

**West Nile Virus in California:  
Guidelines for Human Testing and Surveillance  
Within the Regional Public Health Laboratory Network**

California Department of Public Health  
Richmond, California

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**TABLE OF CONTENTS**

Diagnostic Testing Guidelines .....	1
Submitting Specimens to the Public Health Laboratory Network for Testing .....	1
Viral and Rickettsial Disease Laboratory (VRDL) Testing Algorithm .....	2
Laboratory Diagnosis and Test Interpretation .....	2
Case Classification.....	3
West Nile Virus Testing in Commercial Laboratories .....	3
VRDL Test Results .....	4
Reporting West Nile Virus Cases and Presumptive Viremic Donors .....	4
West Nile Virus-Associated Fatalities .....	4
Contacts .....	5
Useful Links .....	5
Appendix A: Instructions for Submitting Specimens to VRDL .....	6
Appendix B: West Nile Virus Specimen Submittal Form .....	7
Appendix C: VRDL Testing Algorithm – Serum .....	8
Appendix D: VRDL Testing Algorithm – CSF .....	9
Appendix E: WNV Laboratory Testing at VRDL .....	10
Appendix F: Surveillance Case Definition for West Nile Virus Infection in Humans	11
Appendix G: West Nile Virus Infection Case Report .....	12
Appendix H: Report of West Nile-Virus Positive Blood Donor.....	13
Appendix I: CalREDIE Reporting Flowchart.....	14

## West Nile Virus in California: Guidelines for Human Testing and Surveillance Within the Regional Public Health Laboratory Network

### Diagnostic Testing Guidelines

West Nile virus (WNV) testing within the regional public health laboratory network (i.e., the California Department of Public Health Viral and Rickettsial Disease Laboratory and participating local public health laboratories) is recommended for individuals with the following clinical syndromes, particularly during WNV "season," which typically occurs from July through October in California:

- A. Encephalitis
- B. Aseptic meningitis (Note: Consider enterovirus for individuals  $\leq 18$  years of age)
- C. Acute flaccid paralysis; atypical Guillain-Barré Syndrome; transverse myelitis; or
- D. Febrile illness\*
  - a. Illness compatible with West Nile fever and lasting  $\geq 7$  days
  - b. Must be seen by a health care provider

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\* The West Nile fever syndrome can be variable and often includes headache and fever ( $T \geq 38^{\circ}\text{C}$ ). Other symptoms include rash, swollen lymph nodes, eye pain, nausea or vomiting. After initial symptoms, the patient may experience several days of fatigue and lethargy.

Identification of human cases is important early in the WNV season to target mosquito control and public education activities to reduce exposure risk. However, depending on the volume of tests requested and laboratory capacity, local public health laboratories may need to consider limiting testing to individuals with neuroinvasive disease once WNV is established in a given area.

### Submitting Specimens to the Regional Public Health Laboratory Network for Testing

Required specimens:

- $\geq 2$  cc acute serum
- If a lumbar puncture is performed, 1-2 cc cerebral spinal fluid (CSF)

If West Nile virus is highly suspected and acute serum is negative or inconclusive, request:

- $\geq 2$  cc convalescent serum collected 3-5 days after acute serum

Paired acute and convalescent serum specimens are useful for demonstration of sero-conversion to WNV. Paired samples should be collected whenever WNV is suspected. Although a single acute serum may provide evidence of recent WNV infection, a negative acute serum does not necessarily rule out infection. Occasionally, a specimen may be collected too soon to show antibody related to a current illness (e.g. with immunocompromised individuals).

Specimens must be submitted with a completed specimen submittal form (See **Appendix A: Instructions for Submitting Specimens**; and **Appendix B: West Nile Virus Specimen Submittal Form**).

## **Viral and Rickettsial Disease Laboratory Testing Algorithm for West Nile Virus**

The California Department of Public Health (CDPH) Viral and Rickettsial Disease Laboratory (VRDL) provides laboratory support and technical assistance to local public health laboratories, and also serves as a reference laboratory for counties without public health laboratory services. VRDL tests serum and CSF samples for West Nile virus (WNV).

