

Nebraska Department of Health and Human Services

Health Alert Network

UPDATE

July 12, 2023

West Nile Virus in Nebraska

In 2022 the Nebraska Department of Health and Human Services recorded 64 WNV human disease cases. Thirty-seven (58%) of these cases were classified as the severe neuroinvasive disease form with less than 6 deaths also reported (due to privacy protection, exact value has been suppressed; number of deaths reported is 1–5.) To date there has been one confirmed human case and three positive mosquito samples this season in the state. However, WNV activity typically begins picking up in July. Weekly WNV surveillance reports can be found by visiting the DHHS WNV Surveillance Data webpage: <http://dhhs.ne.gov/Pages/West-Nile-Virus.aspx>

Human WNV infections generally follow in the wake of positive mosquito pools, typically beginning in mid-July, peaking around Labor Day, and disappearing around mid-September. Most WNV-infected persons (approximately 80%) are asymptomatic. Those who develop symptoms typically do after a 3–14 day incubation period. Approximately 1 in 5 people who are infected will develop a febrile disease. Symptoms of febrile disease include: fever, headache, fatigue, myalgia/arthralgia, skin rash on the trunk of the body, swollen lymph glands, and eye pain. Some people (1 in 150) will develop neuroinvasive disease affecting the central nervous system including encephalitis or meningitis. Other symptoms of neuroinvasive disease include: high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision change/loss, numbness, and paralysis. At the time of initial symptom onset, the viremia has usually resolved and the patient is seropositive for IgM antibodies. Infected persons appear to develop permanent immunity and cannot be re-infected.

Recommended WNV Training & Assessment

This module is an assessment of clinicians' epidemiologic, clinical, and diagnostic management of WNV disease. Completion of the module will confer 1.0 hours of CME (ABIM MOC). The module may be found here: https://www.medscape.org/viewarticle/990058?utm_source=newsletter&utm_medium=email&ecd=suppd_cdc_distr_mscpedu&utm_campaign=WNV%20Training%20Promo

Laboratory testing

Patients suspected of WNV infection should be tested via PCR or for IgM and IgG antibodies to WNV. These tests are widely available at commercial labs. If neuroinvasive WNV is suspected, antibody testing can be performed at the Nebraska Public Health Lab (NPHL) at DHHS' expense, if the following criteria are met:

- The person has signs and symptoms consistent with neuroinvasive WNV disease (e.g., meningitis, encephalitis, acute flaccid paralysis).
- The specimen is accompanied by a NPHL requisition completed and printed off via NPHL's NUIirt system: <https://nulirt.nebraskamed.com/login>. For individuals who need access to become users of NUIirt, please visit: <http://www.nphl.org/phlip.cfm> for instructions on how to obtain credentials to login.
- The sample collection date is between July 1 and October 31.
- **The submitted specimen must include a CSF for WNV IgM antibody testing. However, it is preferred that the CSF specimen be paired with a serum specimen for WNV IgM/IgG antibody testing.**
- Testing of serum specimens without a concurrent or prior CSF specimen requires approval from public health: call 402-471-2937.

WNV Test Interpretation Guidelines

- Testing (+) for IgM and (-) for IgG in an acute specimen is consistent with acute WNV infection. Paired acute and convalescent samples may be useful for demonstration of seroconversion and laboratory confirmation of WNV infection.
- Testing (+) for IgG and (-) for IgM is consistent with infection in the distant past.
- CSF which tests (+) for IgM is consistent with acute meningitis/encephalitis.
- Stable antibody titers on acute and convalescent specimens suggest infection in the distant past. A four-fold rise in IgM or IgG titers between an acute and convalescent specimen suggest acute infection.

| Tests | Results | Interpretation |
|------------|---------------------------|---|
| IgM IgG | negative negative | Antibody not detected = not a case of WNV |
| IgM IgG | negative positive | Infection at undetermined time = past infection |
| IgM IgG | positive negative | Evidence of recent or current infections |
| IgM IgG | positive positive | Evidence of recent or current infection† |
| IgM IgG | indeterminate negative | Inconclusive; request convalescent serums |

