



# Vector Borne Disease 2019 Surveillance Report

Summit County Public Health



Report Weeks 9 and 10 (July 21 to August 3, 2019)  
MMWR Weeks 30 and 31

Public Health  
Prevent. Promote. Protect.

This report will be issued from June through October of each year (or later if West Nile Virus disease is still a concern). Surveillance will include human and veterinary cases and testing of mosquito pools in Summit County. It will also include updates from Ohio and around the nation. It will include vector-borne diseases besides West Nile Virus.

## SUMMIT COUNTY SURVEILLANCE

Table 1: West Nile virus (WNV) tests ordered in Summit County hospitals

Week(s)	# of WNV tests ordered this period	# of positive WNV tests this period	Cumulative # of tests ordered this season	Cumulative # of positive tests this season	Percentage of positive tests
Weeks 1 & 2: 5/26 to 6/8	2	1	2	1	50.0%
Weeks 3 & 4: 6/9 to 6/22	5	0	7	1	14.3%
Weeks 5 & 6: 6/23 to 7/6	4	0	11	1	9.1%
Weeks 7 & 8: 7/7 to 7/20	6	1	17	2	11.8%
Weeks 9 & 10: 7/21 to 8/3	9	1	26	3	11.5%
Weeks 11 & 12: 8/4 to 8/17					
Weeks 13 & 14: 8/18 to 8/30					
Weeks 15 & 16: 9/1 to 9/14					
Weeks 17 & 18: 9/15 to 9/28					
Weeks 19 & 20: 9/29 to 10/12					
Weeks 21 & 22: 10/13 to 10/26					

Note: Reporting may not be completed each week. Numbers will be updated when reports are received

**West Nile virus testing (Table 1):** During surveillance period Weeks 9 and 10, there were 9 tests for West Nile virus (stand alone or part of an arbovirus panel) ordered by Summit County hospitals. So far this season, there have been three positive results, all of which were likely to be due to a past exposure and were not active infections (Table 1).

**Lyme disease testing (Table 2):** There were 82 diagnostic test series performed for Lyme disease during Weeks 9 and 10, 12 of which were positive. The CDC currently recommends a two-step process when testing blood for evidence of antibodies against the Lyme disease bacteria (*Borrelia burgdorferi*). Both steps can be done using the same blood sample. The first step uses a testing procedure called "EIA" (enzyme immunoassay) or rarely, an "IFA" (indirect immunofluorescence assay). If this first step is negative, no further testing of the specimen is recommended. If the first step is positive or indeterminate (sometimes called "equivocal"), then the second step should be performed. The second step uses a test called an immunoblot test, commonly, a "Western blot" test. Results are considered positive only if the EIA/IFA and the immunoblot are both positive.

Week(s)	# of Lyme tests ordered this period	# of positive Lyme tests this period	Cumulative # of tests ordered this season	Cumulative # of positive tests this season	Percentage of positive tests
Weeks 1 & 2: 5/26 to 6/8	55	2	55	2	3.6%
Weeks 3 & 4: 6/9 to 6/22	79	10	134	12	9.0%
Weeks 5 & 6: 6/23 to 7/6	59	6	193	18	9.3%
Weeks 7 & 8: 7/7 to 7/20	80	5	273	23	8.4%
Weeks 9 & 10: 7/21 to 8/3	82	12	355	35	9.9%
Weeks 11 & 12: 8/4 to 8/17					
Weeks 13 & 14: 8/18 to 8/30					
Weeks 15 & 16: 9/1 to 9/14					
Weeks 17 & 18: 9/15 to 9/28					
Weeks 19 & 20: 9/29 to 10/12					
Weeks 21 & 22: 10/13 to 10/26					

Note: Reporting may not be completed each week. Numbers will be updated when reports are received

**Reported Vector-borne diseases in 2019 (Table 3):** As of August 3, there were 16 reported cases of Lyme disease; 5 were confirmed by laboratory testing and 11 were suspected cases. Two confirmed cases of malaria and two cases of Rocky Mountain spotted fever were also reported.

