Philadelphia Department of Public Health
Division of Disease Control

THOMAS A. FARLEY, MD, MPH
Health Commissioner

CAROLINE C. JOHNSON, MD
Acting Deputy Health Commissioner &
Director, Division of Disease Control

Health Advisory

Zika Virus Update: Epidemiology, Laboratory Testing, and Reporting

August 11, 2016

SUMMARY POINTS

- Locally-acquired Zika has been identified in Miami's Wynwood neighborhood
- Zika testing (rRT-PCR and IgM MAC-ELISA) is now available through commercial laboratories
- Testing recommendations are updated to include:
  - o IgM testing of convalescent specimens when rRT-PCR is negative.
  - o Serum and urine rRT-PCR testing for pregnant women seen within 14 days of illness onset or last exposure. rRT-PCR testing is also recommended following positive IgM tests in pregnant women if not initially performed.

Domestic transmission of Zika virus in Florida, increased summer travel, and the height of mosquito season in Philadelphia compels the need for area providers to remain vigilant regarding Zika virus recognition and prevention. To date, 14 cases of travel-associated Zika virus have been identified among Philadelphia residents. Providers are requested to order appropriate laboratory testing for patients meeting clinical and epidemiological criteria for Zika through commercial or public health laboratories. All suspect cases of Zika infection should be reported to the Philadelphia Department of Public Health (PDPH) including congenital infections and those with neurological complications. Providers can also assist PDPH by disseminating prevention guidance specific to travel, sexual transmission, and mosquito control to their patients.

Epidemiology Update

Mosquito surveillance has not identified the specific vector responsible for the current outbreak locally (*Aedes aegypti)*. Fourteen cases of laboratory-confirmed Zika infection have been identified in Philadelphia residents to date. All cases have been associated with travel to affected countries. Within the United States 1,825 cases of laboratory-confirmed Zika virus have been reported, of which nearly all were acquired through travel outside the US. However, since July 2016, locally-acquired mosquito-borne Zika infections among persons who did not travel have been documented in Miami–Dade and Broward counties in Florida. At present, active local Zika transmission in Florida appears limited to Miami's Wynwood neighborhood. For the most updated information on areas of Florida affected by Zika visit: http://www.cdc.gov/zika/intheus/florida-update.html. The virus continues to be widespread throughout the Caribbean and South/Central America. Affected countries are listed at http://www.cdc.gov/zika/geo.

Laboratory Testing

Providers should recognize that specimen collection and testing choices for Zika will depend on duration of time since disease onset or last exposure date. Newly expanded recommendations include the use of Zika rRT-PCR for screening pregnant women (http://www.cdc.gov/mmwr/volumes/65/wr/mm6529e1.htm).

Diagnostic testing is recommended for the following patients:

- Persons who develop Zika-specific symptoms (mild fever, rash, arthralgia, or conjunctivitis) during or within two weeks of Zika exposure
- Exposed persons with severe Zika manifestations or complications (e.g., congenital Zika, Guillain-Barré syndrome, encephalitis, meningitis, myelitis, etc.)
- Asymptomatic and symptomatic pregnant women with possible Zika exposure

Zika exposure is defined as travel to an affected area, unprotected sexual contact with a traveler to an affected area, or other potential epidemiologic links (transfusion/transplant recipients, maternal-fetal transmission, household contacts/neighbors of infected persons as discussed with PDPH, etc.).

In general, providers should submit both serum and urine for Zika rRT-PCR testing if the patient is seen within 14 days of illness onset or last exposure (for asymptomatic pregnant women). Serum IgM testing alone is recommended if specimens are collected after the initial 14 day window. Specific detail on testing selection (PCR and/or IgM) by collection date is presented in the table below. Since Zika viremia is transient, negative PCR results alone are not sufficient to rule out Zika. In addition, IgM results may be falsely negative if serum is

collected too early. Therefore, new recommendations include collecting an additional convalescent serum specimen for IgM testing from patients who had negative test results during the first week of illness or following exposure. For pregnant patients with initial specimen collection 2-12 weeks after onset or exposure, a positive or equivocal Zika IgM should be reflexed to rRT-PCR.

