



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
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Commissioner

2014 Health Alert 14: Dengue and Chikungunya

July 9, 2014

Please distribute to staff in the Departments of Internal Medicine, Pediatrics, Family Medicine, Neurology, Infection Control, Infectious Disease, Emergency Medicine, Critical Care, Obstetrics and Gynecology, and Laboratory Medicine

- **Report all laboratory-confirmed cases of dengue or chikungunya virus to the Health Department.**
- **Dengue or chikungunya should be suspected year round in patients presenting with fever, arthralgia, myalgia, and/or rash and recent travel to Caribbean, Asia, and Africa.**
- **Testing serum by immunoassay and PCR can help differentiate between dengue or chikungunya and direct medical treatment as ibuprofen, naproxen, and aspirin may be contraindicated in patients with dengue.**
 - **Dengue – the IgM enzyme immunoassay (EIA) is most sensitive at least 6 days post onset of illness. RT-PCR is most sensitive when done within 5 days of illness onset.**
 - **Chikungunya - the IgM enzyme immunoassay (EIA) or immune-fluorescence assay (IFA) is most sensitive at least 4 days post onset of illness. RT-PCR is most sensitive when done within 8 days of illness onset.**
- **Patients with either infection should stay indoors or take measures to prevent mosquito bites for five (dengue) or eight (chikungunya) days after illness onset to avoid local transmission.**

Dear Colleagues,

In New York City (NYC), dengue and chikungunya infections are associated with travel to endemic areas, such as the Caribbean. To date in 2014, there have been a total of 14 laboratory-confirmed cases of dengue and 12 chikungunya infections reported to the Health Department. None of these infections were acquired in NYC.

Humans are the principal reservoirs for both viruses. Dengue virus can be transmitted from one person to another most efficiently by the Yellow Fever mosquito (*Aedes aegypti*) and less efficiently by the Asian Tiger mosquito (*Aedes albopictus*). Chikungunya virus can be readily transmitted by either mosquito. *A. aegypti* is not found in NYC, but *A. albopictus* is; therefore, it is possible for chikungunya virus (and less likely dengue) to be transmitted locally in New York City. Local transmission could happen if someone infected while in an endemic area returns to or visits New York City. If the person is bitten by an *A. albopictus* mosquito during the viremic period, the mosquito could then transmit the virus to another person during a subsequent bite.

Both diseases may have similar clinical presentations. Testing can help differentiate between the two viruses and help direct medical treatment, because analgesics containing ibuprofen, naproxen or aspirin may be contraindicated in patients with dengue.

Dengue

Dengue fever is characterized by sudden fever along with facial flushing, skin erythema, generalized body ache, myalgia, arthralgia and headache lasting 2–7 days. Some patients may also have sore throat, conjunctival injection, anorexia, nausea, vomiting, and/or mild hemorrhagic manifestations, including bleeding from the nose and gums. The earliest hematologic abnormality is a progressive decrease in total white cell count, which should alert the physician to a high probability of dengue.

A small proportion of patients may develop severe dengue. Around the time of defervescence (days 3–7 of illness), an increase in both capillary permeability and hematocrit may occur. Progressive leakage of plasma from capillaries combined with leukopenia and thrombocytopenia may lead to sepsis syndrome, including progressive organ impairment, metabolic acidosis, and disseminated intravascular coagulation.

Adequate management of dengue requires timely recognition and hospitalization, close monitoring of hemodynamic status, and judicious administration of intravascular fluids. There is no antiviral drug or vaccine against the dengue virus. Updated guidelines for the management of dengue can be found at http://whqlibdoc.who.int/publications/2009/9789241547871_eng.pdf. An updated fact sheet with information for health care providers can be found at:

www.cdc.gov/dengue/resources/Dengue&DHF%20Information%20for%20Health%20Care%20Practitioners%202009.pdf

Serum is the specimen of choice for both RT-PCR and serology. RT-PCR testing is most sensitive on serum specimens collected within 5 days of illness onset. Because dengue IgM may not be positive until up to 6 days following onset of illness, specimens collected less than 6 days after onset may be negative for IgM, and testing should be repeated. A positive dengue IgG in the absence of a positive dengue IgM is consistent with past infection. If acute dengue virus infection is suspected, it is best to collect both acute and convalescent sera. Convalescent specimens should be collected 2-3 weeks after acute specimens.