	Confirmed	Suspected or Probable	Notes
<b>Tick-borne diseases:</b>			
Babesiosis	0	0	
Ehrlichiosis / anaplasmosis	0	0	
Lyme disease	5	11	
Powassan virus disease	0	0	
Rocky Mountain spotted fever	0	2	
<b>Mosquito-borne diseases:</b>			
Chikungunya	0	0	
Dengue	0	0	
Eastern equine encephalitis	0	0	
LaCrosse virus disease	0	0	
Malaria	2	0	Cases were international travel-related
St. Louis encephalitis virus disease	0	0	
Zika virus infection	0	0	
West Nile virus infection	0	0	

Source: Ohio Disease Reporting System (ODRS); only confirmed, probable, and suspected cases are included.

Species name	Diseases associated	# identified
<b>Mosquito species</b>		
<i>Aedes albopictus</i>	Chikungunya, dengue fever, yellow fever	0
<i>Aedes triseriatus</i>	La Crosse encephalitis	434
<b>Tick species</b>		
<i>Ixodes scapularis</i>	Lyme disease, babesiosis, anaplasmosis	81

Source: Ohio Department of Health (Identification via mailed specimens, emailed photos and iNaturalist observations)

**Table 5. Reported Aseptic/viral Meningitis Cases in Summit County (confirmed & probable), as of August 3, 2019**

Week(s)	Cases reported this period	Cumulative cases for the season
Aseptic meningitis cases reported prior to season (1/1 to 5/25/2019)	3	-
Weeks 1 & 2: 5/26 to 6/8	1	1
Weeks 3 & 4: 6/9 to 6/22	2	3
Weeks 5 & 6: 6/23 to 7/6	2	5
Weeks 7 & 8: 7/7 to 7/20	3	8
Weeks 9 & 10: 7/21 to 8/3	2	10
Weeks 11 & 12: 8/4 to 8/17		
Weeks 13 & 14: 8/18 to 8/30		
Weeks 15 & 16: 9/1 to 9/14		
Weeks 17 & 18: 9/15 to 9/28		
Weeks 19 & 20: 9/29 to 10/12		
Weeks 21 & 22: 10/13 to 10/26		

Source: Ohio Disease Reporting System (ODRS)

**Reported aseptic/viral meningitis cases (Table 5):** Prior to the reporting season, there were 3 reported cases of aseptic meningitis, and 2 cases were reported during Weeks 9 and 10. Aseptic/viral meningitis is the most common type of meningitis and occurs predominately in the summer and fall. While most aseptic/viral meningitis cases are due to gastrointestinal or respiratory viruses, similar symptoms may be present with arthropod-borne diseases.

**Mosquito testing (Table 6):** Based on the ODH mosquito testing summary released on July 25, over 60,210 mosquitoes were collected as 1,353 pooled samples throughout Summit County. Three of the pooled samples tested positive for West Nile virus.

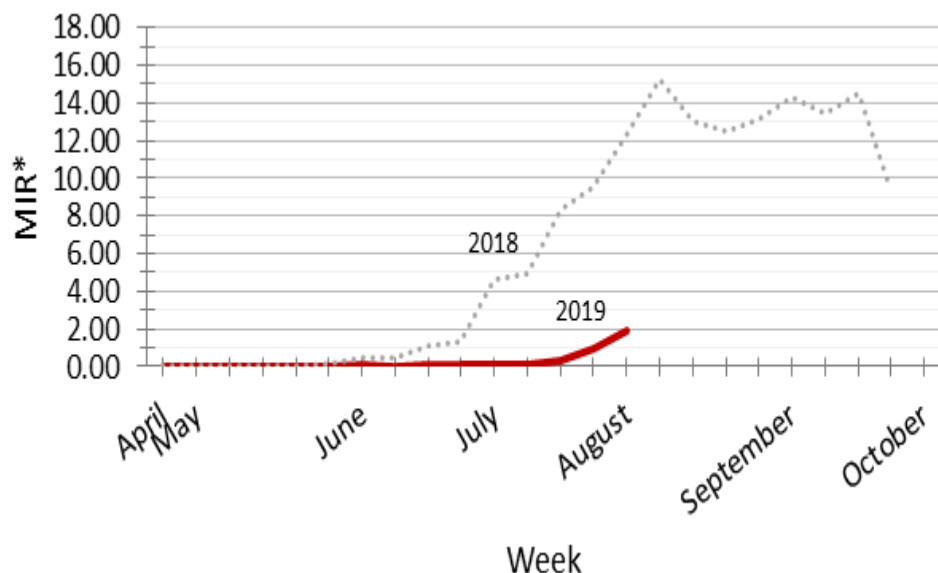
**Table 6. Mosquito Testing in Summit County (samples processed by noon on 8/8/2019)**

