

**West Nile and Saint Louis Encephalitis Viruses in California:  
Guidelines for Human Testing and Surveillance  
Within the Regional Public Health Laboratory Network**



California Department of Public Health  
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**West Nile Virus and Saint Louis Encephalitis Viruses in California:**  
**Guidelines for Human Testing and Surveillance**  
**Within the Regional Public Health Laboratory Network**

The California Department of Public Health (CDPH) Viral and Rickettsial Disease Laboratory (VRDL) provides laboratory support, technical assistance, and consultations on West Nile virus (WNV) and Saint Louis encephalitis virus (SLEV) test results to local public health laboratories. VRDL also serves as a reference laboratory for counties without public health laboratory services.

### **Diagnostic Testing Guidelines**

West Nile virus testing is recommended for individuals with the following clinical syndromes, particularly during WNV “season;” seasonal peaks tend to coincide with the months of July through October in California:

- Encephalitis
- Aseptic meningitis (Note: Consider enterovirus for individuals  $\leq 18$  years of age)
- Acute flaccid paralysis; atypical Guillain-Barré Syndrome; transverse myelitis; or
- Febrile illness\*
  - Illness compatible with West Nile fever Clinical presentation must be confirmed by a healthcare provider

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

Identification of human cases early in the WNV season is important for guiding mosquito surveillance, control, and public education activities that can reduce the risk of exposure. Please consult with VRDL or the Vector-Borne Disease Section (VBDS) WNV/SLEV epidemiologist for guidance any time WNV is strongly suspected, regardless of previous test results.

Saint Louis encephalitis virus (SLEV) is also re-emerging in California. This virus is closely related to WNV, and most available assays are unable to distinguish between these two infections. The most reliable way to distinguish them is via a plaque reduction neutralization test (PRNT). Due to the degree of similarity between these two viruses, much of the information in this document, including clinical presentation, apply to both. Due to the relative frequency of these diseases at this time, specific, *a priori* testing for SLEV (i.e. in the absence of any WNV positive test results) is NOT recommended.

### **Viral and Rickettsial Disease Laboratory Testing for West Nile Virus and St. Louis Encephalitis Virus**

Laboratory diagnosis of human WNV and SLEV infections is a multi-step process due to the high degree of serological cross-reactivity between flaviviruses and the relatively low sensitivity of available molecular assays to diagnose WNV or SLEV. Testing available at the CDPH VRDL includes both serologic and molecular tests.

See **Appendix A: Instructions for Submitting Specimens to VRDL**, **Appendix B: VRDL WNV Testing Algorithm**, and **Appendix C: VRDL SLEV Testing Algorithm**.

**Table 1. Appropriate Clinical Specimens for WNV or SLEV Laboratory Testing at VRDL**

		IgM	IgG	PRNT	PCR
WNV	Serum (≥2 ml)	Yes*†	Paired Acute/Convalescent sera only	IgM (+) sera only <sup>§</sup>	
	CSF** (1-2 ml)	Yes*†		IgM (+) CSF only <sup>§</sup>	Yes
SLEV	Serum (≥2 ml)	Yes <sup>§</sup>		IgM (+) sera only <sup>§</sup>	Yes <sup>§</sup>
	CSF** (1-2 ml)	Yes <sup>§</sup>		IgM (+) CSF only <sup>§</sup>	Yes <sup>§</sup>

\* Serum collected within 3 days of symptom onset may not have detectable levels of IgM from the current illness. If the serum sample is IgM negative but WNV is strongly suspected, another serum sample should be collected 3-5 days after the first serum. IgM is usually present in immunocompetent individuals by day 5 after symptom onset.

† Most sera and all CSF are tested for IgM by the Focus WNV IgM enzyme immunoassay (EIA); an in-house immunofluorescence assay (IFA) is also available for testing sera.

§ These assays are not validated for clinical use and are for surveillance purposes only.

\*\* Because enteroviruses, WNV, and SLEV can cause similar clinical manifestations, enterovirus PCR may also be requested for CSF specimens.

