hemagglutination inhibition (HI) antibody titer in paired acute and convalescent sera*.

Case classification

Confirmed - A death meeting the clinical case definition that is laboratory confirmed.

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

Comment

*Serologic testing for influenza is available in a limited number of laboratories, and should only be considered as evidence of recent infection if a four-fold rise in influenza (HI) antibody titer is demonstrated in paired sera. Single serum samples are not interpretable.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete influenza pediatric death form and forward to central office epi.

Central Office:

- Inform BT coordinator, Epi Manager or State Epi.
- Forward form to Influenza Coordinator.

Kawasaki Syndrome

1990 Case Definition

Clinical case definition

A febrile illness of greater than or equal to 5 days' duration, with at least four of the five following physical findings and no other more reasonable explanation for the observed clinical findings:

- Bilateral conjunctival injection
- Oral changes (erythema of lips or oropharynx, strawberry tongue, or fissuring of the lips)
- Peripheral extremity changes (edema, erythema, or generalized or periungual desquamation)
- Rash
- Cervical lymphadenopathy (at least one lymph node greater than or equal to 1.5 cm in diameter)

Laboratory criteria for diagnosis

None

Case classification

Confirmed: a case that meets the clinical case definition

Comment

If fever disappears after intravenous gamma globulin therapy is started, fever may be of less than 5 days' duration, and the clinical case definition may still be met.

Legionellosis (*Legionella pneumophila*)

2005 Case Definition

Clinical description

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.

Laboratory criteria for diagnosis:

Suspect:

- By seroconversion: fourfold or greater rise in antibody titer to specific species or serogroups of *Legionella* other than *L. pneumophila* serogroup 1 (e.g., *L. micdadei*, *L. pneumophila* serogroup 6).
- By seroconversion: fourfold or greater rise in antibody titer to multiple species of *Legionella* using pooled antigen and validated reagents.
- By the detection of specific *Legionella* antigen or staining of the organism in respiratory secretions, lung tissue, or pleural fluid by direct fluorescent antibody (DFA) staining, immunohistochemistry (IHC), or other similar method, using validated reagents.
- By detection of *Legionella* species by a validated nucleic acid assay.

Confirmed:

- By culture: isolation of any *Legionella* organism from respiratory secretions, lung tissue, pleural fluid, or other normally sterile fluid.
- By detection of *Legionella pneumophila* serogroup 1 antigen in urine using validated reagents.
- By seroconversion: fourfold or greater rise in specific serum antibody titer to *Legionella pneumophila* serogroup 1 using validated reagents.

Case classification

Suspect: a clinically compatible case that meets at least one of the presumptive (suspect) laboratory criteria.

- 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 ten days before onset of illness.

Confirmed: a clinically compatible case that meets at least one of the confirmatory laboratory criteria.

- 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 ten days before onset of illness.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete CDC form and forward to central office epi

Central Office:

- Inform Epi Manager.
- Forward form to CDC.

Leptospirosis (*Leptospira interrogans*)

1997 Case Definition

Clinical description

An illness characterized by fever, headache, chills, myalgia, conjunctival suffusion, and less frequently by meningitis, rash, jaundice, or renal insufficiency. Symptoms may be biphasic.

Laboratory criteria for diagnosis

Isolation of *Leptospira* from a clinical specimen, or

Fourfold or greater increase in *Leptospira* agglutination titer between acute- and convalescent-phase serum specimens obtained greater than or equal to 2 weeks apart and studied at the same laboratory, or

Demonstration of *Leptospira* in a clinical specimen by immunofluorescence

Case classification

Probable: a clinically compatible case with supportive serologic findings (i.e., a *Leptospira* agglutination titer of greater than or equal to 200 in one or more serum specimens)

Confirmed: a clinically compatible case that is laboratory confirmed

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.

Central Office:

- Consult with State Vet.

Listeriosis (*Listeria monocytogenes*)

1999 Case Definition

Clinical description

In adults, invasive disease caused by *Listeria monocytogenes* manifests most commonly as meningitis or bacteremia; infection during pregnancy may result in fetal loss through miscarriage or stillbirth, or neonatal meningitis or bacteremia. Other manifestations can also be observed.

Laboratory criteria for diagnosis

- A. Isolation of *L. monocytogenes* from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or, less commonly, joint, pleural, or pericardial fluid)
- B. In the setting of miscarriage or stillbirth, isolation of *L. monocytogenes* from placental or fetal tissue

Case classification

Confirmed: A clinically compatible case that is laboratory-confirmed

Comment:

The usefulness of other laboratory methods such as fluorescent antibody testing or polymerase chain reaction to diagnose invasive listeriosis has not been established.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete CDC form and forward to central office epi

Central Office:

- Forward form to Foodborne Disease Coordinator.

Lyme Disease (*Borrelia burgdorferi*) *

2008 Case Definition

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

Clinical presentation

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

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 greater than or equal to 5 cm in size across its largest diameter. Secondary lesions also may occur. Annular erythematous lesions occurring within several hours of a tick bite represent hypersensitivity reactions and do not qualify as EM. For most patients, the expanding EM lesion is accompanied by other acute symptoms, particularly fatigue, fever, headache, mildly stiff neck, arthralgia, or myalgia. These symptoms are typically intermittent. The diagnosis of EM must be made by a physician. Laboratory confirmation is recommended for persons with no known exposure.

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 (2nd-degree or 3rd-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.

Laboratory evidence

For the purposes of surveillance, the definition of a qualified laboratory assay is (1) a positive culture for *B. burgdorferi*, or (2) two-tier testing interpreted using established criteria [1],

Exposure

Exposure is defined as having been (less than or equal to 30 days before onset of EM) in wooded, brushy, or grassy areas (i.e., potential tick habitats) in a county in which Lyme disease is endemic. A history of tick bite is not required.

Disease endemic to county

A county in which Lyme disease is endemic is one in which at least two confirmed cases have been acquired in the county or in which established populations of a known tick vector are infected with *B. burgdorferi*.

Case classification

Confirmed: a) a case of EM with a known exposure (as defined above), or b) a case of EM with laboratory evidence of infection (as defined above) and without a known exposure or c) a case with at least one late manifestation that has laboratory evidence of infection.

Probable: any other case of physician-diagnosed Lyme disease that has laboratory evidence of infection (as defined above).

Suspected: a) a case of EM where there is no known exposure (as defined above) and no laboratory evidence of infection (as defined above), or b) a case with laboratory evidence of infection but no clinical information available (e.g. a laboratory report).

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."

References

1. Centers for Disease Control and Prevention. Recommendations for test performance and interpretation from the Second National Conference on Serologic Diagnosis of Lyme Disease. MMWR MMWR Morb Mortal Wkly Rep 1995; 44:590–1.
2. Dressler F, Whalen JA, Reinhardt BN, Steere AC. Western blotting in the serodiagnosis of Lyme disease. J Infect Dis 1993; 167:392–400.
3. Engstrom SM, Shoop E, Johnson RC. Immunoblot interpretation criteria for serodiagnosis of early Lyme disease. J Clin Microbiol 1995; 33:419–27.
4. Centers for Disease Control and Prevention. Notice to readers: caution regarding testing for Lyme disease. MMWR Morb Mortal Wkly Rep 2005; 54:125–6.
5. Centers for Disease Control and Prevention. Lyme Disease — United States, 2003–2005. MMWR Morb Mortal Wkly Rep 2007; 56:573–6.

