



## Florida Department of Health Response Plan for Mosquito-Borne Diseases

Mosquito-borne disease cycles are complex and often involve multiple mosquito species and several vertebrate host species, including humans. Virus transmission can be sporadic (spatially and temporally dispersed) or focal (spatially and temporally isolated). This response plan for mosquito-borne diseases is intended for use by county health department public information officers and mosquito control districts. The plan can also be used regionally for adjoining counties with similar habitats and ecologies, but it is not a response plan for the state as a whole.

The need for mosquito-borne illness advisories and alerts is determined by the county health department (CHD) Director/Administrator after consultation with local mosquito control experts and Department of Health (DOH) Central Office. A number of important factors should be considered prior to the issuance of an advisory or alert. These include, but are not limited to: animal surveillance activity in the same or surrounding counties (sentinel chicken surveillance, wild bird surveillance, and domestic animals), weather information, the time of year, vector surveillance (the abundance and age structure of known vectors), epidemiology of the virus in question, historic arbovirus distribution records, and the presence of human and equine or other veterinary cases in the same or contiguous counties. The CHD Director/Administrator also facilitates the response to mosquito-borne diseases. This includes working closely with the Bureau of Epidemiology (BOE), local and state mosquito control personnel, health care providers, veterinarians, emergency room personnel, and officials in neighboring counties.

The Florida Department of Agriculture and Consumer Services (FDACS) Bureau of Scientific Evaluation and Technical Assistance may provide technical support and leadership for affected counties, mosquito surveillance in areas lacking capability, coordination and delegation of mosquito control activity, aerial mosquito control through their Operational Support Section, and emergency mosquito control funds. The FDACS Bureau of Scientific Evaluation and Technical Assistance response plan is included in this chapter.

In addition to the DOH response plan, a document has been developed by a team coordinated by Dr. Walter Tabachnick, Florida Medical Entomology Laboratory, to guide the mosquito control response for WNV at various levels of mosquito activity. These response guidelines have been approved by the Florida Coordinating Council on Mosquito Control and are included in the [List of Appendices](#) (Florida Mosquito Control Arbovirus Response Plan – West Nile Virus [FMCARP–WNV]). Additional information on the control of *Aedes aegypti* and *Aedes albopictus* mosquito species can be found at: [http://www.floridahealth.gov/diseases-and-conditions/mosquito-borne-diseases/\\_documents/toolbox-for-control-of-aedes-aegypti-and-aedes-albopictus.pdf](http://www.floridahealth.gov/diseases-and-conditions/mosquito-borne-diseases/_documents/toolbox-for-control-of-aedes-aegypti-and-aedes-albopictus.pdf) and [www.cdc.gov/zika/public-health-partners/vector-control-us.html](http://www.cdc.gov/zika/public-health-partners/vector-control-us.html).

The DOH response plan is also appropriate for responses to outbreaks of locally acquired exotic or non-endemic arthropod-borne diseases such as chikungunya virus. However, animal surveillance data will not always be available or utilized in the evaluation of these introductions and outbreaks. The DOH response plan is intended for use by CHDs and differs from the Florida Mosquito Control Arbovirus Response Plan in the [List of Appendices](#). The DOH plan includes the following levels developed by the Interagency Arbovirus Task Force:

### **Level 1: No Activity**

This level describes the absence of cycling arboviruses in Florida.

- DOH Response:
  - Surveillance (human and animal sentinel surveillance, mosquito-borne disease surveillance)
  - Distribution of weekly arbovirus surveillance reports
- Mosquito Control Response:
  - Operations targeting nuisance and/or disease-carrying mosquitoes
  - Surveillance in sentinel chickens, mosquitoes, and birds
  - Coordination of communication with CHD regarding real-time surveillance results

### **Level 2: Background Activity**

Describes time periods when mosquito-borne virus activity does not exceed average historical levels.