## **Serologic tests**

**Enzyme Immunoassay (EIA) testing:** The immunoglobulin M (IgM) antibody-capture enzyme immunoassay (EIA) is the frontline test for both WNV and SLEV at VRDL. EIA testing can be completed within 14 calendar days after a sample arrives at the laboratory; however, results may be delayed when IgM testing is reflexed as part of an arbovirus serology panel. SLEV IgM testing is not currently validated for diagnostic purposes at the VRDL and may not be used for clinical purposes. SLEV IgM-positive specimens with a confirmatory titer of SLEV neutralizing antibody may be forwarded to CDC for additional testing.

The immunoglobulin G (IgG) EIA test can be used as an adjunct test for WNV when paired sera are submitted—a single IgG result cannot differentiate between old and new infection; however, paired sera showing significant changes (≥4x) in IgG antibody reactivity may aid diagnosis. IgG testing for SLEV is not currently available at VRDL.

**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 more rapid than the EIA and are amenable to just a few samples. However, IFA interpretations are more subjective than the EIA.

**Plaque reduction neutralization test (PRNT):** Due to the high degree of serological cross-reactivity among flaviviruses, additional laboratory testing is required to confirm that a WNV IgM detection is specific for WNV. Other flaviviruses include dengue (DEN), SLEV and Zika viruses, as well as yellow fever (YF), and Japanese encephalitis (JE) viruses. People who have been recently vaccinated for JE or YF or those who have a recent exposure to another flavivirus, may have a false positive IgM reaction against WNV even though they have not been exposed to WNV, because infection with any flavivirus can stimulate production of cross-reactive flavivirus-neutralizing antibodies.

The PRNT is the most specific serological test available for distinguishing between the arthropod-borne flaviviruses and the best available assay for differentiating between WNV and SLEV. Final results that include PRNT results are reported within 21 days from detection of WNV/SLEV IgM. WNV and SLEV PRNT testing is not currently validated for diagnostic purposes at the VRDL and may not be used for clinical purposes.

## **Molecular tests**

Reverse transcription polymerase chain reaction (RT-PCR) has a relatively rapid turn-around time but a low sensitivity for WNV and SLEV, making it inappropriate as the primary test for laboratory diagnosis of symptomatic infections. At VRDL, RT-PCR for WNV is only available for CSF specimens, and RT-PCR for SLEV for serum and CSF specimens is only available as a non-diagnostic assay for surveillance purposes (Table 1). For diagnosis of clinical disease, serological tests are more sensitive than molecular tests, as most individuals present to healthcare providers after symptoms have developed and viral particles detectable via RT-PCR have likely already cleared their system.

## **Laboratory Diagnosis, Test Interpretation, and Case Classification**

### **West Nile virus**

- A positive RT-PCR result confirms WNV infection; however, due to low sensitivity of the assay, a negative RT-PCR result does not exclude WNV infection.
- In the absence of other test results, a positive WNV IgM result in a patient with clinically-compatible illness is sufficient to meet the **probable** case definition (**Appendix D**).
- In the absence of a molecular assay, to be considered a **confirmed** case, WNV IgM positive test results must be confirmed by PRNT (**Table 2**). The detection of IgM antibodies in CSF is sufficient to meet the **confirmed** case definition in areas where no other flaviviruses have been detected in a given year. A  $\geq 4$ -fold difference in neutralizing antibody in a PRNT assay is sufficient to meet the **confirmed** case definition (e.g. WNV neutralizing antibody titer is 4-fold or greater than SLEV neutralizing antibody titer).
  - A repeat positive IgM result at another laboratory is not sufficient to confirm WNV. For the first few cases of the WNV season, it is recommended that positive results from commercial or public health laboratories be verified by confirmatory testing, *i.e.*, PRNT.
  - 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.
- In the absence of a positive IgM result, a positive IgG result only indicates previous infection with a flavivirus and is **never** enough to meet the **probable** or **confirmed** case definition.
- Antibody response may be delayed in immunocompromised individuals. For these patients, additional testing is warranted. Please consult with VRDL for guidance.

### **Saint Louis encephalitis virus**

- A positive RT-PCR result confirms SLEV infection; however, due to low sensitivity, a negative RT-PCR result does not exclude SLEV infection (Table 3).

