



## Questions and Answers on Zika Virus (ZIKV) for Health Care Providers

### General Topics

#### ***What are the symptoms of ZIKV infection?***

Only about one in five infected people develop any symptoms. If symptoms occur, they usually start 2-7 days after exposure. The most common symptoms are fever, maculopapular rash, joint pain, and conjunctivitis. Other symptoms may include headache, muscle pain, pain behind the eyes, and vomiting.

Symptoms typically last several days to a week. Infection with ZIKV is usually mild, and hospitalization is uncommon. There have been rare reports of death in patients with pre-existing diseases or other health conditions.

Cases of Guillain-Barré Syndrome (also known as GBS) have been reported in patients following ZIKV infection. Although the association between GBS and ZIKV appears strong, the precise relationship is not known, and GBS remains a rare condition.

#### ***How is the ZIKV transmitted?***

ZIKV is spread to people primarily through the bite of an infected mosquito. Also, a person with ZIKV can pass it to his or her sex partner(s) through vaginal, anal, or oral sex and the sharing of sex toys. A pregnant woman can pass ZIKV to her fetus during pregnancy or around the time of birth.

#### ***What repellent should I recommend for prevention of mosquito bites?***

To prevent ZIKV and other diseases spread by mosquitoes, use Environmental Protection Agency (EPA)-registered insect repellents on exposed skin. The insect repellent should include one of the following ingredients: DEET, picaridin, IR3535, oil of lemon eucalyptus, para-menthane-diol, or 2-undecanone. Higher percentages of active ingredient provide longer protection. Always follow the label instructions when using insect repellent. Information on additional protective measures is available at [https://www.health.ny.gov/diseases/zika\\_virus/mosquitoes.htm](https://www.health.ny.gov/diseases/zika_virus/mosquitoes.htm).

#### ***Is there treatment for ZIKV infection? Is there a vaccine for ZIKV?***

No vaccines or medications are available to prevent or treat ZIKV infections. Acetaminophen may provide symptomatic relief for fever and joint/muscle pain. Because dengue infection may not be clinically distinguishable from ZIKV infection at presentation, aspirin and other non-

steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and naproxen should be avoided so as not to exacerbate potential hemorrhagic complications of dengue.

### ***Are there areas of ZIKV risk in the continental United States?***

No areas within the continental United States currently have ZIKV travel precautions. Local mosquito-borne transmission of ZIKV has been documented in discrete areas of Florida and Texas. Based on lack of evidence for sustained local transmission, the Centers for Disease Control and Prevention (CDC) discontinued travel precautions for Miami, FL, on June 2, 2017, and for Brownsville, TX, on August 29, 2017. Additional information about areas of ZIKV risk can be found at <https://www.cdc.gov/zika/intheus/florida-update.html> (Florida), <https://www.cdc.gov/zika/intheus/texas-update.html> (Texas), and <https://wwwnc.cdc.gov/travel/page/world-map-areas-with-zika> (worldwide).

The primary vector for ZIKV, the *Aedes aegypti* mosquito, is found in many areas of the southern United States, and local transmission may occur. Another species of mosquito, *Aedes albopictus*, may also be capable of transmitting ZIKV. This mosquito has a broader range in the United States and has been found in New York State (NYS) in the lower Hudson Valley, Long Island, and New York City (NYC). Persons residing in, or traveling to, areas where these mosquito vectors are present should protect themselves from mosquito bites.

### ***Which patients should I test for ZIKV?***

ZIKV testing is **recommended** by NYS Department of Health (DOH) and CDC for:

- Any individual with recent potential exposure that presents with symptoms consistent with ZIKV
- Symptomatic pregnant women with possible ZIKV exposure
- Asymptomatic pregnant women with ongoing exposure to ZIKV (ongoing exposure is defined as residence in or frequent travel to an area with risk of ZIKV transmission)
- Pregnant women with possible ZIKV exposure who have a fetus with prenatal ultrasound findings consistent with congenital ZIKV infection
- Infants with clinical findings consistent with congenital ZIKV syndrome and possible maternal ZIKV exposure during pregnancy, regardless of maternal testing results
- Infants without clinical findings consistent with congenital ZIKV syndrome born to mothers with laboratory evidence of definitive or possible ZIKV infection during pregnancy

ZIKV testing **may be considered** for:

- Asymptomatic pregnant women with recent possible (but no ongoing exposure) to ZIKV
  - Testing may be considered on a case-by-case basis as part of a shared provider-patient decision-making process
- Infants without clinical findings consistent with congenital ZIKV syndrome born to mothers with possible ZIKV exposure in pregnancy who have not had laboratory assessment for their most recent ZIKV exposure during pregnancy
  - Testing may be considered on a case-by-case basis as part of a shared provider-patient decision-making process

ZIKV testing is **not recommended** for:

- Asymptomatic non-pregnant individuals
- Preconception screening

### ***How can I arrange ZIKV testing for my patients?***

Several commercial laboratories provide PCR testing on urine and serum (or plasma) as well as IgM antibody testing. Practitioners ordering ZIKV testing through commercial laboratories will need to order the tests most appropriate for the patient's circumstance.

