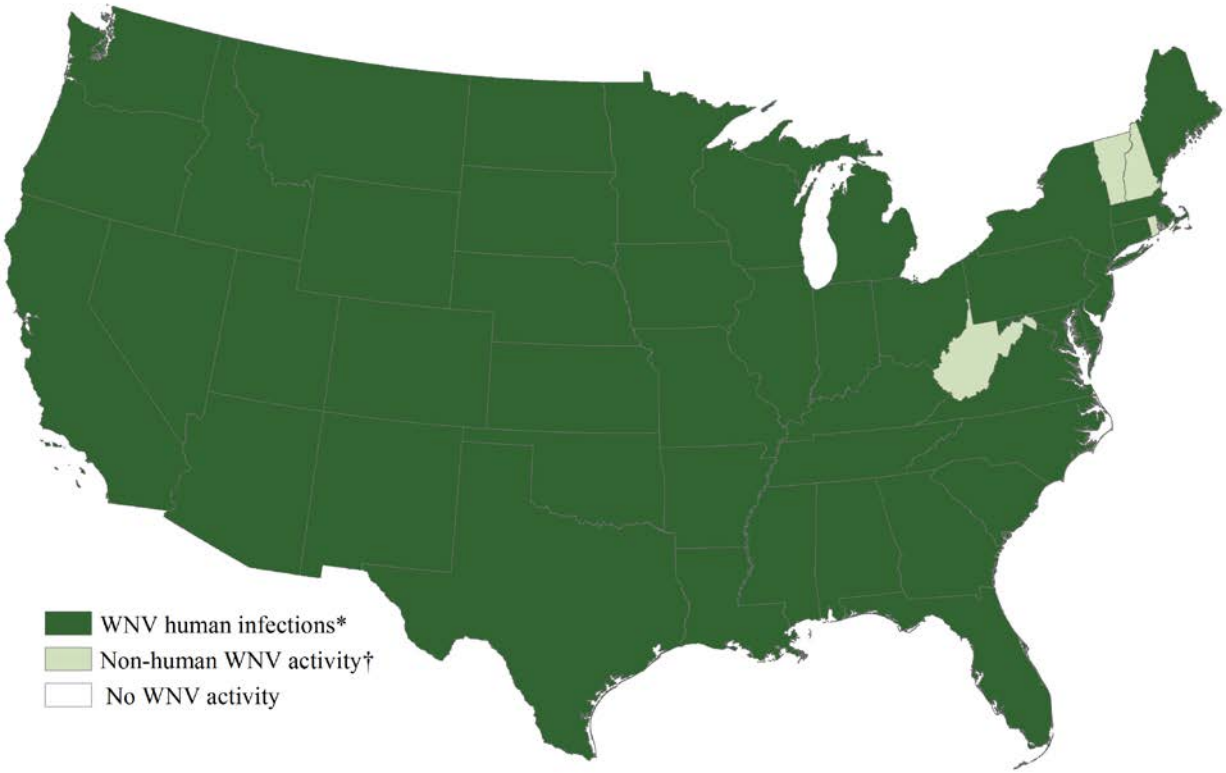
West Nile virus and other arboviral activity -- United States, 2015
Provisional data reported to ArboNET
Tuesday, November 3, 2015

This update from the CDC Arboviral Disease Branch includes provisional data reported to ArboNET for **January 1 – November 3, 2015** for nationally notifiable arboviruses other than dengue and chikungunya viruses. Additional resources for ArboNET and arboviral diseases are provided on page 10.

West Nile virus (WNV) activity in 2015

As of November 3rd, 1,055 counties from 48 states and the District of Columbia have reported WNV activity to ArboNET for 2015, including 44 states and the District of Columbia with reported WNV human infections (i.e., disease cases or viremic blood donors) and four additional states with reported WNV activity in non-human species only (i.e., veterinary cases, mosquito pools, dead birds, or sentinel animals) **[Figure 1]**.

Figure 1. West Nile virus (WNV) activity reported to ArboNET, by state — United States, 2015 (as of November 3, 2015)



*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

Reported WNV disease cases

To date, 1,650 human WNV disease cases have been reported from 503 counties in 42 states and the District of Columbia **[Table 1]**. Dates of illness onset for cases ranged from April–October **[Figure 2]**.

