

Mid Atlantic Mosquito Control Association

2013 Conference Notes

Chikungunya Fever: The Probability of an Outbreak in the Southern US - Chris Evans

- a) Some basics
 - i) Chikungunya means that which contorts or bends up
 - ii) Associated with bent appearance
 - iii) <http://www.cdc.gov/chikungunya/index.html>
 - iv) Togaviridae (Alphavirus)
- b) History
 - i) First recorded in the 1770s
 - ii) First described in 1952
 - iii) Sporadic activity until 2004
 - iv) Epidemic: 2004-2006
 - (1) Started on the Kenya coast in 2004
 - (2) Spread to various islands in the Indian Ocean
 - (3) Moved to India
 - (4) Spread throughout Asia by viremia travelers
 - (5) Reached Italy in 2007
 - (a) Aedes albopictus was the vector
 - (b) 217 cases reported
 - (c) Peaked in August
 - (6) Attack rate was 33-68%
 - v) After the epidemic
 - (1) Imported cases continued to occur in 2010
 - (2) Little to no local transmission has occurred
 - (3) Areas at risk include Africa and India and parts of Asia
- c) The disease
 - i) Vector
 - (1) Prior to 2000 - Aedes aegypti was the primary vector
 - (2) After 2000 - Aedes albopictus became a primary vector due to a gene mutation in the virus
 - (3) Transovarial transmission occurs
 - ii) Life cycle
 - (1) Humans are the main epidemic reservoir
 - (2) Non-epidemic reservoirs
 - (a) Primates
 - (b) Rodents
 - (c) A few others
 - (3) Sylvatic and urban cycles
 - iii) Incubation periods
 - (1) Viremia in humans: 3-10 days
 - (2) Extrinsic incubation: period 10 days
 - (3) Incubation period: 2-3 days
 - (4) Disease in humans
 - (a) Acute - week to 10 days

- (b) Subacute - 3 months
 - (c) Chronic - 3 years
- iv) Symptoms
 - (1) Vary
 - (a) Symmetrical joint pain
 - (b) Rash in 50% of patients
 - (c) Fever
 - (d) Skin peeling after rash
 - (e) Fatigue
 - (2) Can have chronic illness that lasts for years
 - (3) Recovery depends on age
 - (4) Chronic arthritis can occur
 - (5) Atypical symptoms do occur infrequently
 - (6) High risk groups >65 years of age
- v) Treatment
 - (1) Treat symptoms
 - (a) Fever
 - (b) Joint pain
 - (2) No vaccine
- vi) 3-28% of people are a symptomatic
- d) Risk to US
 - i) No natural immunity
 - ii) Competent vectors present
 - iii) Seasonality
 - (1) Travel timing
 - (2) Mosquito populations at time of potential introduction
 - iv) Number of travel related cases is increasing
 - v) Model shows a 30% or greater probability of outbreak occurring
 - (1) In Miami 25% of population could be affected
 - (2) In Atlanta about 0.1% of population could be affected
 - (3) Epidemics are affected by season
 - vi) Resources
 - (1) <http://www.ncbi.nlm.nih.gov/pubmed/22897347>
 - (2) Guidelines for Preparedness and Response for Chikungunya Virus Introduction in the Americas - <http://www.cdc.gov/chikungunya/>
 - (3) <http://www.ncbi.nlm.nih.gov/pubmed/17448935>