In the absence of other test results, a positive SLEV IgM in a patient with a clinically compatible illness is not sufficient to meet the **probable** case definition: PRNT is necessary to meet the **probable** and **confirmed** case definitions for SLEV. Note that SLEV positive IgM is also necessary in these circumstances.

- To be considered a **confirmed** SLEV case, the titer of SLEV-specific neutralizing antibodies in a WNV/SLEV PRNT must be a minimum of four-fold higher for SLEV than for WNV.

- If a patient is both WNV IgM positive and SLEV IgM positive, but SLEV-specific neutralizing antibody is greater than, but less than 4x greater than WNV-specific neutralizing antibody, it meets the case definition for a **probable** case of WNV, and it should not be reported as an SLEV case.
- To be considered a **probable** SLEV case, the patient must be SLEV IgM positive in the competitive WNV/SLEV IgM assay run by the CDC, with an SLEV-specific neutralizing antibody titer that is greater than, but less than 4x greater than WNV-specific neutralizing antibody.

**Table 2. Interpretation of West Nile virus antibody test results\***

Tests	Test Interpretation	Overall Interpretation	Reflex Testing
IgM IgG	negative negative	Antibody not detected	None Request follow up serum if specimen collected <3 days post onset
IgM IgG	negative positive	Flavivirus infection at undetermined time	None Request follow up serum if specimen collected <3 days post onset
IgM IgG	indeterminate negative	Inconclusive; request convalescent serum	None Request follow up serum if specimen collected <3 days post onset
IgM IgG	positive negative	Possible evidence of recent or current infection; further testing necessary <sup>+</sup>	PRNT
IgM IgG	positive positive	Possible evidence of recent or current infection; further testing necessary <sup>‡</sup>	PRNT

\* Serologic results should be interpreted in context with all relevant clinical and epidemiological information

<sup>+</sup> Due to heterotypic antibody responses and/or cross-reactions between closely-related flaviviruses, IgM detections may be falsely positive for WNV. Specimen will be reflexed to PRNT. Recommend collection of a convalescent serum.

<sup>‡</sup> Some individuals may have persisting antibodies from the previous WNV season. A recent or current infection may be confirmed with a four-fold or greater rise in IgG titer between acute and convalescent paired sera by EIA and/or PRNT. Recommend collection of a convalescent serum.

**Table 3. Interpretation of Saint Louis encephalitis virus antibody test results\***

Tests	Test Interpretation	Overall Interpretation	Reflex Testing
IgM	negative	Antibody not detected	None Request follow up serum if specimen collected <3 days post onset
IgM	indeterminate	Inconclusive	None Request follow up serum if specimen collected <3 days post onset
IgM	positive	Possible evidence of recent or current infection; further testing necessary <sup>+</sup>	PRNT

\* Serologic results should be interpreted in context with all relevant clinical and epidemiological information

<sup>+</sup> Due to heterotypic antibody responses and/or cross-reactions between closely-related flaviviruses, IgM detections may be falsely positive for SLEV. Specimen will be reflexed to PRNT.

## Case Reporting: See Appendices D-F

Acute WNV infection is a nationally-notifiable condition. 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. 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/SLEV (**Appendix D**). Please note that this case definition is intended for public health surveillance purposes only and should not be used for clinical diagnoses.

- All VRDL results are sent via secure email to the submitting local public health laboratory.
- Local public health laboratories are expected to forward test results to the appropriate healthcare provider and to the local health department where the patient resides.
- Local health departments should follow up on all IgM-positive results from commercial labs.

## Reporting WNV and SLEV Cases and Presumptive Viremic Donors (PVD)

- **How to Report:**

- Local health departments must report cases of WNV/SLEV illness and WNV-positive blood donors via CalREDIE or by FAX to 510-412-6263.

Note: case report forms may also be mailed to Vector-Borne Disease Section, ATTN: WNV Human Forms, California Department of Public Health, 850 Marina Bay Parkway, Bldg G1-004, Richmond, CA 94804, but paper-based reporting can result in significant reporting delays.

- See **Appendix E: WNV/SLEV Infection Case Report** and **Appendix F: Report Form for WNV/SLEV Presumptive Viremic Donors**. Jurisdictions reporting through CalREDIE, see **Appendix G: WNV CalREDIE Reporting Flowchart** and **Appendix H: SLEV CalREDIE reporting flowchart**.

