

# West Nile Virus

## Traveler Summary

### Key Points

- West Nile virus is a viral infection acquired through the bite of infected mosquitoes in many areas of Africa, Europe, Australia, and the Americas.
- Risk exists for travelers going to affected countries who have extensive unprotected outdoor evening or nighttime exposure.
- Symptoms include fever, headache, fatigue, muscle aches, nausea, vomiting, and rash.
- In rare circumstances, consequences of infection can include meningitis, brain inflammation, and paralysis.
- Prevention includes wearing long sleeves and long pants and observing personal protective measures effective against mosquito bites.
- No vaccine or preventive drugs are available.

### Introduction

West Nile virus (WNV) is a viral infection transmitted via the bite of infected mosquitoes in Africa, Europe, Australia, and the Americas. WNV is a cause of severe neurological disease in humans, but most infected individuals are symptom free.

### Risk Areas

WNV occurs in many areas of Africa, Europe, the Middle East, Asia, Australia, and North and Central America. In tropical climates, the disease occurs throughout the year. In the US and other temperate Northern Hemisphere climates, WNV occurs between June and November and peaks between July and September. During 2021, approximately 2,700 cases were reported in the US (more than half reported in Arizona) and 30 cases were reported in Canada (southern Ontario, Manitoba, and Quebec provinces). During 2019-21, fewer than 1,000 cases were reported in Europe and its neighboring countries, although risk remains considerable.

### Transmission

WNV is mainly transmitted to humans (or animals) through the bite of infected mosquitoes, which are usually early-evening and night feeders. Mosquitoes become infected when they acquire the virus from infected birds. Individuals can also become infected through organ transplants, blood product transfusions, breastfeeding, and during pregnancy (from mother to baby), albeit rarely.

### Risk Factors

Risk is increased for travelers going to affected areas who may acquire the disease through mosquito bites, especially when outdoors at dawn or dusk.

Persons older than 50 years have the highest risk of severe disease; however, severe disease affecting the nervous system can occur at any age and is associated with underlying illnesses, such as diabetes, cancer, hypertension, and kidney disease.

### Symptoms

The severity of WNV infection varies. Most persons infected with the virus are symptom free, whereas about 20% develop a mild illness known as West Nile fever. Symptoms commonly appear 2 to 6 days (up to 21 days in persons with weakened immune systems) following exposure and include fever, headache, fatigue, muscle aches, nausea and vomiting, rash (on the trunk), eye pain, and enlarged lymph nodes.

### Consequences of Infection

WNV infection can result in a more severe disease called West Nile neuroinvasive disease in less than 1% of cases, with complications such as meningitis (characterized by high fever, headache, neck stiffness), brain inflammation (characterized by extreme tiredness/weakness, altered consciousness, confusion, and limb paralysis), or acute flaccid paralysis (characterized by limb weakness and paralysis). Death occurs in about 10% to 17% of cases with such severe disease.

## Need for Medical Assistance

Travelers who develop symptoms of WNV infection during travel to or after returning from a risk area should seek immediate medical attention.

## Prevention

### Nonvaccine

Personal protective measures are the main prevention strategy. No vaccine or preventive medications are available.

Mosquitoes that transmit WNV (*Culex* spp.) are generally night biters but have peak biting activity at dusk and again at dawn. Travelers should be especially vigilant in applying repellent during peak-biting activity times. Treat outer clothing, boots, tents, and sleeping bag liners with permethrin (or other pyrethroid) when traveling in an area of very high risk for WNV. Sleep under a permethrin-impregnated bed net when at high risk of WNV if not sleeping in a sealed, air-conditioned room. Ensure that all open windows have insect screens. See *Insect Precautions*.

Although no evidence exists to show that the virus is transmitted by handling infected birds, dead birds should not be touched.

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