Wadsworth Center, the NYSDOH public health laboratory, provides comprehensive ZIKV testing including PCR testing on serum, whole blood, and urine as well as IgM antibody testing. Health care providers can request ZIKV testing without specifying the precise tests to be conducted. Before February 28, 2018, providers should contact the Zika Information Line at 888-364-4723 for testing authorization.

After February 28, 2018, the NYSDOH will no longer designate centers for collection and transport of specimens to Wadsworth. However, Wadsworth will continue to accept specimens submitted from laboratories or provider offices.

Instructions for specimen preparation and submission can be found at [https://www.health.ny.gov/diseases/zika\\_virus/providers.htm](https://www.health.ny.gov/diseases/zika_virus/providers.htm).

### ***What tests do I need to order if I suspect that my patient may have been exposed to ZIKV?***

Symptomatic patients with recent possible exposure (within 3 months) should be evaluated with serum ZIKV IgM antibody testing and PCR/NAAT of urine and serum (or plasma and/or whole blood, depending on the assays offered by the testing laboratory). PCR is a form of NAAT, or nucleic acid amplification testing. Because false positive IgM values can occur, additional testing is needed with plaque reduction neutralization tests (PRNT) to assess total antibody to ZIKV before clinical decision-making based on a positive IgM. Commercial labs are required to ship IgM positive serum to the NYSDOH Wadsworth Center for PRNT. Occasionally, the medical provider may need to obtain additional serum from the patient for PRNT testing.

Patients with ZIKV infection more than 3 months before testing may test PCR/NAAT and IgM negative. If defining the past ZIKV exposure status is important clinically, testing for total antibody via microsphere immunofluorescence assay (MIA) and plaque reduction neutralization tests (PRNT) is available through the NYSDOH Wadsworth Center.

### ***How should ZIKV test results be interpreted?***

Documents designed to assist with the interpretation of laboratory results reported from Wadsworth Center are available at: [https://www.health.ny.gov/diseases/zika\\_virus/providers.htm](https://www.health.ny.gov/diseases/zika_virus/providers.htm).

Additional information on interpretation of laboratory results, including results from commercial laboratories, is available at: <https://www.cdc.gov/zika/hc-providers/pregnant-women/testing-and-diagnosis.html>.

ZIKV test interpretation has challenges and limitations. Both PCR/NAAT and IgM testing are time-limited in their ability to detect evidence of ZIKV. Generally, PCR/NAAT is only positive for days to weeks following infection while IgM testing is only positive for weeks to a few months following infection. In addition, serological cross-reactivity with related Flaviviruses (e.g., dengue and yellow fever viruses) is common. PRNT can be performed to measure virus-specific

neutralizing antibodies, but cross-reactivity with PRNT is also common following other Flavivirus exposure or vaccination.

Health care providers can access ZIKV subject matter experts to assist with test interpretation and other Zika-related questions through the NYSDOH Zika Information Line at 888-364-4723 on workdays Monday through Friday from 9 am to 5 pm through February 28, 2018. As of March 1, 2018, routine questions may be directed to the LHD; contact information for LHDs is available at [https://www.health.ny.gov/contact/contact\\_information/](https://www.health.ny.gov/contact/contact_information/). Assistance with test interpretation can be obtained by calling the NYSDOH Bureau of Communicable Disease Control at 518-473-4439.

## **Conception and Pregnancy**

### ***Why is ZIKV a concern for women who are pregnant, or trying to become pregnant?***

ZIKV is an established cause of congenital ZIKV syndrome, which may include microcephaly, intracranial calcifications, cerebral atrophy, abnormalities of the cerebrum, corpus callosum, and cerebellum, porencephaly, hydrancephaly, fetal brain disruption sequence, neural tube defects, spina bifida, eye abnormalities, chorioretinal anomalies, deafness and congenital contractures.

Other abnormalities have been reported in conjunction with maternal ZIKV infection, such as pregnancy loss, intrauterine growth retardation, and post-birth development of microcephaly.

### ***My patient is asking to be tested as part of pre-conception counseling. How should I proceed?***

Testing blood, urine, or genital secretions to assess ZIKV as part of preconception assessment is **not** recommended.