Mosquitoes identified	75,798
Pooled samples tested	1,764
Positive WNV pooled samples	9

Note: All mosquitoes pools tested were *Culex sp.*

## OHIO SURVEILLANCE

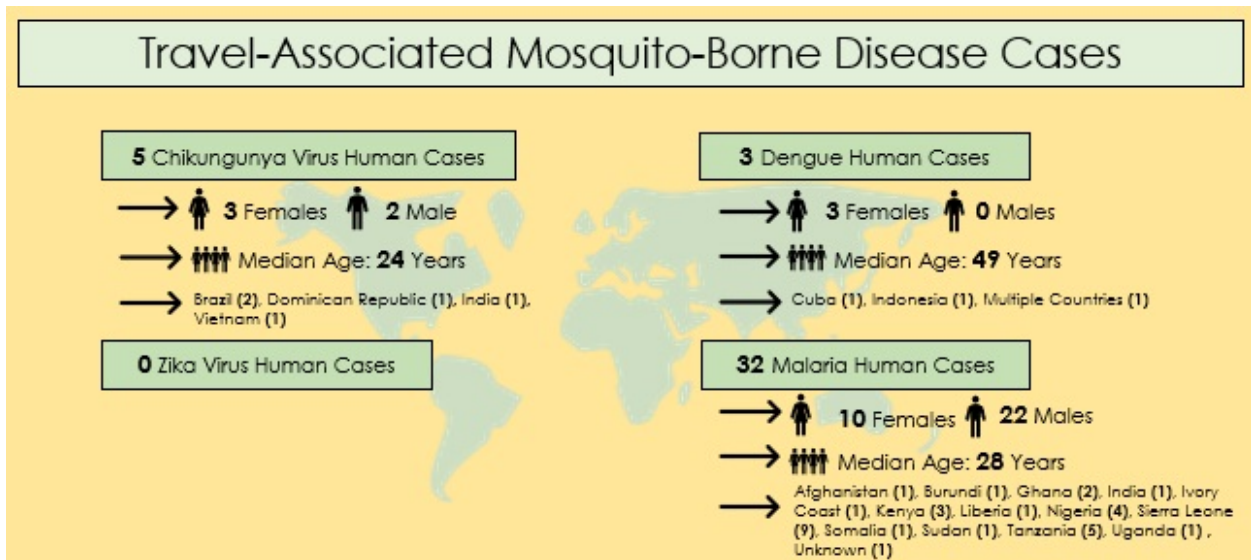
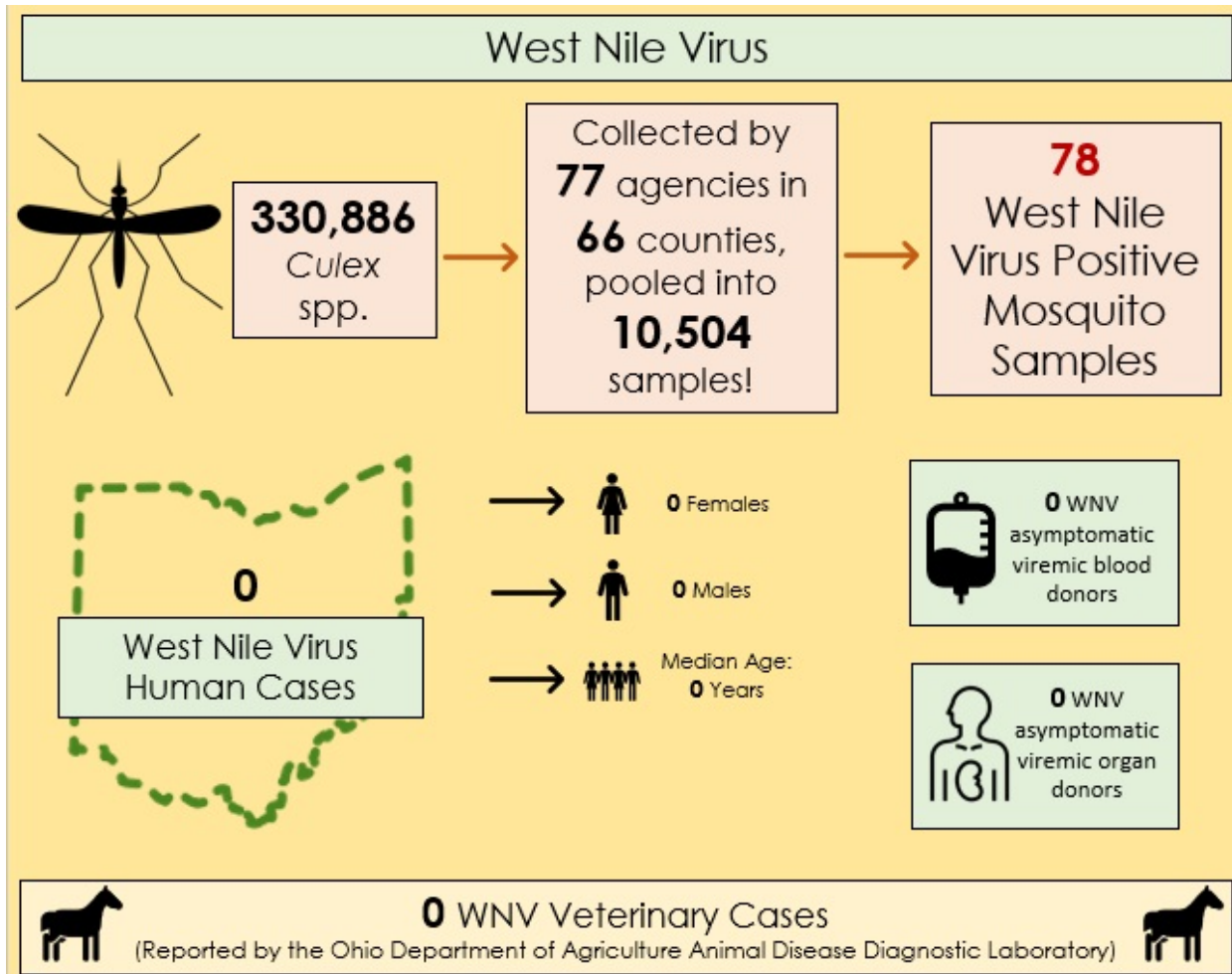
**Figure 1. Minimum infection rate (MIR) of West Nile Virus in *Culex spp.* collected in Ohio as of 8/8/2019**



Although the high amounts of rainfall in early summer have resulted in increased mosquito breeding, West Nile virus infection rates remain low in Ohio (Figure 1). A small increase in the MIR occurred in late July, but it remains well below the MIR at this time in 2018. 78 mosquito pools in Ohio tested positive for West Nile virus, including 9 pools in Summit County. At this time in 2018, Summit County had 177 mosquito pools that were positive for West Nile virus.