Of these, 1,066 (65%) were classified as neuroinvasive disease (such as meningitis or encephalitis) and 584 (35%) were classified as non-neuroinvasive disease **[Figure 3]**. Additional demographic and clinical characteristics of reported cases are provided [**Table 7]**.

Presumptive viremic donors (PVDs)

Overall, 293 WNV PVDs have been reported from 37 states and the District of Columbia **[Table 1]**. Of these, 35 (12%) developed clinical illness.

Table 1. West Nile virus infections in humans reported to ArboNET, 2015

	Human disease cases reported to CDC*				Presumptive viremic blood donors
State	**Neuroinvasive**	**Non-neuroinvasive**	**Total**	**Deaths**	
Alabama	4	5	9	0	0
Arizona	53	27	80	6	15
Arkansas	16	2	18	1	0
California	341	128	469	28	51
Colorado	52	38	90	2	6
Connecticut	7	2	9	0	0
Delaware	0	1	1	0	4
District of Columbia	1	0	1	0	1
Florida	9	0	9	0	1
Georgia	10	2	12	0	2
Idaho	5	8	13	0	4
Illinois	36	22	58	5	6
Indiana	13	5	18	3	5
Iowa	2	8	10	0	5
Kansas	11	18	29	2	13
Kentucky	0	0	0	0	3
Louisiana	36	7	43	4	15
Maine	1	0	1	0	0
Maryland	29	16	45	4	7
Massachusetts	6	3	9	2	2
Michigan	16	1	17	2	3
Minnesota	2	4	6	0	7
Mississippi	25	13	38	1	3
Missouri	16	10	26	3	14
Montana	2	1	3	0	1
Nebraska	17	49	66	2	25
Nevada	4	3	7	0	6
New Jersey	22	3	25	2	0
New Mexico	11	2	13	0	3
New York	19	7	26	1	2
North Carolina	4	0	4	1	2
North Dakota	10	13	23	1	2
Ohio	23	11	34	2	9
Oklahoma	38	36	74	5	15
Oregon	1	0	1	0	6
Pennsylvania	15	12	27	0	2
South Carolina	0	0	0	0	2
South Dakota	11	29	40	0	2
Tennessee	4	1	5	0	3
Texas	162	66	228	9	31
Utah	5	3	8	0	2
Virginia	13	7	20	1	3
Washington	8	16	24	1	10
Wisconsin	4	3	7	1	0
Wyoming	2	2	4	0	0
Totals	**1,066**	**584**	**1,650**	**89**	**293**

*Includes confirmed and probable cases

Figure 2. WNV disease cases reported to ArboNET, by week of onset — United States, 2015

