

*FoodNet — Continued*

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### Hantavirus Pulmonary Syndrome — Panama, 1999–2000

Hantavirus pulmonary syndrome (HPS) is an acute viral rodentborne zoonosis characterized by severe cardiopulmonary illness with a 40%–60% case-fatality rate. Since its identification in the United States in 1993, the recognized clinical spectrum of illnesses associated with human hantavirus infection has expanded to include mild illness, and case-patients have been identified in Canada and South America (1,2). This report describes the first confirmed HPS cases from Central America and summarizes preliminary results of clinical, epidemiologic, and ecologic investigations. Investigators identified 12 suspected cases with typical disease and captured four common species of rodents near case households.

In mid-January 1999, reports of a cluster of acute febrile respiratory illnesses associated with three deaths in Las Tablas and Guarare districts, Los Santos province, Panama (population: 55,000), led to an investigation by the Gorgas Memorial Institute for Health Studies (GMIHS) and the Panamanian Ministry of Health (MOH). Human illness was characterized by fever, myalgia, headache, and cough with rapid progression to respiratory failure and bilateral pulmonary infiltrates, hypotension, and thrombocytopenia consistent with HPS. Initial laboratory testing of specimens at CDC from three case-patients confirmed the presence of IgM and IgG antibodies using antigens of Sin Nombre virus and the presence of detectable hantavirus RNA by reverse-transcription polymerase chain reaction (RT-PCR).

As of March 6, 2000, 12 patients with suspected HPS have been identified; three died. The mean age of patients was 42 years (range: 26–58 years); 58% were women. Serum specimens taken from eight case-patients who met the CDC epidemiologic case definition (1) had hantavirus antibodies, including two specimens that also were positive by RT-PCR. Serologic testing is pending for another suspected case-patient. Although the three patients who died had signs and symptoms compatible with HPS, epidemiologic data are limited and no specimens from these patients are available for diagnostic testing. The first case-patient was identified retrospectively as having onset of illness in August 1999; the latest case-patient had onset of illness on February 28. All 12 case-patients had clinical disease typical of HPS; however, seven case-patients had atypical extrapulmonary symptoms of hepatic, renal, and cerebral dysfunction. No cases have been reported among health-care workers or from person-to-person transmission. Studies to define the prevalence of hantavirus infection among community members and health-care workers, the extent of mild or asymptomatic infection, and the risk factors for developing HPS are in progress.

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Rodent trapping at 10 homes, six occupied by confirmed case-patients, yielded 54 rodents; four common species accounted for 98% of captured rodents and were identified tentatively as *Zygodontomys brevicauda* (25 [46%]), *Sigmodon hispidus* (14 [26%]), *Mus musculus* (eight [15%]), and *Oligoryzomys* sp. (six [11%]). Although only 5% of traps captured rodents, reports from GMIHS indicated a recent increase in peridomestic rodents associated with increased rainfall and flooding in surrounding areas.

To prevent additional hantavirus transmission to humans, MOH disseminated information to the Los Santos community about risk-reduction measures and to physicians about how to recognize patients and manage HPS. A public awareness and risk-reduction campaign was implemented nationwide and included televised public service announcements and distribution of educational posters and pamphlets. In addition, an outbreak communication center was established and staffed 24 hours a day by specially trained physicians, public health officials, and health educators to collect reports of suspected HPS cases and to answer questions from the public and health-care providers about hantaviruses. MOH physicians are contacting hospitals nationwide to promote HPS awareness, to evaluate suspected cases, and to provide treatment guidance on the basis of standard HPS criteria and guidelines (3).

