

Get the Facts for Providers: Zika

Zika is a mosquito-borne disease that is currently spreading throughout many countries and territories, including small areas in the continental United States. A map of countries and territories with active Zika virus transmission is available at <http://www.cdc.gov/zika/geo/index.html>. Local mosquito-borne Zika virus transmission has been reported in the continental United States in Miami-Dade County in Florida and Cameron County in Texas. Most cases in the continental U.S. have been among travelers outside the U.S. to an area of ongoing transmission. Some cases have been reported in the U.S. following sexual transmission from travelers to non-travelers.

TRANSMISSION

How is Zika virus transmitted?

Zika virus is transmitted primarily through the bite of an infected *Aedes* species mosquito (*A. aegypti* and *A. albopictus*). These are the same mosquitoes that spread dengue and chikungunya viruses.

- Mosquitoes become infected when they feed on a person already infected with the virus. Infected mosquitoes can then spread the virus to other people through bites. Anyone who lives in or travels to an area where Zika virus is found and has not already been infected with Zika virus can get it from mosquito bites. Mosquito-borne transmission at elevations greater than 2,000 meters above sea level is unlikely.
- Zika virus may be transmitted from mother to fetus during pregnancy or around the time of birth; Zika virus causes microcephaly and other birth defects. The exact likelihood and extent of birth defects in babies born to mothers infected with Zika remains unknown. To date, no infants have been reported to get Zika virus infection through breastfeeding.
- Zika can be sexually transmitted from a person who has Zika to his or her sex partners, even while they are not symptomatic. Sex includes vaginal, anal and oral sex, and the sharing of sex toys. The virus remains in semen longer than in blood, but the duration and pattern of shedding is unknown and studies are ongoing.
- The virus may be found in blood donors; no blood transfusion transmission cases have been confirmed in the U.S. The U.S. Food and Drug Administration (FDA) has issued [guidance](#) to ensure blood safety and availability.

Once a person has been infected, he or she is likely to be protected from future infections. There is no evidence that past Zika infection poses an increased risk of birth defects in future pregnancies.

CLINICAL MANIFESTATIONS

How is Zika virus clinically different from chikungunya and dengue viruses?

It is important to note that Zika virus infection can cause signs and symptoms similar to those seen in patients with other arthropod-borne virus (arbovirus) infections, including dengue virus, a related flavivirus, and chikungunya virus, an unrelated alphavirus. It is also important to note that a positive result for one of these viruses does not preclude infection with the others. Co-infection with Zika virus and dengue or chikungunya viruses is rare, but possible.

Criteria for Zika testing at public health laboratories in symptomatic patients who are not pregnant require one of the following symptoms: fever, rash, arthralgia, or conjunctivitis.

Features	Zika	Dengue	Chikungunya
Fever	++	+++	+++
Rash	+++	+	++
Conjunctivitis	++	-	-
Arthralgia	++	+	+++
Myalgia	+	++	+
Headache	+	++	++
Hemorrhage	-	++	-
Shock	-	+	-

Who should healthcare providers assess for Zika exposure?

All pregnant women and women of reproductive age should be asked about Zika exposure at each prenatal visit and counseled about prevention. Health care providers should ask pregnant women about their own and their sex partner's history of travel to areas with active Zika virus transmission. Exposure includes travel (including planned upcoming travel) to affected areas, or unprotected sexual activity with a partner who traveled or will travel to affected areas. Infants with microcephaly or intracranial calcifications born to a woman who traveled to an area with Zika transmission during pregnancy should also be assessed.

DIAGNOSTIC TESTING

Testing algorithms were designed to accommodate the temporal nature of the appearance and disappearance of markers of Zika virus infection and to optimize testing for pregnant women. The Illinois Department of Public Health has compiled a Zika Virus Testing algorithm for specimens that will meet approval for testing in public health laboratories:

- [Illinois Flowchart: Authorization of Specimens for Zika Virus Testing.](#)
- [Illinois Flow Chart: Choosing Appropriate Zika Virus Test for Authorized Patients](#)

Which patients should I definitely test for Zika virus? Which patients can I consider testing for Zika virus?