- Serum samples will be tested for WNV IgM and IgG antibodies, while CSF samples will be tested for WNV IgM antibodies.
- When previously untested serum or CSF samples are received, enzyme immunoassay (EIA) is performed on both sample types.
- Immunofluorescence assay (IFA) may be done as an adjunct test. This test is performed on serum only (IFA is not validated for CSF samples).
- If the IgM is negative in the serum sample but WNV is strongly suspected, another serum sample should be collected 3-5 days after the first serum. WNV IgM is usually present in immunocompetent individuals by day 5 of illness onset.
- In immunocompromised individuals, the WNV antibody response may be delayed. For these patients, additional testing is warranted. Please consult with VRDL for guidance.
- Please consult with VRDL for guidance any time WNV is strongly suspected, regardless of previous test results.
- Plaque reduction neutralization testing (PRNT) is also available to differentiate between WNV and other flaviviruses e.g. dengue (*Note: At VRDL, PRNT is not currently validated for diagnostic purposes; these results are to be used for surveillance purposes only*).
- Since enterovirus and WNV can cause similar clinical manifestations, enterovirus PCR may also be done on CSF specimens, depending on the availability of resources at VRDL.
- See **Appendices C and D: VRDL WNV Testing Algorithm for Serum and CSF** and **Appendix E: WNV Laboratory Testing at VRDL**.

### **Laboratory Diagnosis and Test Interpretation**

- IFA is a more subjective assay than EIA and should be interpreted with caution.
- An IgG(+) result only (i.e., negative for IgM) typically indicates previous infection with a flavivirus (Table 1).
  - Check case history for travel to flavivirus-endemic areas, length of time between onset of symptoms and collection of specimen, vaccination history, etc.
  - If current infection is still suspected, obtain convalescent serum to test for seroconversion.
- VRDL is available for consultation on test results with local public health laboratories.

**Table 1. Interpretation of West Nile virus antibody test results\***

Tests	Results	Interpretation
IgM IgG	negative negative	Antibody not detected
IgM IgG	negative positive	Infection at undetermined time
IgM IgG	positive negative	Possible evidence of recent or current infection; further testing necessary**
IgM IgG	positive positive	Evidence of recent or current infection***
IgM IgG	indeterminate negative	Inconclusive; Request convalescent serum‡

\* Due to heterotypic antibody responses and/or cross-reactions, serologic results should be interpreted on the basis of clinical and epidemiological information

\*\* Note the possibility of a false positive IgM result

\*\*\* Note that some individuals may have persisting antibodies from the previous WNV season

‡ Paired acute and convalescent serum samples may be useful for demonstration of seroconversion

### Case Classification

An individual with a clinically compatible illness and one of the following combinations of test results is likely to have an acute WNV infection.

- IgM(+) by two different assays (e.g. EIA and IFA); or
- IgM(+) and IgG(+) by EIA; or
- IgM(+) and IgG(+) by IFA; or
- Rising IgG antibodies in paired sera

An important exception is in individuals with travel history to areas where other flaviviruses are present; additional testing should be done to rule out cross-reactivity.

To determine whether an individual should be reported to CDPH as a WNV case, local health departments should refer to the case definition for WNV (**Appendix F**). Please note this case definition is for public health surveillance purposes only and is not intended for use in clinical diagnosis.

### West Nile Virus Testing in Commercial Laboratories

- Under Title 17 of the California Code of Regulations, Section 2505, laboratories are required to report positive WNV test results to the local health department where the patient resides.
- Local health departments should follow up on all IgM-positive results from commercial labs.
  - If a patient has a clinically compatible illness and is positive for both IgM and IgG antibodies, the commercial laboratory results are sufficient to conclude that the patient is infected with WNV. However, for the first few cases of the WNV season, it is recommended that positive results from commercial laboratories be verified by repeat or confirmatory testing at the local public health laboratory and/or VRDL.
  - If a patient is IgM-positive and IgG-negative, be aware that IgM can be falsely positive; follow-up testing is recommended.
- When in doubt, obtain either the original specimen or a convalescent sample to forward to the local public health laboratory or VRDL for repeat or confirmatory testing.

## **Viral and Rickettsial Diseases Laboratory Test Results**

- All VRDL results are faxed to the submitting local public health lab and to the local health department where the patient resides.
- Non-diagnostic results, or results that are to be used for surveillance purposes only (e.g. PRNT), will be faxed separately.
- Local health departments need to forward test results to the appropriate health care providers.
- Fax requests for results (include patient name and identifier e.g. date of birth) to:  
(510) 307-8599, Attn: West Nile Virus Project.

