Vector-Borne Disease

Weekly Surveillance Report

Center for Acute Disease Epidemiology | Acute Disease Prevention and Emergency Response & EH | West Nile Virus Website

All data presented in this report are provisional and may change as additional reports are received

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West Nile Virus (WNV)

WNV is endemic in Iowa and activity usually peaks in late summer and early fall. IDPH works in collaboration with Local Public Health (LPH) and other appropriate partners to investigate all reported cases.

In 2018, Iowa experienced an increase in WNV activity and 104 human cases were identified. This is the highest number since 2003. Thus far in 2019, four human cases of WNV and one presumptive viremic blood donor have been identified. Three horses and six mosquito samples have tested positive for WNV [Table 1].

Table 1. Human /Equine/Mosquito Surveillance, 2019 Positive Samples

				Mosquitoes	
County	**Human**	**Blood Donor**	**Horse**	***Culex pipiens* group**	***Culex restuans***
Audubon	1	0	0	0	0
Davis	0	0	1	0	0
Harrison	1	0	0	0	0
Humboldt	0	1	0	0	0
Mitchell	0	0	1	0	0
Polk	0	0	0	5	1
Union	0	0	1	0	0
Woodbury	2	0	0	0	0
Total	**4**	**1**	**3**	**5**	**1**

Figure 1. 2019 West Nile virus case count and incidence rate by county of residence.

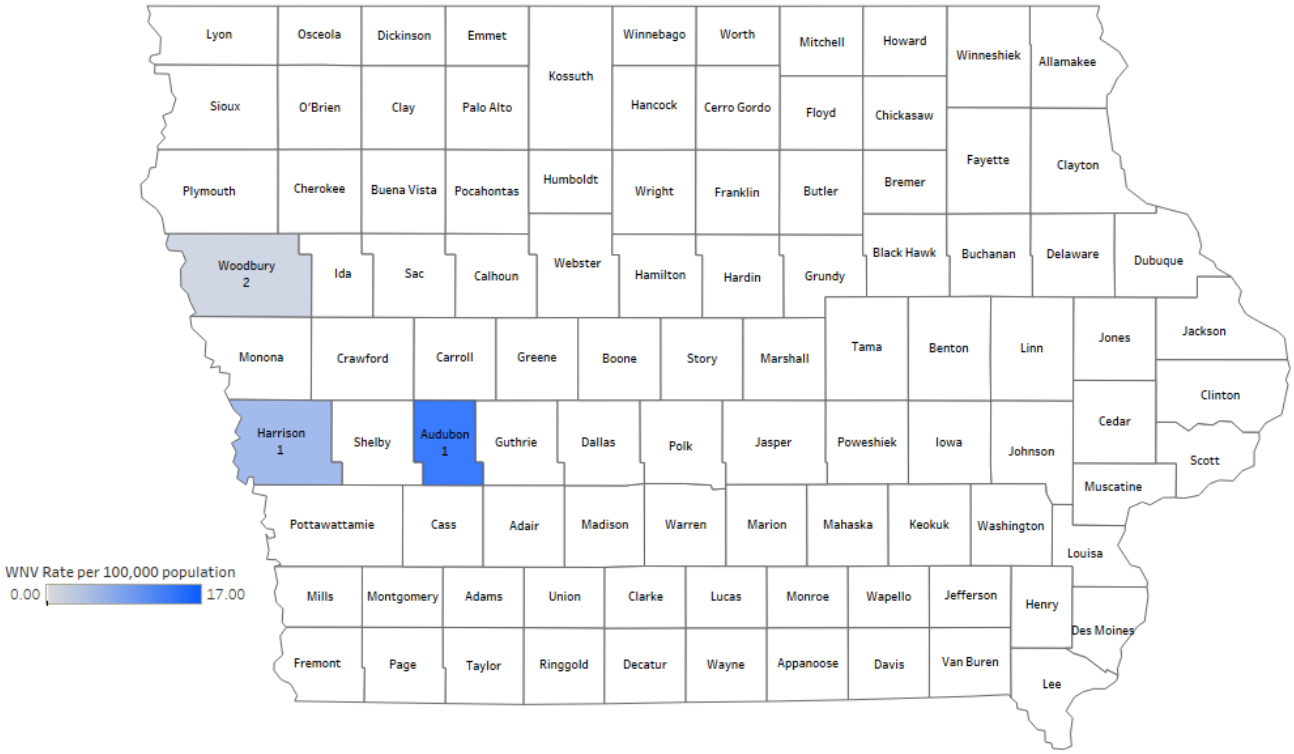
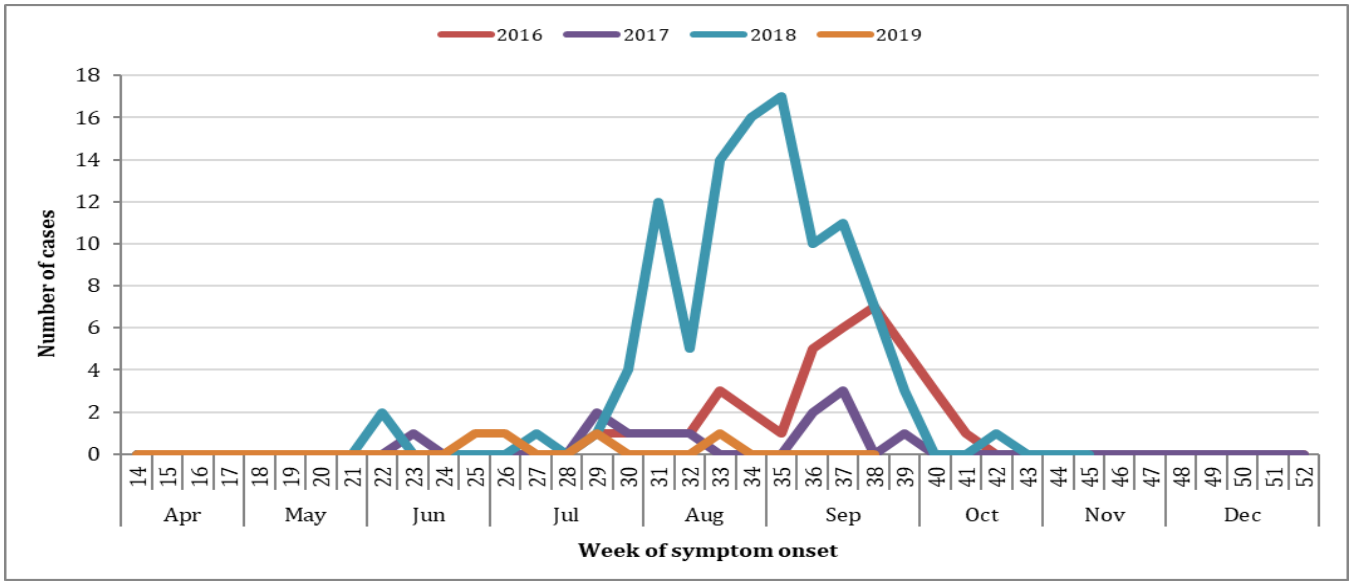