In order to identify patients for Zika virus testing, gather information on:

- Pregnancy status
- Type of exposure and date of exposure
- Symptoms and date of symptom onset
- Travel history (location and dates)
- Ultrasound information, if applicable

Testing for Zika virus infection is **recommended** for the following individuals:

- Pregnant women presenting within 12 weeks of exposure with or without history of symptoms. Exposure may occur 8 weeks prior to conception, or any time during pregnancy. **Exposure includes travel to an area with ongoing Zika virus transmission or unprotected sex (i.e., vaginal, anal, oral sex, and the sharing of sex toys) with a partner who has traveled to an area of ongoing Zika virus transmission.**
- Pregnant women who have ultrasound findings of fetal microcephaly or intracranial calcifications and who report exposure at any time during the current pregnancy.
- Infants with microcephaly or intracranial calcifications born to a woman who was exposed while she was pregnant.
- Infants born to a mother with a positive or inconclusive test result for Zika virus infection.
- Individuals with appropriate exposure history and progressive unexplained symmetric weakness of the arms and legs. CDC research suggests that Guillain-Barre' Syndrome (GBS) is strongly associated with Zika; however, only a small proportion of people with recent Zika virus infection get GBS.
- Non-pregnant women and men with at least one or more symptoms consistent with Zika virus disease within two weeks of travel to an area with ongoing transmission (fever, rash, joint pain, or conjunctivitis).
- Symptomatic persons who have had unprotected sex (i.e., vaginal, anal, oral sex, and the sharing of sex toys) with a partner who has traveled to an area of ongoing Zika virus transmission.

Testing for Zika virus infection can also be **considered** for the following individuals:

- Pregnant women presenting beyond 12 weeks from exposure with or without history of symptoms.

What Zika virus testing assays are available?

Molecular and serologic diagnostic testing for Zika virus are available:

- Real-time reverse transcription-polymerase chain reaction (rRT-PCR) for detection of Zika virus RNA
- Zika MAC-ELISA (serology) for the detection of Zika IgM antibodies
- Plaque reduction neutralization tests (PRNT) for further analysis of virus-specific neutralizing antibodies to Zika virus and other endemic flaviviruses (e.g. dengue)

rRT-PCR and Zika MAC-ELISA testing are performed at the Illinois Department of Public Health (IDPH) laboratory. Specimen submission to IDPH laboratories requires prior approval (authorization code) from Chicago Department of Public Health for Chicago residents. To receive an authorization code and facilitate

testing at public health laboratories, please complete the **Test Authorization Form** available at the following link: <https://www.chicagohan.org/zforms>. Completed forms should be sent by fax to: Chicago Department of Public Health Communicable Disease program **FAX: 312-746-4683**. An authorization code will be emailed to the submitting provider within 24 hours (8am-4:30pm M-F; excluding state holidays). To avoid requiring patients to return for testing, obtain whole blood, serum and urine samples as soon as Zika virus testing is considered; hold these samples at your office/local laboratory while requesting authorization for testing (storage instructions are on page 6). Do NOT send to the IDPH Laboratory prior to obtaining an authorization code. The unique authorization code should accompany all specimens collected from an individual patient at the same time. **Testing performed by public health laboratories is at no cost to the patient or the ordering provider.** Please contact the CDPH Communicable Disease Program at **tel. 312-746-4835** with any questions.

Molecular and serologic Zika testing is now also available through commercial laboratories. Zika testing through commercial laboratories does not require prior CDPH authorization. However, additional testing and follow up may be required; CDPH may reach out to providers to collect information on symptoms and symptom onset date, exposure history and timing (travel or through sexual exposure), pregnancy status and ultrasound findings. Pregnant women with negative rRT-PCR results on specimens collected within 2 weeks of exposure and/or symptom onset, should have IgM antibody testing with a specimen drawn between 2-12 weeks after exposure. Testing assays and specimen requirements vary among commercial laboratories; additional detail regarding commercial laboratory testing are included below page 5.

What is the role of rRT-PCR in testing for Zika?

Detection of Zika virus RNA in any acceptable specimen type should be interpreted as sufficient evidence that an individual is infected with Zika. For symptomatic persons with Zika virus infection, Zika virus RNA can be detected early in the course of illness. rRT-PCR testing should be performed on serum, whole blood and urine specimens collected during the first two weeks after symptom onset. Whole blood and urine should always be collected with a patient-matched serum specimen for follow-up serology testing. rRT-PCR testing is also indicated for pregnant women who present for care ≥ 2 weeks after exposure and have been found to be IgM positive. A positive rRT-PCR test generally indicates the presence of virus in the blood or urine at the time of testing; patients undergoing rRT-PCR testing should also be counseled to protect themselves against mosquito bites to help prevent local transmission. Because of concurrent circulation of Zika, dengue, and chikungunya viruses and the similarity of illness presentation, CDC recommends concurrent rRT-PCR (e.g. Trioplex) testing for all three viruses in symptomatic patients with recent travel to an affected area and clinically compatible illness. Molecular testing performed by some commercial labs may solely test for ZIKV; additional molecular testing for dengue, and chikungunya viruses should also be ordered.

