**Enhancing Surveillance for Arboviral Infections in the Arizona Border Region**

Orion McCotter*1, Frank VanSkike1, 2, Kacey Ernst2, Ken Komatsu3, Harold Margolis4, Stephen Waterman4, Laura Tippit1, Kay Tomashek4, Anne Wertheimer2, Sonia Montiel5, Catherine Golenko1 and Elizabeth Hunsperger4

1Arizona Department of Health Services, Office of Border Health, Tucson, AZ, USA; 2University of Arizona, Mel and Enid Zuckerman College of Public Health, Tucson, AZ, USA; 3Arizona Department of Health Services, Phoenix, AZ, USA; *Centers for Disease Control and Prevention, Division of Vector-Borne Diseases, Dengue Branch, San Juan, Puerto Rico; *Centers for Disease Control and Prevention, Division of Global Migration and Quarantine, U.S. - Mexico Unit, San Diego, CA, USA

**Objective**

To enhance arboviral surveillance and laboratory capacity to establish a surveillance baseline for the emerging threat of Dengue fever in the Arizona-Mexico border region.

**Introduction**

West Nile Virus (WNV) and dengue virus (DENV) are both arboviruses which are transmitted to humans by an infected mosquito bite during blood-meal feeding. The clinical presentations of non-neuroinvasive WNV and dengue fever are similar, and symptoms may include acute onset of high fever, headache, myalgia, arthralgia, nausea, vomiting, and often a maculopapular rash. More serious manifestations of these viruses include fatal encephalitis and meningitis in WNV patients and fatal hemorrhagic disease in dengue patients. Over the last decade, WNV has spread rapidly across North America, reaching Arizona in 2004, and has become a significant cause of human illness since that time. Even though dengue has been described as primarily a disease of the tropics and sub-tropical areas, there is a small but significant risk for dengue outbreaks in the continental United States as evidenced by surveillance efforts in Texas that identified local dengue transmission in 2005. In recent years, outbreaks of dengue have occurred in Mexico border states, most notably Sonora in 2010. That same year, Arizona had the highest incidence of WNV cases in the U.S. including number of neuroinvasive disease cases, total cases, and number of deaths per state. The emergence of DENV and WNV as important public health problems maybe have been due to non-effective mosquito control, global demographic changes (urbanization and population growth), increased air travel, and inadequate surveillance.

**Methods**

Vector mapping: Mapping techniques will be utilized to visually depict *Aedes aegypti* populations captured from previous seasonal public health environmental vector trapping programs.

Laboratory capacity: Multi-state laboratory training by CDC Dengue Branch was held in October 2012.

Surveillance: The WNV cases that present to medical services for WNV testing and reported to public health officials are the most severe neuroinvasive cases. Much less is understood about the non-neuroinvasive cases with often present with non-descript symptoms.

**Results**

Vector mapping: Comparative densities of *Ae. aegypti* with academic partners of the Entomology and Public Health conducting a study capturing *Ae. aegypti* may help to enhance environmental programs.

**Conclusions**

Appropriate and timely response to surveillance data is the key to identification human and animal disease associated with WNV, DENV, and other arboviruses. The mosquito vector *Ae. aegypti* is well established widespread and thriving in Arizona yet there is no autochthonous transmission of DENV identified to date. The results from this study will identify gaps and potential prevention and control measures for emerging infectious diseases including WNV and DENV in Arizona.

**Keywords**

Dengue; Surveillance; Emerging infections; Dengue fever; Arboviral

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**References**


*Orion McCotter

E-mail: Orion.McCotter@azdhs.gov

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