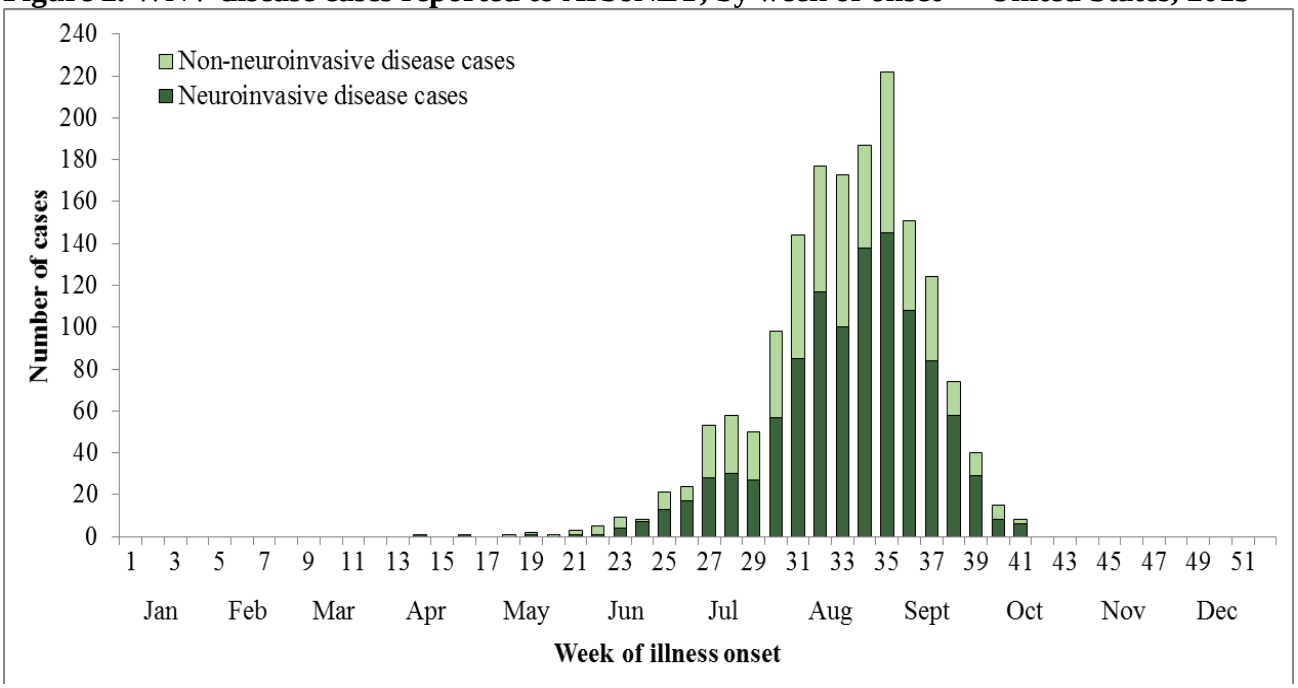
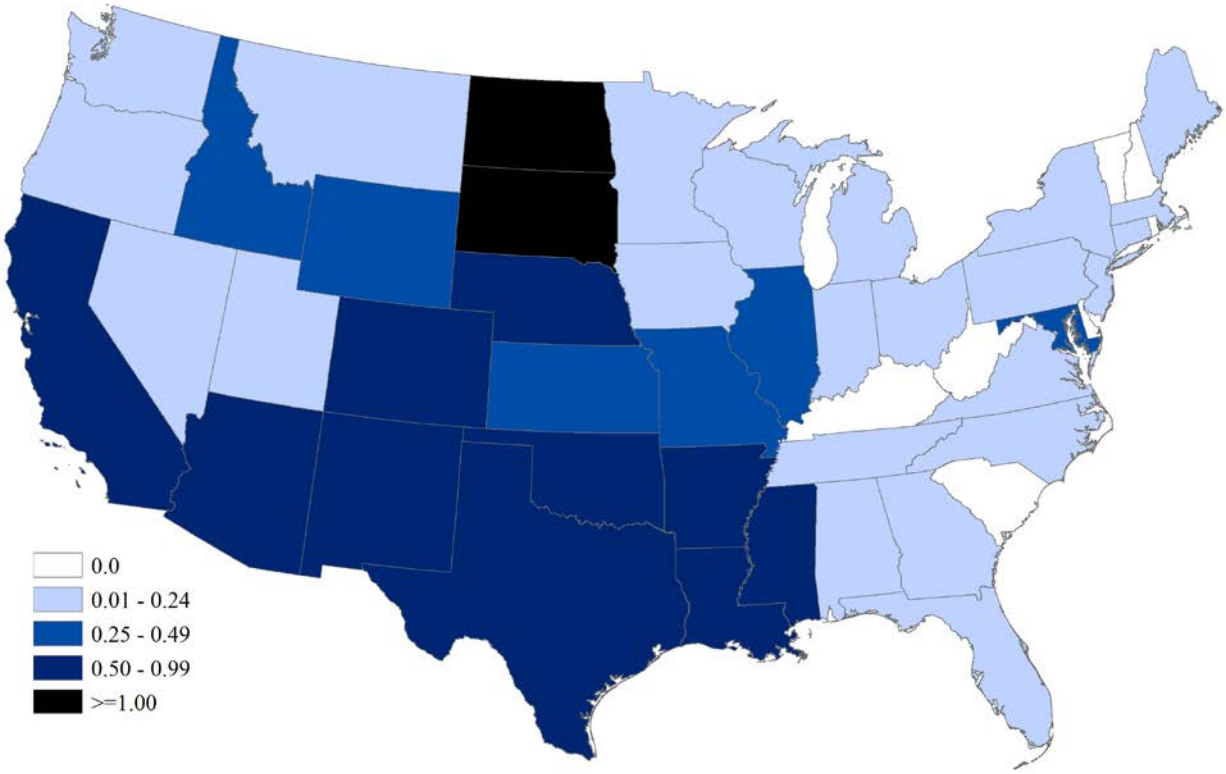