Louisiana Epi Comments

Western Blot bands needed for case confirmation:

- IgM: 23 (OspC)** and 39 or 39 and 41
- IgG: any 5 of the following 10: 18, 23 (OpsC), 28, 30, 39, 41, 45, 58, 66, 93

Timeframe for Western Blot:

- Within 4 weeks of onset: IgM and IgG (if IgG is negative, repeat IgG at 8 weeks)
- More than 4 weeks after onset: IgG must be present (presence of IgM not considered)

Regional Office:

- Consult with central office epi.
- Complete CDC form and forward to central office epi.

Central Office:

- Consult with Epi Manager for case classification.
- Forward form for confirmed cases to CDC.
- Enter case information for non-confirmed reports in Lyme database on M drive.

*Modified CDC case definition

** Bands 21, 23, and 24 refer to OpsC (Outer surface protein C) whose molecular mass is dependent on the strain of *B. burgdorferi* being tested

Malaria (*Plasmodium spp.*)

2010 Case Definition

Clinical description

The first symptoms of malaria (most often fever, chills, sweats, headaches, muscle pains, nausea and vomiting) are often not specific and are also found in other diseases (such as influenza and other common viral infections). Likewise, the physical findings are often not specific (elevated temperature, perspiration, tiredness). In severe malaria (caused by *P. falciparum*), clinical findings (confusion, coma, neurologic focal signs, severe anemia, respiratory difficulties) are more striking and may increase the suspicion index for malaria.

Laboratory criteria for diagnosis:

Detection of circulating malaria-specific antigens using rapid diagnostic test (RDT), OR
Detection of species specific parasite DNA in a sample of peripheral blood using a Polymerase Chain Reaction test*, OR
Detection of malaria parasites in thick or thin peripheral blood films.

Case classification

Suspected:

Detection of *Plasmodium* species by rapid diagnostic antigen testing without confirmation by microscopy or nucleic acid testing in any person (symptomatic or asymptomatic) diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country.

Confirmed:

Detection and specific identification of malaria parasites by microscopy on blood films in a laboratory with appropriate expertise in any person (symptomatic or asymptomatic) diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country, OR
Detection of *Plasmodium* species by nucleic acid test * in any person (symptomatic or asymptomatic) diagnosed in the United States, regardless of whether the person experienced previous episodes of malaria while outside the country.

Comment

* Laboratory-developed malaria PCR tests must fulfill CLIA requirements, including validation studies

A subsequent attack experienced by the same person but caused by a different *Plasmodium* species is counted as an additional case. A subsequent attack experienced by the same person and caused by the same species in the United States may indicate a relapsing infection or treatment failure caused by drug resistance or a separate attack.

Blood smears from questionable cases should be referred to the CDC Division of Parasitic Diseases Diagnostic Laboratory for confirmation of the diagnosis.

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 United States and its territories)

Induced: malaria acquired through artificial means (e.g., blood transfusion, common syringes, or malariotherapy)

Relapsing: renewed manifestation (i.e., of clinical symptoms and/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

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete CDC form and forward to central office epi.
- Request submission of malaria slides to state epi.

Central Office:

- Consult with Epi Manager.
- Forward form to CDC.
- Enter case detail information in Malaria database on M drive.

Measles (Rubeola)

2009 Case Definition

Clinical case definition

An illness characterized by all the following:

- a generalized rash lasting greater than or equal to 3 days
- a temperature greater than or equal to 101.0°F (greater than or equal to 38.3°C)
- cough, coryza, or conjunctivitis

Laboratory criteria for diagnosis

- Isolation of measles virus from a clinical specimen, or
- Detection of measles-virus-specific nucleic acid by polymerase chain reaction, or
- Significant rise in serum measles immunoglobulin G antibody level between acute- and convalescent-phase specimens, by any standard serologic assay, or
- Positive serologic test for measles immunoglobulin M antibody

Case classification

Suspected: any febrile illness accompanied by rash

Probable: a case that meets the clinical case definition, has noncontributory or no serologic or virologic testing, and is not epidemiologically linked to a confirmed case

Confirmed: a case that is laboratory confirmed or that meets the clinical case definition and is epidemiologically linked to a confirmed case. A laboratory-confirmed case does not need to meet the clinical case definition.

Epidemiologic Classification of Internationally-Imported and U.S.-Acquired

Internationally imported case: An internationally imported case is defined as a case in which measles results from exposure to measles virus outside the United States as evidenced by at least some of the exposure period (7–21 days before rash onset) occurring outside the United States and rash onset occurring within 21 days of entering the United States 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: An U.S.-acquired case is defined as a case in which the patient had not been outside the United States during the 21 days before rash onset or was known to have been exposed to measles within the United States.

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 United States 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 ≥ 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 ≥ 12 months within the United States.

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.

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

States may also choose to classify cases as "out-of-state-imported" when imported from another state in the United States. For national reporting, however, cases will be classified as either internationally imported or U.S.-acquired.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.
- Contact investigation as per central office recommendation.

Central Office:

- Inform Epi Manager or State Epi.

Meningococcal Disease (*Neisseria meningitidis*)

2010 Case Definition

Case classification

Suspected:

Clinical purpura fulminans in the absence of a positive blood culture; or Gram-negative diplococci, not yet identified, isolated from a normally sterile body site (e.g., blood or CSF).

Probable:

1. Detection of *N. meningitidis*-specific nucleic acid in a specimen obtained from a normally sterile body site (e.g., blood or CSF), using a validated polymerase chain reaction (PCR) assay or
2. Detection of *N. meningitidis* antigen
 - o in formalin-fixed tissue by immunohistochemistry (IHC); or
 - o in CSF by latex agglutination.

Confirmed

Isolation of *Neisseria meningitidis* from a normally sterile body site (e.g., blood or cerebrospinal fluid, or, less commonly, synovial, pleural, or pericardial fluid), or from purpuric lesions.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.
- Request submission of specimen to OPH laboratory.
- Contact investigation.

Central Office:

- Inform Epi Manage or State Epi.

Mumps

2010 Case Definition

Case Classification

Suspected: Clinically compatible illness characterized by: aseptic meningitis, encephalitis, hearing loss, orchitis, oophoritis, parotitis or other salivary gland swelling, mastitis or pancreatitis without laboratory testing.

OR

Acute onset of unilateral or bilateral tender, self-limited swelling of the parotid and or other salivary gland(s), lasting at least 2 days without laboratory testing,

OR

A person without clinical information but with any of the following laboratory tests suggestive of mumps:

Isolation of mumps virus from clinical specimen, or
Detection of mumps nucleic acid (e.g., standard or real time RT-PCR assays), or
Detection of mumps IgM antibody, or
Demonstration of specific mumps antibody response in absence of recent vaccination, either a four-fold increase in IgG titer as measured by quantitative assays, or a seroconversion from negative to positive using a standard serologic assay of paired acute and convalescent serum specimens.

Probable: Acute onset of unilateral or bilateral tender, self-limited swelling of the parotid and or other salivary gland(s), lasting at least 2 days without laboratory confirmation

AND

Epidemiologically linked to a clinically compatible case.

