



## An Earthquake, a Tropical Storm, and an Emerging Virus in Yap



**Fieldworker collecting mosquitoes with a backpack aspirator**

Often CDC is called in to support local health officials in investigating an unknown illness. In May 2007, the Yap Department of Health Services (YDHS) contacted CDC for assistance in solving the mystery of an unusual illness in its community. Yap is part of the Federated States of Micronesia in the western Pacific. On this island of 7,000 people, 500 residents had come down with an unknown illness. Their symptoms included joint pains, fever, rash and conjunctivitis that appeared different from more familiar diseases. Although it seemed similar to dengue fever, YDHS officials suspected the outbreak could be something else, so they sent samples to CDC, and advised residents to avoid mosquitoes and clean up sites where mosquitoes might breed.

CDC sent two Epidemic Intelligence Service officers (EIS) to investigate. CDC's EIS officers saw patients, helped in clinics, and conducted surveillance under a broad case definition that included many possible diseases. On June 22nd, CDC's laboratory in Fort Collins, Colorado identified Yap's mystery illness as Zika virus. Zika virus is mosquito-borne, and had occurred in Africa and Southeast Asia but never before in the Pacific. There had been only 18 cases of Zika virus known to scientists, and no documented outbreaks. With this information, additional staff from CDC, the World Health Organization, and the Institut Pasteur went to Yap to research the virus.

The CDC-led team gathered surveillance and clinical information for two months in hot, humid weather daily punctuated by rain. Their island-wide investiga-

tion included patient questionnaires, blood collection, household environmental surveys and mosquito collection. The team completed its research despite several challenges, including Tropical Storm Man-Yi and an earthquake. The team's investigation found that approximately three-quarters of Yap's population had been recently infected with Zika virus. Fortunately, most illnesses were mild and no deaths were reported.

In addition to the success of the Yap investigation, this one outbreak provides many lessons for future responses. The team characterized the first-ever documented Zika virus outbreak, providing scientific information helpful for responding to future outbreaks. The team also identified the likely mosquito species in the outbreak, adding to the understanding of mosquito-borne viruses. Using the example of Zika virus in Yap, CDC researchers will continue to work with international colleagues to learn how viruses move around the globe.



**Health department worker collecting blood sample from survey participant for serological survey (to look for evidence of Zika virus infection)**

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