



NEW YORK CITY DEPARTMENT OF
HEALTH AND MENTAL HYGIENE
Mary T. Bassett, MD, MPH
Commissioner

2016 DOHMH Health Alert #50: Congenital Zika Virus Syndrome in New York City Infants and Important Information Regarding Zika Virus Testing

Please share with your colleagues in Obstetrics/Gynecology, Maternal/Fetal Medicine, Pediatrics, Neonatology, Infectious Disease, Neurology, Internal Medicine, Family Medicine, and Emergency Medicine:

- **Five New York City infants have been identified with congenital Zika virus syndrome.**
- **Ask pregnant women at each prenatal encounter about Zika virus exposure, including through travel or unprotected sex with a traveler, and test if any history of exposure.**
- **Report any fetus or infant with findings potentially due to congenital Zika virus infection, regardless of the results of maternal Zika testing.**
- **Any patient with a positive or equivocal result on testing by Zika IgM (with negative results on Zika nucleic acid amplification) will require additional testing by plaque reduction neutralization before determining the final Zika result.**

December 7, 2016

Dear Colleagues,

From January 1 – December 2, 2016, more than 8,000 New York City (NYC) residents have been tested for Zika virus. Of these, 962 New Yorkers have tested positive for Zika viral infection, including 325 pregnant women (92 of whom have confirmed Zika virus infection, and 233 who meet the criteria for probable infection indicating recent infection with an undifferentiated flavivirus). All cases were associated with travel. Of these travel-associated cases, six were transmitted sexually.

To date, more than 200 infants have been born in NYC to women with laboratory evidence of Zika virus infection during pregnancy. The Health Department is following these infants for the first year of life to assess for sequelae of congenital Zika virus exposure. Five infants have been diagnosed with congenital Zika virus syndrome, a constellation of anomalies that includes microcephaly, brain and eye abnormalities, congenital contractures, and/or neurologic impairment.[1] All five infants had laboratory evidence of Zika virus infection. Notably, the mothers of three infants tested negative on nucleic acid amplification (NAAT) and IgM testing, likely due to an extended interval between infection and testing; all three mothers had exposure in the earlier part of pregnancy but were not tested until the third trimester. For the remaining two infants with congenital Zika syndrome, one mother had laboratory evidence of recent Zika virus infection, and one mother has not been tested. Eight additional NYC infants have laboratory evidence of Zika virus infection, but no evidence of congenital Zika virus syndrome. More cases of congenital Zika virus syndrome may be identified in the future, because there are still many women in NYC who are currently pregnant and have evidence of Zika virus infection.

Pregnant women exposed to Zika virus, either through travel or unprotected sex with a traveler, should be tested for Zika virus. A mother's test results influence if and how the infant is evaluated at birth and followed for the first year of life.[2] To ensure infants with possible congenital Zika virus infection are identified promptly, prenatal and pediatric care providers should:

1. Screen pregnant women for exposure to Zika virus at each prenatal encounter

Pregnant women should be screened for Zika virus exposure at each prenatal encounter and, unless already laboratory-positive, upon presentation for labor. Some women may have multiple exposures to Zika virus throughout pregnancy or a single exposure late in pregnancy. In the absence of maternal Zika virus testing results, appropriate assessment of infants with potential congenital Zika virus infection may be delayed by weeks.

2. Be aware of the limitations of testing for Zika virus infection

Testing for Zika virus infection is complex, and providers should be aware of its limitations. First, both Zika NAAT and Zika IgM generally identify only recent infections and cannot detect past maternal infection reliably (i.e., if specimens were collected more than 12 weeks after infection). Zika testing soon after exposure increases the likelihood of detecting evidence of infection. In addition, the sensitivity of routine Zika diagnostic testing for infants following potential congenital exposure is unknown. Some infants with congenital Zika virus infection may have negative results by Zika NAAT and IgM in serum.[3]

Second, the Zika IgM test is not specific to Zika virus. Closely related flaviviruses, such as dengue, may cross-react with the Zika IgM test, producing a positive result in the absence of a recent infection with Zika. A positive or equivocal Zika IgM test result does not confirm a diagnosis of Zika virus infection. Providers should await results of plaque reduction neutralization testing (PRNT) before making a final diagnosis. Even with PRNT results, serologic testing may not yield a specific flavivirus diagnosis. All commercial laboratories testing NYC residents will automatically forward specimens with an equivocal or positive Zika IgM result to the New York State Department of Health Wadsworth Center for both repeat IgM and PRNT.

3. Negative Zika testing results do not rule out infection in pregnant women and infants

Providers concerned about findings potentially consistent with congenital Zika virus infection should contact the Health Department for consultation and possible additional testing for the mother and infant. Three of the NYC infants with congenital Zika virus syndrome were born to mothers with negative Zika NAAT and IgM testing. Upon additional testing, all three mothers were positive on PRNT for both Zika and dengue, which suggests maternal infection with Zika and/or dengue virus at an undetermined time. Given the clinical and laboratory findings for their infants, these cases are consistent with maternal exposure to Zika virus during early pregnancy.

4. Consider Zika virus testing for microcephalic infants born to mothers who report no exposure

Pediatric care providers should consider Zika virus testing for infants with microcephaly and other findings consistent with congenital Zika syndrome, even in the absence of reported maternal Zika virus exposure. Individuals may not be forthcoming about travel history (e.g., may have concerns due to their immigration status), and women also may not have complete information about their own exposure (i.e., may not be aware of travel history of all sexual partners). Consequently, providers should consider testing for Zika virus as part of the evaluation of infants presenting with microcephaly or other central nervous system abnormalities consistent with congenital Zika virus syndrome.

Please continue to call **1-866-692-3641** to report the following cases to the Health Department:

- Pregnant women with possible exposure to Zika virus during pregnancy who have prenatal evidence of microcephaly, intracranial calcifications, and/or other central nervous system abnormalities
- Infants born to women with confirmed or probable Zika virus infection, ideally at the time of delivery
- Infants with findings consistent with congenital Zika virus syndrome (i.e., microcephaly, brain and eye abnormalities, congenital contractures, neurologic impairment), even when maternal Zika virus laboratory test results are negative, or when the mother has not been tested for Zika virus.

As always, we are grateful for your continued collaboration in our response to Zika virus in NYC.

Sincerely,



Jay K. Varma, MD

Deputy Commissioner, Disease Control

References

1. Moore, C.A., et al., *Characterizing the Pattern of Anomalies in Congenital Zika Syndrome for Pediatric Clinicians*. JAMA Pediatr. (Published online November 3, 2016, published ahead of print)
2. Russell, K., et al., *Update: Interim Guidance for the Evaluation and Management of Infants with Possible Congenital Zika Virus Infection - United States, August 2016*. MMWR Morb Mortal Wkly Rep. **65**(33): p. 870-878.
3. van der Linden, V., et al., *Description of 13 Infants Born During October 2015-January 2016 With Congenital Zika Virus Infection Without Microcephaly at Birth - Brazil*. MMWR Morb Mortal Wkly Rep, 2016(22 November 2016).

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