Figure 2. WNV disease cases reported to IDPH, by week of onset-Iowa, 2019



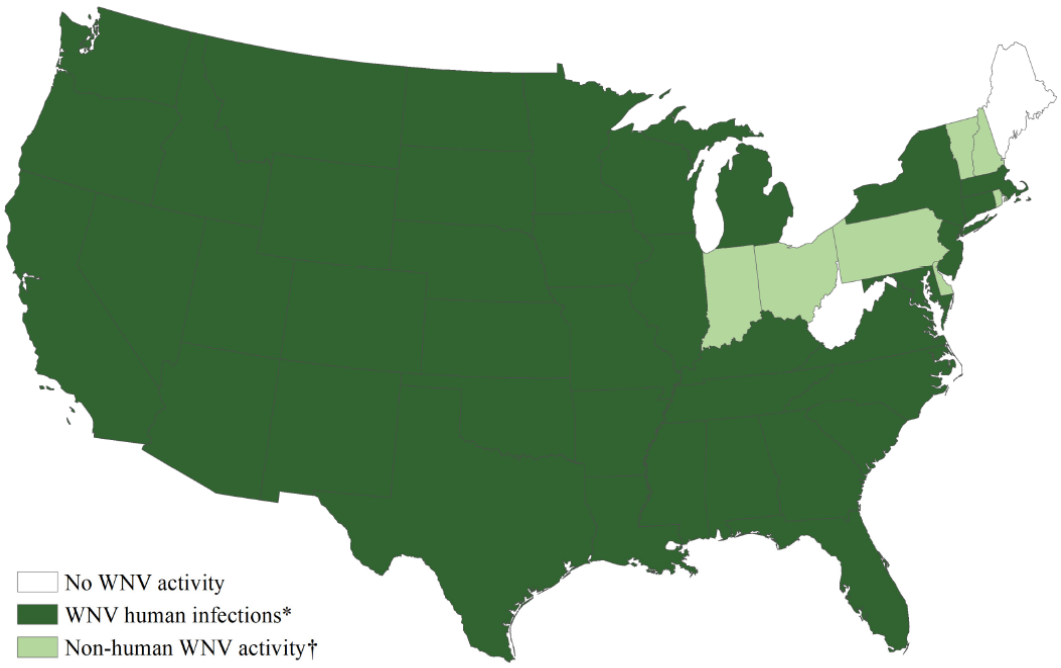
National WNV Activity:

As of September 24th, 490 counties from 46 states and the District of Columbia have reported WNV activity to ArboNET for 2019, including 39 states and the District of Columbia with reported WNV human infections (i.e., disease cases or viremic blood donors) and seven additional states with reported WNV activity in non-human species only (i.e., veterinary cases, mosquito pools, dead birds, or sentinel animals) [Figure 3].

To date, 543 human WNV disease cases have been reported from 171 counties in 39 states and the District of Columbia. Of the 543 reported cases, 355 (65%) were classified as neuroinvasive disease (e.g., meningitis or encephalitis) and 188 (35%) were classified as non-neuroinvasive disease [Figure 4]. Dates of illness onset for cases ranged from January-September [Figure 5].

Overall, 82 WNV PVD has been reported from 19 states.

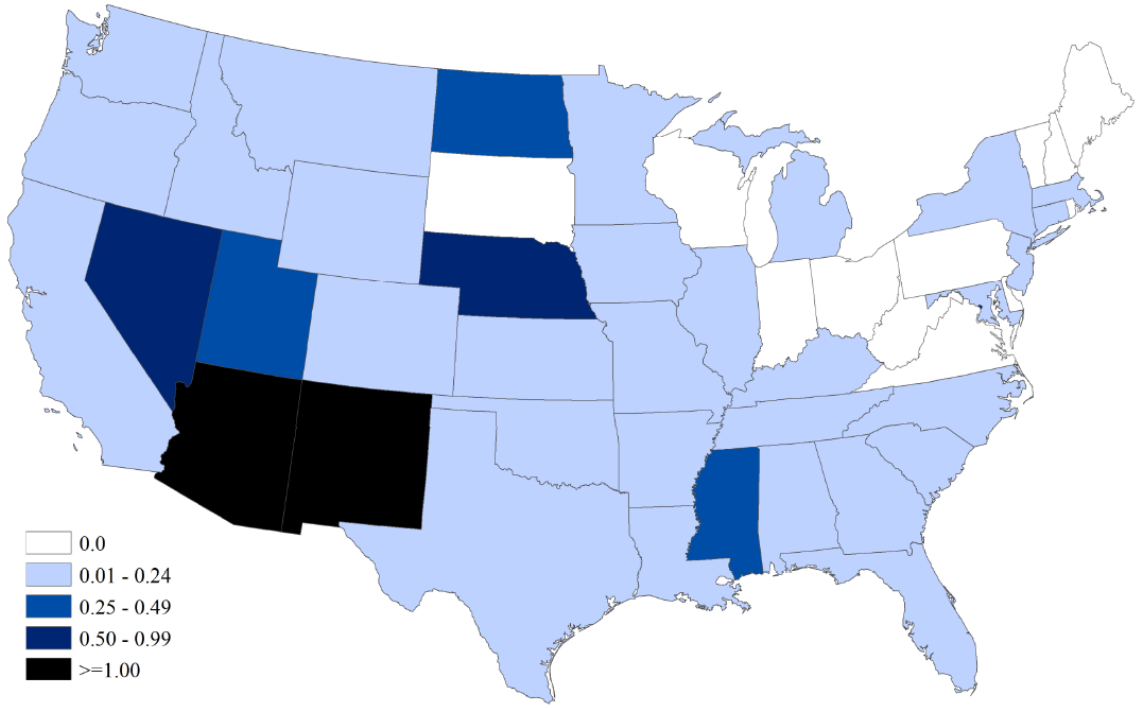
Figure 3. WNV activity reported to ArboNET, by state – United States, 2019 (as of September 24, 2019)