- **Reporting guidelines:**

### West Nile virus

- Report the case as
  - West Nile virus – Non-neuroinvasive (specify clinical syndrome as ‘febrile illness’ or ‘other clinical presentation’ [if non-febrile]);
    - Non-neuroinvasive cases should NOT have any neuroinvasive symptoms indicated (e.g. altered consciousness, seizures, stiff neck, paresis/paralysis, ataxia, etc.)
  - West Nile virus – Neuroinvasive (specify clinical syndrome[s] as ‘encephalitis’, ‘meningitis’, ‘acute flaccid paralysis’, and/or ‘other neuroinvasive presentation’);
    - Clinical syndrome must be neuroinvasive (can also include others as secondary and tertiary)
  - West Nile virus – Asymptomatic (specify as asymptomatic).
- In addition to indicating a clinical syndrome, neuroinvasive symptoms and/or the presence of fever/chills or other symptoms must be specified.
- WNV laboratory results must be included in the case report.
- Onset date must be included in the case report.

## Saint Louis encephalitis virus

- Report the case as “Unusual/Other Disease”
  - If there are any associated WNV incidents, close these incidents as ‘Not a case’ and indicate that it is an SLEV case, also indicating the Unusual/Other Disease CalREDIE incident number in the ‘Case Investigation’ tab under ‘Notes/Remarks’
  - Either the WNV incident or SLEV incident must indicate symptoms and whether or not disease was neuroinvasive (clinical syndrome[s] ‘encephalitis’, ‘meningitis’, ‘acute flaccid paralysis’, and/or ‘other neuroinvasive presentation’), or non-neuroinvasive (‘febrile illness’ or ‘other clinical presentation’ [if non-febrile]).
- SLEV laboratory results must be included in the SLEV case report

- **Official case counts:**

- Case counts are updated every Friday during the WNV season on the California WNV website (<http://westnile.ca.gov>). SLEV cases are reported on the SLEV tab of the California WNV website. Cases reported to CDPH by 5:00 PM Wednesday will be included in the Friday update.
- Cases reported via CalREDIE that meet the following criteria will be included in CDPH case counts and reports, as well as reported to the CDC ArboNET reporting system each week (See **Appendix G: WNV CalREDIE Reporting Flowchart** and **Appendix H: SLEV CalREDIE Reporting Flowchart**):
  - Process Status: Closed by LHD
  - Disease: West Nile virus – Neuroinvasive, non-neuroinvasive, or asymptomatic (or an SLEV case indicated as “Unusual/other disease”)
  - Resolution Status: Confirmed or Probable
  - Onset date (if blood/organ donor, then date of donation)

**Cases that do not meet the above criteria will NOT be counted and reported (e.g., cases listed as Under Investigation or Suspect)**

- If a local health department is aware of a case missing from the case count on the CDPH website or elsewhere for that season, please contact VBDS WNV epidemiologist, Robert Snyder at (510) 412-4650.
- **Vector control notification:** Health departments should notify their local vector control agency of any human WNV activity as soon as possible, so that enhanced mosquito surveillance and control measures can be implemented to reduce the risk of additional transmission.

## West Nile Virus- and Saint Louis Encephalitis Virus-Associated Fatalities

Determining whether or not WNV or SLEV have caused a fatality can be difficult. WNV/SLEV may not always be listed as a contributory or underlying cause of death on death certificates, sometimes the fatality may occur well after acute infection. Case-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/SLEV and never recovered from the sequelae (e.g., they were discharged to a convalescent hospital until date of death), a health department may consider designating the patient as a WNV- or SLEV-associated fatality.