Confirmed:

Acute onset of unilateral or bilateral tender, self-limited swelling of the parotid and or other salivary gland(s), lasting at least 2 days **OR**
Clinically compatible illness characterized by: aseptic meningitis, encephalitis, hearing loss, orchitis, oophoritis, parotitis or other salivary gland swelling, mastitis or pancreatitis **AND**

Epidemiologically linked to a confirmed case, **OR**

Has laboratory confirmation by any of the following:

Isolation of mumps virus from clinical specimen, or
Detection of mumps nucleic acid (e.g., standard or real time RT-PCR assays), or
Detection of mumps IgM antibody, or

Demonstration of specific mumps antibody response in absence of recent vaccination, either a four-fold increase in IgG titer as measured by quantitative assays, or a seroconversion from negative to positive using a standard serologic assay of paired acute and convalescent serum specimens.

Case Classification for Import Status

Internationally imported case: An internationally imported case is defined as a case in which mumps results from exposure to mumps virus outside the United States 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 United States and the onset of parotitis or other mumps-associated complications within 25 days of entering the United States 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 United States during the 25 days before onset of parotitis or other mumps-associated complications or was known to have been exposed to mumps within the United States.

U.S.-acquired cases are sub-classified 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 United States 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 ≥ 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 ≥ 12 months within the United States.

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.

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

Comment

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 United States or to distinguish endemic from non-endemic strains.

States may also choose to classify cases as "out-of-state-imported" when imported from another state in the United States. For national reporting, however, cases will be classified as either internationally imported or U.S-acquired.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.

Central Office:

- Consult with Epi Manager for case classification.

Pertussis (*Bordetella pertussis*) (Whooping Cough)

2010 Case Definition

Case classification

Probable. In the absence of a more likely diagnosis, a cough illness lasting ≥ 2 weeks, with at least one of the following symptoms:

paroxysms of coughing;
inspiratory "whoop"; or
post-tussive vomiting; AND
absence of laboratory confirmation; and
no epidemiologic linkage to a laboratory-confirmed case of pertussis.

Confirmed:

Acute cough illness of any duration, with isolation of *B. pertussis* from a clinical specimen; OR
Cough illness lasting ≥ 2 weeks, with at least one of the following symptoms:

paroxysms of coughing;
inspiratory "whoop"; or
post-tussive vomiting; AND
polymerase chain reaction (PCR) positive for pertussis;

OR

Cough illness lasting ≥ 2 weeks, with at least one of the following symptoms:

paroxysms of coughing;
inspiratory "whoop"; or
post-tussive vomiting; AND, contact with a laboratory-confirmed case of pertussis.

Comment

The clinical case definition above is appropriate for endemic or sporadic cases. In outbreak settings, a case may be defined as a cough illness lasting at least 2 weeks (as reported by a health professional).

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.
- Complete CDC form and forward to central office epi.
- Contact investigation.

Central Office:

- Inform Epi Manager or State Epi.
- Forward form to CDC.

Plague (*Yersinia pestis*)

1996 Case Definition

Clinical description

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 that 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 diagnosis

Presumptive

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 or
Detection of F1 antigen in a clinical specimen by fluorescent assay

Confirmatory

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

Case classification

Suspect: a clinically compatible case without presumptive or confirmatory laboratory results

Probable: a clinically compatible case with presumptive laboratory results

Confirmed: a clinically compatible case with confirmatory laboratory results

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.

Central Office:

- Inform Epi Manager or State Epi.

Polio Virus Infection, Non-Paralytic

2010 Case Definition

Case classification

Confirmed: Any person without symptoms of paralytic poliomyelitis in whom a 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.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.

Central Office:

- Inform Epi Manager or State Epi.

Poliomyelitis, Paralytic

2010 Case Definition

Case classification

Probable: 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.

Confirmed: 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; AND in which the patient

has a neurologic deficit 60 days after onset of initial symptoms; or
has died; or
has unknown follow-up status.

Comment

All suspected cases of paralytic poliomyelitis are reviewed by a panel of expert consultants before final classification occurs. Confirmed cases are then further classified based on epidemiologic and laboratory criteria (1). Only confirmed cases are included in Table I in the *MMWR*. Suspected cases are enumerated in a footnote to the *MMWR* table.

References

1. Sutter RW, Brink EW, Cochi SL, et al. A new epidemiologic and laboratory classification system for paralytic poliomyelitis cases. *Am J Public Health* 1989;79:495-8.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.

Central Office:

- Inform Epi Manager or State Epi.

Psittacosis (*Chlamydophila psittaci*) (Ornithosis)

2010 Case Definition

Clinical description

Psittacosis is an illness characterized by fever, chills, headache, myalgia, and a dry cough with pneumonia often evident on chest x-ray. Severe pneumonia requiring intensive-care support, endocarditis, hepatitis, and neurologic complications occasionally occur.

Laboratory criteria for diagnosis

Isolation of *Chlamydophila psittaci* from respiratory specimens (e.g., sputum, pleural fluid, or tissue), or blood, or
Fourfold or greater increase in antibody (Immunoglobulin G [IgG]) against *C. psittaci* by complement fixation (CF) or microimmunofluorescence (MIF) between paired acute- and convalescent-phase serum specimens obtained at least 2-4 weeks apart, or
Supportive serology (e.g. *C. psittaci* antibody titer [Immunoglobulin M (IgM)] of greater than or equal to 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) assay.

Case classification

Probable: An illness characterized by fever, chills, headache, cough and myalgia that has either:

Supportive serology (e.g. *C. psittaci* antibody titer [Immunoglobulin M, IgM] of greater than or equal to 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) assay.

Confirmed: An illness characterized by fever, chills, headache, cough and myalgia, and laboratory confirmed by either:

Isolation of *Chlamydophila psittaci* from respiratory specimens (e.g., sputum, pleural fluid, or tissue), or blood, OR
Fourfold or greater increase in antibody (Immunoglobulin G [IgG]) against *C. psittaci* by complement fixation (CF) or microimmunofluorescence (MIF) between paired acute- and convalescent-phase serum specimens obtained at least 2-4 weeks apart.

Comment

Although MIF has shown greater specificity to *C. psittaci* than CF, positive serologic findings by both techniques may occur as a result of infection with other Chlamydia species and should be interpreted with caution. 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 realtime polymerase chain reaction (rtPCR) has been developed and validated in avian specimens but has not yet been validated for use in humans (1).

References

1. Mitchell, S.L., Wolff, B.J., Thacker, W.L., Ciembor, P.G., Gregory, C.R., Everett, K.D., Ritchie, B.W., & Winchell, J.M. (2009). Genotyping of *Chlamydophila psittaci* by real-time PCR and high-resolution melt analysis. *J Clin Microbiol*, 47(1),175-181.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.

Central Office:

- Consult with State Veterinarian.

Q Fever

2009 Case Definition

Acute Q Fever

Clinical presentation

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.

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

Clinical evidence

Acute fever and one or more of the following: rigors, severe retrobulbar headache, acute hepatitis, pneumonia, or elevated liver enzyme levels.

Laboratory evidence

Laboratory confirmed:

Serological evidence of a fourfold change in immunoglobulin G (IgG)-specific antibody titer to *C. burnetii* phase II antigen by indirect immunofluorescence assay (IFA) between paired serum samples, (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) assay, **or**
Demonstration of *C. burnetii* in a clinical specimen by immunohistochemical methods (IHC), **or**
Isolation of *C. burnetii* from a clinical specimen by culture.