§Paired acute and convalescent samples may be useful for demonstration of seroconversion

†Some individuals may have persisting IgM and IgG antibodies from the previous WNV season

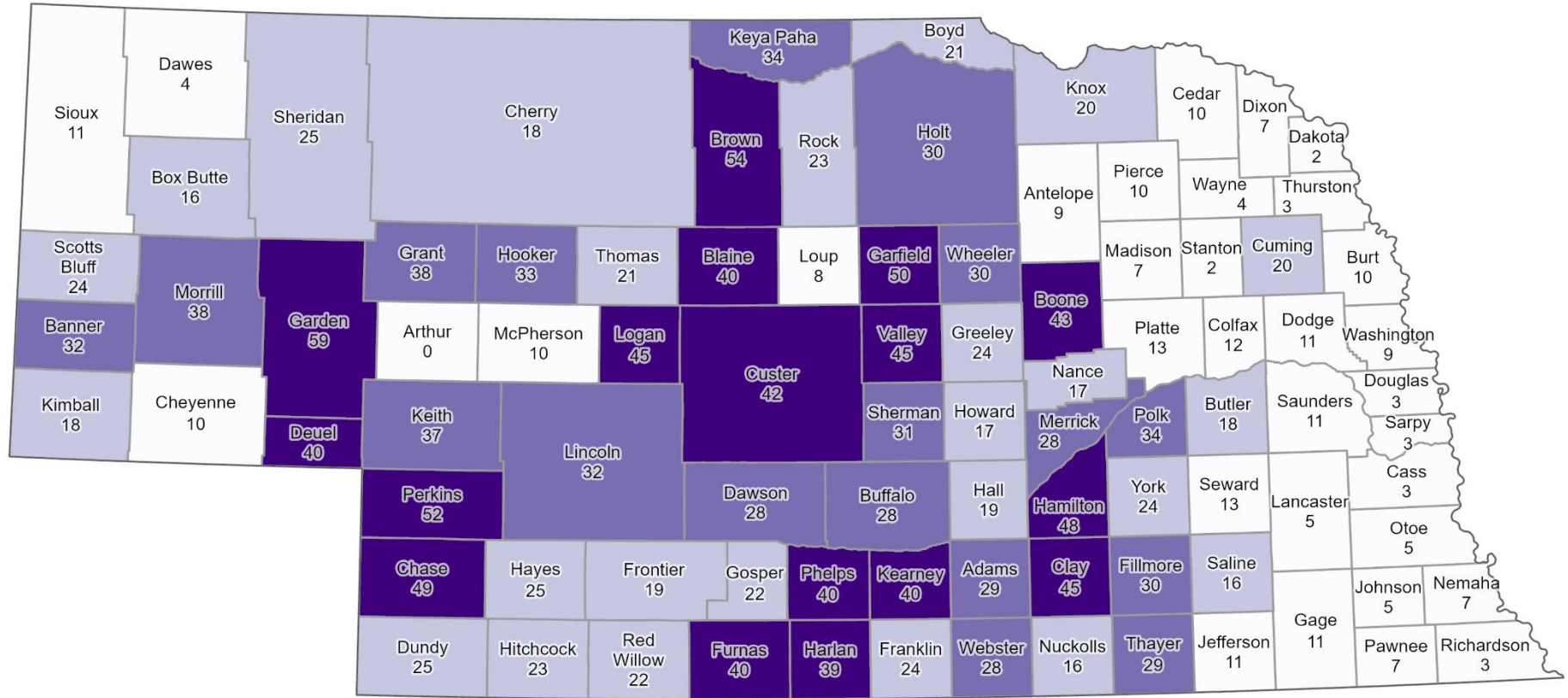
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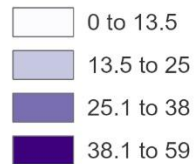
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West Nile Virus in Humans

Average Annual Rate per 100,000 population, 2002 to 2022.



WNV rate per 100,000



NEBRASKA

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DEPT. OF HEALTH AND HUMAN SERVICES