## **Reporting West Nile Virus Cases and Presumptive Viremic Donors**

- Acute WNV infection is a reportable disease. Local health departments should report cases of WNV illness and WNV-positive blood donors (See **Appendix G: West Nile Virus (WNV) Infection Case Report** and **Appendix H: Report of West Nile Virus-Positive Blood Donor**) to the CDPH Communicable Disease Emergency Response Branch (CDER).
- Cases should be reported via CalREDIE or by FAX (510) 620-5896. Case report forms may also be mailed to CDER-WNV at 850 Marina Bay Parkway, Richmond, CA 94804, but please note mail is likely to result in reporting delays.
- Report the clinical syndrome as non-neuroinvasive disease (West Nile fever), neuroinvasive disease (specify encephalitis, meningitis, acute flaccid paralysis, or other), unspecified, or asymptomatic.
- Cases of WNV illness or asymptomatic blood donors that are closed by the local health department in CalREDIE with a confirmed or probable resolution status will be included in CDPH case counts and reports, as well as reported to the CDC via the ArboNET reporting system (See **Appendix I: CalREDIE Reporting Flowchart**).
- Health departments should notify their local vector control agency of any confirmed human WNV activity as soon as possible, so that enhanced mosquito surveillance and control measures can be implemented.
- During the WNV season, case counts are maintained and updated biweekly on the California WNV website (<http://westnile.ca.gov>).
- If a local health department knows of a case that is not included in the case counts on the CDPH website or in ArboNET, please contact CDPH-CDER (510) 620-3987.

## **West Nile Virus-Associated Fatalities**

Determining whether or not a WNV infection has played a causal role in a fatality can be difficult. WNV may not always be listed as a contributory or underlying cause of death on death certificates. Patients often have many underlying conditions and preexisting medical problems that also may be related to the immediate causes of death. In general, if a patient was diagnosed with WNV and never recovered from the sequelae (e.g. was discharged to convalescent hospital until date of death), a health department may consider designating the patient as a WNV-associated fatality.

## **Contacts**

### Communicable Disease Emergency Response Branch

Cynthia Jean Yen, MPH ..... (510) 620-3987  
Carol Glaser, DVM, MD (for clinical consultation)..... (510) 307-8613  
West Nile Virus Surveillance Project Fax ..... (510) 620-5896

### Viral and Rickettsial Disease Laboratory

Maria Salas, MPH..... (510) 307-8606  
Katharine King..... (510) 307-8562  
Heather Sheriff..... (510) 307-8608

### Vector Borne Disease Section

West Nile Virus Hotline ..... (877) 968-2473

## **Useful Links**

California West Nile Virus Website ..... <http://westnile.ca.gov>

CDC West Nile Virus Website ..... <http://www.cdc.gov/ncidod/dvbid/westnile>

## Appendix A: Instructions for Submitting Specimens to VRDL

- Refrigerated specimens should be sent on **cold pack** using an overnight courier
  - If CSF needs to be stored  $\leq 72$  hours before submittal, store at 2 to 8°C and ship on cold pack.
  - If CSF needs to be stored  $> 72$  hours before submittal, freeze at -70°C or colder and ship on dry ice.
- Each specimen should be clearly labeled with **patient name**, **specimen type**, and **date of specimen collection**
- **Specimens must be submitted with a specimen submittal form.** The following information is asked for on the specimen submittal form because it is important for accurate interpretation of results:
  - Onset date
  - Unusual immunological status of patient, if any
  - County of residence
  - History of travel to flavivirus-endemic areas
  - History of prior vaccination against flavivirus disease
  - Brief clinical summary including clinical diagnosis
- **Please include any West Nile virus test results obtained by the local public health laboratory or a commercial reference laboratory**
  - Other laboratory results affect the VRDL testing algorithm; Specimens that have screened positive or indeterminate for WNV IgM antibodies at another laboratory will be immediately tested with the heterophile subtract procedure
- **Do not send specimens on Fridays for weekend delivery** (VRDL Specimen Receiving Hours M-F 8-5)
- Address specimens for VRDL to:  
Specimen Receiving/ West Nile  
850 Marina Bay Parkway  
Richmond, CA 94804

