

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

2010 Case Definition

CSTE Position Statement Number: 09-ID-19

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

See also:

- 1996 Case Definition
- 1990 Case Definition