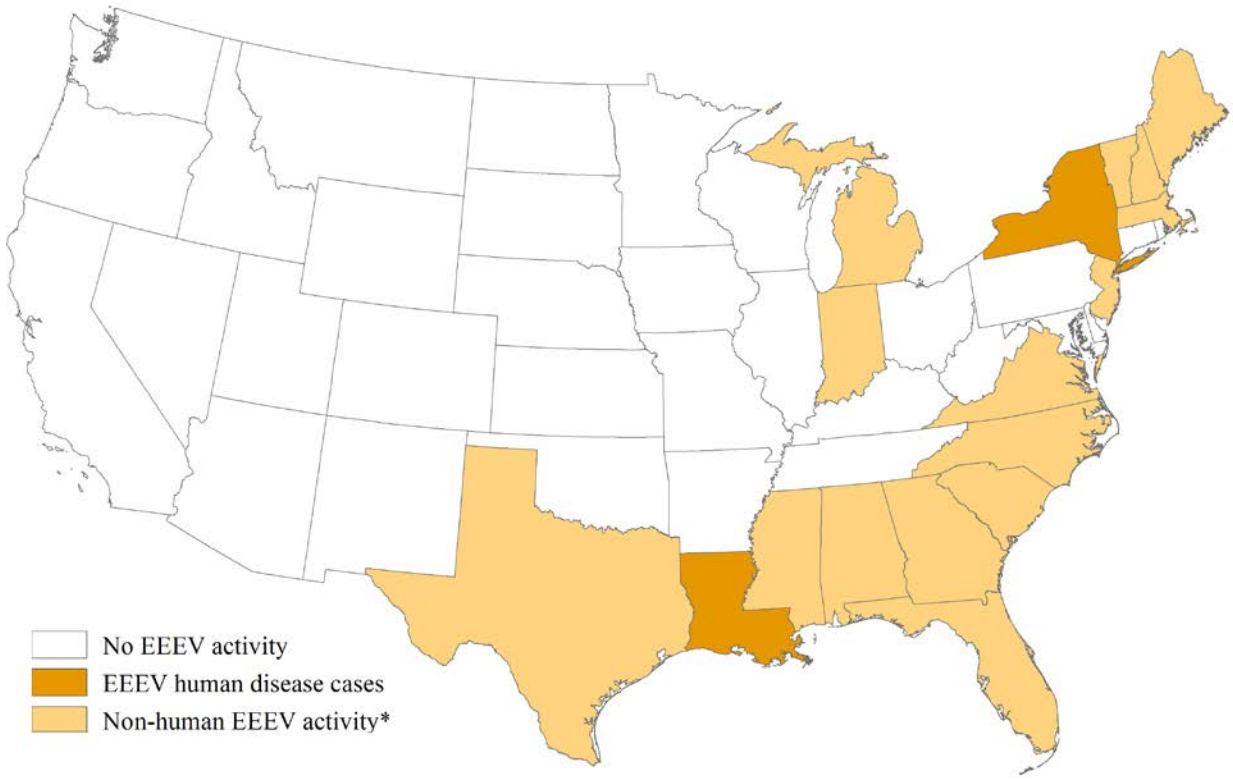
Figure 3. West Nile virus (WNV) neuroinvasive disease incidence reported to ArboNET, by state — United States, 2015 (as of November 3, 2015)



Eastern equine encephalitis virus (EEEV) activity in 2015

As of November 3rd, three counties in two states reported human cases of EEEV disease to ArboNET for 2015 **[Figure 4 and Table 2]**. Seventy-four additional counties in 15 states have reported EEEV activity in non-human species only.