## Appendix B: Specimen Submittal Form (Version for Use by Local Public Health Labs)

West Nile virus testing is recommended on individuals with the following:

- A. Encephalitis
- B. Aseptic meningitis (Note: Consider enterovirus for individuals ≤ 18 years of age)
- C. Acute flaccid paralysis; atypical Guillain-Barré Syndrome; transverse myelitis; or
- D. Febrile illness compatible with West Nile fever\* and lasting ≥ 7 days (must be seen by health care provider):

\* The West Nile fever syndrome can be variable and often includes headache and fever ( $T \geq 38C$ ). Other symptoms include rash, swollen lymph nodes, eye pain, nausea or vomiting. After initial symptoms, the patient may experience several days of fatigue and lethargy.

1. **Required specimens:**

- Acute Serum:** ≥ 2cc serum
  - Cerebrospinal Fluid (CSF):** 1-2cc CSF
2. If West Nile virus is highly suspected and acute serum is negative or inconclusive:
- 2<sup>nd</sup> Serum:** ≥ 2 cc serum collected 3-5 days after acute serum

- Each specimen should be labeled with **date of collection**, **specimen type**, and **patient name**
- Refrigerated specimens should be sent on **cold pack** using an overnight courier
- Frozen specimens should be sent on **dry ice** using an overnight courier
- CSF that cannot be shipped within 72 hours of collection should be stored frozen at -70°C or colder.
- Serum that cannot be shipped within 48 hours of collection may be stored at 4°C or frozen at -20°C or colder.
- Please do not send specimens on Fridays (Specimen Receiving Hours: M-F 8-5)
- Send specimens to CDPH VRDL: **Specimen Receiving – West Nile Virus**

**850 Marina Bay Parkway  
Richmond, CA 94804**

- Local Public Health Laboratory West Nile **IFA/EIA IgM results** (or attach copy of results):

Specimen	Date Collected	IgM Assay Method	Results			
			Negative	Reactive	Indeterminate	Not Tested
		<input type="checkbox"/> IFA <input type="checkbox"/> EIA				
		<input type="checkbox"/> IFA <input type="checkbox"/> EIA				