- DOH Response (in addition to the response outlined above):
  - Public announcements about personal protection
- Mosquito Control Response (in addition to the response outlined above):
  - Monitor potential hot spots using surveillance tools
  - Public announcements about personal protection
- FDACS Bureau of Scientific Evaluation and Technical Assistance Response:
  - Monitor activity detected through existing surveillance programs
  - Routinely disseminate surveillance information to mosquito control programs

### **Level 3: Mosquito-Borne Illness Advisory**

Mosquito-Borne Illness Advisories are declared when animal and mosquito surveillance data indicate a rise in virus transmission activity and an increased potential for human infections, or when a locally acquired single human case of exotic or endemic arboviral disease has been confirmed. An advisory is also declared when sentinel chicken data indicate a rise in transmission activity for a genus of viruses (e.g. *Flavivirus*). Mosquito-Borne Illness Advisories may be declared in a county or region where the surveillance data indicate:

1. One sporadic, locally acquired confirmed human case or blood donor

OR

2. Where the animal surveillance data indicate one of the following:
  - a. Two or more confirmed horse cases over a two-week period
  - b. 10% higher-than-baseline seroconversion rate in the sentinel chickens in a single county (11% current year vs. 1% baseline) over a two-week period
  - c. 50% seroconversion rate in sentinel chickens in a single flock over a one-week period

- d. 50% of mosquito pools collected over a one to two-week period test positive\*

\*The use of mosquito pools as advisory criteria will be reviewed on a case-by-case basis. Mosquitoes should be grouped into pools of 10–50 mosquitoes by species. At this time, priority for testing will be given to mosquito pools containing human disease vector species, such as *Culex quinquefasciatus* or *Culex nigripalpus*. At least five pools must be submitted for testing in order to meet this criterion. Mosquito pools must be tested or confirmed at the Bureau of Public Health Laboratories (BPHL).

- DOH Response (in addition to the response outlined above):
  - Dissemination of health care provider advisories
  - Dissemination of information internally via EpiCom
- Mosquito Control Response (in addition to the response outlined above):
  - Mosquito control targeting high-risk vector mosquito populations and areas commensurate with arbovirus indicators for risk by performing **repetitive** nightly spraying operations in high-risk areas until vector is suppressed to background levels
  - Consideration for increased surveillance using sentinels in high-risk areas with attention to measuring mosquito transmission frequencies using chicken-baited mosquito traps or exit traps on sentinel chicken coops
  - Preventive ultra-low volume (ULV) and aerial post-epic rainfall brood reduction directed at vector species, and control of nuisance mosquitoes as a lower priority
- FDACS Bureau of Scientific Evaluation and Technical Assistance Response (in addition to the response outlined above):
  - Support surveillance of adult mosquitoes in Level 2 areas not covered by a county or district
  - Assist in public information dissemination

Mosquito-Borne Illness Advisories are lifted by the CHD when activity has returned to background levels. The Arbovirus Surveillance Coordinator at DOH should be notified of the status change. A press release stating the reason for lifting the advisory can also be issued if desired by the CHD. CHDs should notify local partners when advisories are lifted.

#### **Level 4: Mosquito-Borne Illness Alert**

Mosquito-Borne Illness Alerts are declared when additional human cases of locally acquired endemic or exotic arboviral disease have been confirmed, suggestive of a potential disease clustering, or when evidence of intense virus transmission activity has been detected in animal surveillance systems. Mosquito-Borne Illness Alerts may be declared in a county or region where the surveillance data indicate:

1. A cluster of two or more locally acquired, confirmed human cases and/or blood donors

OR

2. Where the animal surveillance data over a two-week period indicate a 50% higher than baseline seroconversion rate in sentinel chickens in a county

- DOH Response (in addition to the response outlined above):
  - Work with the local mosquito control districts and the Interagency Arbovirus Task Force as needed to assess the risk of human disease and the sufficiency of implemented mosquito control activities
- Mosquito Control Response (in addition to the response outlined above):
  - Focus mosquito control efforts to high-risk mosquito populations and areas, commensurate with arbovirus indicators for risk (i.e. adulticiding hot spots)
  - Consider aerial adulticiding, if not already in place, with focus in high-risk areas where wide area control measures are required to respond to the increased level of risk in a timely manner
  - Increase surveillance to obtain estimates of mosquito transmission frequency in targeted areas
- FDACS Bureau of Scientific Evaluation and Technical Assistance Response (in addition to the response outlined above):
  - Consider aerial or ground control activities through the Operational Support Section
  - Deploy contracted aerial or ground control activities if funding is available and if requested by local government (county or city)
  - Local government request should include:
    - Citizen notification of dates and times
    - Delineation of areas to be treated and areas to be avoided, including delineation of public lands and sensitive areas
    - Surveillance support

