Arboviruses in Florida

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Bureau of Environmental Public Health Medicine
Arboviruses in Florida

- **Flaviviruses**
  - West Nile
  - St. Louis Encephalitis

- **Alphaviruses**
  - Eastern Equine Encephalitis
  - Highlands J

- Dengue
Surveillance Coordination

- Department of Agriculture & Consumer Services - Labs
- County Health Departments
- Department of Health-Labs
- Mosquito Control Programs-Labs
- Department of Health
- CDC - ArboNet
- Public
- Equine Veterinarians
- Fish and Wildlife
- Hospitals Clinics
- Human
- Dead Birds
- Sentinel Chickens
- Mosquito Pools
Arbovirus Response Plan

- Dept. of Health
  - Env Health
  - CHD
  - Lab
- Dept. of Agriculture
  - Mosq. Control
- Dept. of Env. Prot.
- Fish and Wildlife CC
- PHEREC
- USF
- UF
  - Vet Med
  - FMEL
- FMCA
EEE in Florida, 2009

Through 10/10/09

- 69 horses, 1 cassowary
- 168 sentinel chickens
- 3 mosquito pools
- 91 live wild birds
Reported Human Cases of EEE, 1989-2009
Eastern Equine Encephalitis in Florida, 1999-2008

- **Human cases:**
  - 1999: 3
  - 2000: 0
  - 2001: 3
  - 2002: 1
  - 2003: 3
  - 2004: 0
  - 2005: 5
  - 2006: 0
  - 2007: 0
  - 2008: 1

- **Veterinary cases:**
  - 1999: 0
  - 2000: 0
  - 2001: 0
  - 2002: 0
  - 2003: 0
  - 2004: 0
  - 2005: 5
  - 2006: 0
  - 2007: 0
  - 2008: 1
West Nile Virus in Florida, 2009

Through 10/10/09

- 2 locally acquired human cases
  - 1 acquired out of state
- 3 horses
- 42 sentinel chickens
- 2 live wild birds
West Nile Virus in Florida, 2001-2008

The graph shows the number of human and horse cases of West Nile Virus in Florida from 2001 to 2008. The number of human cases peaked in 2003 with 93 cases, while the number of horse cases remained relatively stable with 3 cases in each year from 2006 to 2008.
West Nile virus cases 2003-2009
Reported SLE Cases by Month of Disease Onset, 1989-2008, Florida
## Sentinel Results

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<td>352</td>
<td>1346</td>
<td>1102</td>
<td>202</td>
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*Note: The numbers indicate counts or quantities for each year.*
Sentinel Chicken Seroconversions to Flavivirus, Florida: 1988-2008
Dengue in Key West

- Monroe County Health Department notified on 9/1/09 of a 34-yr-old F New York resident diagnosed with dengue after travel to Key West
- Alert sent out to public and health care providers
- Florida Keys Mosquito Control District implemented enhanced trapping and control of Aedes aegypti
**Virus**

- Single-stranded RNA flavivirus
  - Same family as the viruses that cause West Nile fever, St. Louis encephalitis, and yellow fever
- Four serotypes – DEN-1, 2, 3, 4
- Causes dengue and dengue hemorrhagic fever
- No animal vector
World distribution in 2008

- Dengue Risk Areas
- No Known Dengue Risk
Dengue Fever

- Often mild, non-specific
- Sudden onset of high fever
- Severe headache
- Pain behind the eyes
- Body aches and joint pains
- Nausea or vomiting
- Rash
Dengue Hemorrhagic Fever

- Severe abdominal pain
- Bleeding from the nose, mouth, and gums
- Frequent vomiting with or without blood
- Black stools
- Excessive thirst
- Pale, cold skin
- Restlessness or sleepiness
Case 2: 48-yr-old m Key West resident, onset 8/25

Case 3: 47-yr-old f, onset 9/9

Case 4: 24-yr-old m, onset 10/2

Case 5: 60-yr-old m, onset 10/6

High numbers of Aedes aegypti
Epi Curve, Dengue Fever, Key West, 2009

Extrinsic Incubation Period

Onset date

8-Aug | 15-Aug | 22-Aug | 29-Aug | 5-Sep | 12-Sep | 19-Sep | 26-Sep | 3-Oct
Active Surveillance

- Medical record search
  - Identified 6 patients from 7/15-9/15 with symptoms consistent with dengue and collected blood for testing

- Serosurvey of Key West residents in radius around confirmed cases
  - Sampled 170 houses, 240 individuals
  - Test for recent infection with dengue virus
  - Results pending
Participating Households in Key West during Dengue Investigation

Sampled Households (N=170)
Dengue vs. Flu

- Fever
- Severe headache
- Pain behind the eyes
- Body aches
- Joint pains
- Nausea or vomiting
- Rash
- Fatigue

- Fever
- Cough
- Sore throat
- Runny or stuffy nose
- Body aches
- Headache
- Chills
- Fatigue
- Nausea or vomiting
- Diarrhea
Obstacles

- No vaccine (prospects in development)
- Difficult to control mosquito-borne diseases
- Free movement of people from endemic areas (repeated introduction)
Advantages

- No animal reservoir
- Established mosquito control
- U.S. Lifestyle
  - Water management
  - Waste management
  - Good housing with air conditioning and screening
  - Staying indoors
DOH Contact Info

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Epi curve, Dengue fever, Key West, 2009

Onset date

Case

8-Aug 15-Aug 22-Aug 29-Aug 5-Sep 12-Sep 19-Sep 26-Sep 3-Oct

Onset date