Figure 4. Eastern equine encephalitis virus (EEEV) activity reported to ArboNET, by state — United States, 2015 (as of November 3, 2015)



*EEEV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 2. Eastern equine encephalitis virus human disease cases reported to ArboNET, United States, 2015

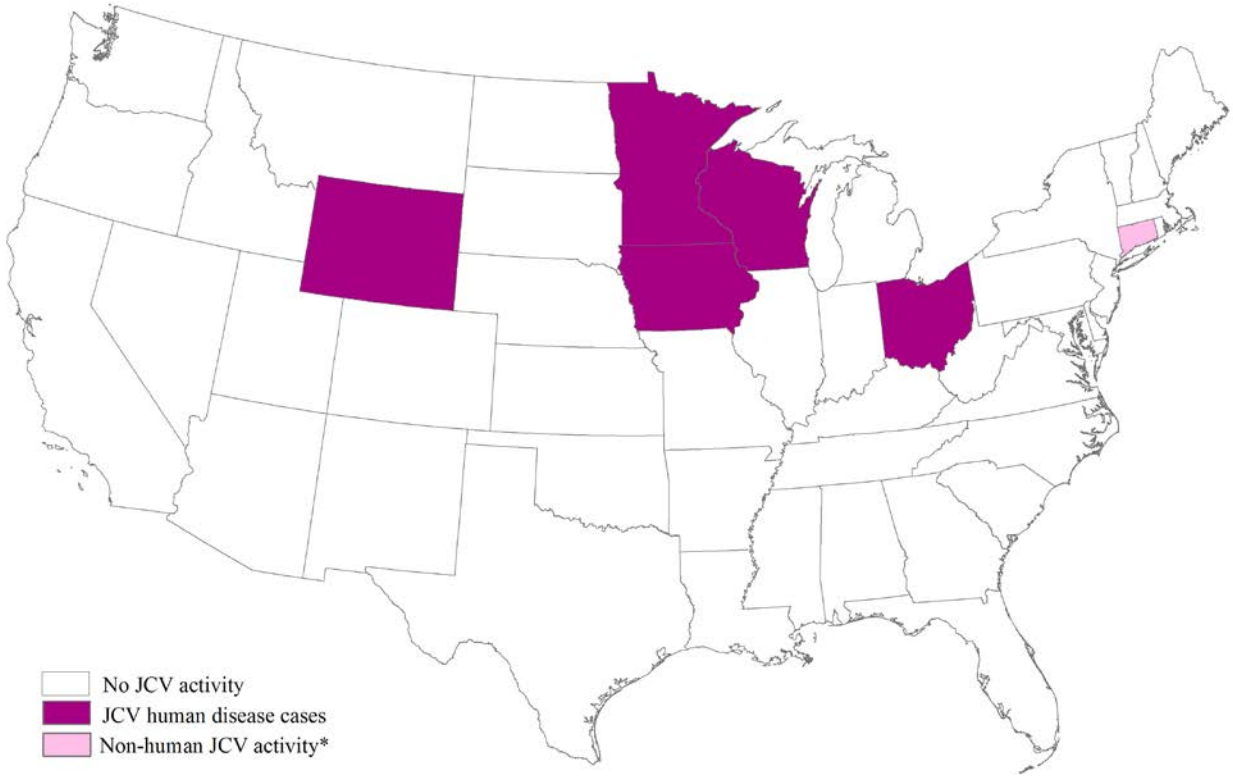
	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Louisiana	1	0	1	0
New York	2	0	2	2
Totals	**3**	**0**	**3**	**2**

*Includes confirmed and probable cases.

Jamestown Canyon virus (JCV) activity in 2015

As of November 3rd, eight counties in five states reported human cases of JCV disease to ArboNET for 2015 **[Figure 5 and Table 3]**. Seven additional counties in Connecticut have reported JCV activity in non-human species only. Additional demographic and clinical characteristics of reported cases are provided **[Table 7]**.