*Reported by:* V Bayard, MD, E Ortega, MD, A Garcia, L Caceres, MS, Z Castillo, MS, E Quiroz, PhD, B Armien, MD, F Gracia, MD, Gorgas Memorial Institute for Health Studies, Panama City; J Serrano, MD, Hospital G De Leon, Las Tablas; G Guerrero, MD, R Kant, MD, E Pinilla, MD, Social Security Hospital System, Complejo Hospital AAM, Panama City; L Bravo, MD, Santo Tomas Hospital, Panama; C Munoz, MD, I Barahona de Mosca, MD, A Rodriguez, MD, C Campos, M Avila Diaz, B Munoz, F Crespo, I Villalaz, P Rios, MD, E Morales, MD, J Manuel Teran Sitton, MD, Ministry of Health, Panama City, Panama. L Reneau-Vernon, MD, Pan American Health Organization (PAHO), Panama City, Panama; M Libel, MD, PAHO, Washington, DC; L Castellanos, MD, PAHO, Tegucigalpa, Honduras. L Ruedas, PhD, Univ of Wisconsin Zoological Museum, Madison, Wisconsin. D Tinnin, T Yates, PhD, Univ Museum of Southwestern Biology, Albuquerque, New Mexico. Special Pathogens Br, Div of Viral and Rickettsial Diseases, National Center for Infectious Diseases; and an EIS Officer, CDC.

**Editorial Note:** HPS is a pan-American zoonosis identified in 1993 with confirmed cases ranging from Canada and the United States to southern South America (2,4). HPS is attributed to infection with New World hantaviruses maintained by natural hosts in the rodent family Muridae, subfamily Sigmodontinae. Infection in humans occurs after inhalation of aerosolized virus or direct contact with infected rodents or their excreta. Person-to-person and nosocomial transmission have been documented only in Argentina with Andes virus (5). An increasing number of hantaviruses is being identified by genetic sequencing, including from the two RT-PCR-positive cases described in this report (6). On the basis of antigenic similarities, CDC has identified all cases using Sin Nombre antigens. The predominant viruses in the United States have been Sin Nombre and the closely related New York viruses, the reservoirs of which are *Peromyscus* spp. (deer mice and white-footed mice); *Peromyscus* spp. have caused 234 cases reported in the United States as of March 2000 (CDC, unpublished data, 2000).

The epidemiology of HPS is closely related to the ecology of the rodent reservoir populations. Increased U.S. incidence of HPS has been linked to periods of above average rainfall in normally dry areas of the southwestern United States resulting in improved habitat quality and increased numbers of infected reservoir rodents (7). Blood and tissue samples from the captured species of sigmodontine rodents in Panama will be tested for hantavirus antibody and RNA to identify the specific reservoir. Preliminary

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data indicate that rainfall in parts of Los Santos was unusually high during the fall and winter of 1999. A possible association between increased precipitation and increased numbers of reservoir rodents in the affected and surrounding areas is being explored. Sigmodontine rodents occur throughout the Americas, but HPS never has been found between Texas and Brazil. However, the discovery of HPS in Panama was expected and should lead to increased vigilance for the syndrome in Mexico, Central America, and northern South America.

Because no specific therapy exists for HPS, prevention measures should be taken to avoid contact with wild rodents, including preventing entry of wild rodents into human dwellings; eliminating food and shelter for rodents in the peridomestic environment; safe trapping (using kill-traps) and disposal of wild rodents that enter homes; and careful cleaning and disinfecting of areas in and around homes that have been contaminated by rodents (8). Reports of HPS and requests for diagnostic testing and epidemic assistance can be directed to CDC's National Center for Infectious Diseases, Division of Viral and Rickettsial Diseases, Special Pathogens Branch, telephone (404) 639-1511. Information about HPS can be found on the CDC World-Wide Web site, <http://www.cdc.gov/ncidod/diseases/hanta/hps/index.htm>.

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### **Outbreaks of Norwalk-like Viral Gastroenteritis — Alaska and Wisconsin, 1999**

Norwalk-like viruses (NLVs) are the most common cause of epidemic gastroenteritis in the United States, resulting in illness in approximately 23 million persons each year (1,2). Persons of all ages are affected because previous infection confers only short-term immunity (3). Most NLV gastroenteritis outbreaks involve foodborne or person-to-person transmission. This report presents investigations of a foodborne NLV outbreak in Alaska and person-to-person transmission in Wisconsin.