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TO: Healthcare Providers, Hospitals, Local Health Departments (LHDs), Laboratories
FROM: NYSDOH Bureau of Communicable Disease Control

HEALTH ADVISORY: ZIKA VIRUS UPDATE

Please distribute to the Infection Control Department, Emergency Department, Infectious Disease Department, Obstetrics/Gynecology (including Nurse Practitioners and Midwives), Family Medicine, Travel Medicine Service, Pediatrics, Director of Nursing, Medical Director, Laboratory Service, Pharmacy, and all patient care areas.

SUMMARY

- This advisory provides the following information on Zika virus
 - Updated national and New York State (NYS) case counts
 - Updated guidance on Zika virus testing and laboratory interpretation including
 - The importance of urine rRT-PCR testing
 - The availability of commercial Zika real-time reverse-transcription polymerase chain reaction (rRT-PCR) testing and recommendations for additional antibody testing
 - A new timeline for blood and urine rRT-PCR testing in pregnant women and how NYS' approach is more expansive than that announced yesterday by the Centers for Disease Control and Prevention (CDC).¹
 - A review of eligibility and processes to be used with public health laboratory testing
 - Guidance on interpretation of laboratory results
 - Requirements and procedures for reporting of suspected Zika virus cases
 - Information on NYSDOH's mosquito surveillance program

CASE COUNTS

Zika virus disease in the United States, 2015 2016: As of July 27, 2016²

Cases in US States

- Locally acquired mosquito-borne cases reported: 0
- Travel-associated cases reported: 1,657
- Laboratory-acquired cases reported: 1
- **Total: 1,658**
 - Sexually transmitted: 15
 - Guillain-Barré syndrome: 5

Cases in US Territories

- Locally acquired cases reported: 4,729
- Travel-associated cases reported: 21
- Laboratory-acquired cases reported: 0
- **Total: 4,750**
 - Sexually transmitted cases are not reported for areas with local mosquito-borne transmission of Zika virus because it is not possible to determine whether infection occurred due to mosquito-borne or sexual transmission.
 - Guillain-Barré syndrome: 17

¹ Available at <https://www.cdc.gov/mmwr/volumes/65/wr/pdfs/mm6529e1.pdf>

² Source: U.S. Centers for Disease Control and Prevention (CDC): www.cdc.gov/zika/geo/united-states.html

Pregnant women with any laboratory evidence of possible Zika virus infection in the United States and Territories, 2016: As of July 21, 2016³

- Pregnant women in the continental United States with any laboratory evidence of possible Zika virus infection reported to CDC's Zika Pregnancy Registry: 433
- Pregnant women in US territories and Puerto Rico with any laboratory evidence of possible Zika virus infection reported to the Zika Pregnancy Registry or Puerto Rico's Zika Active Pregnancy Surveillance System: 422

Zika virus disease in NYS 2015–2016: As of July 27, 2016⁴

NYS (excluding NYC)

- Locally acquired cases reported: 0
- Travel-associated cases reported: 118
- Laboratory-acquired cases reported: 0
- **Total: 118**
 - Sexually transmitted: 1
 - Guillain-Barré syndrome: 1
- Pregnant women or infants with any laboratory evidence of possible Zika virus infection reported to CDC's Zika Pregnancy Registry: 28

NYC (excluding NYS)

- Locally acquired cases reported: 0
- Travel-associated cases reported: 381
- Laboratory-acquired cases reported: 0
- **Total: 398**
 - Sexually transmitted: 4
 - Guillain-Barré syndrome: 3
- Pregnant women or infants with any laboratory evidence of possible Zika virus infection reported to CDC's Zika Pregnancy Registry: 95

ZIKA VIRUS TESTING AND LABORATORY INTERPRETATION UPDATES

The Importance of Urine rRT-PCR Testing

- Testing at the Wadsworth Center for Zika virus has often resulted in the detection of the virus in urine for a longer time after the person's exposure than in serum. Therefore, NYSDOH reiterates the importance of offering rRT-PCR testing on blood and urine.