## Contacts

### Viral and Rickettsial Disease Laboratory

Maria Salas, MPH.....	(510) 307-8606
Diana Singh.....	(510) 307-8585
VRDL Fax.....	(510) 307-8599

### Vector-Borne Disease Section

Robert Snyder, PhD, MPH.....	(510) 412-4650
VBDS Fax (for case report forms).....	(510) 412-6263
WNV Hotline.....	(877) 968-2473

## Useful Links

California WNV Website	<a href="http://westnile.ca.gov">http://westnile.ca.gov</a>
California WNV Dead Bird Report	<a href="http://www.westnile.ca.gov/report_wnv.php">http://www.westnile.ca.gov/report_wnv.php</a>
CDPH VRDL Specimen Submittal Forms	<a href="https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/VRDL_Specimen_Submittal_Forms.aspx">https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/VRDL_Specimen_Submittal_Forms.aspx</a>
CDC WNV Website	<a href="https://www.cdc.gov/westnile">https://www.cdc.gov/westnile</a>
CSTE Case Definition for Arboviral Diseases	<a href="https://wwwn.cdc.gov/nndss/conditions/arboviral-diseases-neuroinvasive-and-non-neuroinvasive/case-definition/2015/">https://wwwn.cdc.gov/nndss/conditions/arboviral-diseases-neuroinvasive-and-non-neuroinvasive/case-definition/2015/</a>

## Appendix A: Instructions for Submitting Specimens to VRDL

### Recommended Specimens:

- ≥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:

- ≥2 cc convalescent serum collected at least 3-5 days after acute serum.

### Instructions:

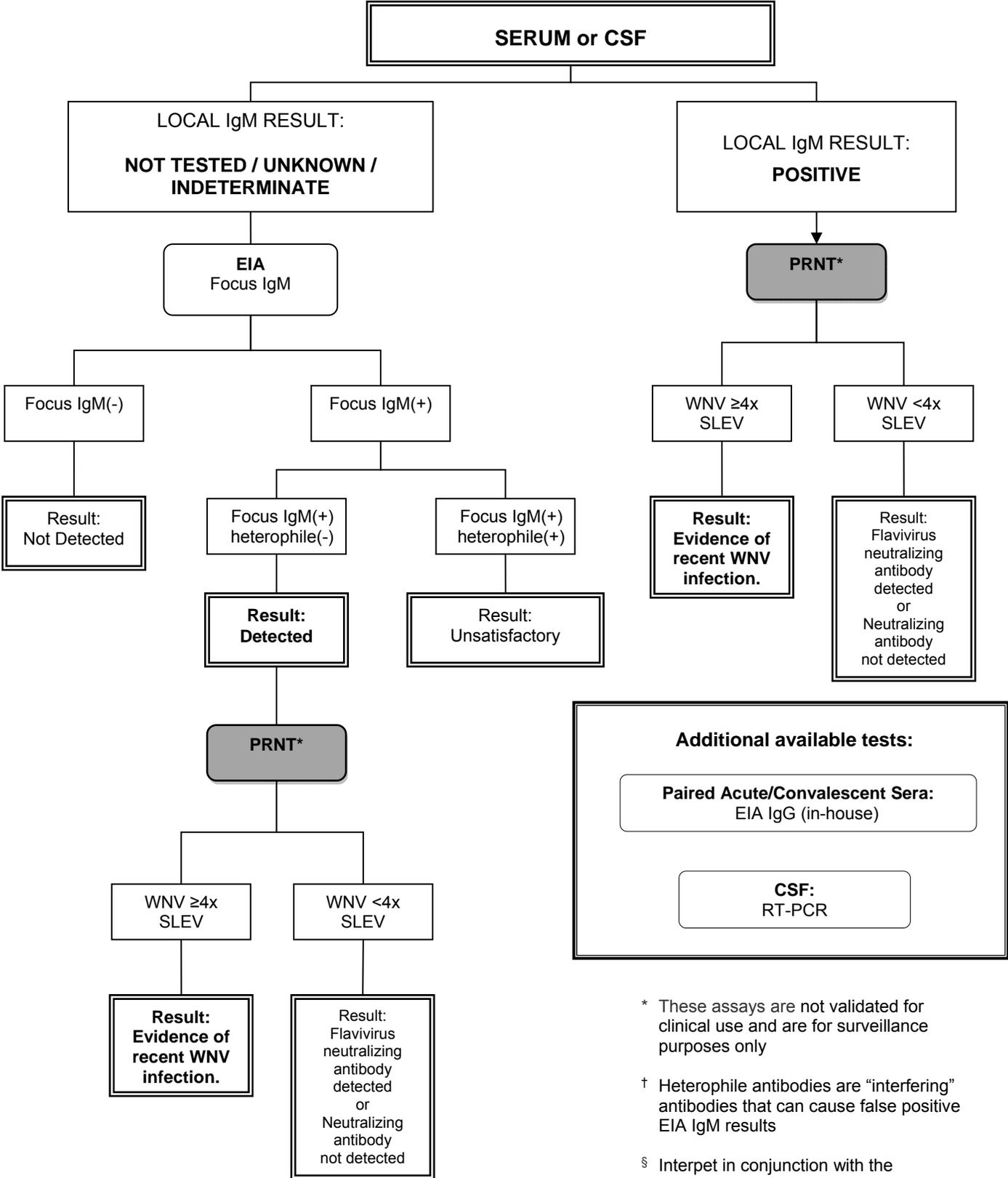
- Refrigerate all specimens at 2-8°C and ship **on cold pack** via overnight courier.
  - If CSF needs to be stored >72 hours, freeze at ≤-70°C and ship on dry ice.
- Each specimen container should be clearly labeled with the following information and in agreement with the accompanying General Purpose Specimen Submittal Form:
  - o **patient name**
  - o **specimen type**
  - o **date of specimen collection**
- Specimens must be submitted with **General Purpose Specimen Submittal Form Lab300**  
[https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/VRDL\\_Specimen\\_Submittal\\_Forms.aspx](https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/VRDL_Specimen_Submittal_Forms.aspx).