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

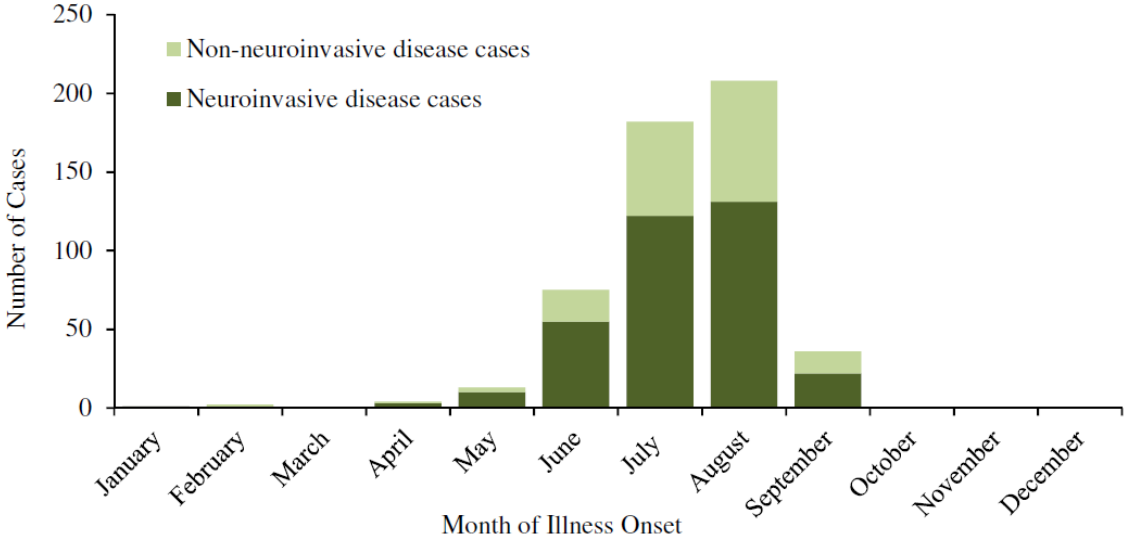
†WNV veterinary disease cases, or infections in mosquitoes, birds, or sentinel animals

Figure 4. WNV neuroinvasive disease incidence* reported to ArboNET, by state – United States, 2019 (as of September 24, 2019)



*Incidence per 100,000 population

Figure 5. WNV disease cases reported to ArboNET, by month of onset*– United States, 2019 (as of September 24, 2019)



*Cases missing onset date (n=22)

Dengue Fever

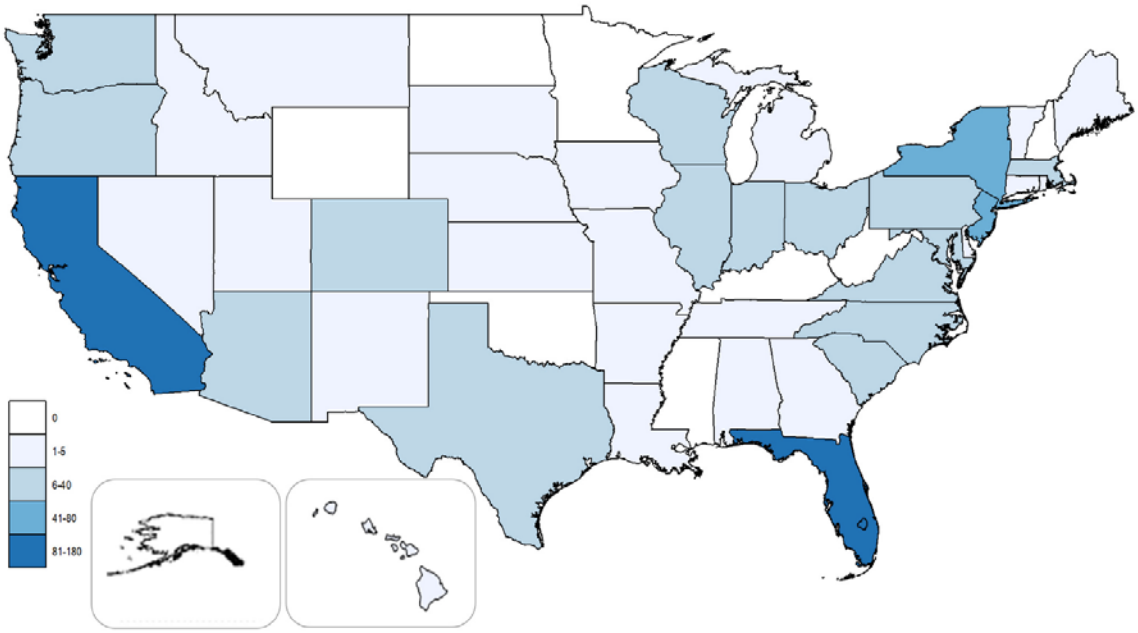
Dengue is a disease caused by any one of four related viruses, which are passed by the bite of an infected *Aedes aegypti* or *Aedes albopictus* mosquito. Infection with one of the four viruses does not protect against the others and consecutive infections put people at greater risk of developing dengue hemorrhagic fever (DHF).