Note, failure to detect Zika virus RNA (i.e., a negative result on a molecular test) does not exclude Zika virus infection, and therefore serum should be analyzed by reflex IgM antibody (serological) testing.

rRT-PCR Zika virus RNA Testing-Specimen Collection Guidelines

Serum	Minimum volume of serum required for testing is 1.0 ml. Collect samples in serum separator tube to obtain total volume of 1.0 ml of serum (i.e., amount of whole blood required is approximately 2.5-3 ml). Centrifuge and transfer serum to a separate tube
Whole blood	Minimum volume required is 1.0 ml. Collect samples in EDTA (purple top) tube.
Urine	Collect 3 cc of urine in a sterile leak-proof container and wrap in parafilm.

What is the role of serologic testing for Zika?

In individuals who require testing after symptoms have resolved (or who never develop symptoms), rRT-PCR may not detect virus in the blood or urine. In these cases, the Zika IgM serology is the more appropriate initial test. Virus-specific IgM and neutralizing antibodies typically develop toward the end of the first week of illness; cross-reaction with related flaviviruses (e.g., dengue and yellow fever viruses) is common and may make the identification of the infecting virus difficult to discern when individuals have a past history of flavivirus infection or vaccination. Pregnant women with negative rRT-PCR results on specimens collected within 2 weeks of exposure and/or symptom onset should have IgM antibody testing with a specimen drawn between 2-12 weeks after exposure. For testing at IDPH lab, a new authorization request should be submitted to CDPH for each subsequent test ordered. Plaque reduction neutralization testing (PRNT) can be performed to measure virus-specific neutralizing antibodies and discriminate between cross-reacting antibodies in primary flavivirus infections. Specimens with IgM positive or equivocal performed at IDPH, will be sent to CDC for PRNT testing. Due to longer durations of viremia in some pregnant women with Zika virus infection, positive serologic testing will be reflexed to rRT-PCR testing to attempt definitive diagnosis.

How do interpret Zika MAC-ELISA IgM results for testing performed at IDPH?

Results	Interpretation	Next Steps
<i>Negative</i>	No serologic evidence of recent flavivirus infection if: Asymptomatic pregnant patient whose specimen was collected ≥ 2 weeks but < 12 weeks after last potential exposure (e.g., unprotected sex, time spent in a Zika affected area) or; Symptomatic patient whose specimen was collected ≥ 8 days but < 12 weeks after the onset of illness.	A second specimen for additional serologic testing should be collected for: (1) Asymptomatic pregnant patient - if specimen collected < 2 weeks after last potential exposure or, (2) Symptomatic patient - if specimen collected < 8 days after illness onset. Otherwise, if specimen was collected between 2 to 12 weeks after last potential exposure or between 8 days to 12 weeks after symptom onset, results suggest no serological evidence of recent Zika virus infection.
<i>Presumptive Positive or Equivocal</i>	Test result suggests recent exposure to a flavivirus. However, a presumptive positive or equivocal result may be due to infection with another flavivirus.	Zika IgM positive result is reported as “presumptive positive” to denote the need to perform confirmatory PRNT. PRNT may help: (1) determine the flavivirus to which the patient was exposed, or (2) rule out a false positive Zika MAC- ELISA IgM result. For pregnant women, positive serology should be followed by rRT-PCR on serum, whole blood and urine.
<i>Inconclusive</i>	It is not possible to interpret the result of this test because of high background signal.	Additional testing required. Specimen will be forwarded to CDC for repeat serology and confirmatory PRNT testing.

My patient meets criteria for Zika virus testing—which test(s) should be ordered?