Laboratory supportive:

Has a single supportive IFA IgG titer of $\geq 1:128$ to phase II antigen (phase I titers may be elevated as well).
Has serologic evidence of elevated IgG or IgM antibody reactive with *C. burnetii* antigen by enzyme-linked immunosorbent assay (ELISA), dot-ELISA, 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.

Case Classification

Confirmed acute Q fever: A laboratory confirmed case that either meets clinical case criteria or is epidemiologically linked to a lab confirmed case.

Probable acute Q fever: A clinically compatible case of acute illness (meets clinical evidence criteria for acute Q fever illness) that has laboratory supportive results for past or present acute disease (antibody to Phase II antigen) but is not laboratory confirmed.

Chronic Q Fever

Clinical presentation

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 evidence

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 evidence

Laboratory confirmed:

Serological evidence of IgG antibody to *C. burnetii* phase I antigen $\geq 1:800$ by 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 PCR assay, **or**
Demonstration of *C. burnetii* antigen in a clinical specimen by IHC, **or**
Isolation of *C. burnetii* from a clinical specimen by culture.

Laboratory supportive:

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

Note: Samples from suspected chronic patients should be evaluated for IgG titers to both phase I and phase II antigens. Current commercially available ELISA 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.

Case Classification

Confirmed chronic Q fever: A clinically compatible case of chronic illness (meets clinical evidence criteria for chronic Q fever) that is laboratory confirmed for chronic infection.

Probable chronic Q fever: A clinically compatible case of chronic illness (meets clinical evidence criteria for chronic Q fever) that has laboratory supportive results for past or present chronic infection (antibody to Phase I antigen).

Exposure:

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.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.

Central Office:

- Consult with State Veterinarian.

Rabies, Animal

1997 Case Definition

Laboratory criteria for diagnosis

A positive direct fluorescent antibody test (preferably performed on central nervous system tissue)

Isolation of rabies virus (in cell culture or in a laboratory animal)

Case classification

Confirmed: a case that is laboratory confirmed

Louisiana Epi Comments

Regional Office/Central Office:

- Consult with State Veterinarian.
- Complete rabies form and forward to State Vet.

Rabies, Human

1997 Case Definition

Clinical description

Rabies is an acute encephalomyelitis that almost always progresses to coma or death within 10 days after the first symptom.

Laboratory criteria for diagnosis

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 greater than or equal to 5 (complete neutralization) in the serum or CSF of an unvaccinated person.

Case classification

Confirmed: a clinically compatible case that is laboratory confirmed

Comment

Laboratory confirmation by all of the above methods is strongly recommended.

Louisiana Epi Comments

Regional Office/Central Office:

- Notify Epi Manager, State Epi or State Vet immediately.

Reye Syndrome

1990 Case Definition

Clinical case definition

An illness that meets all of the following criteria:

Acute, noninflammatory encephalopathy that is documented clinically by a) an alteration in consciousness and, if available, b) a record of the CSF containing less than or equal to 8 leukocytes/cu.mm or a histologic specimen demonstrating cerebral edema without perivascular or meningeal inflammation

Hepatopathy documented by either a) a liver biopsy or an autopsy considered to be diagnostic of Reye syndrome or b) a threefold or greater increase in the levels of the serum glutamic-oxaloacetic transaminase (SGOT), serum glutamic-pyruvic transaminase (SGPT), or serum ammonia

No more reasonable explanation for the cerebral and hepatic abnormalities

Case classification

Confirmed: a case that meets the clinical case definition

Rheumatic Fever

1997 Case Definition

Clinical description

An inflammatory illness that occurs as a delayed sequela of group A streptococcal infection

Major criteria: carditis, polyarthritis, chorea, subcutaneous nodules, and erythema marginatum

Minor criteria: a) previous rheumatic fever or rheumatic heart disease; b) arthralgia; c) fever; d) elevated erythrocyte sedimentation rate, positive C-reactive protein, or leukocytosis; and e) prolonged PR interval on an electrocardiogram

Laboratory criteria for diagnosis

No specific laboratory test exists for the diagnosis of rheumatic fever

Case classification

Confirmed: an illness characterized by a) two major criteria or one major and two minor criteria (as described in Clinical Description) and b) supporting evidence of preceding group A streptococcal infection (14).

Comment

Supporting evidence to confirm streptococcal infection includes increased antistreptolysin-O or other streptococcal antibodies, throat culture positive for group A streptococcus, or recent scarlet fever. The absence of supporting evidence of preceding streptococcal infection should make the diagnosis doubtful, except in Sydenham chorea or low-grade carditis when rheumatic fever is first discovered after a long latent period from the antecedent infection.

Louisiana Epi Comments

This condition is not reportable.

Rocky Mountain spotted fever, RMSF (Spotted Fever Rickettsiosis)

2010 Case Definition

Clinical Description

Spotted fever rickettsioses are a group of tickborne 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 averages one week 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), has 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 has been reported for some other spotted fever rickettsioses.

Clinical evidence

Any reported fever and one or more of the following: rash, eschar, headache, myalgia, anemia, thrombocytopenia, or any hepatic transaminase elevation.

Laboratory criteria for diagnosis

The organism in the acute phase of illness is best detected by polymerase chain reaction (PCR) and immunohistochemical methods (IHC) 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 samples, and paired acute and convalescent samples are essential for confirmation.

For the purposes of surveillance,

Laboratory confirmed:

Serological evidence of a fourfold change in immunoglobulin G (IgG)-specific antibody titer reactive with *Rickettsia rickettsii* or other spotted fever group 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 spotted fever group DNA in a clinical specimen via amplification of a specific target by PCR assay, or
Demonstration of spotted fever group antigen in a biopsy or autopsy specimen by IHC, or
Isolation of *R. rickettsii* or other spotted fever group rickettsia from a clinical specimen in cell culture.

Laboratory supportive:

Has serologic evidence of elevated IgG or IgM antibody reactive with *R. rickettsii* or other spotted fever group antigen by IFA, enzyme-linked immunosorbent assay (ELISA), dot-ELISA, or latex agglutination.

Note: Current commercially available ELISA 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.

Exposure

Exposure is defined as having been in potential tick habitats within the past 14 days before onset of symptoms. Occupation should be recorded if relevant to exposure. A history of a tick bite is not required.

Case Classification

Suspected: A case with laboratory evidence of past or present infection but no clinical information available (e.g. a laboratory report).

Probable: A clinically compatible case (meets clinical evidence criteria) that has supportive laboratory results.

Confirmed: A clinically compatible case (meets clinical evidence criteria) that is laboratory confirmed.

Louisiana Epi Comments

Regional Office:

- Complete CDC form and forward to central office.

Central Office:

- Consult with Epi Manager for case classification.
- Forward form to CDC.

Rubella (German measles)

2010 Case Definition

Case classification

Suspected: Any generalized rash illness of acute onset that does not meet the criteria for probable or confirmed rubella or any other illness

Probable: In the absence of a more likely diagnosis, an illness characterized by all of the following:

acute onset of generalized maculopapular rash; and
temperature greater than 99.0° F or 37.2° C, if measured; and
arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and
lack of epidemiologic linkage to a laboratory-confirmed case of rubella; and
noncontributory or no serologic or virologic testing.