**The current version of the submittal form found at this link must be completed electronically. Handwritten or expired/historical versions of the form can not be accepted and will result in testing delays.**

The following information is **required** to accurately interpret laboratory results:

- o Symptom onset date
  - o Unusual immunological status of patient (e.g. immunocompromised), if any
  - o County of residence
  - o History of travel to domestic or international flavivirus-endemic areas (include country/locale)
  - o History of prior vaccination against flavivirus disease (e.g., YF or JE)
  - o Previous West Nile virus IgM results if PRNT is requested. **PRNT testing will be delayed or rejected if this information is not provided with the submittal form.**
- Do not send specimens for weekend delivery (VRDL receiving hours- M-F, 8:00 AM - 5:00 PM)
  - Address specimens for VRDL to:
    - Specimen Receiving / West Nile
    - 850 Marina Bay Parkway
    - Richmond, CA 94804

# Appendix B: Viral and Rickettsial Disease Lab WNV Testing Algorithm



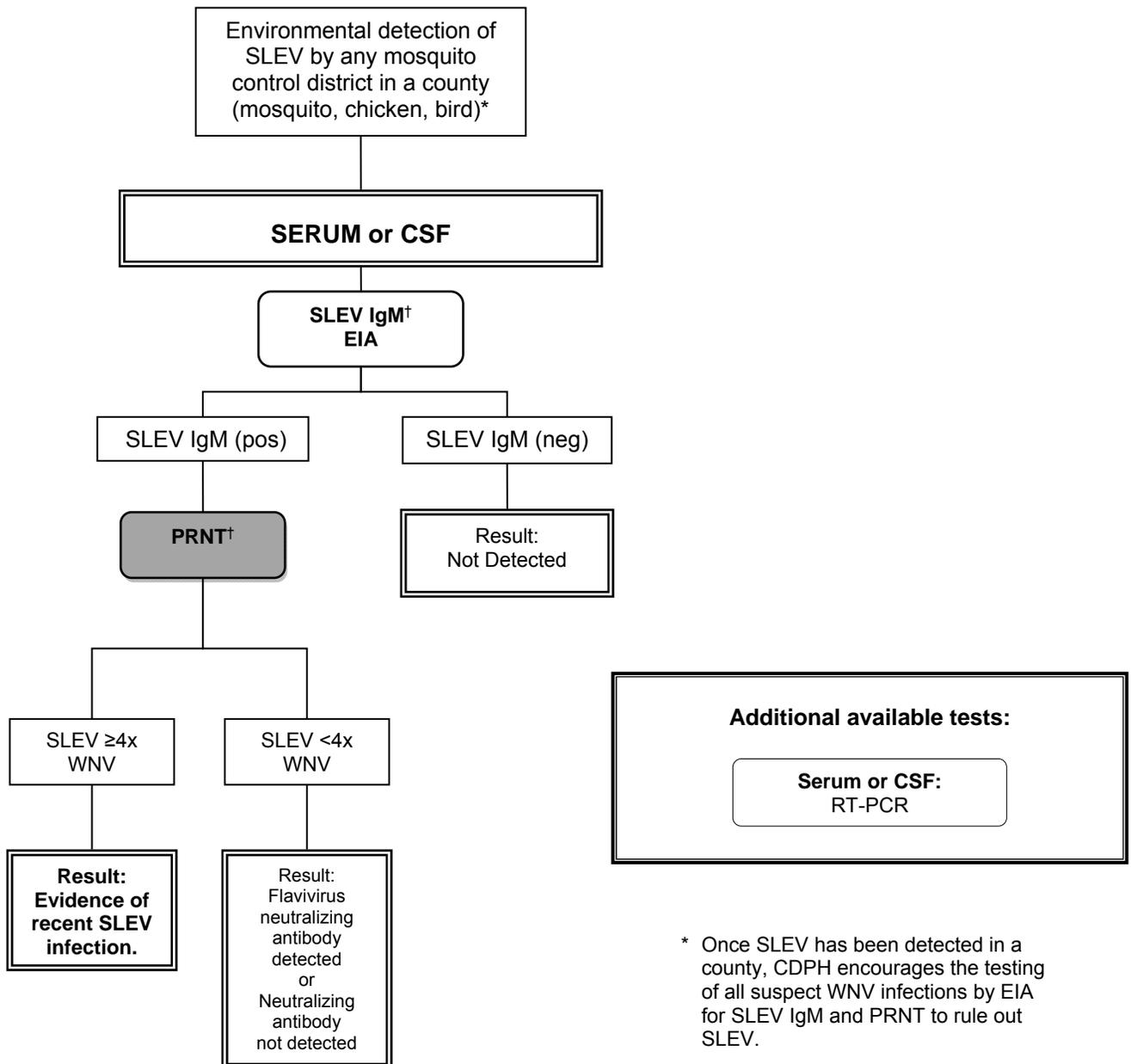
\* These assays are not validated for clinical use and are for surveillance purposes only

† Heterophile antibodies are “interfering” antibodies that can cause false positive EIA IgM results

§ Interpret in conjunction with the following information:

- onset date
- travel history
- prior flavivirus exposure
- vaccination history

