

## Recent Trends in Arboviruses Found in the US - Janet McAllister

- a) Many external influences on arbovirus transmission
- b) Many unknowns
  - i) Vectors
  - ii) Role of incidental hosts
  - iii) Overwintering mechanisms
- c) Many arboviruses found in the US from 5 different viral families
- d) Some specifics
  - i) WNV
    - (1) Flavivirus
    - (2) Found in many different habitats
    - (3) Principal vertebrate host - birds
    - (4) Vectors - *Culex* spp
    - (5) Reported from 48 of 50 states
    - (6) Human cases reported from 47 states - no cases in
      - (a) Maine
      - (b) Hawaii
      - (c) Alaska
    - (7) First year reported - 1999
    - (8) Peak year - 2002
    - (9) Average human cases ~3000 per year
  - ii) SLE
    - (1) Flavivirus
    - (2) Vector - *Culex* spp
    - (3) Human cases reported from 42 states, including GA
    - (4) Last large outbreak 1975
    - (5) Average ~102 cases per year
    - (6) Numbers appear to be going down
  - iii) LAC
    - (1) Bunyavirus in the California serogroup
    - (2) Considered a more rural disease
    - (3) Vertebrate host - small mammals (squirrels and chipmunks)
    - (4) Vector - *Ochlerotatus triseriatus*
    - (5) Found primarily in the eastern US
    - (6) Average ~78 cases per year
    - (7) Under-reported
  - iv) Western Equine Encephalitis
    - (1) Associated with irrigated areas and flood plains
    - (2) Vector - *Culex tarsalis*
    - (3) Alphavirus
    - (4) Found in the western US
    - (5) No human cases since ~1999
    - (6) Last significant activity 1987
    - (7) Positive mosquitoes and seropositive birds are found
  - v) EEE
    - (1) Associated with freshwater hardwood swamps

- (2) Vertebrate host - birds
- (3) Enzootic vector - *Cs melanura*, may be others
- (4) Needs a bridge vector
- (5) Found in eastern US
- (6) Average cases ~7 per year
- (7) Last big outbreak in 2005
- e) Appears to be a downward trend in arboviral diseases in the US over the last couple of years
- f) Some non-endemic arboviruses
  - i) Yellow fever
    - (1) Was found from MA to LA
    - (2) Epidemics occurred from 1793-1905
    - (3) Vaccine available
    - (4) Still endemic in other places in the world
    - (5) Epidemic in US is currently unlikely
      - (a) Rare imported cases with travel history
      - (b) No local transmission
  - ii) Chikungunya
    - (1) Historically found in Africa and NE Asia
    - (2) Primary vector - *Ae aegypti*
    - (3) Primary host - humans
    - (4) Large outbreak in 2006 associated with *Ae albopictus*
      - (a) Vector common in US
      - (b) A number of imported cases reported in US
      - (c) Large outbreak in Italy in 2007
  - iii) Japanese Encephalitis
    - (1) Vaccine available
    - (2) Can infect a number of vertebrate hosts besides humans
  - iv) Rift Valley Fever
    - (1) Disease of humans and livestock
    - (2) Recent outbreaks occurring
  - v) Dengue
    - (1) Vector - *Ae aegypti*
    - (2) Can be transmitted by *Ae albopictus*
    - (3) Outbreaks have occurred recently in US
      - (a) Now a reportable disease
      - (b) Small outbreak in Key West, FL
      - (c) Periodic local transmission in Texas along the border
    - (4) A lot of travel-associated dengue seen in the US
    - (5) Resurgence of disease as *Ae aegypti* eradication programs fail