Confirmed:

A case with or without symptoms who has laboratory evidence of rubella infection confirmed by one or more of the following laboratory tests:

isolation of rubella virus; or
detection of rubella-virus specific nucleic acid by polymerase chain reaction; or
significant rise between acute- and convalescent-phase titers in serum rubella immunoglobulin G antibody level by any standard serologic assay; or
positive serologic test for rubella immunoglobulin M (IgM) antibody;

OR

An illness characterized by all of the following:

acute onset of generalized maculopapular rash; and
temperature greater than 99.0°F or 37.2°C;
arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and
epidemiologic linkage to a laboratory-confirmed case of rubella.

Epidemiologic Classification of Internationally-Imported and U.S.-Acquired

Internationally imported case: An internationally imported case is defined as a case in which rubella results from exposure to rubella virus outside the United States as evidenced by at least some of the exposure period (12–23 days before rash onset) occurring outside the United States and the onset of rash within 23 days of entering the United States 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 United States during the 23 days before rash onset or was known to have been exposed to rubella within the United States.

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 United States 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 ≥ 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 ≥ 12 months within the United States.

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.

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

States may also choose to classify cases as "out-of-state-imported" when imported from another state in the United States. For national reporting, however, cases will be classified as either internationally imported or U.S.-acquired.

Comments

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.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.
- Contact investigation as per central office recommendation.

Central Office:

- Inform Epi Manager or State Epidemiologist.

Rubella, Congenital Syndrome

2010 Case Definition

Case classification

Suspected: An infant that does not meet the criteria for a probable or confirmed case but who has one of more of the following clinical findings:

- cataracts or congenital glaucoma,
- congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis),
- hearing impairment,
- pigmentary retinopathy
- purpura,
- hepatosplenomegaly,
- jaundice,
- microcephaly,
- developmental delay,
- meningoencephalitis, or
- radiolucent bone disease.

Probable:* An infant without an alternative etiology that does not have laboratory confirmation of rubella infection but has at least 2 of the following:

- cataracts or congenital glaucoma,*
- congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis),
- hearing impairment, or
- pigmentary retinopathy;

OR

An infant without an alternative etiology that does not have laboratory confirmation of rubella infection but has at least one or more of the following:

- cataracts or congenital glaucoma,*
- congenital heart disease (most commonly patent ductus arteriosus or peripheral pulmonary artery stenosis),
- hearing impairment, or
- pigmentary retinopathy

AND one or more of the following:

- purpura,
- hepatosplenomegaly,
- jaundice,
- microcephaly,
- developmental delay,
- meningoencephalitis, or
- radiolucent bone disease.

Confirmed: An infant with at least one symptom (listed above) that is clinically consistent with congenital rubella syndrome; and laboratory evidence of congenital rubella infection as demonstrated by:

isolation of rubella virus, or
detection of rubella-specific immunoglobulin M (IgM) antibody, 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), or
a specimen that is PCR positive for rubella virus.

Infection only: An infant without any clinical symptoms or signs but with laboratory evidence of infection as demonstrated by

isolation of rubella virus, or
detection of rubella-specific immunoglobulin M (IgM) antibody, 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), or
a specimen that is PCR positive for rubella virus.

*In probable cases, either or both of the eye-related findings (cataracts and congenital glaucoma) count 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 is reclassified as confirmed.

Epidemiologic Classification of Internationally-Imported and U.S.-Acquired

Congenital Rubella Syndrome (CRS) 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 United States 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 US-acquired case is one in which the mother acquired rubella from an exposure in the United States. 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 United States 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 ≥ 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 ≥ 12 months within the United States.

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.

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

States may also choose to classify cases as "out-of-state-imported" when imported from another state in the United States. For national reporting, however, cases will be classified as either internationally imported or U.S.-acquired.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.

Central Office:

- Inform Epi Manager or State Epidemiologist.

Salmonellosis (*Salmonella spp.*)

2005 Case Definition

Clinical description

An illness of variable severity commonly manifested by diarrhea, abdominal pain, nausea, and sometimes vomiting. Asymptomatic infections may occur, and the organism may cause extraintestinal infections.

Laboratory criteria for diagnosis

- Isolation of *Salmonella* from a clinical specimen.

Case classification

Probable: a clinically compatible case that is epidemiologically linked to a confirmed case.

Confirmed: a case that meets the laboratory criteria for diagnosis. When available, O and H antigen serotype characterization should be reported.

Comment

For users of the legacy National Notifiable Diseases Surveillance System, laboratory-confirmed isolates are also reported via the Public Health Laboratory Information System (PHLIS), which is managed by the Foodborne and Diarrheal Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC. The National Electronic Disease Surveillance System (NEDSS) or NEDSS compatible systems will eventually replace PHLIS and NETSS; users of NEDSS or compatible systems which report to CDC should not report via PHLIS.

Both asymptomatic infections and infections at sites other than the gastrointestinal tract, if laboratory confirmed, are considered confirmed cases that should be reported.

Severe Acute Respiratory Syndrome-associated Coronavirus (SARS-CoV) disease

2003 Case Definition

Case Definition: Refer to the Centers for Disease Control and Prevention (CDC) SARS web site for the surveillance case definition for SARS-CoV disease and other related information maintained by the National Center for Infectious Diseases (URL: <http://www.cdc.gov/ncidod/sars/reporting.htm>).

NOTE: Only cases of SARS-CoV disease are considered nationally notifiable. The SARS surveillance case definition also includes a non-specific case definition for "SARS reports under investigation." While States are encouraged to report both SARS reports under investigation and SARS-CoV disease, only SARS-CoV disease has been added to the national notifiable diseases list.

Shigellosis (*Shigella* spp.)

2005 Case Definition

Clinical description

An illness of variable severity characterized by diarrhea, fever, nausea, cramps, and tenesmus. Asymptomatic infections may occur.

Laboratory criteria for diagnosis

- Isolation of *Shigella* from a clinical specimen

Case classification

Probable: a clinically compatible case that is epidemiologically linked to a confirmed case.

Confirmed: a case that meets the laboratory criteria for diagnosis. When available, O antigen serotype characterization should be reported.

Comment

For users of the legacy National Electronic Telecommunications System for Surveillance (NETSS), laboratory-confirmed isolates are also reported via the Public Health Laboratory Information System (PHLIS), which is managed by the Foodborne and Diarrheal Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC. The National Electronic Disease Surveillance System (NEDSS) or NEDSS compatible systems will eventually replace PHLIS; users of NEDSS or compatible systems which report to CDC should not report via PHLIS.

Both asymptomatic infections and infections at sites other than the gastrointestinal tract, if laboratory confirmed, are considered confirmed cases that should be reported.

Smallpox

2004 Case Definition

Clinical Case Definition

An illness with acute onset of fever $\geq 101^{\circ}\text{F}$ ($\geq 38.3^{\circ}\text{C}$) followed by a rash characterized by firm, deep seated vesicles or pustules in the same stage of development without other apparent cause. Clinically consistent cases are those presentations of smallpox that do not meet this classical clinical case definition: a) hemorrhagic type, b) flat type, and c) *variola sine eruptione*. (Detailed clinical description is available on the CDC web site, see URL: <http://www.bt.cdc.gov/agent/smallpox/index.asp>).

