

Zika, dengue, and ChikV: Frequency of mosquito-borne diseases increases with drought. Zika and dengue are now endemic and epidemic in Brazil and the Caribbean area; dengue has become endemic in Hawaii on the big island, with 256 cases reported on Hawaii in 2016. There are two strains of Zika, one African and one Asian. The Asian strain is the one that's affected the Pacific islands and Americas. The first outbreak in Asia was on the island of Yap in 2007, when it was estimated that 73% of the population was infected with Zika; about 80% of adults had no symptoms. In May of 2015 the first locally-acquired Zika was reported in the Americas. Savage stated that proven Zika transmission occurs with maternal-fetal, perinatal, sexual, blood transfusion, and laboratory exposure. Transmission via organ/tissue transplants and in breast milk have not been proved yet. 52 travel-associated cases have been reported in the US. Local mosquito-borne transmission of Zika virus has been reported in the Commonwealth of Puerto Rico, the US Virgin Islands, and America Samoa.

Microcephaly: In 2014 Brazil registered 134 infants with microcephaly, which appears to be associated with Zika virus; 1500 cases were recorded in 2015. Causation has not been firmly established, but virus has been isolated from newborns in a few cases, and from maternal and fetal tissues in a few cases. Some microcephalic infants have been virus-negative. Epidemic microcephaly has not been reported in other areas with high levels of Zika virus infection to date. A few cases of microcephaly have been reported in French Polynesia.

Introduction of viruses into a country has occurred via mosquitoes in shipping containers. Tires are of course well-documented breeding sites for mosquitoes. A shipping container of "lucky bamboo," in which the bamboo plants were shipped from China in 2-3" of water, was loaded with mosquitoes.

Finding breeding sites: In California, *Aedes aegypti*, a container-breeder, commonly breeds in household plant dishes and cemetery containers. *A. albopictus* with virus has also been found from traps in cemeteries. Mosquitoes infected with St. Louis encephalitis (SLE) and West Nile virus were found in the same 4 breeding pools in the Coachella Valley, CA. SLE was found in *Culex tarsalis*. Urban areas showed mostly West Nile virus, and rural areas, mostly St. Louis Encephalitis. This is the first time in 12 years that SLE has been detected in CA. The author commented that mosquito population numbers did not correlate with disease detection.

Predicting viral infections (Morgan et al): In Orange County, CA, WN increases in dry years. Reservoirs are mainly house finches and house sparrows. Herd immunity among the birds may explain drops in WNV transmission; increased transmission may be due to dilution of herd immunity by naïve birds. High WNV titers in house finches may predict high transmission seasons.

Roger Nasci (Northwest Mosquito Abatement District, Cook county) reported that sustained high *Culex* abundance early in the season ( $\geq 45$  mosquitoes per trap night up to week 28) correlated with outbreaks of WNV at week 32.

Other arbovirus infections: LaCrosse virus is the most common cause of pediatric arboviral infection North America and is endemic in Western North Carolina; the primary vector species is *A. triseriatus*, but *A. albopictus* and *A. japonicus* may also carry this virus.