Zika Testing Recommendations by Clinical Status, Specimen Collection Timing, and Laboratory

Clinical Status	Specimen Collection Timing (from Symptom Onset or Last Exposure, if Asymptomatic)	Preferred Specimen Type(s)* and Test(s)	Laboratories†	Additional Testing
Exposed, symptomatic, non-pregnant patients	Day 1–3	Serum rRT-PCR and Urine rRT-PCR	PABOL, LabCorp, ViraCor, Quest‡	If neg, submit serum from ≥Day 14 for IgM testing
	Day 4–7	Serum rRT-PCR, Serum IgM, and Urine rRT-PCR	PABOL, LabCorp	If neg, submit serum from ≥Day 14 for IgM testing; If IgM pos, laboratory to forward for PRNT testing
	Day 8–13	Serum IgM and Urine rRT-PCR	PABOL, LabCorp	If neg, submit serum from ≥Day 14 for IgM testing' If IgM pos, laboratory to forward for PRNT testing
	Day 14–12 weeks	Serum IgM	PABOL, LabCorp	If IgM pos, laboratory to forward for PRNT testing
Exposed, pregnant patients (asymptomatic and symptomatic)	Day 1–14	Serum rRT-PCR and Urine PCR	PABOL, LabCorp, ViraCor, Quest‡	If neg, submit serum from ≥Day 14 for IgM testing; If IgM pos, laboratory to forward for PRNT testing
	Day 14–12 weeks	Serum IgM	PABOL, LabCorp	If IgM pos, reflex to rRT-PCR; subsequent negative rRT-PCR should be forwarded for PRNT testing

Abbreviations PABOL, Pennsylvania Department of Health Bureau of Laboratories; PRNT, Plaque-reduction neutralization tests
*Serum should be collected in a serum separator (red or tiger-top) tube, centrifuged to prevent hemolysis, and stored refrigerated or frozen.
†In addition to Zika testing, providers should order testing for dengue and chikungunya viruses as well, given clinical and epidemiologic similarities.
‡Quest does not currently perform PCR-testing on urine specimens.

Reporting

Providers should report suspect Zika cases to PDPH at (215) 685-6742 during business hours. These include clinically mild cases, more severe neurological cases such as Guillain-Barré Syndrome or encephalitis, and congenital defects that may be associated with Zika infection. Please provide patient demographics along with clinical, travel, arboviral disease and prior yellow fever and/or dengue vaccine history. Pregnant women with Zika and infants with congenital Zika virus infections will be followed by PDPH and the Centers for Disease Control and Prevention (CDC) National Zika Pregnancy Registry to help in better understanding of Zika-associated congenital infections.

Zika Virus Prevention

Zika virus is best prevented through mosquito control and practicing mosquito bite prevention activities, particularly when traveling to or returning from Zika-affected areas. Residents are reminded to utilize screens and remove standing water around their home. To prevent mosquito bites residents should use insect repellent and consider wearing long sleeves and pants. Women who are pregnant or are trying to conceive should avoid all travel to Zika-affected areas including areas identified by the Florida Department of Health where local transmission has been identified. Returning travelers should use effective contraceptive methods for 8 weeks to 6 months, depending on circumstances of travel. For more information on the prevention of sexual transmission and duration of precautions, see the resource section below.

Additional Resources

- PDPH Surveillance Report, Diagnostic Testing Algorithm, and Patient Education Materials: https://hip.phila.gov/DiseaseControlGuidance/DiseasesConditions/Arboviruses/Zika
- Sexual Transmission Prevention and Testing Guidance: http://www.cdc.gov/zika/hc-providers/clinical-guidance/sexualtransmission.html