Laboratory Criteria

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).

Note: Indications for laboratory testing of patients with suspected smallpox should be followed as described in detail in Guide A of the CDC Smallpox Response Plan. Laboratory diagnostic testing for variola virus should be conducted in Level C or D laboratories only.

Case Classification*

Confirmed: case of smallpox that is laboratory confirmed, or a case that meets the clinical case definition that is epidemiologically linked to a laboratory confirmed case.

Probable: A case that meets the clinical case definition, or a clinically consistent case that does not meet the clinical case definition and has an epidemiological link to a confirmed case of smallpox.

Suspected: A case with a generalized, acute vesicular or pustular rash illness with fever preceding development of rash by 1-4 days.

***Exclusion Criteria:** 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.

Note: The smallpox case definition is to be used only during post-event surveillance. The case definition described in Guide A of the Smallpox Response Plan and Guidelines (Version 3) on the CDC bioterrorism preparedness website (URL: <http://www.bt.cdc.gov/agent/smallpox/response-plan/index.asp>) includes different criteria for a suspected case than the smallpox case definition the Council of State and Territorial Epidemiologists approved for use in the National Notifiable Diseases Surveillance System (NNDSS). The smallpox case definition on the CDC bioterrorism web site is more sensitive and less specific than the case definition for the NNDSS, in that a "suspect" case is defined as: "a case with febrile rash illness with fever preceding the development of rash by 1-4 days."

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.

Central Office:

- Inform BT Coordinator, Epi Manager or State Epidemiologist.

Staphylococcus aureus* , Methicillin resistant (MRSA) Invasive Disease

2007 Case Definition

Clinical Description

S. 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

Isolation of MRSA or detection of MRSA by nucleic acid test in a clinical specimen from a normally sterile site (e.g., blood or cerebrospinal fluid [CSF] or other internal body fluid) with the exception of subcutaneous tissue.

Case Classification

Confirmed: A case that is laboratory confirmed.

***Louisiana case definition**

Staphylococcus aureus*, Methicillin resistant (MRSA) Pneumonia

2007 Case Definition

Clinical case definition

An illness characterized by one or more of the following clinical features:

- A febrile illness (i.e., temperature greater than 101.0° F or 38.3°C) characterized by pneumonia or Acute Respiratory Distress Syndrome (ARDS)
- An unexplained respiratory illness resulting in death, with an autopsy examination demonstrating pneumonia without an identifiable cause

Laboratory Criteria

Isolation of MRSA or detection of MRSA by nucleic acid test in a clinical specimen from one of the following sites:

- lung tissue
- sputum or bronchial washing
- blood or other internal body fluid (e.g., pleural fluid)

Case Classification

Confirmed: A laboratory-confirmed case that meets the clinical case definition and for which there is no other identifiable cause.

***Louisiana case definition**

Louisiana Epi Comments

Regional Office/Central Office:

- Form to be completed for outbreaks only.

***Staphylococcus aureus*, Vancomycin-intermediate (VISA), and Vancomycin-resistant (VRSA)**

2007 Case Definition

Clinical Description

S. 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

Isolation of *S. aureus* from any body site.

AND

Intermediate or resistance of the *S. aureus* isolate to vancomycin, detected and defined according to Clinical and Laboratory Standards Institute (CLSI, formerly NCCLS) approved standards and recommendations (Minimum Inhibitory Concentration [MIC]=4-8 µg/ml for VISA and MIC≥16 µg/ml for VRSA).

Case Classification

Confirmed: A case of vancomycin-intermediate or vancomycin-resistant *S. aureus* that is laboratory-confirmed (MIC=4-8 µg/ml for VISA and MIC≥16 µg/ml for VRSA).

Reference

Clinical and Laboratory Standards Institute/NCCLS. Performance Standards for Antimicrobial Susceptibility Testing. Sixteenth informational supplement. M100-S16. Wayne, PA: CLSI, 2006.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.
- Request submission of specimen to OPH laboratory.

Central Office:

- Inform Epi Manager or State Epidemiologist.

Streptococcus Disease, Invasive, Group A (*Streptococcus pyogenes*)

1995 Case Definition

Clinical description

Invasive group A streptococcal infections may manifest as any of several clinical syndromes, including pneumonia, bacteremia in association with cutaneous infection (e.g., cellulitis, erysipelas, or infection of a surgical or nonsurgical wound), deep soft-tissue infection (e.g., myositis or necrotizing fasciitis), meningitis, peritonitis, osteomyelitis, septic arthritis, postpartum sepsis (i.e., puerperal fever), neonatal sepsis, and nonfocal bacteremia.

Laboratory criteria for diagnosis

Isolation of group A *Streptococcus* (*Streptococcus pyogenes*) by culture from a normally sterile site (e.g., blood or cerebrospinal fluid, or, less commonly, joint, pleural, or pericardial fluid)

Case classification

Confirmed: a case that is laboratory confirmed

Streptococcus Disease, Invasive, Group B (*Streptococcus agalactiae*) *

1995 Case Definition

Clinical description

Invasive group B streptococcal infections may manifest as any of several clinical syndromes, including lower respiratory tract infection, pneumonia, bacteremia, meningitis, peritonitis, osteomyelitis, septic arthritis, postpartum sepsis (i.e., puerperal fever), neonatal sepsis, and nonfocal bacteremia.

Laboratory criteria for diagnosis

Isolation of group A *Streptococcus* (*Streptococcus agalactiae*) by culture from a normally sterile site (e.g., blood or cerebrospinal fluid, or, less commonly, joint, pleural, or pericardial fluid)

Case classification

Confirmed: a case that is laboratory confirmed

Probable: a clinically compatible case that has evidence of *Group B Strep* antigen by latex agglutination of CSF

Louisiana Epi Comments

Regional Office:

- Complete Newborn Infection Form for patients 3 months of age or younger and forward to central office epi.

Central Office:

- Form should not be forwarded to CDC.

*Louisiana case definition

Streptococcus pneumoniae, invasive disease (Invasive Pneumococcal Disease, IPD)

2010 Case Definition

Invasive Pneumococcal Disease

Clinical description

Streptococcus pneumoniae causes many clinical syndromes, depending on the site of infection (e.g., acute otitis media, pneumonia, bacteremia, or meningitis).

Laboratory criteria for diagnosis

Isolation of *S. pneumoniae* from a normally sterile body site (e.g., blood, cerebrospinal fluid, or, less commonly, joint, pleural or pericardial fluid)

Case classification

Suspected: Any reported case lacking confirmation of isolation of *Streptococcus pneumoniae* from a normally sterile body site.

Confirmed: Isolation of *Streptococcus pneumoniae* from a normally sterile body site in a person of any age.

Comment

Notification to CDC of **confirmed** cases of invasive pneumococcal disease (IPD) is recommended by CSTE.

The licensure of a new 13-valent pneumococcal conjugate vaccine (PCV13) is expected in late 2009 or early 2010. Surveillance should be enhanced to provide baseline and ongoing data for the assessment of disease burden and immunization program effects.