**\*\* IMPORTANT: THE INFORMATION BELOW MUST BE COMPLETED AND SUBMITTED WITH SPECIMENS \*\***

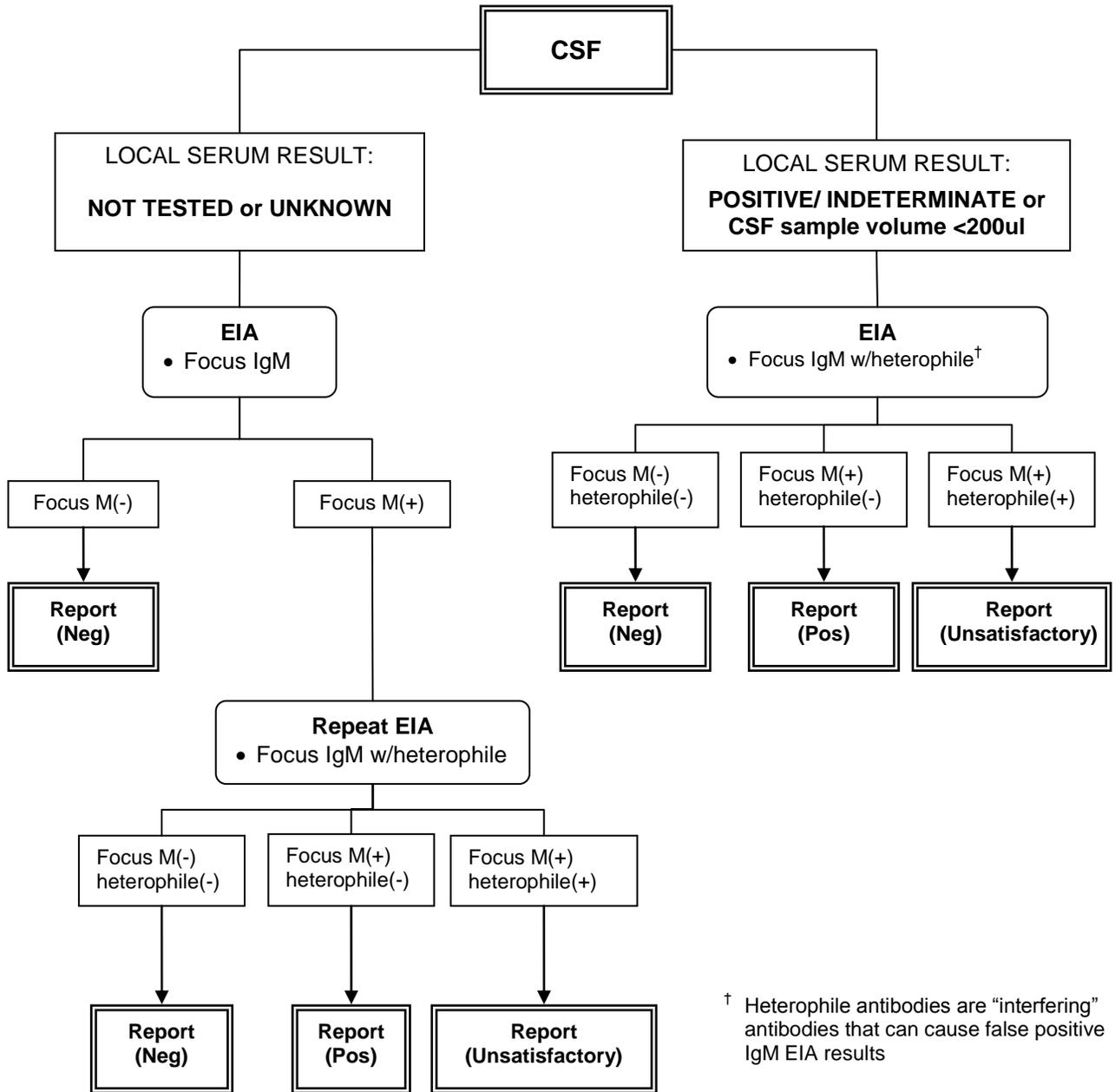
Patient's last name, first name:			<b>Patient Information</b>			
			Address _____			
Age or DOB:	Sex (circle): M   F	Onset Date:	City _____ Zip _____ County _____			
			Phone Number (_____) _____			
<b>Clinical findings:</b> <input type="checkbox"/> Encephalitis <input type="checkbox"/> Meningitis <input type="checkbox"/> Acute flaccid paralysis <input type="checkbox"/> Febrile illness <input type="checkbox"/> Other: _____			Other information (immunocompromised, travel hx, hx of flavivirus infection, etc.):			
Other tests requested:			<b>This section for Laboratory use only.</b> Date received by VRDL and State Accession Number			
1 <sup>st</sup>	Specimen type and/or specimen source	Date Collected	1 <sup>st</sup>			
2 <sup>nd</sup>	Specimen type and/or specimen source	Date Collected	2 <sup>nd</sup>			
3 <sup>rd</sup>	Specimen type and/or specimen source	Date Collected	3 <sup>rd</sup>			

Questions? Call Maria Salas at (510) 307-8606

Submitting Physician \_\_\_\_\_ Phone Number (\_\_\_\_\_) \_\_\_\_\_  
 Submitting Facility \_\_\_\_\_ Phone Number (\_\_\_\_\_) \_\_\_\_\_



Appendix D: Viral and Rickettsial Disease Lab West Nile Virus Testing Algorithm - CSF



## Appendix E: West Nile Virus Laboratory Testing at CDPH Viral and Rickettsial Disease Laboratory

Laboratory diagnosis of human West Nile virus (WNV) infection is a multi-step process. In some cases, physicians send specimens to private commercial laboratories for WNV diagnostic testing. More commonly, specimens are sent to the local or state health department for diagnostic laboratory testing.

Testing available at the California Department of Public Health Viral and Rickettsial Disease Laboratory includes:

### **Serologic tests**

**Enzyme Immunoassay (EIA) testing:** The immunoglobulin M (IgM) antibody-capture enzyme immunoassay (EIA) is the frontline test for WNV diagnosis. The EIA is the ideal test because it is both simple and sensitive (i.e., highly likely to find true positives). EIA testing can be completed in 14 calendar days from the time samples arrive at the laboratory. Generally several specimens are tested in each EIA run.

The immunoglobulin G (IgG) EIA test is used as an adjunct test—a single IgG result cannot differentiate between old and new infection; however, paired sera showing significant change in IgG antibody levels can be helpful.

