NEW YORK CITY DEPARTMENT OF HEALTH AND MENTAL HYGIENE
Alister F. Martin, MD, MPP
Commissioner

A Letter to Our Healthcare Providers

Risk of Severe West Nile Virus Neuroinvasive Disease in People Receiving B-Cell Depleting Medications

August 4, 2026

Dear Colleague,

West Nile virus (WNV) is currently circulating in New York City (NYC) mosquitoes, putting New Yorkers at risk for infection. While young, healthy individuals often have subclinical infections, adults 60 years and older, people with certain medical conditions, such as diabetes and chronic kidney disease, and people being treated with or taking medications that cause immunosuppression are at greatest risk for West Nile virus neuroinvasive disease (WNND), which typically manifests as meningitis and encephalitis. This risk may be compounded in people on B-cell depleting therapy.

Increased Risk of Severe Disease Among People Taking B-cell Depleting Therapies
Medications that deplete B-cells (eg, anti-CD20 monoclonal antibodies [mAbs]) can impact a person's ability to form antibodies against a new infection.[1] There are a growing number of reports of severe neuroinvasive disease from WNV and other arboviruses among people receiving immune-modulating medications that target B-cells or B-cell function, particularly anti-CD20 mAbs.[2-5] These therapies are used to treat B-cell malignancies, autoimmune diseases such as multiple sclerosis, and transplant rejection. While highly effective, their mechanism of action can impair the humoral immune system and increase the risk of infection. Anti-CD20 mAbs currently approved in the United States include rituximab (and biosimilars), ocrelizumab, ofatumumab, ublituximab, and obinutuzumab.

The NYC Health Department identified 5 people between 2021 and 2025 with WNV infections who were taking anti-CD20 mAbs: 4 developed WNND and the fifth had subclinical illness but had West Nile viremia that persisted for at least 1 year. Among case reports of people on anti-CD20 mAbs with arboviral diseases, the overall mortality was approximately 40%[2,4,5]; most survivors experienced long-term neurologic sequelae, and WNV was the most common infecting arbovirus identified.[2-5] Other less common arboviruses in the United States, such as eastern equine encephalitis, Powassan virus, Jamestown Canyon virus, and La Crosse virus have also caused severe disease in people on anti-CD20 mAbs; however, there are no reports of local transmission of these viruses among people in NYC.

Educate People on B-cell Depleting Therapies
There are currently no available medications to treat WNV or vaccines to prevent WNV.

Prevention through provider and patient education is critical. People receiving immune-depleting or immune-modulating therapies may not recognize their heightened vulnerability to infection, particularly when treated for autoimmune or neurologic conditions rather than malignancy. Counsel people at therapy initiation and during each arboviral season on mosquito avoidance strategies, including using Environmental Protection Agency-registered repellents, wearing protective clothing, avoiding peak mosquito exposure times, maintaining intact window screens, and eliminating standing water.

Consider WNND in People on B-cell Depleting Therapies
Maintain a heightened awareness of WNND and other arboviral diseases in people receiving therapies affecting B-cell function who present with unexplained encephalopathy, meningitis, or acute neurologic decline during peak arboviral transmission months. Some people may have delayed or atypical clinical presentations and present for care outside of the typical arboviral season.

Diagnostic Testing
While serologic testing of serum or cerebrospinal fluid (CSF) for WNV IgM is typically recommended for diagnosing WNV infections, molecular testing should also be used for severely immunocompromised people, as immunocompromised people might lack the ability to form antibodies against a new infection. Molecular testing typically includes *virus-specific real-time polymerase chain reaction (RT-PCR)* or *metagenomic next-generation sequencing (mNGS)* to detect viral RNA in specimens such as serum, plasma, CSF, whole blood, or tissue. Reliance on serologic testing alone may delay diagnosis. In immunocompromised people, a negative WNV IgM result does not exclude infection.

Thank you all for your continuing efforts to prevent, identify, and manage people with West Nile virus infection in NYC.

Sincerely,

Andrea Howard, MD, MS
Deputy Commissioner
Division of Disease Control

Resources

For Healthcare Providers

NYC Health Department

- West Nile Virus: Information for Providers
- *2026 Health Advisory #19: Updates on WNV and Other Mosquito-borne Viruses*

Detected in NYC

Centers for Disease Control and Prevention (CDC)

- *CDC Vector-Borne Diseases. Clinical Guidance for Immunocompromised Patients*
- *Patient Awareness Brochure*
- *Patient Awareness Poster*
- *CDC West Nile Virus. Clinical Testing and Diagnosis for West Nile Virus Disease*

For the Public

NYC Health Department

- Mosquitoes
- West Nile Virus

US Environmental Protection Agency

- EPA Repellent Search Tool

Centers for Disease Control and Prevention (CDC)

- Vector-Borne Viral Diseases and People Who Are Immunocompromised
- Video: It Starts with a Mosquito Bite

References

1. Casan JML, Wong J, Northcott MJ, Opat S. Anti-CD20 monoclonal antibodies: reviewing a revolution. *Hum Vaccin Immunother.* 2018;14(12):2820-2841. doi:10.1080/21645515.2018.1508624. Epub 2018 Sep 6.
2. Ardakani R, Crane P, Alvarez E, et al. Neuroinvasive West Nile virus associated with anti-CD20 therapies in a university health system. *Neurol.* 2024;103(Suppl 1):S95-S96. doi:10.1212/ 01.wnl.0001051648.25214.05.
3. Ardakani RV, Crane PD, Pastula DM, et al. West Nile virus neuroinvasive disease in patients treated with anti-CD20 therapies. *Neurol Clin Pract.* 2025;15(4):e200489. doi:10.1212/CPJ.0000000000200489.
4. Kapadia RK, Staples JE, Gill CM, et al. Severe arboviral neuroinvasive disease in patients on rituximab therapy: a review. *Clin Infect Dis.* 2023;76(6):1142-1148. doi:10.1093/cid/ciac766.
5. Thebault S, Gandelman S, Lane C, et al. Severe neuroinvasive West Nile virus in association with anti-CD20 monotherapy for multiple sclerosis. *Neurol Neuroimmunol Neuroinflamm.* 2023;10(5):e200154. doi:10.1212/NXI.0000000000200154.