Date: August 12, 2026
From: Kansas Department of Health and Environment – Division of Public Health
To: Kansas Health Care Providers and Local Health Departments
RE: Risk of Severe Arboviral Disease in Patients Receiving B Cell-Depleting or Modulating Medications

Summary

- West Nile Virus (WNV) is the most common mosquito-borne disease in Kansas. The peak transmission season for WNV in Kansas occurs during the last week of August through the first two weeks in September.
- The Centers for Disease Control and Prevention and the Kansas Department of Health and Environment (KDHE) are issuing a Health Alert Network (HAN) Health Advisory to share information and notify clinicians, public health authorities, and the public about the risk of severe arboviral neuroinvasive disease among patients who are receiving B cell-depleting or B cell-modulating medications, particularly anti-CD20 monoclonal antibodies (mAbs).
- Patients and their providers should be aware of this risk to help patients protect themselves against the bites of mosquitoes and ticks, which can increase patients' risk of arboviral disease.

Situation

West Nile Virus (WNV) is the most common arbovirus in the United States and in Kansas, with around 2,000 cases reported nationally and a range of 14-60 cases reported in Kansas. Transmission season peaks in the last week of August through the first two weeks in September, with the greatest burden of disease in those 55 and older. While a majority (~80%) of WNV infections are asymptomatic, a concerning trend has been observed over the last several years as the proportion of neuroinvasive cases increases and severe outcomes are noted for those on immunomodulating medications, particularly B-cell depleting monoclonal antibodies (mAbs). As there are no vaccines to prevent WNV infection in humans, mosquito bite prevention is paramount, especially in more vulnerable populations.

Background

Arboviruses are RNA viruses transmitted by biting arthropods, most commonly mosquitoes and ticks, which are most active during late spring through early fall. Although most arboviral infections are subclinical, symptomatic arboviral disease typically presents as acute febrile or neurologic illness (e.g., aseptic meningitis, encephalitis, or acute flaccid myelitis). The incubation period is typically days to weeks from arthropod bite to onset of symptoms and can be longer in persons who are immunocompromised.

Medications that deplete B cells or modulate B cell function, which are used for treating B cell malignancies, many autoimmune conditions, and transplant rejection, can increase the risk of severe arboviral disease. B cell-depleting monoclonal antibodies (mAbs) targeting the CD20 cell surface antigen have been associated with a growing number of reports of severe arboviral neuroinvasive disease in patients on these medications. Health professionals and the public

should be aware of this information because the United States had an early and strong start to this year's WNV season and many weeks of the arbovirus transmission season remain.

Anti-CD20 mAbs currently approved in the United States include rituximab and biosimilars, ocrelizumab, ofatumumab, ublituximab, obinutuzumab, and ibritumomab tiuxetan. Among published case reports of arboviral neuroinvasive disease in patients on anti-CD20 mAbs, overall mortality was approximately 40%, and most survivors experienced long-term neurologic sequelae. WNV was the most common infecting arbovirus in these case reports. Less common or regionally focal viruses in the United States, such as eastern equine encephalitis virus, Powassan virus, Jamestown Canyon virus, La Crosse virus, Cache Valley virus, and Potosi virus, have also caused severe disease in these patients.

In recent years, a novel clinical presentation of chronic, neurodegenerative encephalitis developing over months to years has been described in at least five patients receiving rituximab who were infected with an orthobunyavirus, including Jamestown Canyon virus, Cache Valley virus, or Potosi virus. All patients died; diagnoses were delayed because of unrecognized infection and rare or unexpected pathogens requiring specialized diagnostic testing.

Because patients receiving anti-CD20 mAbs or other medications that deplete B cells (e.g., anti-CD38 mAbs) or modulate B cell function (e.g., B cell activating factor inhibitors) might not form antibodies against a new infection, diagnosis of arboviral infection often requires molecular rather than serologic testing. Molecular testing typically includes virus-specific RT-PCR or metagenomic next-generation sequencing (mNGS) to detect viral RNA in specimens such as serum, plasma, cerebrospinal fluid (CSF), whole blood, or tissue. Clinicians can contact the KDHE Epidemiology hotline for consultation on appropriate testing to perform based on the patient's medical conditions and current medications.

There are no approved treatments, prophylactic agents, or human vaccines to prevent arboviral diseases endemic to the United States. Therefore, it is critical that patients receiving medications that deplete or reduce B cell function be advised to use personal protective measures to prevent mosquito and tick bites.

Healthcare Provider Actions Requested

1. Be aware that patients with an arboviral disease who are immunocompromised can have a prolonged incubation period or an atypical course of illness and might not present with illness during the usual months when mosquitoes and ticks are active (i.e., May through November in the United States).

2. When prescribing any immunosuppressive medications or caring for patients taking any immunosuppressive medication, particularly B cell-depleting mAbs, educate patients about the risk of severe arboviral disease and advise them to take measures to prevent mosquito and tick bites.

3. When an arboviral infection is suspected in a patient receiving B cell-depleting mAbs, preferentially order molecular testing (i.e., RT-PCR or mNGS). Immunocompromised patients, particularly those receiving B cell-depleting mAbs, can have prolonged viremia and delayed or absent antibody responses.

4. Serologic testing of serum or CSF for virus-specific IgM antibodies should be ordered only for patients who are immunocompetent or receiving immunomodulating drugs that do not substantially suppress antibody production. See the diagnostic testing algorithm for suspected West Nile virus disease for more details.

5. Contact the KDHE Epidemiology Hotline at 877-427-7317, option 5 or kdhe.epihotline@ks.gov for consultation on the optimal testing approach. Preferred specimen type(s) depend on the clinical presentation and laboratory conducting the testing. Molecular tests are available from some commercial and public health laboratories.

Local Health Department Actions Requested

1. Provide education to local healthcare providers regarding the enhanced risk of severe WNV in patients who are immunocompromised or taking immunosuppressive medications, especially B cell-depleting mAbs. Providers should specifically be educated on appropriate diagnostic testing strategy including use of RT-PCR diagnostics in this population. Clinical Guidance for Vector-Borne Viral Diseases in People Who Are Immunocompromised and WNV specific clinician training is available through CDC.

2. Educate citizens to take steps to prevent mosquito and tick bites to lower the risk of vector-borne diseases including arboviral infections. Citizens should also notify their healthcare provider if they have concerning changes to their health, such as persistent headaches, fever, body aches, weakness, loss of balance, or confusion.

3. Educational and outreach materials are available through CDC's WNV outbreak communications toolkit.

For more information:

KDHE produces weekly WNV risk levels to help guide citizens on the risk of WNV in their area and appropriate prevention measures. These risk levels as well as the KDHE WNV data dashboard are updated each Friday from June through November. For more information on the national WNV case counts, visit CDC's WNV webpage at https://www.cdc.gov/west-nile-virus/data-maps/current-year-data.html.

References:

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