## Appendix C: Viral and Rickettsial Disease Lab SLEV Testing Algorithm



\* Once SLEV has been detected in a county, CDPH encourages the testing of all suspect WNV infections by EIA for SLEV IgM and PRNT to rule out SLEV.

† These assays are not validated for clinical use and are for surveillance purposes only

§ Interpret in conjunction with the following information:

- onset date
- travel history
- prior flavivirus exposure
- vaccination history
- environmental arbovirus detections

## Appendix D: Surveillance Case Definition for WNV/SLEV Infection in Humans

West Nile virus infection is a nationally-notifiable disease that is reportable to local health departments under Title 17 of the California Code of Regulations. Blood and organ donors who test positive for West Nile virus through blood bank or organ donor screening must also be reported to CDPH, regardless of whether or not they subsequently develop symptoms.

### **CASE DEFINITION: West Nile virus and St. Louis encephalitis virus Diseases)**

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

### **Symptomatic Cases (adapted from 2015 CSTE case definition**

<http://wwwn.cdc.gov/nndss/conditions/arboviral-diseases-neuroinvasive-and-non-neuroinvasive/case-definition/2015/>)

### **Clinical criteria for diagnosis**

#### Neuroinvasive disease

- 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 (chills), as reported by the patient or a healthcare 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 ( $\geq 4x$  difference in neutralizing antibodies WNV:SLEV), **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.

