



## **RESEARCH BRIEF #2 FOR MEDIA**

### **FOR IMMEDIATE RELEASE**

#### **Contact:**

Preeti Singh [psingh@burness.com](mailto:psingh@burness.com)

Katy Lenard [klenard@burness.com](mailto:klenard@burness.com)

### **New Evidence of Wider Infections in North America with 'Rare' Mosquito-Borne Virus**

**CHICAGO (October 19, 2023)** — An expert in vector-borne pathogens from the U.S. Centers for Disease Control and Prevention (CDC) will discuss new evidence that human infections with a dangerous mosquito-borne disease called Cache Valley virus may be more common in the United States and Mexico than previously thought. The disease, discovered decades ago, mainly has been seen as a threat to livestock, with only seven cases ever documented in humans — all in the U.S., two fatal and two causing severe neurological problems.

CDC scientists recently developed a new test for detecting a category of antibodies known as IgM antibodies, which are present during infection with the virus and shortly thereafter. It offers a simpler alternative to other diagnostic methods, which require working with the live virus in highly secure facilities and do not indicate timing of the infection.

The researcher will discuss results from antibody tests in 27 patients from Mexico and nine patients from the U.S. who were suffering from a serious illness with no apparent cause. The tests found 16 patients — 10 from Mexico and six from the U.S. — had evidence of potential exposure to Cache Valley virus and indications that Cache Valley virus may have been the cause of illness in at least six of them. The hope is the new test will allow broader surveillance to determine whether these results are an indication of a growing threat. A key concern is that in addition to the risk of serious illness, in sheep, Cache Valley virus is known to cause birth defects and stillbirths, but its ability to cause human birth defects is unknown.

### **CONFERENCE SCIENTIFIC ABSTRACT FOLLOWS BELOW**

**POSTER ABSTRACT 5255 - Development of a Diagnostic IgM-Antibody Capture ELISA for Detection of anti-Cache Valley Virus Human IgM**

**Amanda E. Calvert**<sup>1</sup>, Sierra R. Mikula<sup>1</sup>, Jordan R. Powers<sup>1</sup>, Holly R. Hughes<sup>1</sup>, Brad J. Biggerstaff<sup>1</sup>, Kelly Fitzpatrick<sup>1</sup>, Amanda J. Panella<sup>1</sup>, Carlos Machain-Williams<sup>2</sup>, SeungHwan Lee<sup>3</sup>, Christin Goodman<sup>1</sup> <sup>1</sup>*U.S. Centers for Disease Control and Prevention, Fort Collins, CO, United States*, <sup>2</sup>*Laboratory of Arbovirology, Regional Research Center "Dr. Hideyo Noguchi" Universidad Autónoma de Yucatán, Merida, Mexico*, <sup>3</sup>*Seoul National University, Seoul, Korea, Republic of*

Cache Valley virus (CVV) is a mosquito-borne virus in the genus Orthobunyavirus, family Peribunyaviridae that has been identified as a teratogen in ruminants causing fetal death and severe malformations during epizootics in the United States. CVV has recently emerged as a potential viral pathogen causing severe disease in humans. Limited information exists on its potential as a human teratogen. The only serological diagnostic assay available to detect recent CVV infections is the plaque reduction neutralization test (PRNT) which requires the use of live virus in biosafety level 2 (BSL-2) biocontainment. In order to expand human serological diagnostic capacity for CVV we have developed an immunoglobulin M (IgM)-antibody capture enzyme-linked immunosorbent assay (MAC-ELISA) for detection of anti-CVV human IgM in diagnostic specimens. In conjunction, a HEK-293 cell line constitutively expressing a human-murine chimeric antibody with the variable regions of murine monoclonal antibody (MAb) CVV17 and the constant regions of the human IgM was developed to overcome the lack of human positive sera used as controls in the assay. The new cell line produced antibody with higher reactivity ( $\geq 3$ -fold) in the assay compared to a human serum sample positive for anti-CVV IgM. Previously collected human diagnostic specimens from the United States and Mexico from patients with acute febrile illness with no known etiologic agent will be tested in MAC-ELISA and PRNT to determine the utility of the assay in CVV-serodiagnostics. These results will be summarized and discussed.