



West Nile Virus and Pregnancy A Guide for Clinicians

West Nile Virus and Pregnancy

Intrauterine transmission of West Nile Virus (WNV) was first documented in 2002. A woman infected with WNV during pregnancy delivered an infant with congenital abnormalities, but there remains insufficient evidence to determine a causal relationship between WNV infection during pregnancy and birth defects. State and local health departments are assisting the Centers for Disease Control and Prevention (CDC) in enhancing surveillance for intrauterine transmission and birth outcomes.

Reporting WNV Infection during Pregnancy

Healthcare providers in Georgia are required to report any acute arboviral infection to public health immediately. This includes WNV infection in a pregnant woman. Healthcare providers should report pregnancy-associated WNV cases to the Georgia Department of Public Health (GDPH, 404-657-2588 or <https://sendss.state.ga.us>) and GDPH will report the cases to CDC. GDPH and CDC will work with healthcare providers to enroll patients in the national registry to track intrauterine infections and birth outcomes.

Evaluation of Pregnancy-Associated WNV Infection

If WNV infection is detected during pregnancy, CDC¹ recommends:

- Detailed ultrasound examination of the fetus to evaluate for structural abnormalities no sooner than 2-4 weeks after onset of illness in the mother (unless earlier examination is otherwise indicated).
- Amniotic fluid, chorionic villi, and/or fetal serum can be tested for evidence of WNV infection (sensitivity, specificity, and predictive value of tests to evaluate fetal WNV infection are not known).
- In event of miscarriage or induced abortion, testing of all products of conception (e.g., the placenta and umbilical cord) for evidence of WNV infection is advised to document the effects of WNV infection on pregnancy outcome.

If an infant is born to a mother who was known or suspected to have WNV infection during pregnancy, CDC recommends:

- Thorough physical evaluation, including careful measurement of the head circumference, length, weight, and assessment of gestational age.
- Evaluation for neurologic abnormalities, dysmorphic features, splenomegaly, hepatomegaly, and rash or other skin lesions. Any rash, skin lesions, or dysmorphic features should be photographed. If an abnormality is noted, consultation with an appropriate specialist is recommended.
- Testing of infant serum for IgM and IgG antibody to WNV. The initial sample should be collected either from the umbilical cord or directly from the infant within 2 days of

birth. If maternal WNV illness occurred ≤ 8 days before delivery and the initial infant serum sample is negative for WNV IgM antibody, a second infant serum sample should be obtained ≥ 2 weeks after the first sample. Free testing of samples by CDC can be arranged by contacting the Georgia Department of Public Health (404-657-2588).

- Evaluation of hearing by evoked otoacoustic emissions testing or auditory brainstem response testing, either before discharge from the hospital or within 1 month after birth. Infants with abnormal initial hearing screens should be referred to an audiologist for further evaluation.
- Initial examination of the placenta by a pathologist is encouraged. Regardless whether this is completed, the entire placenta, a sample of umbilical cord tissue, and a sample of serum from the umbilical cord should be retained for further evaluation if congenital WNV infection is identified or strongly suspected. A section of the placenta and umbilical cord should be frozen, and the remainder of the placenta should be preserved in formalin; a sample of the umbilical cord blood should be centrifuged, and the serum should be refrigerated or frozen.

If any clinical abnormality is identified or if laboratory testing indicates that an infant might have congenital WNV infection, CDC recommends:

- Computerized tomography (CT) scans of the head and brain. If CT is abnormal, a pediatric neurologist should be consulted.
- Pediatric ophthalmologic evaluation, including examination of the retina.
- Complete blood count, platelet count, and liver function tests, including alanine aminotransferase and aspartate aminotransferase. Examination of the cerebrospinal fluid (CSF) should be considered and, if performed, should include testing of CSF for IgM antibody to WNV.
- Evaluation by a dysmorphologist or clinical geneticist.
- Further evaluation of any congenital abnormalities to determine alternative causes, including genetic, infectious, or other teratogenic causes.
- Additional hearing screening at age 6 months.
- Careful evaluation of head circumference, physical characteristics, and developmental milestones throughout the first year of life.
- Additional examination of infant serum for IgG and IgM antibody to WNV at age 6 months.
- Histopathologic examination of the placenta and umbilical cord, testing of frozen placental tissue and cord tissue for WNV nucleic acid, and testing of cord serum for IgM and IgG antibody to WNV.

Screening for WNV during Pregnancy

It is not recommended that asymptomatic pregnant women be screened for WNV. There is no treatment for WNV infection and no method to reduce the risk of intrauterine transmission. In areas where WNV transmission is ongoing, healthcare providers should order WNV antibody testing for pregnant women who develop encephalitis, meningitis, acute flaccid paralysis, or

unexplained fever. Positive tests should be immediately reported to the Georgia Department of Public Health (404-657-2588).

Prevention of WNV during Pregnancy

Pregnant women are advised to take personal precautions against mosquito bites:

- Avoid going outdoors when mosquitoes are most actively biting (usually dusk and dawn).
- Wear long sleeves and pants when outdoors to reduce the amount of skin exposed for mosquitoes to bite.
- Make sure doors and windows remain closed or have tight-fitting screens with no holes for mosquitoes to enter the house.
- When outdoors, wear insect repellent containing DEET on exposed skin and/or on clothing to prevent mosquito bites.

Some individuals are concerned about the use of DEET on pregnant women. DEET is the most effective and most widely used repellent and has an outstanding safety profile over its nearly 50 years on the market. Numerous studies have evaluated the use of DEET during pregnancy and have found no evidence for safety concerns when DEET is used according to manufacturers' instructions. Studies have also failed to identify risk associated with DEET use in women who are breastfeeding. Given the potential risk to mother and fetus from WNV and other serious mosquito-borne viruses, pregnant women should consider using DEET to protect against mosquito bites in areas where mosquito-borne viruses are known to be active (this includes all of Georgia). Adults should use repellents containing no more than 35% DEET.

¹ Interim guidelines for the evaluation of infants born to mothers infected with West Nile virus during pregnancy. *MMWR* 2004; 53(07):154-157.