ArboNET
National Arbovirus Surveillance System

NATIONALLY NOTIFIABLE ARBOVIRAL DISEASES REPORTED TO ARBONET: DATA RELEASE GUIDELINES

Nationally notifiable arboviral diseases are reported to CDC by U.S. states, territories, and associated states according to standardized case definitions https://wwwn.cdc.gov/nndss/conditions/notifiable. Since 1996, neuroinvasive disease due to the following domestic arboviruses has been nationally reportable: St. Louis encephalitis virus (SLEV), eastern equine encephalitis virus (EEEV), western equine encephalitis virus (WEEV), and California serogroup (CAL) viruses (i.e., La Crosse virus, California encephalitis virus, Jamestown Canyon virus, Keystone virus, snowshoe hare virus, and trivittatus virus). In 2001, West Nile virus (WNV) and Powassan virus (POWV) were made nationally notifiable. In 2004, non-neuroinvasive disease due to all of the above arboviruses became notifiable. More recently, non-domestic arboviral diseases that are typically acquired through travel were made notifiable, including dengue (2010), chikungunya (2015), and Zika (2016) viruses.

ArboNET, an electronic passive national arboviral surveillance system, was developed in 2000. In addition to human disease, ArboNET maintains data on arboviral infections among presumptive viremic blood donors, non-human mammals, sentinel animals, dead birds, and mosquitoes. From 2000 to 2002, only WNV data were reported to ArboNET. Since 2003, ArboNET has collected data for all notifiable arboviral diseases.

Providing access to data for education, research, and disease prevention is an essential function of public health surveillance. However, this function must be balanced with patient confidentiality. In addition, surveillance data have several significant limitations that need to be considered in the analysis, interpretation, and reporting of results. These guidelines were developed to facilitate access to ArboNET data while maintaining patient confidentiality and ensuring that users understand the limitations of the data.

Limitations of ArboNET Data

1. ArboNET is a passive surveillance system that depends on clinicians to consider the diagnosis of an arboviral disease, obtain the appropriate diagnostic test, and report any positive results. Diagnosis and reporting are likely incomplete, leading to underestimation of true incidence of arboviral diseases.

2. ArboNET does not routinely collect information regarding the specific laboratory methods used to confirm each case. The most common laboratory tests used to diagnose arboviral disease are immunoglobulin M (IgM) antibody-capture enzyme immunoassays. Although these assays are relatively specific, false-positive results and cross-reactions between viruses of the same family do occur. Positive IgM results should be confirmed by additional testing such as neutralizing antibodies. However, this confirmatory testing is often not performed.

3. ArboNET does not require information regarding a patient's clinical signs and symptoms. As a result, some cases may be misclassified with regards to clinical syndrome (i.e., neuroinvasive versus non-neuroinvasive).

4. Arboviral disease awareness, testing capacity, and reporting may vary by county, state, or region, and from year-to-year. Therefore, ArboNET data may not be representative of true differences in disease incidence by jurisdiction or over time.

5. Reported cases of neuroinvasive disease are thought to be the most accurate indicator of arboviral activity in

humans because of the substantial morbidity associated with this clinical syndrome. The severity of neuroinvasive disease increases the likelihood that a patient will present to medical care and have that appropriate diagnostic testing performed. The more distinctive clinical findings with neuroinvasive arboviral disease also increase the positive predictive value of the laboratory testing. In contrast, reported cases of non-neuroinvasive arboviral disease are more likely to be impacted by the disease awareness and healthcare seeking behavior in different communities, and by the availability and specificity of laboratory testing which is performed. Surveillance data for non-neuroinvasive disease should be interpreted with caution and not be used to make comparisons between geographic areas or over time.

6. ArboNET data from the current calendar year are often posted or published to help track recent arboviral disease activity. However, these data are provisional and may change substantially before they are finalized. Provisional data from the current year should not be combined with or compared to final or provisional data from previous years.

Accessing Arboviral Disease Surveillance Data

1. CDC's National Notifiable Diseases Surveillance System (NNDSS) provides provisional state-specific disease case counts in the U.S. and periodic summaries of arboviral disease activity for the year. These data are available at: https://wonder.cdc.gov/nndss/nndss_weekly_tables_menu.asp.

2. The MMWR Summary of Notifiable Diseases is published each year and provides final state-specific arboviral disease data. This MMWR supplement is available at: https://www.cdc.gov/mmwr/mmwr_nd/index.html.

3. The CDC Division of Vector-Borne Diseases, which manages ArboNET, provides tables and maps of various arboviral surveillance data, which can be found here: https://www.cdc.gov/ncezid/dvbd/a-z-index.html. Additional tables are available that include a) Total counts of a particular nationally notifiable arboviral disease reported to ArboNET by state, month, and year, or b) Total counts of a particular nationally notifiable arboviral disease reported by county and year (but not month).

4. Upon request, the Division of Vector-Borne Diseases can provide a limited use data set that contains a line-listing of case-specific data for any of the particular nationally notifiable arboviral diseases reported to ArboNET. The variables in the data file may include clinical syndrome (neuroinvasive or non-neuroinvasive), state, year, month, age group (<1 yr, 1-4 yrs, and by 5 year intervals thereafter), sex, race, and ethnicity. If the total number of cases in a state in a year for a given arboviral disease is ≤3, then race and ethnicity will be suppressed for all cases in that state in that year. To receive a case-specific data set, the investigator must complete the attached data request form and data use agreement confirming that they have read and understand the data release policies.