**Immunofluorescence Assay (IFA) testing:** IFA tests for WNV can also test for IgM and IgG antibodies. The advantages of these tests are that they are rapid and amenable to just a few samples. However, the IFA is a more subjective assay than the EIA.

### **Molecular tests**

Molecular methods for WNV testing can be used as an adjunct to the serologic tests. For diagnosis of clinical disease, serological tests are more accurate than molecular tests. Reverse Transcriptase - Polymerase Chain Reaction (RT-PCR) is a process that uses nucleic acid amplification techniques. While these tests can be useful in diagnosis, they have low sensitivity for a variety of reasons for WNV, making them inappropriate as the sole test for laboratory diagnostic testing of possible human WNV infections. An advantage of this method is the relatively rapid turn around time. RT-PCRs may be useful for immunocompromised individuals that have a delay in antibody response and prolonged viremia. Additionally, VRDL uses molecular methods to rule out enterovirus.

### **Confirmation of results**

#### **Plaque reduction neutralization test (PRNT)**

Once VRDL has an initial positive result, further testing may be done to confirm that the infection detected is West Nile virus. WNV is a flavivirus, which can be problematic as far as cross-reactivity with other flaviviruses. The flaviviruses include St. Louis encephalitis (SLE) and Japanese encephalitis (JE) viruses, both of which are closely related to WNV, as well as yellow fever (YF) and dengue (DEN) viruses. People who have been recently vaccinated for JE or YF, or who have a recent exposure to JE, YF, SLE, or DEN viruses, may have a positive IgM for WNV, even though they have not actually been exposed to WNV.

Additional laboratory testing may be required to rule out the false-positive reactions that result from an exposure to a related flavivirus. The PRNT is the most specific test available for distinguishing between and among the arthropod-borne flaviviruses. Because exposure to other flaviviruses is possible in many areas of WNV activity, initial IgM positive results may need to be confirmed by PRNT. The PRNT usually takes up to 8 days if testing for both WNV and SLE viruses is required. The process may take even longer if testing with YF or Dengue viruses is necessary. This additional testing (e.g., the PRNT) may require growth of the virus and may take a week or more (plus shipping time) to conduct. Since PRNT testing is not currently validated for diagnostic purposes at the VRDL, PRNT results are reported out separately and should be used for surveillance purposes only.

### **Tests in development**

The VRDL is in the process of developing tests for more rapid confirmation of WNV, e.g. the Western Blot.

## Appendix F: Surveillance Case Definition for West Nile Virus Infection in Humans

West Nile virus infection is reportable to local health departments under Title 17 of the California Code of Regulations. Blood donors that test positive for West Nile virus through blood bank screening should also be reported to CDPH, regardless of clinical presentation.

### **CASE DEFINITION: West Nile Virus**

*NOTE: This definition is for public health surveillance purposes only. It is not intended for use in clinical diagnosis.*

### **Symptomatic Cases (adapted from 2011 CSTE case definition**

**[http://www.cdc.gov/osels/ph\\_surveillance/nndss/casedef/arboviral\\_current.htm](http://www.cdc.gov/osels/ph_surveillance/nndss/casedef/arboviral_current.htm)**

### **Clinical criteria for diagnosis**

#### Neuroinvasive disease

- Fever ( $\geq 100.4^{\circ}\text{F}$  or  $38^{\circ}\text{C}$ ) as reported by the patient or a health-care provider, **AND**
- Meningitis, encephalitis, acute flaccid paralysis, or other acute signs of central or peripheral neurologic dysfunction, as documented by a physician, **AND**
- Absence of a more likely clinical explanation.

#### Non-neuroinvasive disease

- Fever ( $\geq 100.4^{\circ}\text{F}$  or  $38^{\circ}\text{C}$ ) as reported by the patient or a health-care provider, **AND**
- Absence of neuroinvasive disease, **AND**
- Absence of a more likely clinical explanation.