In January 2008, the Clinical and Laboratory Standards Institute published new Minimum Inhibitory Concentration (MIC) breakpoints for defining susceptibility of *S. pneumoniae* isolates to penicillin (1). The new breakpoints are estimated to decrease the number of isolates classified as antibiotic-resistant by approximately 5% (2). The changes in breakpoints will likely result in a surveillance artifact in drug resistant *S. pneumoniae* reporting and further complicate interpretation of the reported data.

References

1. Clinical and Laboratory Standards Institute. Performance Standards for Antimicrobial Susceptibility Testing; Eighteenth Informational Supplement. CLSI document M100-S18 (ISBN 1-56238-653-0). Clinical and Laboratory Standards Institute, 940 West Valley Road, Suite 1400, Wayne, Pennsylvania. 19087-1898 USA, 2008.
2. Centers for Disease Control and Prevention. Effect of New Penicillin Susceptibility Breakpoints for *Streptococcus pneumoniae*—United States, 2006-2007. MMWR 2008;57:1353-5.

Streptococcal Toxic-Shock Syndrome (STSS)

2010 Case Definition

Clinical description

Streptococcal toxic-shock syndrome (STSS) is a severe illness associated with invasive or noninvasive group A streptococcal (*Streptococcus pyogenes*) infection. STSS may occur with infection at any site but most often occurs in association with infection of a cutaneous lesion. Signs of toxicity and a rapidly progressive clinical course are characteristic, and the case fatality rate may exceed 50%.

Clinical case definition

An illness with the following clinical manifestations*:

Hypotension defined by a systolic blood pressure less than or equal to 90 mm Hg for adults or less than the fifth percentile by age for children aged less than 16 years.

Multi-organ involvement characterized by two or more of the following:

Renal impairment: Creatinine greater than or equal to 2 mg/dL (greater than or equal to 177 μ mol/L) for adults or greater than or equal to twice the upper limit of normal for age. In patients with preexisting renal disease, a greater than twofold elevation over the baseline level.

Coagulopathy: Platelets less than or equal to 100,000/mm³ (less than or equal to 100 x 10⁶/L) or disseminated intravascular coagulation, defined by prolonged clotting times, low fibrinogen level, and the presence of fibrin degradation products.

Liver involvement: Alanine aminotransferase, aspartate aminotransferase, or total bilirubin levels greater than or equal to twice the upper limit of normal for the patient's age. In patients with preexisting liver disease, a greater than twofold increase over the baseline level.

Acute respiratory distress syndrome: defined by acute onset of diffuse pulmonary infiltrates and hypoxemia in the absence of cardiac failure or by evidence of diffuse capillary leak manifested by acute onset of generalized edema, or pleural or peritoneal effusions with hypoalbuminemia.

A generalized erythematous macular rash that may desquamate.

Soft-tissue necrosis, including necrotizing fasciitis or myositis, or gangrene.

* Clinical manifestations do not need to be detected within the first 48 hours of hospitalization or illness, as specified in the 1996 case definition. The specification of the 48 hour time constraint was for purposes of assessing whether the case was considered nosocomial, not whether it was a case or not.

Laboratory criteria for diagnosis

Isolation of group A *Streptococcus*.

Case classification

Probable: a case that meets the clinical case definition in the absence of another identified etiology for the illness and with isolation of group A *Streptococcus* from a nonsterile site.

Confirmed: a case that meets the clinical case definition and with isolation of group A *Streptococcus* from a normally sterile site (e.g., blood or cerebrospinal fluid or, less commonly, joint, pleural, or pericardial fluid).

Tetanus (*Clostridium tetani*)

2010 Case Definition

Case classification

Probable:

In the absence of a more likely diagnosis, an acute illness with muscle spasms or hypertonia, AND diagnosis of tetanus by a health care provider;

OR

Death, with tetanus listed on the death certificate as the cause of death or a significant condition contributing to death

Comment

There is no definition for "confirmed" tetanus.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete tetanus details in RDD

Central Office:

- Inform Epi Manager or State Epidemiologist.

Toxic-Shock Syndrome (TSS)

1997 Case Definition

Clinical case definition

An illness with the following clinical manifestations:

Fever: temperature greater than or equal to 102.0°F (greater than or equal to 38.9°C)

Rash: diffuse macular erythroderma

Desquamation: 1-2 weeks after onset of illness, particularly on the palms and soles

Hypotension: systolic blood pressure less than or equal to 90 mm Hg for adults or less than fifth percentile by age for children aged less than 16 years; orthostatic drop in diastolic blood pressure greater than or equal to 15 mm Hg from lying to sitting, orthostatic syncope, or orthostatic dizziness

Multisystem involvement (three or more of the following):

Gastrointestinal: vomiting or diarrhea at onset of illness

Muscular: severe myalgia or creatine phosphokinase level at least twice the upper limit of normal

Mucous membrane: vaginal, oropharyngeal, or conjunctival hyperemia

Renal: blood urea nitrogen or creatinine at least twice the upper limit of normal for laboratory or urinary sediment with pyuria (greater than or equal to 5 leukocytes per high-power field) in the absence of urinary tract infection

Hepatic: total bilirubin, alanine aminotransferase enzyme, or aspartate aminotransferase enzyme levels at least twice the upper limit of normal for laboratory

Hematologic: platelets less than 100,000/mm³

Central nervous system: disorientation or alterations in consciousness without focal neurologic signs when fever and hypotension are absent

Laboratory criteria

Negative results on the following tests, if obtained:

Blood, throat, or cerebrospinal fluid cultures (blood culture may be positive for *Staphylococcus aureus*)

Rise in titer to Rocky Mountain spotted fever, leptospirosis, or measles

Case classification

Probable: a case which meets the laboratory criteria and in which four of the five clinical findings described above are present

Confirmed: a case which meets the laboratory criteria and in which all five of the clinical findings described above are present, including desquamation, unless the patient dies before desquamation occurs

Trichinosis (*Trichinella* spp.) (Trichinellosis)

1996 Case Definition

Clinical description

A disease caused by ingestion of *Trichinella* larvae. The disease has variable clinical manifestations. Common signs and symptoms among symptomatic persons include eosinophilia, fever, myalgia, and periorbital edema.

Laboratory criteria for diagnosis

Demonstration of *Trichinella* larvae in tissue obtained by muscle biopsy, or

Positive serologic test for *Trichinella*

Case classification

Confirmed: a clinically compatible case that is laboratory confirmed

Comment

In an outbreak setting, at least one case must be laboratory confirmed. Associated cases should be reported as confirmed if the patient shared an epidemiologically implicated meal or ate an epidemiologically implicated meat product and has either a positive serologic test for trichinosis or a clinically compatible illness.

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete CDC form.

Central Office:

- Forward form to CDC.

Tularemia (*Francisella tularensis*)

1999 Case Definition

Clinical description

An illness characterized by several distinct forms, including the following:

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

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

Laboratory criteria for diagnosis

Presumptive

- Elevated serum antibody titer(s) to *F. tularensis* antigen (without documented fourfold or greater change) in a patient with no history of tularemia vaccination or
- Detection of *F. tularensis* in a clinical specimen by fluorescent assay

Confirmatory

- Isolation of *F. tularensis* in a clinical specimen or
- Fourfold or greater change in serum antibody titer to *F. tularensis* antigen

Case classification

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

Confirmed: a clinically compatible case with confirmatory laboratory results

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.

Central Office:

- Inform BT coordinator, Epi Manager or State Epidemiologist.