The Availability of Commercial Zika rRT-PCR Testing and Recommendations for Additional Antibody Testing

- Testing for Zika virus is now available commercially from Quest/Focus Diagnostics (serum), ViraCor-IBT Laboratories (plasma, serum, and urine), LabCorp (serum and urine). Additional commercial laboratories are expected to offer rRT-PCR and serological testing in the near future.
- Zika rRT-PCR of serum and urine continues to be available from the NYSDOH's Wadsworth Center and the New York City Department of Health and Mental Hygiene's (NYCDOHMH) Public Health Laboratory (PHL).
- rRT-PCR testing is most useful during the acute phase of infection. Because of the decline in the level of viremia/viruria over time and possible inaccuracy in reporting of dates of exposure and illness onset, a negative rRT-PCR result does not exclude Zika virus infection and additional serological testing is indicated.
 - Additional serological testing is particularly important for pregnant women given concerns about the effects of prior infection, which might only be identifiable through antibody testing.
 - Commercial laboratories currently do not offer antibody testing for Zika virus.
 - Serology for Zika infection is available through NYSDOH's Wadsworth Center and NYCDOHMH PHL.
- If providers order Zika virus rRT-PCR testing from a commercial laboratory, a serum aliquot of at least 2 ml should be stored in a refrigerator for subsequent antibody testing in case the rRT-PCR assay is negative. Otherwise, collection of an additional serum sample may be necessary during a future appointment.

³ Source: CDC Zika Pregnancy Registry and the Puerto Rico Zika Active Pregnancy Surveillance System:
<http://www.cdc.gov/zika/geo/pregwomen-uscases.html>

⁴ Sources: NYSDOH's Bureau of Communicable Disease Control and NYCDOHMH's Bureau of Communicable Diseases

- Providers and commercial laboratories may be contacted by NYSDOH to obtain epidemiologic information about persons being tested.

Testing for Pregnant Women: NYSDOH Expands Upon Latest CDC Recommendations

- Ideally, pregnant women should be tested within two weeks after their potential exposure to Zika virus regardless of the presence of symptoms.⁵ Prompt testing increases the likelihood that a definitive diagnosis can be made and allows optimal assessment for possible effects of Zika virus infection on fetal development. However, testing may be conducted at any time during pregnancy for women with a history of exposure.
- Persistent viremia has been identified by NYSDOH's Wadsworth Center in several pregnant women tested beyond six weeks after their last possible exposure to Zika virus. In one case, viremia was identified 53 days after the last possible exposure.
- Therefore, NYSDOH is expanding beyond CDC's recommendations for the eligibility criteria for its Zika testing program. rRT-PCR will be performed on specimens from all pregnant women submitted to the NYSDOH Wadsworth Center, regardless of the time that has elapsed from their last exposure.⁵ All specimens from pregnant women that are not positive by rRT-PCR will also undergo serological testing.

Eligibility and Public Health Laboratory Testing Process in NYS

- For symptomatic individuals, including men, non-pregnant women, and children: Specimens collected within 4 weeks of symptom onset in those with possible exposure⁶ can be submitted for testing.
- For pregnant women: As described above.
- For patients with Guillain-Barré syndrome (GBS): Specimens collected from patients who present with GBS after possible exposure¹ to Zika virus can be submitted.
- For infants with microcephaly, intracranial calcifications, or other congenital abnormalities possibly associated with Zika virus and born to women who were exposed¹ to Zika virus while pregnant OR infants who do not have obvious congenital abnormalities at birth and were born to women who were equivocal or positive on Zika virus testing: Specimens can be submitted after birth or when the abnormality is identified.
- Preauthorization of testing by the LHD where the patient resides continues to be required for testing performed by NYSDOH's Wadsworth Center and NYCDOHMH's PHL.
 - For NYS residents living outside of NYC:
 - LHD contact information is available at: https://www.health.ny.gov/contact/contact_information/
 - Providers must also provide the specimen collection site with a completed NYSDOH Infectious Diseases Requisition (IDR) form, which is available at http://www.wadsworth.org/sites/default/files/WebDoc/1065760803/infectious_diseases_requisition_DOH_4463.pdf
 - For NYC residents, call the NYC DOHMH Provider Access Line at 866-692-3641.