Figure 5. Jamestown Canyon virus (JCV) activity reported to ArboNET, by state — United States, 2015 (as of November 3, 2015)



*JCV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 3. Jamestown Canyon virus human disease cases reported to ArboNET, United States, 2015

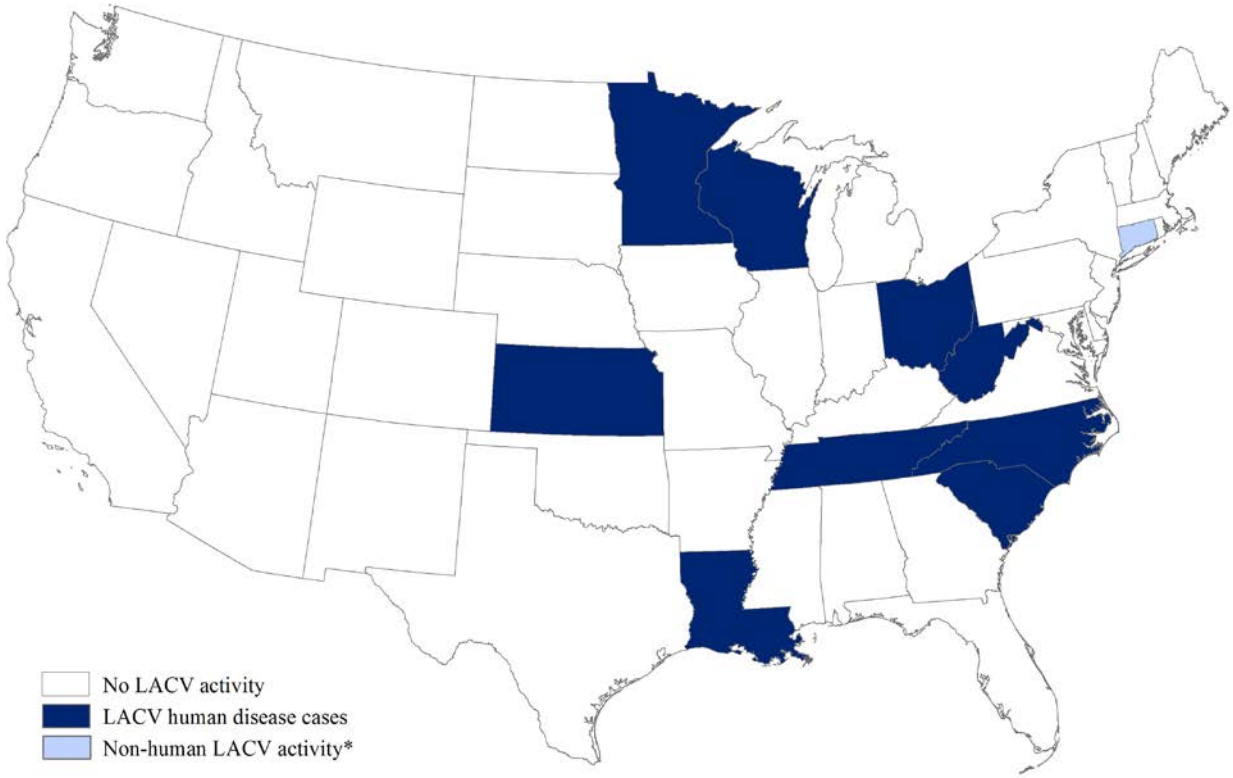
	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Iowa	0	1	1	0
Minnesota	1	1	2	0
Ohio	1	1	2	0
Wisconsin	1	1	2	0
Wyoming	0	1	1	0
Totals	**3**	**5**	**8**	**0**

*Includes confirmed and probable cases.

La Crosse encephalitis virus (LACV) activity in 2015

As of November 3rd, 29 counties in nine states have reported human cases of LACV disease to ArboNET for 2015 **[Figure 6 and Table 4]**. One additional county in Connecticut has reported LACV activity in non-human species only. Additional demographic and clinical characteristics of reported cases are provided **[Table 7]**.

Figure 6. La Crosse encephalitis virus (LACV) activity reported to ArboNET, by state — United States, 2015 (as of November 3, 2015)



*LACV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 4. La Crosse encephalitis virus human disease cases reported to ArboNET, United States, 2015

	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Kansas	1	0	1	0
Louisiana	1	0	1	0
Minnesota	0	1	1	0
North Carolina	10	0	10	0
Ohio	15	0	15	0
South Carolina	1	0	1	0
Tennessee	1	0	1	0
West Virginia	1	1	2	0
Wisconsin	4	0	4	0
Totals	**34**	**2**	**36**	**0**

*Includes confirmed and probable cases.