Mosquito-Borne Illness Alerts are lifted after a significant decrease in animal surveillance activity **and** six weeks or more after the onset of the last human case (or sample date in the case of blood donors). The Arbovirus Surveillance Coordinator at DOH should be notified of the status change. A press release stating the reason for lifting the advisory can also be issued if desired by the CHD. CHDs should notify local partners when advisories are lifted.

#### **Level 5: Mosquito-Borne Illness Threat**

When there is a potential for a widespread distribution of large numbers of human cases, the State Health Officer may declare a Mosquito-Borne Illness Threat. A Mosquito-Borne Illness Threat is a declaration by the State Health Officer that “a threat to the public health exists” as per section 388.45, Florida Statutes. The same statute provides the Commissioner of Agriculture the authority to declare “a threat to animal health.” These official declarations also allow FDACS to respond with actions allowing more liberal use of arthropod control measures on certain public lands and movement of mosquito control personnel and equipment into affected counties from other areas of the state, as appropriate.

- DOH Response (in addition to the response outlined above):
  - Consider distributing daily arbovirus surveillance updates to responsible governmental agencies and other partners
  - Work with local mosquito control district to assess their resource needs for mosquito control activities
  - Advise local authorities on the potential need for elevated disease prevention efforts such as: canceling outdoor events/activities, closing campgrounds, etc.
- Mosquito Control Response (in addition to the response outlined above):

- Advise county health departments on the justification for elevated disease prevention efforts such as canceling outdoor events/activities, closing campgrounds, etc.
  - Conduct aggressive aerial/truck adulticiding. Consider control on protected lands (with approval from FDACS, Department of Environmental Protection (DEP), Florida Fish and Wildlife Conservation Commission, private owners etc.), as needed, based on justified widespread danger to public health.
  - Provide regional inter-county/district and FDACS support, as indicated, for counties in emergency status
  - Request state (FDACS) and Federal Emergency Management Agency (FEMA) support for mosquito control operations, as needed
- FDACS Bureau of Scientific Evaluation and Technical Assistance Response (in addition to the response outlined above):
    - Acquire and distribute emergency funds
    - Activate Emergency Operations Center functions
    - Implement Incident Command System protocols

Mosquito-Borne Illness Threats are downgraded after mosquito surveillance data (i.e. abundance, age structure, or infectivity) indicate a decrease in risk for human arbovirus transmission. If disease risk still exists but no longer meets the standard for a threat declaration, a new Mosquito-Borne Illness Advisory or Alert should be issued, as appropriate.

Under a Level 5 threat, the CHD in the affected county will notify:

- Community health care providers concerning the potential for transmission of St. Louis encephalitis virus, WNV, or Eastern equine encephalitis virus to people, and the need for health care providers and veterinarians to report new cases
- The County Mosquito Control Director
- CHD Directors/Administrators and Mosquito Control Directors in contiguous counties of the mosquito-borne illness threat
- Local media, education representatives, senior citizens groups, and other citizen groups, as appropriate

The Division of Disease Control and Health Protection will notify FDACS and DEP within 24 hours of the declaration of a mosquito-borne illness threat (section 388.45, Florida Statutes).

#### **Non-Disease Mosquito Control Emergencies:**

State-declared emergencies preceding or following hurricanes or other flooding events may result in elevated mosquito populations that hinder emergency response without posing an immediate mosquito-borne disease threat. In such cases, FDACS will coordinate response within the state Emergency Management structure, and a FEMA-developed protocol with requirements to qualify for federal reimbursement for local mosquito control efforts will be distributed to impacted local Emergency Operations Centers. A fact sheet for hurricanes or other flooding events can be found in the [List of Appendices](#).

Please see [Chapter 12](#) for more information on response and public education.