Source: <https://u.osu.edu/zika/category/mosquitos/>

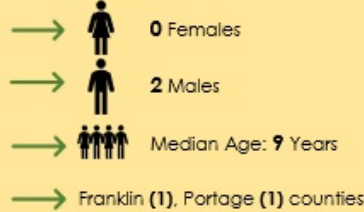
**Ohio Mosquito-borne diseases (as of 8/8/2019):**



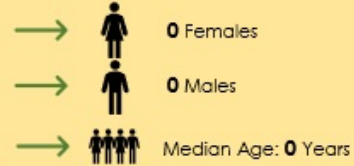
**Special note for travelers:** Ohioans traveling to areas where local transmission is occurring should be aware of the ongoing situation and make every effort to avoid mosquito and tick bites. Additional information can be found from the [Centers for Disease Control and Prevention \(CDC\)'s Travelers' Health](#) and [Pan-American Health Organization](#) websites.

## La Crosse/Unspecified California Encephalitis Virus

**2** La Crosse Human Cases



**0** Unspecified California Virus Human Cases



## Ohio Tick-borne diseases (as of 8/8/2019):

### Lyme Disease, Anaplasmosis, Babesiosis



**438**  
Blacklegged  
Ticks, *Ixodes*  
*scapularis*,  
Identified\*

Identified from **42** counties: Ashland (14), Ashtabula (7), Belmont (60), Butler (1), Clark (2), Columbiana (27), Coshocton (1), Cuyahoga (2), Erie (2), Fayette (2), Franklin (1), Gallia (3), Geauga (1), Greene (1), Highland (3), Hocking (2), Holmes (1), Huron (2), Jefferson (52), Knox (12), Lake (2), Lawrence (9), Licking (2), Lucas (2), Madison (1), Medina (6), Monroe (9), Morgan (30), Muskingum (7), Noble (1), Perry (14), Pike (18), Portage (5), Richland (8), Ross (1), Scioto (6), Stark (34), Summit (81), Trumbull (1), Warren (1), Washington (1), Wood (2), Unknown (1) counties