Powassan virus (POWV) activity in 2015

As of November 3rd, four counties in three states have reported human cases of POWV disease to ArboNET for 2015 **[Figure 7 and Table 5].**

Figure 7. Powassan virus (POWV) activity reported to ArboNET, by state — United States, 2015 (as of November 3, 2015)

Table 5. Powassan virus human disease cases reported to ArboNET, United States, 2015

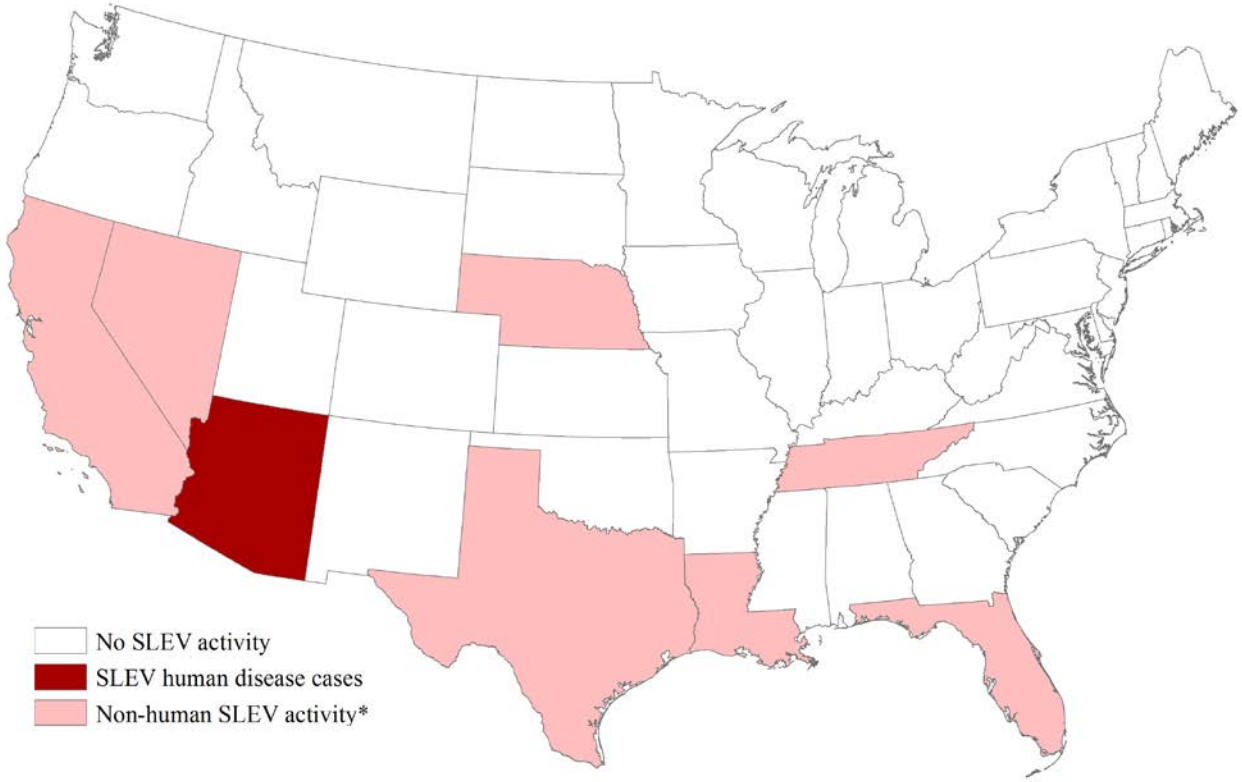
	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Massachusetts	2	0	2	0
New Jersey	1	0	1	0
New York	0	1	1	0
Totals	**3**	**1**	**4**	**0**

*Includes confirmed and probable cases.

St. Louis encephalitis virus (SLEV) activity in 2015

As of November 3rd, two counties in Arizona reported human cases of SLEV disease to ArboNET for 2015 **[Figure 8 and Table 6]**. Sixteen additional counties in seven states have reported SLEV activity in non-human species only. Additional demographic and clinical characteristics of reported cases are provided **[Table 7]**.

Figure 8. St. Louis encephalitis virus (SLEV) activity reported to ArboNET, by state — United States, 2015 (as of November 3, 2015)



*SLEV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Table 6. St. Louis encephalitis virus human disease cases reported to ArboNET, United States, 2015

	Neuroinvasive disease cases	Nonneuroinvasive disease cases	Total cases*	Deaths
Arizona	15	2	17	1
Totals	**15**	**2**	**17**	**1**

*Includes confirmed and probable cases.

