

G: ARBOVIRUS EPIDEMIOLOGY

- 161 EPIDEMIC DENGUE ONE IN THE MARSHALL ISLANDS, 1989. G.L. Miller+, M. O'Leary, D. Morens, and D.J. Gubler. Division of Vector-Borne Infectious Diseases, Center for Infectious Diseases, Centers for Disease Control, Fort Collins, CO 80522.

Between August and October, 1989, an outbreak of classical dengue fever and dengue hemorrhagic fever (DHF) occurred in the Republic of the Marshall Islands, an area where dengue had not previously been reported. Febrile illness consistent with dengue was first reported among members of a private medical foundation ship serving the Marshall Islands the first week of September, with 4/6 members positive for dengue-specific IgM antibody. Subsequent reports of a dengue-like illness, some associated with severe hemorrhagic disease, were received from Majuro population 19,664), Ebon (pop. 741) and Ebeye (pop. 8,324). Reports of febrile illness increased in Majuro from May through July, peaking in August, and decreasing sharply in September, while on Ebeye, a similar illness began in July and peaked in October. Focused surveillance activities on Ebeye allowed a unique opportunity to evaluate dengue-like illness on a densely populated Pacific island (est. density 50,000 residents/square mile). Active hospital surveillance established on Ebeye identified 77 acutely ill patients. Dengue 1 virus was isolated from 12/77 of these patients and 53/77 had dengue 1 antibody. Nine hospitalized patients met the clinical case definition for DHF and one patient had an illness consistent with dengue shock syndrome (DSS). All 10 patients with severe disease were confirmed as having recent dengue infection by the presence of anti-dengue IgM antibody in acute and/or convalescent serum samples. A random household serosurvey of 5% of Ebeye residents yielded specimens from 395 persons and a self-reported infection rate of 13%. Serologic confirmation was determined in 91/395 persons for an overall island-specific attack rate of 23%. No fatalities directly attributable to dengue were detected.

- 162 A REGRESSION MODEL FOR PREDICTION OF DHF OUTBREAK IN MANILA. B.A. Annis+. U.S. Naval Medical Research Unit No. 2, Manila, Philippines.

Weather, *Aedes aegypti* populations and the incidence of dengue hemorrhagic fever (DHF) show seasonal trends in the Manila area. The cyclical nature of these trends suggests interrelationships between the above parameters. The objective of this study has been to identify a measurable parameter or parameters which could be used to predict outbreaks of DHF. Time series analysis was applied to climatic, hospital admissions, and mosquito population data collected between January 1985 and December 1989 to identify associations between the various data sets. This analysis indicates that conditions become suitable for outbreaks of DHF as rainfall approaches 300 mm per month. Greater or lesser amounts appear to precede less severe DHF cycles. A "rainfall index" was developed to measure the proximity of rainfall to 300 mm. A simple regression model explains 84% of the variation in admissions for DHF at San Lazaro Hospital in Manila in terms of the rainfall index. The relationship is undergoing further evaluation as a predictor of DHF outbreaks.

- 163 POST-EPIZOOTIC PREVALENCE OF RIFT VALLEY FEVER ANTIBODY IN SMALL RUMINANTS FROM THE SENEGAL RIVER BASIN (1988-1990). Y. Thiongane+, H.G. Zeller, H.G. Faty, J.A. Akakpo, and J.P. Gonzalez. Institut Sengalais de la Recherche Agricole, BP 2057, Dakar, Senegal, Institut Pasteur, B.P.220, Dakar, Ecole Inter-Etats de Sciences et de Medecine Vetrinaire, BP 5077, Dakar, ORSTOM, B.P. 1386, Dakar.

Following the Rift Valley Fever (RVF) epidemic and epizootic manifestations in Southern Mauritania in October/December 1987, we developed a clinical and serological survey in domestic ruminants. The targeted area for such survey included the left bank of the Senegal River Basin. We present results on a long term serosurvey (from August 1988 to 1990) in sentinel herds selected within three areas and monitored for RVF neutralizing antibodies. Study areas along the Senegal River are represented by the lower basin or delta (Dagana district), middle basin (Podor district) and upper basin (Matam district). Domestic ruminants sera were tested for neutralizing antibody and by ELISA for IgG and IgM specific antibody. A negative gradient of RVF reacting antibody from the Senegal River delta to the upper basin was observed. From 1988 to 1989, within the Dagana district, the antibody seroprevalence significantly decreased by 2/3. The 1987 epizootic was limited to the delta area; a serosurvey of small ruminants indicated a RVFV silent phase after the 1988 and 1989 rainy seasons.

