



North Carolina Department of Health and Human Services  
Division of Public Health

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Date: 1 April 2015  
To: N.C. Health Care Providers  
From: Megan Davies, MD, State Epidemiologist  
Subject: Chikungunya Virus Surveillance (2 pages)

MD

**Introduction:**

Chikungunya is a mosquito-borne disease caused by an alphavirus, chikungunya virus. The virus is transmitted predominantly by *Aedes aegypti* and *Ae. albopictus*, aggressive daytime biting mosquitoes. Chikungunya virus was first identified in Tanzania in 1952 and has periodically caused outbreaks in Africa for decades. Starting in February 2005, several large outbreaks of chikungunya occurred in India and islands of the Indian Ocean. During 2005-2006 over 1.7 million cases were reported, primarily from India and Reunion Island.

The first local transmission of chikungunya virus in the western hemisphere was reported on the island of St. Martin on December 6, 2013. Since then, it has spread throughout the Caribbean and the Americas and over 1.2 million cases have been reported (<http://www.paho.org/chikungunya>). Imported cases have been identified in residents from North Carolina and other states returning from endemic areas. Although transmission in the United States has only been documented in Florida to date, local transmission within North Carolina is possible, as a competent mosquito vector (*Ae. albopictus*) is found throughout North Carolina.

**Disease Transmission:**

During epidemics, transiently infected humans are the reservoir for chikungunya. The incubation period following the bite of an infectious mosquito is typically 3-7 days (range, 1-12 days). Persons become viremic approximately two days prior to symptom onset and remain viremic for up to seven days. During the viremic phase, the patient can transmit the virus to mosquitoes biting them, which could then potentially infect another person. The disease is not directly transmitted from person-to-person.

**Clinical Presentation:**

Most people infected with chikungunya virus become symptomatic. The most common clinical findings are acute onset of fever and polyarthralgia, primarily affecting the hands, wrists, ankles and feet. Joint pains are often severe and debilitating. Chikungunya should be considered in patients who develop acute onset of fever and polyarthralgia within two weeks of returning from the Caribbean or from other endemic areas. Other symptoms may include headache, myalgia, arthritis, or rash. Persons at risk for more severe disease include neonates exposed intrapartum, adults  $\geq 65$  years of age, and persons with underlying medical conditions (e.g., hypertension, diabetes, or cardiovascular disease).

**Case Management:**

No specific antiviral treatment is available for chikungunya. The differential diagnosis of chikungunya virus infection is broad, as fever with or without arthralgia is a common manifestation of many diseases. Preliminary diagnosis is based on the patient's clinical features, places and dates of travel, and activities. Treatment is focused

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on symptoms and includes rest, fluids, and use of analgesics and antipyretics. Dengue fever should be considered in the differential diagnosis for these patients because of the similarities in geographic distribution and symptoms.

People infected with chikungunya or dengue virus should be protected from further mosquito exposure during the first few days of illness to reduce the risk of local transmission. For more detailed case management information and keys to differentiating chikungunya infection from dengue infection, visit <http://www.cdc.gov/chikungunya/hc/index.html>.

#### **Diagnosis:**

Serologic and molecular testing for chikungunya are now available at the North Carolina State Laboratory of Public Health (NCSLPH). Please report suspected cases to your local health department if you plan to submit specimens for testing. (See Surveillance and Reporting below.) Specimens submitted to the NCSLPH for chikungunya testing must be accompanied by the NCSLPH submission form DHHS 3445, which is available at <http://slph.state.nc.us/virology-serology/special-serology.asp>. Please include all clinical and travel information, including date of onset.

NCSLPH will follow CDC testing guidelines for chikungunya. Patient samples collected  $\leq 8$  days post-illness onset will be tested by RT-PCR. If  $\geq 4$  days post-onset, the sample will also be tested for the presence of IgM antibody by ELISA. Samples  $> 8$  days post-onset will receive IgM ELISA testing only. All samples with “Presumptive Positive” IgM ELISA results will be referred to CDC for confirmatory plaque reduction neutralization testing. Testing for chikungunya will also be included with requests for arboviral panel testing on patients with a history of travel to an endemic area.

#### **Surveillance and Reporting:**

Chikungunya is reportable immediately in North Carolina. Due to the threat of introduction of this illness into North Carolina, this disease is required to be immediately reported by physicians to the local health department as soon as clinically **suspected**. Laboratory confirmed cases are also reportable. Laboratories are also required to report positive results to the Division of Public Health.

A suspected case is defined as a clinically compatible illness:

- Fever or chills as reported by the patient or a health-care provider, AND
- Arthralgia or arthritis involving two or more joints, AND
- Absence of a more likely clinical explanation

#### **Education of Patients, Prevention of Disease:**

We encourage all providers to educate their patients about personal protective measures that can be used to minimize the risk of acquiring this disease. Patients should be advised to consult their physician if they develop a compatible illness following travel to endemic areas. If chikungunya is suspected, patients should be encouraged to stay indoors or use mosquito repellent consistently during the first 5 days of illness when they might be viremic, in order to minimize the risk that they transmit the virus to local mosquitoes.

#### **Resources and Contact Information:**

- CDC website: <http://www.cdc.gov/chikungunya/>
- CDC Health Advisory: <http://emergency.cdc.gov/HAN/han00358.asp>
- NC DPH Communicable Disease Branch Epidemiologist On-Call: 919-733-3419 (24/7)