Table 7. Characteristics of reported cases of arboviral disease, United States, 2015

	JCV (N=8)		LAC (N=36)		SLE (N=17)		WNV (N=1,650)	
	No.	**(%)**	**No.**	**(%)**	**No.**	**(%)**	**No.**	**(%)**
Age group								
<20 years	1	(13)	34	(94)	1	(6)	50	(3)
20-39 years	0	(0)	0	(0)	1	(6)	263	(16)
40-49 years	1	(13)	1	(3)	4	(24)	195	(12)
50-59 years	2	(25)	0	(0)	2	(12)	391	(24)
≥60 years	4	(50)	1	(3)	9	(53)	751	(46)
Unknown	0	(0)	0	(0)	0	(0)	0	(0)
Male sex	4	(50)	19	(53)	13	(77)	949	(58)
Onset of illness								
January	0	(0)	0	(0)	0	(0)	0	(0)
February	0	(0)	0	(0)	0	(0)	0	(0)
March	0	(0)	0	(0)	0	(0)	0	(0)
April	0	(0)	0	(0)	1	(6)	2	(<1)
May	1	(13)	1	(3)	2	(12)	7	(<1)
June	3	(38)	5	(14)	1	(6)	54	(3)
July	2	(25)	7	(19)	10	(59)	248	(15)
August	2	(25)	17	(47)	2	(12)	769	(47)
September	0	(0)	6	(17)	1	(6)	534	(32)
October	0	(0)	0	(0)	0	(0)	36	(2)
Clinical syndrome								
Nonneuroinvasive	5	(63)	2	(6)	2	(12)	584	(35)
Neuroinvasive								
Encephalitis	2	(25)	28	(78)	9	(53)	499	(30)
Meningitis	1	(13)	5	(14)	6	(35)	454	(28)
Acute flaccid paralysis	0	(0)	1	(3)	0	(0)	83	(5)
Other neuroinvasive	0	(0)	0	(0)	0	(0)	30	(2)
Outcome								
Hospitalization	6	(75)	34	(94)	13	(77)	1,153	(70)
Death	0	(0)	0	(0)	1	(6)	89	(5)

About ArboNET

ArboNET is a national arboviral surveillance system managed by CDC and state health departments. In addition to human disease, ArboNET maintains data on arboviral infections among presumptive viremic blood donors (PVDs), veterinary disease cases, mosquitoes, dead birds, and sentinel animals. As with other national surveillance data, ArboNET data has several limitations that should be considered in analysis, interpretation, and reporting **[Box]**.

Box: Limitations of ArboNET data

The following should be considered in the analysis, interpretation, and reporting of ArboNET data:

1. ArboNET is a passive surveillance system. It is dependent on clinicians considering the diagnosis of an arboviral disease and obtaining the appropriate diagnostic test, and reporting of laboratory-confirmed cases to public health authorities. Diagnosis and reporting are incomplete, and the incidence of arboviral diseases is underestimated.
2. Reported neuroinvasive disease cases are considered the most accurate indicator of arboviral activity in humans because of the substantial associated morbidity. In contrast, reported cases of nonneuroinvasive arboviral disease are more likely to be affected by disease awareness and healthcare-seeking behavior in different communities and by the availability and specificity of laboratory tests performed. Surveillance data for nonneuroinvasive disease should be interpreted with caution and generally should not be used to make comparisons between geographic areas or over time.

Additional resources

For additional arboviral disease information and data, please visit the following websites:

- CDC's Division of Vector-Borne Diseases:
  http://www.cdc.gov/ncezid/dvbd/
- National Notifiable Diseases Surveillance System:
  http://wwwn.cdc.gov/nndss/conditions/arboviral-diseases-neuroinvasive-and-non-neuroinvasive/case-definition/2015/
- U.S. Geological Survey (USGS):
  http://diseasemaps.usgs.gov/ or http://diseasemaps.usgs.gov/mapviewer/
- AABB (American Association of Blood Banks):
  www.aabb.org/programs/biovigilance/Pages/wnv.aspx