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Brief Report

Outbreak of Marburg Virus Hemorrhagic Fever — Angola, October 1, 2004–March 29, 2005

On March 23, 2005, the World Health Organization (WHO) confirmed Marburg virus (family Filoviridae, which includes Ebola virus) as the causative agent of an outbreak of viral hemorrhagic fever (VHF) in Uige Province in northern Angola. Testing conducted by CDC's Special Pathogens Branch detected the presence of virus in nine of 12 clinical specimens from patients who died during the outbreak.

During October 1, 2004–March 29, 2005, a total of 124 cases were identified; of these, 117 were fatal (*1*). Approximately 75% of the reported cases occurred in children aged <5 years; cases also have occurred in adults, including healthcare workers. Predominant symptoms have included fever, hemorrhage, vomiting, cough, diarrhea, and jaundice.

WHO and international partners in the Global Outbreak Alert and Response Network (GOARN) are working with the Ministry of Health in Angola in conducting an investigation and public health response to the outbreak. Outbreak-control efforts are directed at providing technical support for case management, strengthening infection control in hospitals, improving surveillance and contact tracing, and educating local residents about the disease and its modes of transmission.

As part of the public health response, CDC will be sending personnel to join the WHO-coordinated GOARN response team to assist with epidemiologic investigation, infection control, and laboratory diagnosis. In addition, CDC will continue to provide laboratory and other scientific and logistical support. On March 25, CDC posted a notice on its website to inform travelers about the outbreak (available at http://www.cdc.gov/travel/other/marburg_vhf_angola_2005.htm). This website will be updated as new information becomes available. No U.S. travel restrictions to the affected area are recommended at this time.

Marburg virus disease presents as an acute febrile illness and can progress within 6–8 days to severe hemorrhagic manifestations. After an incubation period of 5–10 days, onset of the disease is sudden and is marked by fever, chills, headache, and myalgia. Approximately the fifth day after onset of symptoms, a maculopapular rash might occur, after which nausea, vomiting, chest pain, sore throat, abdominal pain, and diarrhea might appear. Signs and symptoms become increasingly severe and can include jaundice, inflammation of the pancreas, severe weight loss, delirium, shock, liver failure, massive hemorrhaging, and multi-organ dysfunction.

Fatality rates for outbreaks of Marburg VHF have ranged from approximately 25% to 80%; mortality has been higher in outbreaks in which effective case management was lacking. No vaccine or curative treatment is available, and supportive treatment should be used. The virus can be spread to humans through direct contact with body fluids (e.g., blood, saliva, and urine) of an infected person or animal. Thus, the best protection for persons in or traveling to the outbreak area is to avoid direct contact with body fluids from potentially infected persons. Virus transmission also might be possible through contact with objects (e.g., medical equipment) that have been contaminated with infectious material. The virus has been reported to survive for as long as several days on contaminated surfaces (*2*). Hospital infection-control practices for infected patients should include contact and droplet precautions, in addition to wearing eye protection or a face shield. U.S. clinicians caring for patients with suspected Marburg virus infection should contact CDC or local public health officials for additional information about VHF infection control.

Clinicians should consider the diagnosis of Marburg VHF among febrile patients who, within 10 days before onset of fever, have either 1) traveled in northern Angola; 2) had direct contact with blood, other body fluids, secretions, or excretions of a person or animal suspected of having VHF; or 3) worked in a laboratory or animal facility that handles hemorrhagic fever viruses (*3*). The likelihood of acquiring VHF is considered extremely low in persons who do not meet any of

these criteria. The cause of fever in persons who have traveled to areas where VHF is endemic is more likely to be a different infectious disease.

Reports of Marburg virus disease are rare, and its occurrence has been limited to countries in sub-Saharan Africa. The environmental reservoir of the virus is unknown. The current outbreak in Angola is the first report of Marburg virus disease since 1998–2000, when the largest known outbreak occurred in the Democratic Republic of Congo, resulting in 149 cases and 123 deaths (*4*).

Additional information is available at the following websites:

- WHO information about the outbreak in Angola: http://www.who.int;
- CDC information about Marburg virus and VHFs: http://www.cdc.gov/ncidod/dvrd/spb/mnpages/dispages/marburg.htm;
- CDC information on infection control for VHFs in the African health-care setting: http://www.cdc.gov/ncidod/dvrd/spb/mnpages/vhfmanual.htm; and
- CDC information about travelers' health: http://www.cdc.gov/travel/index.htm.

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