Surveillance for Mosquito-Borne Disease Among Connecticut Residents

Mosquito-borne Disease Symposium
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Connecticut Agricultural Experiment Station
DPH Infectious Diseases Section

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Reportable mosquito-borne diseases in Connecticut

- West Nile Virus (WNV)
- Equine Encephalitis Virus (EEE)
- California Group Arboviruses
  - Jamestown Canyon
  - La Crosse
- Venezuelan Encephalitis Virus
- St. Louis Encephalitis Virus
- Dengue
- Zika
- Chikungunya
- Yellow Fever
- Malaria
Arboviral Surveillance in CT

Mosquito Trapping Stations

Reportable Diseases

Risk of Human Disease
Human Arboviral Surveillance in CT

- Reports received from providers or laboratories
- Providers contacted for clinical and exposure information
- Cases classified according to national case definitions
  - Confirmed and probable reported to CDC
- Health directors contacted when WNV or EEE case classified as probable or confirmed
WNV Diagnosis

- **Probable:**
  - Meets clinical criteria and
  - Virus-specific IgM antibodies, no other testing

- **Confirmed:**
  - Meets clinical criteria
  - 4-fold increase in virus-specific antibody OR
  - Confirmatory test (PRNT)
  - Virus-specific IgM antibodies in CSF
Epidemiology of WNV in CT

- **Clinical Forms**
  - West Nile Fever
  - Neuroinvasive (meningitis, encephalitis, meningoencephalitis)

- **Persons over 50, underlying conditions, at higher risk**

- **Acquired in CT vs out of CT**

- **Challenges** – antibodies cross-react, take up to 8 days to develop, then persist months to years
Cases of West Nile virus disease acquired in state by Clinical Syndrome, Connecticut, 2000-2018

- Neuroinvasive
- Unknown
- West Nile Fever

Year of Onset

Number of Cases

- 2000: 1
- 2001: 1
- 2002: 7
- 2003: 2
- 2004: 2
- 2005: 2
- 2006: 2
- 2007: 2
- 2008: 2
- 2009: 2
- 2010: 2
- 2011: 21
- 2012: 2
- 2013: 2
- 2014: 2
- 2015: 1
- 2016: 1
- 2017: 1
- 2018: 21
Distribution of WNV Disease
The WNV Infection “Iceberg”

- ~80% Asymptomatic
- ~20% West Nile Fever
- <1% Neuroinvasive

- Severe disease
- Mild disease
- No Symptoms

Most of What is reported
Occasionally reported
Not reported
Blood donations
Other arbovirus infections acquired in CT

- EEE – 2013
- Jamestown canyon virus – sporadic
  - Reported probable cases 2017, 2018
## Imported Mosquito-borne diseases

<table>
<thead>
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<th>Year</th>
<th>Dengue</th>
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*Preliminary
Testing available at DPH State Lab

- WNV antibody
- Arboviral antibody panel – sent to CDC
- Zika PCR and antibody
- Denque PCR
- Chikungunya PCR
Personal Prevention

- Perceptions of risk of mosquito bites correlate with prevention measures

- Perception of *safety* of repellents related to use

- Measures:
  - EPA registered repellent
  - Long sleeves, long pants, light colored, loose fitting clothing
  - Dawn and dusk
  - Reduce/eliminate breeding grounds in yard
QUESTIONS?

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