Zika Virus Test Results Interpretation

- For persons with suspected Zika virus infection, a **positive** rRT-PCR result confirms Zika virus infection.
- Because of the decline in the level of viremia/viruria over time and possible inaccuracy in reporting of dates of exposure and illness onset, a negative rRT-PCR result does not exclude Zika virus infection and additional serological testing is indicated.
 - In addition, if a specimen for serological testing is obtained within one week of symptom onset (or for asymptomatic pregnant women within 3 weeks of last exposure) then a second, convalescent, blood specimen should be obtained for repeat antibody testing.

⁵ Exposure is defined here as travel to an area with active mosquito-borne transmission of Zika virus or unprotected vaginal, anal, or oral sexual exposure with a sexual partner who traveled to an area with active mosquito-borne transmission of Zika virus. Eligibility for testing includes those pregnant women with possible Zika virus exposure during the 8 weeks before conception (6 weeks before the last menstrual period).

- In appropriately timed specimens, negative screening antibody testing via the Zika IgM ELISA and the West Nile Virus Microsphere Immunofluorescence Assay (WNV MIA, which measures total flavivirus antibody) rules out recent or past infection with flaviviruses.
- If the Zika screening antibody screening tests yield positive, equivocal, or inconclusive results, a more specific test, the plaque reduction neutralization test (PRNT), should be performed on the paired acute and convalescent specimens. The PRNT assesses antibodies against Zika and dengue viruses (or other flaviviruses endemic to the region where exposure occurred). PRNT will help determine whether a presumptive positive screening antibody result against Zika virus reflects a recent or prior flavivirus infection or a false-positive result. The PRNT may also determine which flavivirus is responsible for the positive serologic response. NYSDOH's Wadsworth Center is the only laboratory in New York State that performs PRNT. Given the complicated nature of PRNT, it is recommended that each case, particularly those involving pregnant women, be discussed with public health authorities familiar with PRNT and its interpretation. General guidance for PRNT interpretation provided by CDC includes:
 - A PRNT positive against Zika virus, together with negative PRNTs against other flaviviruses is confirmatory for recent infection with Zika virus.
 - A PRNT positive for both Zika and dengue virus (or another flavivirus) provides evidence of a recent infection with a flavivirus but precludes identification of the specific infecting virus.
 - A negative PRNT against Zika virus in a specimen that is collected >7 days after illness onset rules out Zika virus infection.
- Providers can access public health consultation for assistance with interpretation of results by calling the LHD of the patient's county of residence or the NYSDOH Zika Information line at (888) 364-4723 weekdays from 9 am to 5 pm.

REPORTING SUSPECTED ZIKA VIRUS CASES

- Hospitals and providers must report all suspected cases of Zika virus (and all other arboviral diseases) to the LHD where the patient resides.
 - When a provider obtains LHD authorization for Zika virus testing at the public health laboratory, the suspected Zika virus case is considered reported, though additional information may be requested from the provider. However, if the provider orders Zika virus testing commercially, the provider also must report the suspected case to the LHD.
- **If local, mosquito-borne transmission of Zika virus is suspected because a patient with any laboratory evidence of possible Zika virus infection does not report travel to a country with active mosquito-borne Zika virus transmission or a sexual partner who has traveled these areas, LHD notification should be immediate.** Contact information for LHDs is available at https://www.health.ny.gov/contact/contact_information/. Providers who cannot reach the LHD can access 24/7/365 public health consultation from NYSDOH at 518-473-4439 during business hours and 866-881-2809 evenings, weekends, and holidays

MOSQUITO SURVEILLANCE AND PUBLIC INFORMATION

- NYSDOH's seasonal mosquito surveillance and testing program has begun. NYSDOH conducts surveillance for mosquito-borne viruses that pose a risk to human health including Zika virus, West Nile virus (WNV) and Eastern Equine Encephalitis virus (EEEV).
 - During the mosquito season, NYSDOH publishes a weekly mosquito-borne disease activity report, which is available on the Department's website at http://www.health.ny.gov/diseases/zika_virus/.

NYSDOH encourages providers to contact their [LHD](#) or the NYSDOH Zika Information line with any questions. The NYSDOH Zika Information line can be reached at (888) 364-4723 weekdays from 9 am to 5 pm. Additional information can be found on the NYSDOH website at www.nyhealth.gov.