

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