Typhoid Fever (*Salmonella typhi*)

1997 Case Definition

Clinical description

An illness caused by *Salmonella typhi* that is often characterized by insidious onset of sustained fever, headache, malaise, anorexia, relative bradycardia, constipation or diarrhea, and nonproductive cough. However, many mild and atypical infections occur. Carriage of *S. typhi* may be prolonged.

Laboratory criteria for diagnosis

Isolation of *S. typhi* from blood, stool, or other clinical specimen

Case classification

Probable: a clinically compatible case that is epidemiologically linked to a confirmed case in an outbreak

Confirmed: a clinically compatible case that is laboratory confirmed

Comment

Isolation of the organism is required for confirmation. Serologic evidence alone is not sufficient for diagnosis. Asymptomatic carriage should not be reported as typhoid fever. Isolates of *S. typhi* are reported to the Foodborne and Diarrheal Diseases Branch, Division of Bacterial and Mycotic Diseases, National Center for Infectious Diseases, CDC, through the Public Health Laboratory Information System. (See *Salmonella*.)

Louisiana Epi Comments

Regional Office:

- Consult with central office epi.
- Complete CDC form.

Central Office:

- Inform Foodborne coordinator.
- Submit form to Foodborne coordinator.

Varicella (Chickenpox)

2010 Case Definition

Clinical case definition

An illness with acute onset of diffuse (generalized) maculo-papulovesicular rash without other apparent cause.

Laboratory criteria for diagnosis

Isolation of varicella virus from a clinical specimen, or
Varicella antigen detected by direct fluorescent antibody test, or
Varicella-specific nucleic acid detected by polymerase chain reaction (PCR), or
• Significant rise in serum anti-varicella immunoglobulin G (IgG) antibody level by any standard serologic assay.

Case classification

Probable:

An acute illness with
Diffuse (generalized) maculopapulovesicular rash, AND
Lack of laboratory confirmation, AND
Lack of epidemiologic linkage to another probable or confirmed case.

Confirmed:

An acute illness with diffuse (generalized) maculopapulovesicular rash, AND
Epidemiologic linkage to another probable or confirmed case, OR
Laboratory confirmation by any of the following:
Isolation of varicella virus from a clinical specimen, OR
Varicella antigen detected by direct fluorescent antibody test, OR
Varicella-specific nucleic acid detected by polymerase chain reaction (PCR), OR
Significant rise in serum anti-varicella immunoglobulin G (IgG) antibody level by any standard serologic assay.

Comment

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 not routinely recommended; laboratory confirmation is recommended for fatal cases and in other special circumstances.

Vibriosis (Non-cholera *Vibrio spp.*)

2007 Case Definition

Clinical description

An infection of variable severity characterized by diarrhea and vomiting, primary septicemia, or wound infections. Asymptomatic infections may occur, and the organism may cause extraintestinal infections.

Laboratory criteria for diagnosis

Isolation of *Vibrio spp.* other than toxigenic *Vibrio cholerae* O1 or O139 from a clinical specimen.*

Case classification

Confirmed: A case that meets the laboratory criteria for diagnosis. Note that species identification and, if applicable, serotype designation (i.e., *Vibrio cholerae* non-O1/non-O139) should be reported.

Probable: A clinically-compatible symptomatic case that is epidemiologically linked to a confirmed case.

Comment

In addition to reporting through the National Notifiable Diseases Surveillance System (NNDSS), CDC requests that states collect information on the standard surveillance form for Cholera and Other *Vibrio* Illness Surveillance System (COVISS), available at: http://www.cdc.gov/foodborneoutbreaks/documents/cholera_vibrio_report.pdf. CDC intends to integrate the COVISS form into the National Electronic Diseases Surveillance System (NEDSS) in the future. Reporting sites should use the COVISS reporting form until the integration is complete and COVISS data can be transmitted to CDC. CDC requests that *Vibrio cholerae* and *Vibrio parahaemolyticus* isolates be referred to the Foodborne and Diarrheal Diseases Laboratory for characterization.

*Infections due to toxigenic *Vibrio cholerae* O1 or O139 are reportable as cholera (see current cholera case definition listed below).

Regional Office:

- Consult with central office epi.
- Complete CDC form.
- Request submission of specimen to OPH laboratory.

Central Office:

- Inform Foodborne coordinator.
- Submit form to Foodborne coordinator.

Viral Hemorrhagic Fever (VHF)

2010 Case Definition

Filoviruses (Ebola, Marburg)

Lassa Virus

New World Arenaviruses (Guanarito, Machupo, Junin, Sabia)

Crimean-Congo Hemorrhagic Fever (Nairovirus)

Clinical description

A person with acute onset with ALL the following clinical findings:

A fever > 40°C, AND

One or more of the following clinical findings:

Severe headache

Muscle pain

Erythematous maculopapular rash on the trunk with fine desquamation 3–4 days after rash onset

Vomiting

Diarrhea

Pharyngitis (arenavirus only)

Abdominal pain

Bleeding not related to injury

Retrosternal chest pain (arenavirus only)

Proteinuria (arenavirus only)

Laboratory criteria for diagnosis

One or more of the following laboratory findings:

Detection of VHF viral antigens in blood by enzyme-linked immunosorbent assay (ELISA) antigen detection

VHF viral isolation in cell culture for blood or tissues

Detection of VHF viral genes using reverse transcriptase with polymerase chain reaction amplification (RT-PCR) from blood or tissues

Detection of VHF viral antigens in tissues by immunohistochemistry

Exposure

One or more of the following exposures within the 3 weeks before onset of symptoms:

Contact with blood or other body fluids of a patient with VHF

Residence in—or travel to—a VHF endemic area

Work in a laboratory that handles VHF specimens

Work in a laboratory that handles 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

Suspected: Case meets the clinical and epidemiologic linkage criteria.

Confirmed: Case meets the clinical and laboratory criteria.

Louisiana Epi Comments

Regional Office:

- Notify central office epi immediately.

Central Office:

- Inform BT coordinator, Epi Manager or State Epidemiologist.

Yellow Fever

1997 Case Definition

Clinical description

A mosquito-borne viral illness characterized by acute onset and constitutional symptoms followed by a brief remission and a recurrence of fever, hepatitis, albuminuria, and symptoms and, in some instances, renal failure, shock, and generalized hemorrhages

Laboratory criteria for diagnosis

Fourfold or greater rise in yellow fever antibody titer in a patient who has no history of recent yellow fever vaccination and cross-reactions to other flaviviruses have been excluded or

Demonstration of yellow fever virus, antigen, or genome in tissue, blood, or other body fluid

Case classification

Probable: a clinically compatible case with supportive serology (stable elevated antibody titer to yellow fever virus [e.g., greater than or equal to 32 by complement fixation, greater than or equal to 256 by immunofluorescence assay, greater than or equal to 320 by hemagglutination inhibition, greater than or equal to 160 by neutralization, or a positive serologic result by immunoglobulin M-capture enzyme immunoassay]. Cross-reactive serologic reactions to other flaviviruses must be excluded, and the patient must not have a history of yellow fever vaccination.)

Confirmed: a clinically compatible case that is laboratory confirmed

Regional Office:

- Consult with central office epi.
- Collect travel history.

Central Office:

- Inform Epi Manager or State Epi.