Testing is available through most commercial laboratories. RT-PCR testing (not serology) is available at both the New York State Wadsworth Laboratory and NYC Health Department's Public Health Laboratory (PHL). Collect 2ml serum or plasma specimen for RT-PCR testing. Specimens must be kept frozen/cold from time of collection and shipped on cold packs that will ensure it is still cold on arrival. For testing at Wadsworth, follow the instructions below and request dengue on the submission form. For testing at PHL, ensure that specimens are properly labeled and accompanied by a completed laboratory test request form which can be obtained at:

<http://www.nyc.gov/html/doh/downloads/pdf/labs/testing-services.pdf>

Chikungunya

Infection with chikungunya virus is most often characterized by acute onset of fever and polyarthralgia. Joint symptoms are usually bilateral and symmetric, and can be debilitating. Other symptoms may include headache, myalgia, arthritis, conjunctivitis, nausea, vomiting, and/or maculopapular rash. Clinical laboratory findings can include lymphopenia, thrombocytopenia, elevated creatinine, and elevated hepatic transaminases. The incubation period is typically 3–7 days (range, 1–12 days). There is no drug or vaccine against chikungunya virus. An updated fact sheet with information for health care providers can be found at:

http://www.cdc.gov/chikungunya/pdfs/CHIKV_Clinicians.pdf

Serum is the specimen of choice for both RT-PCR and serology. RT-PCR testing is most sensitive on serum specimens collected within 8 days of illness onset. Because chikungunya IgM may not be positive until up to 4 days following onset of illness, specimens collected fewer than 4 days after onset may be negative for IgM, and testing should be repeated. A positive chikungunya IgG in the absence of a positive chikungunya IgM is

consistent with past infection. If acute chikungunya virus infection is suspected, it is best to collect both acute and convalescent sera. Convalescent specimens should be collected 2-3 weeks after acute specimens.

Testing is available at Wadsworth and Focus Diagnostics. Testing can also be done at the Centers for Disease Control and Prevention (CDC), but should be arranged through the Health Department (866-692-3641).

- FOCUS Diagnostics: IgM and IgG serology, RT-PCR on serum Focus performs the tests. Other commercial laboratories can forward specimens to Focus for testing. For more information about submitting specimens visit www.focusdx.com/focus/1-reference_laboratory/index.asp , or call 1-800-445-4032 or 1-800-631-1390.
- New York State Wadsworth Center: RT-PCR and virus isolation on serum, PRNT for paired acute and convalescent sera only. Collect 2ml serum specimen for RT-PCR. Specimens must be kept frozen/cold from time of collection and shipped on cold packs that will ensure it is still cold on arrival at Wadsworth. Specimens must be accompanied by a completed Wadsworth Infectious Diseases Requisition Form (travel history including location and date is required), which can be obtained at: http://www.wadsworth.org/divisions/infdis/DOH-4463_060209.pdf

Ship specimens to;
Virology Laboratory,
David Axelrod Institute
Wadsworth Center. NYSDOH
120 New Scotland Avenue
Albany, NY 12208

What Providers Should Do

Report arboviral infections including dengue and chikungunya with laboratory evidence of acute infection, as required by law by calling 866-692-3641 OR by faxing the completed Universal Reporting Form to 347-396-2632 OR completing the electronic Universal Reporting Form at: <http://www.nyc.gov/html/doh/html/hcp/hcp-urf.shtml>.

The successful detection and control of arboviruses in NYC has been due in large part to our ongoing excellent partnership with the city's medical and laboratory communities. Thank you for your continuing efforts.

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