Dengue is not found in Iowa. Cases are in travelers and immigrants returning from parts of the world where dengue transmission occurs. Four cases of dengue have been reported in Iowa, thus far in 2019. In 2018, five cases of dengue were reported to IDPH.

National Dengue Activity:

As of September 25th, 43 states and three territories have reported dengue cases to ArboNET for 2019 [Figure 6].

Figure 6. Laboratory-positive travel-associated and locally-acquired dengue cases from the 50 states— United States, 2019 (as of September 25, 2019)



Mosquito Surveillance

IDPH in collaboration with the State Hygienic Laboratory (SHL), Iowa State University (ISU), and local public environmental health partners conducts ecological surveillance in 16 counties across the state by monitoring mosquitoes and testing for WNV infected populations.

Table 2. 2019 mosquitoes tested for West Nile virus

Species	# of Samples Tested	WNV Negative	WNV Positive
Cx. pipiens	240	240	0
***Cx. pipiens* group**	726	721	5
Cx. tarsalis	133	133	0
Cx. restuans	555	554	1
Cx. territans	26	26	0
Cx. erraticus	0	0	0
Cx. salinarius	9	9	0
Cx. species	2	2	0
Ae. japonicus	0	0	0
An. punctipennis	0	0	0
Ae. atropalpus	0	0	0
Ae. sticticus	0	0	0
Ae. triseriatus	2	2	0
Total	**1693**	**1687**	**6**

In addition to viral testing for WNV, the population of mosquitoes in Iowa is monitored through trapping activities. All trapped mosquitoes are sorted by species. The figure [Figure 7] below shows where and when Aedes albopictus mosquitoes were detected 2017-2019.

Figure 7. *Aedes albopictus* identified in Iowa, 2017-2019

Malaria

Malaria is a serious and sometimes fatal disease caused by a parasite that commonly infects *Anopheles* mosquitoes. Malaria is spread to humans by the bite of the infected female mosquito. Only *Anopheles* mosquitoes can transmit malaria and they must have been infected through a previous blood meal taken from an infected person.

Twenty-one cases of malaria have been reported in Iowa. Cases are in travelers and immigrants returning from parts of the world where malaria transmission occurs. In 2018, 22 cases of malaria were reported to IDPH.

Rocky Mountain spotted fever (RMSF)

American dog ticks are carriers of *Rickettsia rickettsii*, the bacteria that causes RMSF. The American dog tick is the most common species of tick in Iowa and can be found in every county in the state. The tick is most active late March through August.

Eleven cases of RMSF have been reported in Iowa. In 2018, 22 cases of RMSF were reported to IDPH.

Ehrlichiosis/Anaplasmosis

There are at least three species of bacteria responsible for ehrlichiosis/anaplasmosis in the United States: *Ehrlichia chaffeensis, Ehrlichia ewingii, and Anaplasma phagocytophilum*. Ehrlichiae are transmitted by the bite of an infected lone star tick (*Amblyomma americanum*) which is found in Iowa. *A. phagocytophilum* is transmitted by the bite of an infected blacklegged tick (or deer tick, *Ixodes scapularis*) in Iowa. The clinical signs and symptoms of these infections are similar.

Twenty-eight cases of ehrlichiosis/anaplasmosis have been reported in Iowa. In 2018, 27 cases of ehrlichiosis/anaplasmosis were reported to IDPH.

Lyme

Lyme disease is caused by *Borrelia burgdorferi* and in Iowa is transmitted to humans by the bite of an infected tick, the blacklegged tick (or deer tick, *Ixodes scapularis*). Ticks are most likely to spread the Lyme disease bacterium during their pre-‘

As of September 27th, 247 confirmed and probable cases of Lyme disease have been reported in Iowa [Figure 8]. In 2018, 284 cases of Lyme disease were reported to IDPH.

Figure 8. 2019 Lyme disease case count and incidence rate by county of residence.