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

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

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 two weeks after the date of donation to assess if the patient subsequently developed symptoms. 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 E: WNV/SLEV 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

**Appendix F: Report Form for WNV/SLEV Presumptive Viremic Donors**

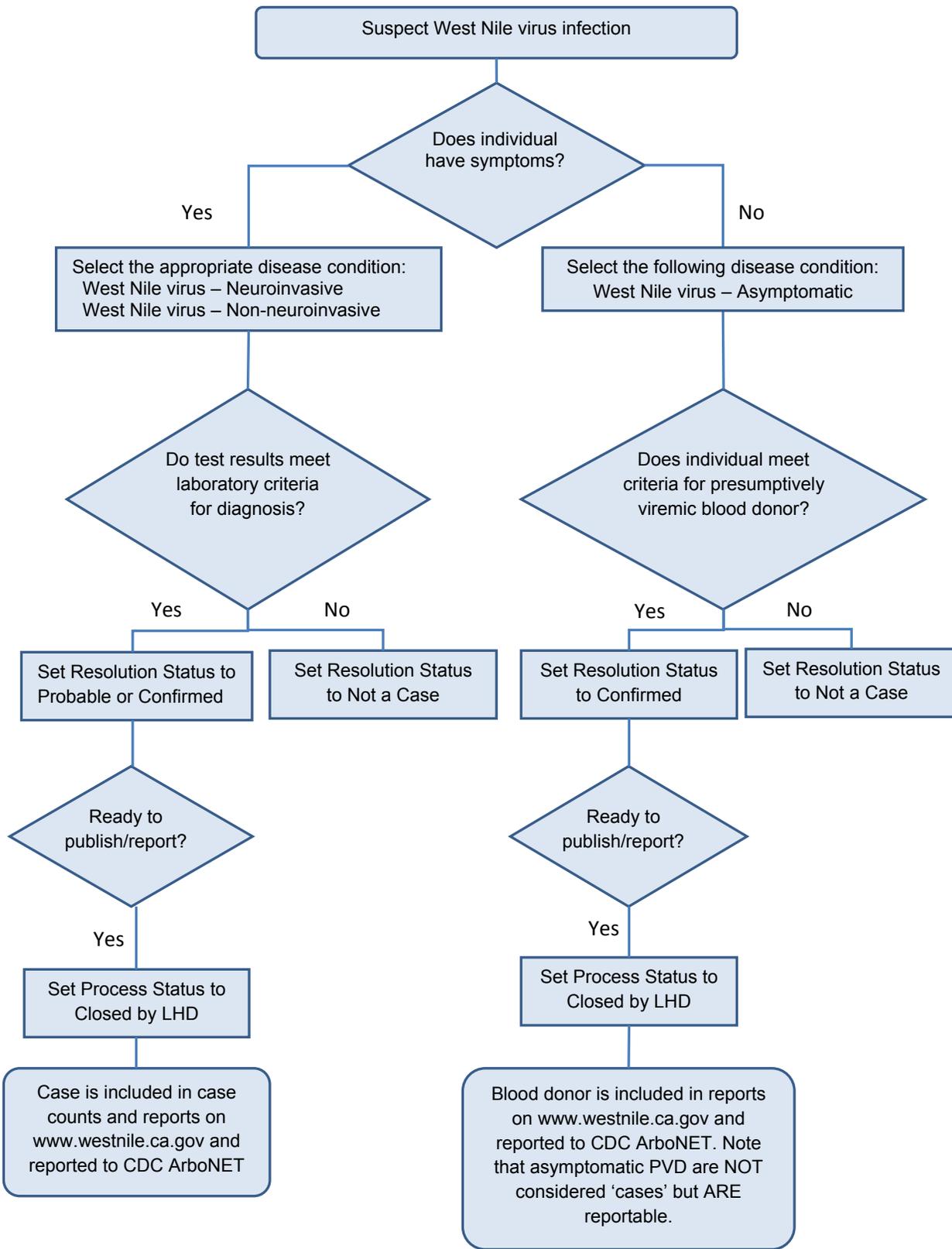
California Department of Public Health (CDPH)  
Vector-Borne Disease Section  
850 Marina Bay Parkway, Richmond, CA, 94804  
(510) 412-4650; Fax (510) 412-6263

**Report of WNV/SLEV-Positive Blood Donor to the CDPH**

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 name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: (\_\_\_\_\_) \_\_\_\_\_
  
13. Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Please include this form in the patient's CalREDIE electronic filing cabinet or fax to (510) 412-6263

## Appendix G: WNV CalREDIE Reporting Flowchart



## Appendix H: SLEV CaIREDIE Reporting Flowchart

