

## ARTICLES

VENEZUELAN EQUINE ENCEPHALITIS IN TEXAS, 1971  
INFORMATIONAL REPORT<sup>1</sup>

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Ecuador experienced an epidemic of Venezuelan equine encephalitis (VEE) in the spring of 1969. The arbovirus responsible for this outbreak was the type IB epidemic strain of VEE (K. Johnson, personal communication, 1969). An estimated 20,000 human cases occurred (T. P. Monath, personal communication, 1969); the usual symptoms were fever, severe headache, myalgia, and some vomiting. The mortality rate was estimated at less than 1 percent. The disease was more severe in equines; between 30,000 to 60,000 equine deaths occurred, and the mortality rate was estimated to vary from 50 to 90 percent (*Vector Control Briefs*, February, 1970).

In July, 1969, the same disease was recognized in El Salvador and Guatemala (Hinman *et al.*, 1971, Sudia *et al.*, 1971), and soon spread to Honduras and Nicaragua (VCB, February, 1970). By November, a small outbreak had occurred in Mexico near the Guatemalan border. In the summer of 1970, VEE-IB virus activity had spread southward into Costa Rica and northward towards Tampico, Mexico.

The 1971 outbreak began in March and April with equines dying in the Tampico area; by late June, the disease was reported from the Matamoros, Mexico, area (M.M.W.R., No. 27, 1971). The first recognized horse deaths in the United States due to VEE-IB occurred in the

Brownsville, Texas, area during the first week in July, 1971.

Thus far (late July, 1971), the United States Department of Agriculture has reported 1,937 sick horses and 1,505 dead horses in Texas, primarily in the area south of San Antonio, Texas, mostly clustered in the lower Rio Grande Valley (M.M.W.R., No. 29, 1971). Data on human cases are incomplete; however, less than 100 suspect cases had been reported in Texas by July 17, 1971 (M.M.W.R., No. 28, 1971). No human deaths have been reported.

Unlike equines with eastern equine encephalitis or western equine encephalitis, equines with VEE-IB develop high virus levels in their blood; thus, they contribute significantly to the infection of a large number of mosquito species that feed upon them (Henderson *et al.*, 1971, and Sudia *et al.*, 1971).

Preliminary results obtained by the Arbovirus Ecology Laboratory, Arbovirology Unit, Center for Disease Control suggest that at least 11 mosquito species are involved in the current outbreak. The largest number of VEE-like isolates thus far have been obtained from *Aedes sollicitans* (Wlk.), *Psorophora confinnis* (L.-A.), and *Psorophora discolor* (Coq.). Smaller numbers of viral isolates have also been obtained from *Aedes thelcter* Dyar., *Deinocerites pseudos* D. & K., *Psorophora ciliata* (F.), *Aedes taeniorhynchus* (Wied.), *Psorophora cyaneus* (Coq.), *Culex (Melanoconion)* sp., *Culex salinarius* Coq., *Anopheles crucians* Wied., and *Anopheles pseudopunctipennis* Theob. (VCB, July, 1971). Any of the species

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listed above might assume greater or lesser importance in virus transmission, depending upon the type of habitats involved. When habitats other than those currently under study are sampled, additional mosquito species might still be added to the list.

Horse quarantines and embargoes are being employed in almost all Southern and Southwestern states to prevent satellite foci of the disease from developing in areas outside of Texas. Most of these states have begun to vaccinate horses with the TC-83 vaccine (an attenuated live VEE virus vaccine) to reduce or eliminate the potential of horses infecting vector mosquito species.

Nearly one million horses had been vaccinated in Texas, New Mexico, Oklahoma, Arkansas, and Louisiana by July 26, 1971 (*M.M.W.R.*, No. 29, 1971). In addition, horse vaccination has been authorized for Florida, Georgia, Alabama, Mississippi, Arizona, and California at this time.

Ultra-low volume aerial application of technical malathion was initially used in the affected areas of Cameron and Hidalgo Counties, Texas, during the second week of July. Since that time, approximately 2,800,000 acres of the Gulf Coast of Texas have been sprayed (*M.M.W.R.*, No. 29, 1971). Preliminary results indicate effective mosquito control except in some coastal areas where wind conditions were less than optimal for aerial ULV applications.

Vector studies, initiated prior to the outbreak, are continuing, and wild mammal and bird blood samples are being

collected in ecological studies in southern Texas to determine vertebrate involvement in the current outbreak and possibly in continued maintenance of the virus in post-epidemic periods.

As of July 30, 1971, VEE-IB virus activity had not been confirmed outside the state of Texas in the United States. It is too early to predict if the massive coordinated control efforts applied have stopped the spread of this disease, or if additional outbreaks may yet occur in other states.

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