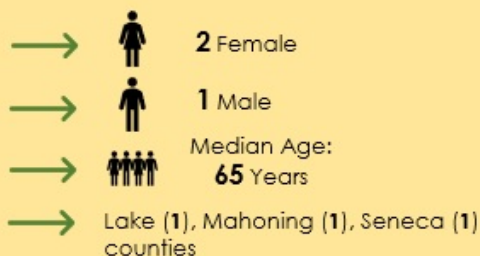
**220**  
Lyme Disease Human Cases

→  94 Females  126 Males

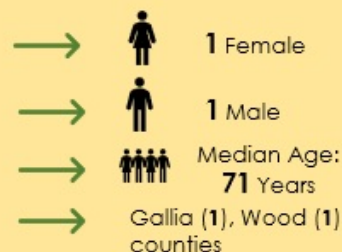
→  Median Age: 35 Years

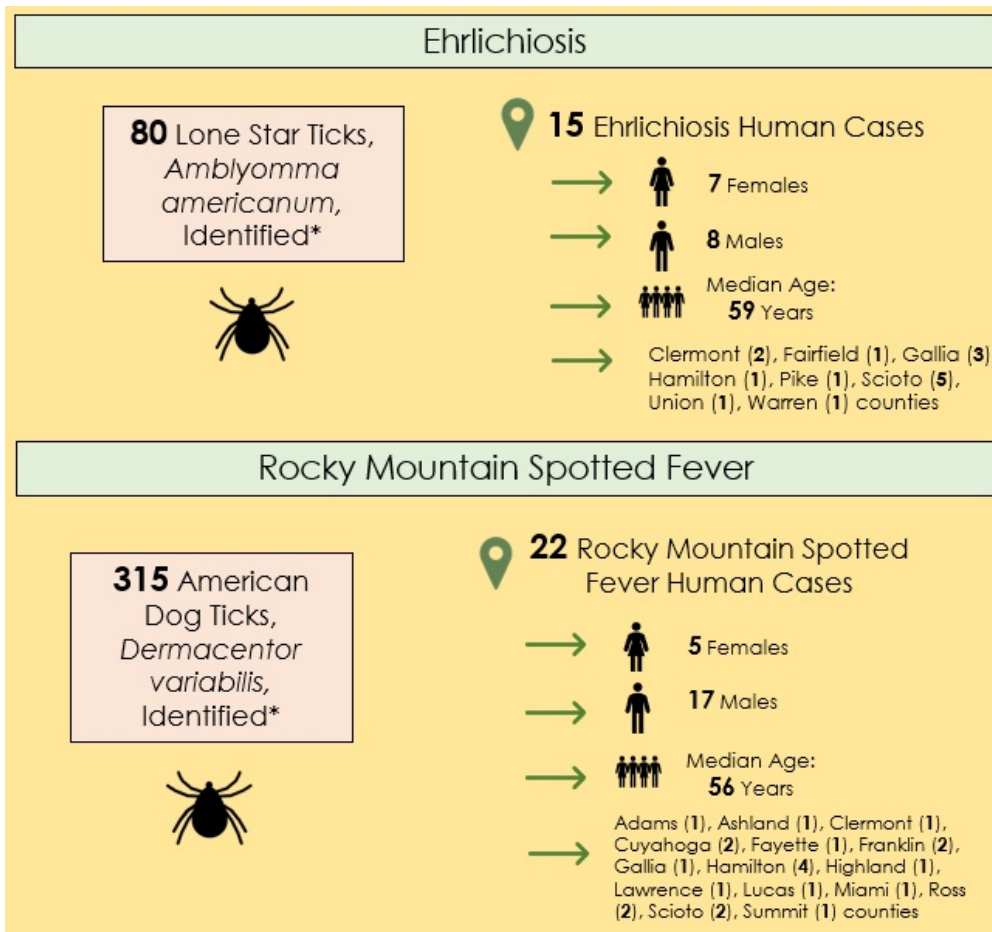
→ Adams (1), Ashland (3), Athens (1), Belmont (17), Butler (2), Carroll (8), Columbiana (1), Coshocton (8), Cuyahoga (10), Delaware (2), Fairfield (3), Fayette (1), Franklin (7), Gallia (6), Geauga (1), Guernsey (13), Hamilton (8), Hancock (1), Harrison (11), Highland (1), Hocking (1), Holmes (13), Huron (2), Jefferson (15), Knox (8), Licking (13), Lorain (1), Madison (1), Mahoning (2), Medina (2), Montgomery (1), Muskingum (4), Noble (1), Perry (1), Pike (2), Portage (6), Richland (1), Ross (3), Sandusky (1), Scioto (4), Seneca (2), Stark (9), Summit (5), Trumbull (3), Tuscarawas (8), Union (1), Vinton (1), Warren (1), Wayne (1), Wood (2) counties

**3** Anaplasmosis Human Cases



**2** Babesiosis Human Cases





Source: [Ohio Department of Health Vector Borne Disease Updates](#)

## OHIO AND UNITED STATES SURVEILLANCE

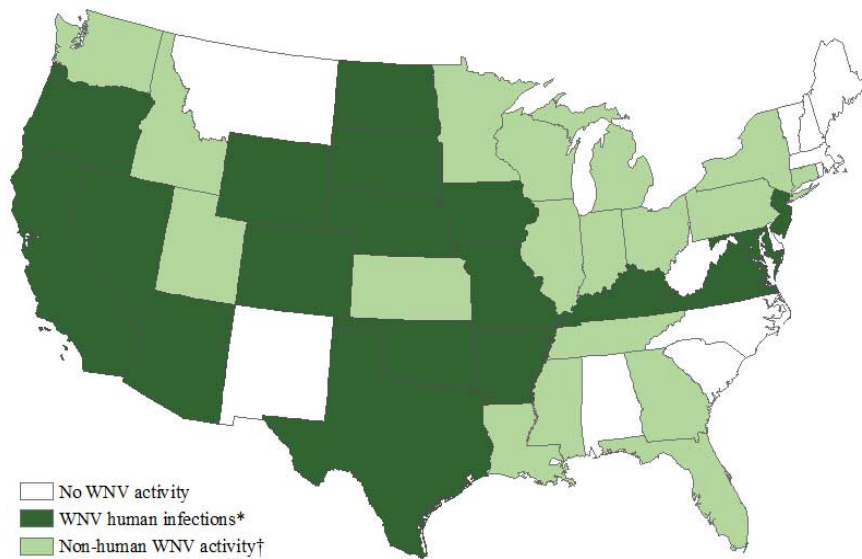
Table 7. Reported Vector Borne disease in Ohio and the United States, 2019

