

# WEST NILE VIRUS

## Epidemiology

**Source:**  
Birds → mosquitoes → humans

**Transmission**

- Usually bite of an infected mosquito
- Blood transfusion
- Organ transplant
- Transmission in utero
- Breastmilk (rare)

**Incubation**  
2-6 days  
(2-21 days)

~80% of  
infections are  
asymptomatic

~20% are infected with  
West Nile Virus fever

**Clinical case definition**

- Abrupt onset of fever
- headache
- myalgia
- weakness
- abdominal pain
- nausea
- vomiting
- diarrhea
- transient maculopapular rash

Most people infected with the non-neuroinvasive form (WNV fever) fully recover.

Affects ~1,000 people in the U.S. each year

## Diagnosis

**Microbiology:** RNA flavivirus related antigenically to St. Louis & Japanese encephalitis viruses.

**Lab Diagnosis**

- **Screening EIA assay:** Rapid screening tool; produces false positives
- **Antigen Capture Enzyme Immuno Assay:** Serum & CSF tested for WNV-specific IgM antibody. Ratio of optical density of the patient test over the control test (extract of the cell culture infected w/o WNV) interpreted as positive if >3.0
- **Immunofluorescent Assay:** Serum & CSF tested for WNV-specific IgM antibody
- **Plaque Reduction Neutralization Tests:** Determine infecting flavivirus & confirm acute infection by demonstrating fourfold change in WNV specific antibody titer between acute and convalescent serum samples (2-3 wks apart)
- **Viral culture & nucleic acid amplification (NAA)-** for WNV RNA, on serum, CSF, & tissue specimens

**Probable:** Clinical description +

- CWNV EIA IgM positive in acute serum
- Or WNV IgG positive in convalescent serum with 4 fold elevation relative to acute serum + PRNT positive

**Confirmed:** Clinical description +

- WNV EIA IgM positive in acute CSF
- Or WNV EIA IgM positive + WNV EIA IgG positive + PRNT positive
- Or 4fold change in PRNT antibody titer to WNV in acute and convalescent serum samples + PRNT positive
- Or WNV virus isolation in blood, CSF, other body fluid or tissue
- Or WNV antigen in blood, CSF, other body fluid or tissue

**WNV during pregnancy:**

- Detailed ultrasonographic exam of fetus 2-4 weeks after onset of mother's illness
- Cord or infant serum tested for IgM to WNV immediately after birth
- Evaluate for congenital anomalies/ signs of infection for 6 mos. then retest infant serum for WNV specific IgM & IgG antibodies

## Treatment, Prophylaxis

**•Supportive treatment**

- No specific therapy has been proven effective

## Standard Precautions

## Control

**Report to OPH**

**WNV can be prevented by:**

- Avoiding exposure to infected mosquitoes
- Screening blood & organ donors.

**Mosquito Control**

- Mosquito control programs in areas w/ endemic infection
- Using mosquito repellent
- Avoid being outdoors during peak mosquito feeding time (dawn/dusk)
- Diethyltoluamide (DEET) is the most effective repellent (not recommended for use on children <2 months.)
- Remove standing water from the area (mosquito breeding grounds)

Report dead birds, especially crows, blue jays, birds of prey to local health dept.