### **Case classification**

Confirmed = A case that meets the above clinical criteria and one or more of the following laboratory criteria for a confirmed case:

- Isolation of virus from, or demonstration of specific viral antigen or nucleic acid in, tissue, blood, CSF, or other body fluid, **OR**
- Four-fold or greater change in virus-specific quantitative antibody titers in paired sera, **OR**
- Virus-specific immunoglobulin M (IgM) antibodies in serum with confirmatory virus-specific neutralizing antibodies in the same or a later specimen, **OR**
- Virus-specific IgM antibodies in CSF and a negative result for other IgM antibodies in CSF for arboviruses endemic to the region where exposure occurred.

Probable = A case that meets the above clinical criteria and the following laboratory criteria:

- Virus-specific IgM antibodies in CSF or serum but with no other testing.\*  
*\*CDPH recommends that virus-specific IgG antibody testing (e.g. EIA or IFA) also be performed. A specimen that is IgM-positive only (i.e. IgG-negative) may be a false positive, while a specimen that is both WNV IgM- and IgG-positive is more likely a true infection.*

### **Presumptive Viremic Donors (Asymptomatic)**

Asymptomatic infection with WNV, which is generally identified in blood donors, is also reportable. Blood donors who test positive for WNV may not necessarily be ill, nor will they initially have positive IgM or IgG antibody test results. Local health departments should report blood donors who meet the following criteria for being a presumptively viremic donor to CDPH-CDER:

A presumptively viremic donor (PVD) is a person with a blood donation that meets at least one of the following criteria:

- a) One reactive nucleic acid-amplification (NAT) test with signal-to-cutoff (S/CO)  $\geq 17$
- b) Two reactive NATs

Additional serological testing is not required. Local health departments should follow up with the donor after two weeks of the date of donation to assess if the patient subsequently became ill. If the donor did become ill as a result of WNV infection, the disease incident should be reclassified as “West Nile virus – Non-neuroinvasive” or “West Nile virus – Neuroinvasive,” depending on the individual’s clinical symptoms.

## Appendix G: West Nile Virus (WNV) Infection Case Report

### Patient Information:

**Last Name:** \_\_\_\_\_ **First Name:** \_\_\_\_\_ **DOB:** \_\_\_/\_\_\_/\_\_\_ **Age:** \_\_\_ **Med Rec #:** \_\_\_\_\_  
**Address:** \_\_\_\_\_ **City:** \_\_\_\_\_ **Zip Code:** \_\_\_\_\_  
**Phone:** Home (\_\_\_\_\_) \_\_\_\_\_ Work (\_\_\_\_\_) \_\_\_\_\_ **Occupation:** \_\_\_\_\_  
**Sex:**  Male  Female  Unknown **Ethnicity:**  Hispanic  Non-Hispanic  Unknown  
**Race:**  White  Black  Unknown  Asian/ Pacific Islander  American Indian/Alaskan Native  Other: \_\_\_\_\_

### Physician Information (Mandatory):

**Name:** \_\_\_\_\_ **Facility:** \_\_\_\_\_  
**Pager/Phone:** (\_\_\_\_\_) \_\_\_\_\_ **Fax:** (\_\_\_\_\_) \_\_\_\_\_ **Email:** \_\_\_\_\_  
**Date of first symptom(s):** \_\_\_/\_\_\_/\_\_\_  Hospitalized or  ER / Outpatient  
**If hospitalized, admit date:** \_\_\_/\_\_\_/\_\_\_ **Discharge date:** \_\_\_/\_\_\_/\_\_\_ **If patient died, date of death:** \_\_\_/\_\_\_/\_\_\_

#### Clinical syndrome:

Encephalitis .....  Yes  No  Unk  
 Aseptic meningitis .....  Yes  No  Unk  
 Acute flaccid paralysis ....  Yes  No  Unk  
 Febrile illness .....  Yes  No  Unk  
 Asymptomatic .....  Yes  No  Unk  
 Other \_\_\_\_\_

#### Do the following apply anytime during current illness:

In ICU .....  Yes  No  Unk  
 Fever  $\geq 38^{\circ}\text{C}$ .....  Yes  No  Unk  
 Headache .....  Yes  No  Unk  
 Rash .....  Yes  No  Unk  
 Stiff neck .....  Yes  No  Unk  
 Muscle pain/weakness ....  Yes  No  Unk  
 Altered consciousness ....  Yes  No  Unk  
 Seizures .....  Yes  No  Unk

#### CSF Results

Date: \_\_\_/\_\_\_/\_\_\_  
 RBC: \_\_\_\_\_  
 WBC: \_\_\_\_\_  
 %Diff: \_\_\_\_\_  
 Protein: \_\_\_\_\_  
 Glucose: \_\_\_\_\_