Disease	OHIO	UNITED STATES	
	2019 (as of 8/3) cumulative	Weeks 9 and 10 (7/21 to 8/3)	2019 (as of 8/3) Cumulative
Babesiosis	5	117	784
Chikungunya	8	0	45
Dengue (includes dengue-like illness)	4	0	228
Eastern equine encephalitis	0	0	0
Ehrlichiosis / anaplasmosis	25	394	3872
Jamestown Canyon virus disease	0	0	2
LaCrosse virus disease	2	2	6
Lyme Disease	478	Not reported weekly by CDC	
Malaria	32	28	784
Powassan virus disease	0	0	13
Spotted fever rickettsiosis	47	78	2313
St. Louis encephalitis virus disease	0	0	4
West Nile virus infection	0	3	93
Zika virus infection, non congenital	0	0	5

**Note:** Data is provisional and subject to change

Source: [https://wonder.cdc.gov/nndss/nndss\\_weekly\\_tables\\_menu.asp](https://wonder.cdc.gov/nndss/nndss_weekly_tables_menu.asp)

Figure 2. West Nile virus activity by state – United States, 2019 (as of August 6, 2019)



**WNV infections in mosquitoes, birds, sentinel animals, or veterinary animals** have been reported to CDC ArboNET from the following states: Arizona, Arkansas, California, Colorado, Florida, Georgia, Idaho, Iowa, Illinois, Indiana, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Mississippi, North Dakota, Nebraska, New Jersey, Nevada, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Utah, Virginia, Washington, Wisconsin, and Wyoming.

\*WNV human disease cases or presumptive viremic blood donors. Presumptive viremic blood donors have a positive screening test which has not necessarily been confirmed.

†WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals.

**West Nile virus infections in humans** have been reported to CDC ArboNET from the following states: Arizona, Arkansas, California, Colorado, Iowa, Kentucky, Maryland, Missouri, Nebraska, Nevada, New Jersey, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Virginia, and Wyoming.

Source: <https://www.cdc.gov/westnile/statsmaps/preliminarymapsdata2019/activitybystate2019.html>

## VECTOR BORNE DISEASE NEWS

### CDC arbovirus report shows uptick of neuroinvasive West Nile virus

The US Centers for Disease Control and Prevention (CDC) today published an analysis of 2,813 arbovirus infections for 2018, focusing on insect-borne disease acquired domestically. As in past years, West Nile virus (WNV) made up the vast majority of cases, with 94%, but the neuroinvasive form of the disease was nearly 25% higher than the average during 2008 to 2017.

More La Crosse virus disease cases were reported in 2018 than any year since 2011, and the virus continued to be the most common source of neuroinvasive arboviral disease in children. The report appears in the latest issue of *Morbidity and Mortality Weekly Report (MMWR)*. The CDC said arbovirus remained an ongoing blood and tissue safety concern, with 2018 seeing the first documented case of Powassan virus transmission from blood transfusion and two WNV cases in solid-organ recipients from the same infected donor, signaling the first transplant-related cases since 2013.