For more information about ArboNET or these data release guidelines, please contact Arboviral Diseases Branch, Division of Vector-Borne Diseases, Centers for Disease Control and Prevention, dvbid2@cdc.gov.

NATIONALLY NOTIFIABLE ARBOVIRAL DISEASES REPORTED TO ARBONET: DATA REQUEST FORM

1. Date requested: __/__/___ (mm/dd/yyyy) 2. Date needed: __/__/___ (mm/dd/yyyy)

3. Requestor/ investigator

Name: _____

Title: _____

Organization: _____

City: _____ State: _____

Phone: _____ Email: _____

4. Project name: West Nile virus 2022 Forecasting Challenge

5. Brief description of project:

Run and evaluate an open forecasting challenge to predict the total number of neuroinvasive WNV disease cases for each county in the contiguous United states that will be reported to ArboNET during the 2022 calendar year. The structure of the challenge is the same as the 2020 WNV Forecasting Challenge.

6. Data requested

A. Viruses (check all that apply):

a. Chikungunya	☐ All				
b. Dengue	☐ All	☐ Dengue	☐ Dengue-Severe	☐ Dengue-Like	
c. Eastern equine encephalitis	☐ All	☐ Neuroinvasive	☐ Non-neuroinvasive		
d. Jamestown Canyon	☐ All	☐ Neuroinvasive	☐ Non-neuroinvasive		
e. La Crosse	☐ All	☐ Neuroinvasive	☐ Non-neuroinvasive		
f. Powassan	☐ All	☐ Neuroinvasive	☐ Non-neuroinvasive		
g. St. Louis encephalitis	☐ All	☐ Neuroinvasive	☐ Non-neuroinvasive		
h. West Nile	☐ All	☐ Neuroinvasive	☐ Non-neuroinvasive		
i. Zika*	☐ All				

B. States and territories: ☐ All US states and territories ☐ US states ☐ US territories

☐ Selected states/territories (specify: contiguous 48 states plus DC)

C. Years**: ☐ All available ☐ Selected (specify: 2000-2021)

D. Please specify what variables are being requested (see #4 of page 2 for available variables):

annual neuroinvasive cases (probable and confirmed) by FIPS code

_____

Zika non-congenital disease cases.

***Years available: Chikungunya (2015-present), Dengue (2010-present), Eastern equine encephalitis (2003-present), Jamestown Canyon (2003-present), La Crosse (2003-present), Powassan (2003-present), St. Louis encephalitis (2003-present), West Nile (2000-present), Zika (2016-present).*

7. How will the data be used/project outcome (e.g., proposal, scientific manuscript, news article)?

The data will be provided to teams to develop their forecasts and not shared beyond these individuals. The results of the evaluation of submitted forecasts will be presented in a scientific manuscript.

8. When do you anticipate completing the project? _08_/_2023_ (mm/yyyy)

NATIONALLY NOTIFIABLE ARBOVIRAL DISEASES REPORTED TO ARBONET: DATA USE AGREEMENT

In accepting access to ArboNET data, I have read and agree to follow the policies listed below:

1. Access to ArboNET data is limited to the "Requestor" named on the form. The data provided will be treated as confidential and not provided to other persons. All other requests for access to ArboNET data should be directed to the CDC Division of Vector-Borne Diseases.
2. The data are provided for the purpose of statistical reporting and analysis only and may not be combined with other data or information for the purpose of matching records to identify individuals. Any information that could be used directly or indirectly to identify individuals will not be disclosed. If the identity of a person included in the data is discovered inadvertently that information will not be disclosed or otherwise made public.
3. Analysis and reporting will be performed only on the variables and final data provided and should not be combined or compared to provisional data from the current or previous years.
4. Case-specific data cannot be released by county or any geographic unit smaller than a state.
5. Provisional data, other than that which is already publicly available, cannot be released.
6. The data provided, including any temporary or permanent files created from the ArboNET data, will be stored on a password protected computer. Copies of the data file(s) should not be made, even for back-up purposes. Hard copies of the data will be stored securely and shredded when they are no longer needed.
7. The requestor/investigator is responsible for obtaining Institutional Review Board (IRB) review of projects when appropriate.
8. ArboNET will be appropriately referenced in any publications or presentations that are derived from these data and a draft of the article or presentation will be provided to the CDC Arboviral Diseases Branch for review.

I have read and understand the limitations of ArboNET data as presented above. I will consider these limitations in any analysis and interpretation of the data and will include an explanation of these limitations in any resulting presentations or publications. If I have any questions regarding ArboNET, the limitations of ArboNET data, or the data use agreement or policies, I will contact the Arboviral Diseases Branch at CDC.

Name: _____

Signature: _____ Date: _____

Please return your completed form and agreement to:
Arboviral Diseases Branch
Division of Vector-Borne Diseases
Centers for Disease Control and Prevention
dvbid2@cdc.gov