Also, patterns of Zika shedding in semen or vaginal fluids are not well-understood. Zika shedding in these secretions may be intermittent. Studies are underway to better understand this biological response and inform interpretation of test results from semen and vaginal fluids.

Additional information that may be helpful in preconception counseling can be found at <https://www.cdc.gov/zika/hc-providers/clinical-guidance/sexualtransmission.html>.

### ***How long after travel to an area with risk of ZIKV transmission should a couple abstain/practice safe sex before attempting to conceive?***

Non-pregnant couples with a partner who traveled to an area with risk of ZIKV should consider using condoms or abstaining from sex. The recommended duration of the waiting period before attempting conception depends on the sex of the potentially exposed person:

- Females who have traveled should wait at least 8 weeks after the travel (in absence of symptoms) or at least 8 weeks after illness onset (if symptoms develop)
- Males who have traveled should wait at least 6 months after travel (in absence of symptoms) or at least 6 months after illness onset (if symptoms develop). Further information can be found at <https://www.cdc.gov/zika/hc-providers/clinical-guidance/sexualtransmission.html>.

***My pregnant patient is planning a trip. How can I assess the risk of ZIKV at her intended destination, and what guidance should I provide if ZIKV infection is a risk?***

Persons considering travel should consult CDC recommendations for their intended destination, available at <https://wwwnc.cdc.gov/travel/page/zika-information>. This site is updated as information about ZIKV changes. Pregnant women are advised not to travel to areas with a risk of ZIKV infection.

If the patient decides to travel, she should be advised to avoid mosquito bites. Information on protective measures is available at [https://www.health.ny.gov/diseases/zika\\_virus/mosquitoes.htm](https://www.health.ny.gov/diseases/zika_virus/mosquitoes.htm).

***An already pregnant couple wants to know about the safety of sex after the non-pregnant partner visits an area with risk of ZIKV transmission. What should I advise them?***

If the sexual partner of a pregnant woman travels to an area with risk of ZIKV, the couple should use condoms from start to finish every time they have oral, anal or vaginal sex or not have sex for the entire pregnancy, even if the traveler does not have symptoms of ZIKV or feel sick.

CDC and NYSDOH recommend that until more is known, sexual partners of pregnant women who have traveled to or lived in an area where ZIKV is active during the pregnancy should not have sex or should always and correctly use condoms every time they have sex (vaginal, anal or oral) during pregnancy. Information on using condoms correctly is available from CDC at [How to Use a Condom Consistently and Correctly \(cdc.gov\)](http://www.cdc.gov/condom/index.html).

***Should pregnant women who may have been exposed to ZIKV through travel or sexual contact be tested?***

Symptomatic pregnant women who have traveled to or resided in a ZIKV-affected area during pregnancy or the eight weeks prior to pregnancy should be tested. Testing can be considered for asymptomatic pregnant women with recent possible exposure to ZIKV but no ongoing exposure on a case-by-case basis as part of a shared provider-patient decision-making process.

Similarly, symptomatic pregnant women should be tested if during pregnancy or in the eight weeks prior to conception, they had unprotected vaginal, anal or oral sex with a partner who traveled to an area with active mosquito-borne transmission of ZIKV. Testing can be considered for asymptomatic pregnant women with possible sexual exposure to ZIKV on a case-by-case basis as part of a shared provider-patient decision-making process. Testing should be considered regardless of whether the sex partner had symptoms.

***My pregnant patient received testing through NYSDOH's Wadsworth Center. How do I interpret the test results?***

The following documents provide guidance on test interpretation. They are available at [https://www.health.ny.gov/diseases/zika\\_virus/providers.htm](https://www.health.ny.gov/diseases/zika_virus/providers.htm).

- "A Healthcare Provider's Guide to Zika Virus Laboratory Results from the NYSDOH Wadsworth Center - May 25, 2017"

- “Interpretation of Zika Virus Serology Performed at the New York State Department of Health Wadsworth Center - May 31, 2017”

Result interpretation can be particularly challenging when dealing with pregnant women with ongoing or prolonged potential exposure to ZIKV. ZIKV IgM antibodies may persist in the body for months after infection, making it difficult to determine if the woman was infected before or after she became pregnant or during the periconception period. Definitive exclusion of ZIKV infection may not be possible, especially in the absence of appropriately timed specimens evaluated by serology inclusive of total antibody assays (ie, MIA and/or PRNT). Providers are reminded to discuss complexity of testing and test results with patients as part of pre-test counseling.

Additional resources related to patient counseling are available at <https://www.cdc.gov/zika/hc-providers/pregnant-women/patient-counseling.html>. Medical providers can also contact the NYSDOH Zika Information Line at 888-364-4723 Monday through Friday 9 am to 5 pm on workdays for assistance through February 28, 2018. After that date, inquiries may be directed to NYSDOH ZIKV subject matter experts at 518-473-4439.