#### CBC Results

Date: \_\_\_/\_\_\_/\_\_\_  
 WBC: \_\_\_\_\_  
 %Diff: \_\_\_\_\_  
 HCT: \_\_\_\_\_  
 Plt: \_\_\_\_\_

**Other lab results (MRI/CT, LFTs, etc.):** \_\_\_\_\_

#### Past medical history:

Hypertension:  Yes  No  Unk  
 Diabetes Type \_\_\_\_\_  Yes  No  Unk  
 Other: \_\_\_\_\_

#### Travel/Exposures within 4 wks of onset (specify details):

Mosquito bites/exposure .....  Yes  No  Unk  
*Dates/Locations:* \_\_\_\_\_  
 Travel outside of California .....  Yes  No  Unk  
*Dates/Locations:* \_\_\_\_\_  
 Travel outside the U.S. ....  Yes  No  Unk  
*Dates/Locations:* \_\_\_\_\_  
 Donated blood .....  Yes  No  Unk  
*Date:* \_\_\_/\_\_\_/\_\_\_  
 Donated organ .....  Yes  No  Unk  
*Date:* \_\_\_/\_\_\_/\_\_\_  
 Received blood transfusion .....  Yes  No  Unk  
*Date:* \_\_\_/\_\_\_/\_\_\_  
 Received organ transplant: .....  Yes  No  Unk  
*Date:* \_\_\_/\_\_\_/\_\_\_  
 Currently pregnant .....  Yes  No  Unk  
*Week of gestation:* \_\_\_\_\_  
 Ever traveled outside the U.S. ....  Yes  No  Unk  
*Dates/Locations:* \_\_\_\_\_  
 Ever rec'd yellow fever vaccine.....  Yes  No  Unk  
*Date:* \_\_\_/\_\_\_/\_\_\_

#### Knowledge of WNV prior to illness:

Did patient do anything to avoid mosquito bites?  
*If yes,*  Yes  No  Unk  
 - used insect repellent?  Yes  No  Unk  
 - drained standing water near home?  Yes  No  Unk

**Other significant history/exposures:** \_\_\_\_\_

**Other lab results (MRI/CT, etc.):** \_\_\_\_\_

#### West Nile Virus Test Results:

Testing Laboratory	Specimen Type	Coll Date	Test Type	Result

FAX this form: (510) 620-5896 or MAIL to: CDPH–West Nile Virus, 850 Marina Bay Parkway, Richmond CA 94804

Appendix H: Report Form for Presumptive Viremic Donors

California Department of Public Health  
Communicable Disease Emergency Response Branch  
850 Marina Bay Parkway, Richmond, CA 94804  
(510) 620-3987 Fax (510) 620-5896

**Report of West Nile Virus-Positive Blood Donor to the California Department of Public Health**

1. Blood Collection Facility:
  - a. Name: \_\_\_\_\_
  - b. Address: \_\_\_\_\_ Zip Code \_\_\_\_\_
  - c. Telephone number: (\_\_\_\_) \_\_\_\_\_ - \_\_\_\_\_
  - d. Contact person: \_\_\_\_\_
  
2. Blood Unit Identification Number: \_\_\_\_\_
  
3. Date of Collection: \_\_\_\_/\_\_\_\_/\_\_\_\_
  
4. Donor's name: \_\_\_\_\_
  
5. Case identification number assigned by the blood center \_\_\_\_\_  
(This tracking code should be different from the index blood unit identification number or other operational identification numbers. It is to be used to track the case investigation)
  
6. Donor's date of birth: \_\_/\_\_/\_\_\_\_
  
7. Donor's gender: M/F
  
8. Donor's Address \_\_\_\_\_  
  
ZIP code: \_ \_ \_ \_ \_ Tel: (\_\_\_\_) \_\_\_\_\_
  
9. This test was confirmed: Y/N If Y, confirmatory test and result: \_\_\_\_\_
  
10. NAT #1 S/CO: \_\_\_\_\_
  
11. NAT #2 S/CO: \_\_\_\_\_ (if done)
  
12. Blood testing laboratory (optional): Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_
  
13. Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Appendix I: CalREDIE Reporting Flowchart

