

## ARTHROPOD-BORNE HEMORRHAGIC FEVER

*Includes Dengue Hemorrhagic Fever; Does Not Include Yellow Fever and Classical Dengue Fever.*

### Background

This case definition was developed by the Armed Forces Health Surveillance Center (AFHSC) for the purpose of epidemiological surveillance of conditions important to military-associated populations.

### Clinical Description

Arthropod-borne hemorrhagic fevers are a diverse group of viral illnesses transmitted by arthropod vectors such as ticks or mosquitoes. Clinical signs and symptoms may include high fever, decreased white blood cell count, altered mental status, local hemorrhage, and low blood pressure. Severe cases may result in shock due to severe vascular instability and decreased vascular integrity.<sup>1</sup>

### Case Definition and Incidence Rules

For surveillance purposes, a case of arthropod-borne hemorrhagic fever is defined as:

- *One hospitalization* with any of the defining diagnoses of arthropod-borne hemorrhagic fever (see ICD9 and ICD10 code lists below) in *any* diagnostic position; or
- *Two outpatient medical encounters*, occurring *within a 60-day period*, with any of the defining diagnoses of arthropod-borne hemorrhagic fever (see ICD9 and ICD10 code lists below) in any diagnostic position; two encounters with the same ICD9 or ICD10 code for a specific virus type are not required to define a case; or
- One record of a reportable medical event of a confirmed case of arthropod-borne hemorrhagic fever.

#### *Incidence rules:*

For individuals who meet the case definition:

- The incidence date is considered the date of the first reportable medical event, hospitalization or outpatient medical encounter that includes a defining diagnosis of arthropod-borne hemorrhagic fever.
- An individual is considered an incident case only *once per 365 days*.

#### *Exclusions:*

- None

<sup>1</sup> *Viral Hemorrhagic Fevers*. Centers for Disease Control and Prevention, Special Pathogens Branch. <http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/vhf.htm>. Accessed: October 21, 2011.



## Codes

The following ICD9 and ICD10 codes are included in the case definition:

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Arthropod-borne hemorrhagic fever	A91 (Dengue <i>hemorrhagic</i> fever)	065.4 (mosquito-borne hemorrhagic fever)
	A98.0 (Crimean-Congo hemorrhagic fever)	065.0 (Crimean hemorrhagic fever)
	- A98.1 (Omsk hemorrhagic fever)	065.1 (Omsk hemorrhagic fever)
	- A98.2 (Kyasannur Forest disease)	065.2 (Kyasannur Forest disease)
	- A98.8 (other specified viral hemorrhagic fevers)	065.3 (other tick-borne hemorrhagic fever) 065.8 (other specified arthropod-borne hemorrhagic fever)
	A99 (unspecified viral hemorrhagic fever)	065.9 (arthropod-borne hemorrhagic fever, unspecified)

## Development and Revisions

- In April of 2014 the case definition was updated to include ICD10 codes.
- This case definition was developed in 2011 by AFHSC staff for the Annual Vector Borne Reports, which provide information on cases of vector-borne illnesses during the last 10 years, including details by Service for active component, Reserve/Guard, and other beneficiaries. The case definition was developed based on reviews of the ICD9 codes, the scientific literature, and previous AFHSC analyses.

### *Case Definition and Incidence Rule Rationale*

- This case definition does not include Yellow fever (ICD9 code 060.x; ICD10code A95.0). Researchers who wish to include yellow fever in an analysis should supplement this case definition accordingly.
- Prior to 2014, dengue hemorrhagic fever was excluded from this case definition because the only relevant ICD9 code for this severe manifestation of dengue virus infection was 065.4 (mosquito-borne hemorrhagic fever), a non-specific designation which could be used for illnesses caused by other mosquito-borne viruses. The ICD10 coding system has a specific code for dengue hemorrhagic fever (A91) so the code is included in this case definition and will be used once the new coding system is implemented in the Military Health System.
- Chikungunya virus is excluded from this case definition because hemorrhagic manifestations are rare with infections by this virus. The ICD9 coding system provides no specific code for infections with this virus. Chikungunya is one of several viruses reported under codes 065.4 (mosquito-borne hemorrhagic fever) and 066.3 (other mosquito-borne fevers). In the ICD10 coding system, there is a specific code for chikungunya virus disease (A92.0), but the same code applies to both common cases of uncomplicated chikungunya and the rare cases of hemorrhagic disease.



- The specification of “*within a 60-day period*” for the two outpatient encounters is used to allow for the likelihood that “true” cases of Arthropod Borne Hemorrhagic Fever would likely have a second encounter within that interval. The interval also allows enough time to elapse for laboratory confirmation.

#### *Code Set Determination and Rationale*

- Specific serotypes of the viruses causing arthropod-borne hemorrhagic fever are not distinguished in the ICD9 or ICD10 coding systems so this granularity of detail cannot be conveyed using the existing administrative data source.

### **Reports**

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AFHSC reports on arthropod-borne hemorrhagic fever in the following reports:

- Annually: “Arthropod-Borne Hemorrhagic Fever Report” for the Armed Forces Pest Management Board, released in April of each year; Available on the AFHSC website at: <http://www.afhsc.mil>; see “Reports and Publications”.
- Weekly: DoD Communicable Disease Weekly Report; Summary of Communicable Reportable Events by Service; Available on the AFHSC website at: <http://www.afhsc.mil>; see “Reports and Publications”.

### **Review**

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Apr 2014	Case definition reviewed and updated by the AFHSC Surveillance Methods and Standards (SMS) working group.
Nov 2011	Case definition reviewed and adopted by the AFHSC Surveillance Methods and Standards (SMS) working group.
Apr 2011	Case definition developed and reviewed by AFHSC staff.

### **Comments**

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*Armed Forces Reportable Events:* Hemorrhagic fevers associated with any mode of transmission (arthropod-borne or zoonotic) are reportable medical events in the Armed Forces Reportable Events surveillance system; they are reported under the category of “Hemorrhagic Fever”. Yellow fever and dengue hemorrhagic fever are reported under separate categories (“Yellow Fever” and “Dengue Fever”) in the reportable events system.