***I have a pregnant patient with laboratory evidence of ZIKV infection. What is the likelihood that her infant will be affected?***

In 2016 in the United States, approximately 10% of infants born to mothers with laboratory confirmed maternal ZIKV infection during pregnancy had ZIKV associated birth defects. (See [https://www.cdc.gov/mmwr/volumes/66/wr/mm6613e1.htm#T1\\_down](https://www.cdc.gov/mmwr/volumes/66/wr/mm6613e1.htm#T1_down).) Some infants described as normal at birth born to mothers with ZIKV infection during pregnancy in Brazil have developed microcephaly and other neurological findings in the months after birth. The incidence of these later complications is unknown.

***I have a pregnant patient with laboratory evidence of ZIKV infection. Are there additional precautions that need to be in place during labor and delivery?***

Standard Precautions are recommended to prevent exposure of healthcare personnel to ZIKV. ZIKV has been demonstrated in multiple body fluids and tissues, including blood, urine, breast milk, semen, and vaginal fluids. Additional information on infection control and potential Zika exposures in healthcare settings can be found at <https://www.cdc.gov/zika/hc-providers/infection-control.html>.

## **Infants**

***Is it safe for ZIKV-infected mothers to breastfeed their infants?***

Current recommendations from both the CDC and the World Health Organization (WHO) are that women should be encouraged and supported to breastfeed their infants, regardless of maternal or infant ZIKV testing results. Although ZIKV RNA has been identified in breast milk, there are no reports of ZIKV infection associated with breastfeeding.

### ***Which infants should be tested at birth?***

ZIKV testing is recommended for:

- Infants with clinical findings consistent with congenital ZIKV syndrome regardless of maternal testing results
- Infants without clinical findings consistent with congenital ZIKV syndrome born to mothers with laboratory evidence of possible ZIKV infection during pregnancy

### ***What tests should I order on the day of delivery for an infant who I suspect may have been exposed to ZIKV? Is placental testing advised?***

The following tests should be ordered if infant testing is indicated:

- Serum (or plasma), whole blood, and urine PCR/NAAT
- IgM antibody

Placenta testing with PCR/NAAT can be considered for women with laboratory evidence of ZIKV who do not have a definitive diagnosis of ZIKV infection during pregnancy. Placental testing should also be considered in the setting of infant abnormalities consistent with congenital ZIKV syndrome if the mother had potential exposure to ZIKV during pregnancy but did not receive testing. Evidence of ZIKV nucleic acid in the placenta confirms a diagnosis of ZIKV infection during pregnancy for the mother, but it does not confirm congenital ZIKV infection.

Further information about testing at birth is available at [https://www.health.ny.gov/diseases/zika\\_virus/providers.htm](https://www.health.ny.gov/diseases/zika_virus/providers.htm). Telephone inquiries may be directed to the Zika Information Line at 888-364-4723 through February 28, 2018, and to 518-473-4439 thereafter.

### ***An infant was born with laboratory evidence of or clinical findings consistent with congenital ZIKV infection. How should I proceed?***

Infants with evidence of congenital ZIKV infection and/or laboratory evidence of infant ZIKV infection should have:

- A standard newborn evaluation
- Comprehensive ophthalmologic exam by age 1 month
- Head ultrasound by age 1 month
- Automated ABR by age 1 month

Infants with clinical findings may need referral to pediatric subspecialists, developmental specialists, and/or early intervention services.

See <https://www.cdc.gov/mmwr/volumes/66/wr/mm6641a1.htm> for further information about the diagnosis, evaluation and management of infants with possible congenital ZIKV infection.

Information on referral to Early Intervention Services in NYS can be found at [https://www.health.ny.gov/community/infants\\_children/early\\_intervention/](https://www.health.ny.gov/community/infants_children/early_intervention/).

### ***Where can health care providers go for detailed guidance on recognizing, managing, and reporting ZIKV infections?***

**NYSDOH:** [https://www.health.ny.gov/diseases/zika\\_virus/providers.htm](https://www.health.ny.gov/diseases/zika_virus/providers.htm)

**CDC:** <https://www.cdc.gov/zika/hc-providers/index.html>

**NYC Department of Health and Mental Hygiene (for New York City residents):**  
<http://www1.nyc.gov/site/doh/providers/reporting-and-services.page>

**NYSDOH Zika Information Line** (through February 28, 2018): 888-364-4723  
**NYSDOH Bureau of Communicable Disease Control** (after February 28, 2018):  
518-473-4439 or [bcdc@health.ny.gov](mailto:bcdc@health.ny.gov)