Fewer Jamestown Canyon virus cases were reported in 2018 than in 2017, but at levels still higher than previous years. The CDC added that case increases in that viral disease might be linked to an increase in awareness and testing. The agency urged healthcare providers to consider arboviral infections when assessing the differential diagnosis for aseptic meningitis or encephalitis, to obtain appropriate specimens, and to promptly report cases to public health officials.

**Aug 9 MMWR report**

Source: <http://www.cidrap.umn.edu/news-perspective/2019/08/news-scan-aug-08-2019>



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## FDA clears new indications for existing Lyme disease tests that may help streamline diagnosis

July 29, 2019: Today, the U.S. Food and Drug Administration cleared for marketing four previously cleared tests with new indications to aid in the diagnosis of Lyme disease. The tests cleared today are the first time that a test has been indicated to follow a new testing paradigm in which two tests called enzyme immunoassays (EIA) are run concurrently or sequentially, rather than the current two-step process in which a separate protein test called a Western Blot must be run after the initial EIA test.

“Lyme disease can have a devastating impact on patients. With today’s action, clinicians have a new option to test for Lyme that is easier to interpret by a clinical laboratory due to the streamlined method of conducting the test. These tests may improve confidence in diagnosing a patient for a condition that requires the earliest possible treatment to ensure the best outcome for patients,” said Tim Stenzel, M.D., Ph.D., director of the Office of In Vitro Diagnostics and Radiological Health in the FDA’s Center for Devices and Radiological Health.

Lyme disease is caused by the bacteria *Borrelia burgdorferi* and is transmitted to humans through the bite of infected ticks. Typical symptoms include fever, headache, fatigue and skin rash called erythema migrans. If left untreated, infection can spread to joints, the heart and the nervous system. In 2017, the last year for which the Centers for Disease Control and Prevention (CDC) has published data, a total of 42,743 confirmed and probable cases of Lyme disease were reported to CDC, an increase of 17% from 2016.



Laboratory diagnosis of Lyme disease has traditionally used a two-tier process for detecting the presence of antibodies against *Borrelia burgdorferi* in a patient’s blood. Antibodies are proteins present in the blood when the body is responding to a specific infection. In the previous two-tier approach, different types of tests were used (EIA and Western blots) to confirm a clinical diagnosis. The tests cleared today involve a modified approach that uses only EIA technology-based tests.

The FDA reviewed data from clinical studies of the ZEUS ELISA *Borrelia* VlsE1/pepC10 IgG/IgM Test System, ZEUS ELISA *Borrelia burgdorferi* IgG/IgM Test System, ZEUS ELISA *Borrelia burgdorferi* IgM Test System, and the ZEUS ELISA *Borrelia burgdorferi* IgG Test System that showed this alternative approach, referred to as a modified two-tier test, is as accurate as current methods for detecting antibodies for assessing exposure to *Borrelia burgdorferi*, the causative agent of Lyme disease, over current methods.

CDC recommendations should be followed for the diagnosis of Lyme disease and for determining when laboratory tests are appropriate. The enzyme immunoassay tests were reviewed through the [premarket notification](#) (510(k)) pathway. A 510(k) is a premarket submission made to the FDA to demonstrate that the device to be marketed is at least as safe and effective, that is, substantially equivalent, to a legally marketed device. The FDA granted clearance of the ZEUS ELISA enzyme immunoassay tests to ZEUS Scientific.

**Sources:** [FDA Lyme disease testing press release](#)  
<http://www.cidrap.umn.edu/news-perspective/2019/07/news-scan-jul-30-2019>

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**About this report:** Reporting agencies include Summit County hospital laboratories and the Ohio Department of Health. Vector-borne disease case data for Summit County are obtained from the Ohio Disease Reporting System.

**Many thanks to all agencies who report vector-borne disease data weekly.**

Reporting from participants may not be complete each week. Numbers may change as updated reports are received. For questions, please contact Joan Hall (jhall@sched.org) or Tracy Rodriguez (trodriguez@sched.org), Summit County Public Health Communicable Disease Unit (330-375-2662). This report was issued on **August 9, 2019**.