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## CHARACTERISTICS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td><strong>Morphology</strong></td>
<td>An icosahedral, enveloped virus of 40 to 50 nm in diameter. It has a single stranded, positive-sense RNA genome.</td>
</tr>
<tr>
<td><strong>Growth Conditions</strong></td>
<td>Tissue culture.</td>
</tr>
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</table>

## HEALTH HAZARDS

### Host Range
Humans, mosquitoes, ticks, birds, horses, alligators, tree squirrels, eastern chipmunks, eastern cottontail rabbits, lake frogs; as well as a broad range of common North American wild and domestic mammals, such as dogs, deer, feral swine, coyotes, foxes, opossums, raccoons skunks, bats and other small rodents.

### Modes of Transmission
Primarily from infected mosquitoes. Other possible routes include: blood transfusion, vertical transmission, breast milk, organ transplantation, contact of the conjunctiva with contaminated bodily secretions from infected birds, and laboratory accidents involving sharps.

### Signs and Symptoms
- Sudden onset fever with chills, headache, backache, malaise, arthralgia, myalgia and eye pain
- Nausea, vomiting, diarrhea, sore throat & cough
- Less than 1% of WNV infected individuals develop meningitis, encephalitis and/or acute flaccid paralysis

### Infectious Dose
Unknown

### Incubation Period
2-6 days, but could extend to 14 days.

## MEDICAL PRECAUTIONS / TREATMENT

### Prophylaxis
None currently available.

### Vaccines
None currently available.

### Treatment
None currently available for WNV fever. Supportive therapy for encephalitis include: intravenous fluid, electrolyte management, assisted respiration, anticonvulsants, management of cerebral edema, and prevention of secondary bacterial infections.

### Surveillance
Monitor for symptoms, confirm via virus isolation from blood or cerebrospinal fluid

### Emory Requirements
Report all exposures. Emory EHSO provided medical alert card should be carried by researcher at all times.

## LABORATORY HAZARDS

### Laboratory Acquired Infections (LAIs)
Twenty cases have been reported of workers who acquired WNV following percutaneous inoculation while handling infected fluids and tissues with no deaths.

### Sources
Blood, cerebrospinal fluid, tissues, infected arthropods, oral and cloacal swabs and feather pulp.

## CONTAINMENT REQUIREMENTS

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BSL-2+</strong></td>
<td>In vitro work with the virus or clinical samples.</td>
</tr>
<tr>
<td><strong>ABSL-3</strong></td>
<td>Manipulation of virus in animals.</td>
</tr>
</tbody>
</table>

## SPILL PROCEDURES

### Small
Notify others working in the lab. Allow aerosols to settle. Don appropriate PPE. Cover area of the spill with paper towels and apply an EPA registered disinfectant, working from the perimeter towards the center. Allow 30 minutes of contact time before disposal and cleanup of spill materials.

### Large
Contact Emory's Biosafety Officer (404-727-8863), the EHSO Office (404-727-5922), or The Spill Response Team (404-727-2888).

## VIABILITY

### Disinfection
Susceptible to disinfectants such as 3 to 8% formaldehyde, 2% glutaraldehyde, 2 to 3% hydrogen peroxide, 500 to 5,000 ppm available chlorine, alcohol, 1% iodine, and phenol iodophors.

### Inactivation
Inactivated by heat (50 to 60°C for at least 30 minutes), ultraviolet light, and gamma irradiation.

### Survival Outside Host
Low temperatures preserve infectivity, with stability being greatest below -60°C. When added to ELISA wash buffer there is a 10-fold decrease in titer per 24 hour period at 28°C.

## PERSONAL PROTECTIVE EQUIPMENT (PPE)

### Minimum PPE Requirements
At minimum, personnel are required to don gloves, closed toed shoes, lab coat, and appropriate face and eye protection prior to working with West Nile Virus. Additional PPE may be required depending on lab specific SOPs.

### Additional Precautions
Not applicable.

## SUPPLEMENTAL REFERENCES

- **Canadian MSDS**

- **BMBL: 5th Edition**

- **CDC Guidelines**