

## MOSQUITO-BORNE VIRAL ENCEPHALITIDES

### 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

The mosquito-borne viral encephalitides are viral diseases transmitted by the bite of an infected mosquito that carries the virus from various vertebrate hosts to humans. Within the United States the most common types of viruses are Eastern equine, Western equine, West Nile, St. Louis, and LaCross encephalitis. Outside the U.S. the most common types are Japanese Encephalitis (JE) and Venezuelan equine encephalitis (VEE). Most human infections are asymptomatic though the viruses are capable of causing nonspecific flu-like symptoms, (e.g., fever, headache, myalgias, malaise and prostration). A small proportion of infected individuals develop encephalitis with associated neurologic sequelae and potentially a fatal outcome.<sup>1</sup>

### Case Definition and Incidence Rules

For surveillance purposes, a case of mosquito-borne viral encephalitis is defined as:

- *One hospitalization* with any of the defining diagnoses of mosquito-borne viral encephalitis (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 mosquito-borne viral encephalitis (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
- For Japanese encephalitis (JE) only, *five outpatient medical encounters*, occurring *within a 180-day period*, with a defining diagnosis of Japanese encephalitis (see ICD9 and ICD10 code lists below) in *any* diagnostic position.
- One record of a reportable medical event of mosquito-borne viral encephalitis.

#### *Incidence rules:*

For individuals who meet the case definition:

- The incidence date is considered the date of onset documented in a reportable medical event, or the first hospitalization or outpatient medical encounter that includes a defining diagnosis of mosquito-borne viral encephalitis.
- An individual is considered an incident case only *once per lifetime*.

*(continued on next page)*

<sup>1</sup> “Information on Arboviral Encephalitides.” Centers for Disease Control and Prevention. <http://www.cdc.gov/ncidod/dvbid/arbtor/arbdet.htm>. Accessed: Oct 5, 2011



### Case Definition and Incidence Rules *(continued)*

#### Exclusions:

- For Japanese encephalitis, medical encounters with evidence of JE vaccination on the day of or the day prior to the JE diagnosis are excluded. The following codes are used to identify instances of JE vaccination:
  - Vaccine administered (CVX codes): 039 (Japanese encephalitis SC), 134 (Japanese encephalitis IM)
  - Adverse events: ICD9 codes E949.6 (other and unspecified viral and rickettsial vaccines), E949.9 (other and unspecified vaccines and biological substances)
  - Vaccine poisoning: ICD9 codes 979.6 (other and unspecified viral and rickettsial vaccines), 979.9 (poisoning by other and unspecified vaccines and biological substances)
  - Need for prophylactic vaccination and inoculation against certain diseases; ICD9 codes V04.8 (other viral diseases), V04.89 (other viral diseases), V05.0 (arthropod-borne viral encephalitis), V05.1 (other arthropod-borne viral diseases)

### Codes

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

Condition	ICD-10-CM Codes	ICD-9-CM Codes
Mosquito-Borne Viral Encephalitis	A83 (mosquito-borne viral encephalitis)	--
	- A83.0 (Japanese encephalitis)	062.0 (Japanese encephalitis)
	- A83.1 (Western equine encephalitis)	062.1 (Western equine encephalitis)
	- A83.2 (Eastern equine encephalitis)	062.2 (Eastern equine encephalitis)
	- A83.3 (St. Louis encephalitis)	062.3 (St. Louis encephalitis)
	- A83.4 (Australian encephalitis)	062.4 (Australian encephalitis)
	- A83.5 (California virus encephalitis)	062.5 (California virus encephalitis)
	- A83.6 (Rocio virus disease)	062.8 (other specified mosquito-borne viral encephalitis)
	- A83.8 (other mosquito-borne viral encephalitis)	062.8 (above)
	- A83.9 (mosquito-borne viral encephalitis, unspecified)	062.9 (mosquito-borne viral encephalitis, unspecified)



## Development and Revisions

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- In July 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 was based on reviews of the ICD9 codes, the scientific literature, and previous AFHSC analyses.

### *Case Definition and Incidence Rule Rationale*

- The specification of “*within a 60-day period*” for the two outpatient encounters is used to allow for the likelihood that “true” cases of Mosquito Borne Encephalitis would likely have a second encounter within that interval. The interval also allows enough time to elapse for laboratory confirmation.
- *Japanese Encephalitis*: Due to miscoding associated with the administration of the JE vaccine, five outpatient visits, irrespective of data source, *within a 180 day period*, are required to be considered an incident case.

## Reports

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AFHSC reports on mosquito-borne viral encephalitides in the following reports:

- Annually: “Annual Mosquito-Borne Viral Encephalitides Report” 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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Jul 2014	Case definition reviewed and updated by the AFHSC Surveillance Methods and Standards (SMS) working group.
Nov 2011	Case definition reviewed and adopted by 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*: Arthropod-borne hemorrhagic fevers are reportable medical events in the Armed Forces Reportable Events surveillance system; reported under the category of “Arboviral encephalitis.”<sup>2</sup>

<sup>2</sup> Armed Forces Reportable Medical Events Guidelines and Case Definitions, Armed Forces Health Surveillance Center, March 2012.

