Recognizing and Treating Dengue in U.S. Residents

[Announcer] This podcast is presented by the Centers for Disease Control and Prevention. CDC — safer, healthier people.

Hello. I'm Dr. Christopher Gregory with the Center for Disease Control and Prevention's Dengue Branch in the Division of Vector-Borne Diseases.

Dengue is the most common mosquito-borne viral disease in the world. Over two billion people, including over four million U.S. citizens, live in dengue-endemic areas and an estimated 50 to 100 million dengue infections occur worldwide each year. Reported cases of dengue have dramatically increased over the last 20 years, especially in the western hemisphere. Dengue is now the most common cause of acute febrile illness in U.S. travelers returning from Asia, the Caribbean, and South America.

Recently, the mainland U.S. experienced a re-emergence of dengue, as well. Since 1980, seven dengue outbreaks have been identified near the Texas-Mexico border, involving patients without a history of travel outside of Texas. In addition, an outbreak of dengue was identified in Hawaii in 2001, likely following introduction of the virus by a Hawaii resident returning from Tahiti. Most recently, there was an outbreak identified in Key West, Florida which involved approximately five percent of all residents. In this outbreak, over 1100 people were estimated to have been infected with dengue virus between July and October 2009. This represents one of the largest, if not the largest, outbreak in the continental U.S. in 60 years. Unlike recent outbreaks along the Texas-Mexico border, where a majority of infections were potentially acquired in Mexico, the recent infections in Key West appear to have been all locally-acquired. The primary mosquito vectors for dengue, *Aedes aegypti* and *Aedes albopictus*, are present throughout the southern United States, and *Aedes albopictus* can be found as far north as New Jersey. These mosquitoes live around human habitation, bite primarily during the daytime, and breed easily in water-filled artificial containers, such as unused pools, discarded tires, and buckets.

Personal protection measures are especially important, as large-scale vector control efforts have not, by and large, been successful in controlling dengue transmission. Wearing long-sleeved clothing, using DEET-containing repellents, eliminating potential mosquito breeding sites by routinely emptying water-filled containers, and having screened windows and doors are effective means of reducing the risk of contracting dengue. Other methods of dengue transmission have been reported, including via blood transfusion, organ transplantation, occupational exposure in healthcare workers, and vertical transmission in utero or at parturition.

Dengue infection can range in severity from asymptomatic cases to a non-specific flu-like syndrome to severe disease with vascular leakage, shock, bleeding, and rarely, death. Classic dengue fever is defined by presence of acute fever and two or more of the following symptoms: headache, rash, retro orbital pain, muscle aches, joint or bone pain, hemorrhage, and low white cell count. Fever typically lasts two to seven days, and when the fever resolves, patients can either improve or deteriorate. Patients who deteriorate usually show warning signs as result of increased vascular permeability, including severe abdominal pain, persistent vomiting, mucosal bleeding, signs of shock, and mental status changes. The increase in vascular permeability, with

resultant plasma leakage into abdominal and pleural cavities, typically lasts 24 to 48 hours after fever resolution and distinguishes severe dengue infections from less severe infections. This period of increased vascular permeability is known as the critical phase. No vaccine or anti-viral currently exists, but proper medical management of the critical phase can reduce the mortality rate to less than one percent, even in the most severe cases.

Dengue diagnosis relies on detecting the virus by PCR or detecting dengue proteins in the early phase of infection, within five days of fever onset, or anti-dengue IgM antibodies after day five of illness, but test results are not usually available to guide clinical management. Non-specific lab findings commonly seen in dengue infections include leucopenia, thrombocytopenia, an elevated AST or ALT, and hemoconcentration.

In 2009, dengue was made a nationally-notifiable disease and cases should be reported to the CDC via state and local health departments. More information on dengue diagnosis, reporting, management, and prevention can be found at the CDC's website at www.cdc.gov/dengue. Thank you.

[Announcer] For the most accurate health information, visit www.cdc.gov or call 1-800-CDC-INFO, 24/7.