For testing pregnant and non-pregnant **SYMPTOMATIC** individuals with specimens collected **< 14 days following symptom onset:**

- Test whole blood, serum and urine with a Zika virus RNA rRT-PCR. A RNA-positive Zika virus rRT-PCR result in any specimen is sufficient to diagnose Zika virus infection. However, a negative rRT-PCR result does not exclude Zika virus infection.
- If Zika virus RNA rRT-PCR results are negative, serum should be tested for the presence of Zika IgM on a serum specimen collected ≥ 8 days but < 12 weeks after the onset of illness. Testing for dengue IgM should also be performed if the patient is pregnant or potentially exposed to dengue virus.

For individuals who are **SYMPTOMATIC** and specimens are collected **≥ 14 days following symptom onset:**

Initial testing should be done with a Zika IgM serology. For non-pregnant symptomatic patients, a reactive (Equivocal, Presumptive Positive /Possible Zika Positive, or Inconclusive) Zika IgM result is followed by PRNT to confirm the diagnosis.

Note to Health Care Providers: There are limited data that indicate RNA may persist longer in urine and whole blood, so collection of these specimen types, in addition to serum, may be beneficial to conduct RNA testing ≥ 14 days following symptom onset.

Additional criteria and testing strategies apply for pregnant women:

- If a positive Zika IgM result is obtained in specimens collected ≥ 14 days after onset of symptoms or potential exposure, testing by Zika RNA rRT-PCR (on all appropriate specimen types available) should be performed. If the Zika RNA rRT-PCR test results are negative, testing should proceed to PRNT to test for the presence of neutralizing Zika antibodies.
- Dengue IgM serology testing is recommended for symptomatic pregnant women.

For **ASYMPTOMATIC PREGNANT WOMEN** who meet epidemiologic criteria for testing, testing depends on the time after return from travel or exposure:

- Serum, whole blood and urine specimens collected from a pregnant woman presenting < 14 days from exposure should be tested by RNA rRT-PCR for Zika virus. If negative, a second serum specimen should be collected 2-12 weeks following exposure for Zika virus IgM serology testing.
- Serum specimens collected from asymptomatic pregnant women 2-12 weeks following a potential exposure or from asymptomatic pregnant women living in an area of ongoing transmission should be tested for Zika IgM serology. If reactive, Zika RNA rRT-PCR should be performed on all appropriate specimen types available. If Zika RNA rRT-PCR is negative, PRNT should be performed for confirmation of the IgM result.
- Serum specimens collected from asymptomatic pregnant women > 12 weeks following a potential exposure may also be tested for Zika IgM

serology. However, Zika IgM performed > 12 weeks after exposure may be negative as a result of waning IgM antibodies. Providers should monitor for fetal abnormalities; if fetal abnormalities are identified, maternal serum, whole blood and urine specimens may be tested by RNA rRT-PCR for Zika virus and infant testing should be performed (specimen guidelines for infant testing are outlined below).

What are the currently available diagnostic tests options and laboratories where they are performed?

Available Molecular assays include:			
PCR test	Appropriate specimen	Virus detection	Available lab
Triplex Real-Time RT-PCR Assay	Serum, CSF, whole blood	Dengue, Chikungunya, Zika	e.g., IDPH, CDC, ACL (1-800-877-7016)
	Urine, amniotic fluid	Zika only	
Focus Diagnostic Zika Virus RNA Qualitative real time RT-PCR	Serum only	Zika only	e.g. Quest (1-866-697-8378)
Altona RealStar Zika Virus rRT-PCR	Serum and urine	Zika only	e.g. LabCorp (1-800-331-2843)

Additional commercial molecular assays have received [FDA Emergency Use Authorizations](#). Specimen requirements vary among these assays. Please check with your laboratory prior to specimen collection to identify specific requirements and which tests are available.

Serology Test	Appropriate specimen	Virus detection	Available lab
CDC-Zika MAC-ELISA	Serum, CSF	Zika	e.g. IDPH, CDC, LabCorp, Quest,
Zika serologic assay*	Serum	Zika	e.g. ACL, InBios
Plaque-reduction neutralization assay (PRNT)	Serum	Dengue, Chikungunya, Zika	CDC

Specimen submission to IDPH laboratories requires prior approval (authorization code) from Chicago Department of Public Health for Chicago residents. Zika testing through commercial laboratories does not require prior CDPH authorization.

* Specimens which test positive using any serology at a commercial reference lab should be forwarded to IDPH for supplemental testing. IDPH will confirm the result and forward the specimen to CDC for PRNT testing. An authorization number is not required in this situation. Please indicate that the specimen is Zika virus positive on the lab requisition form.

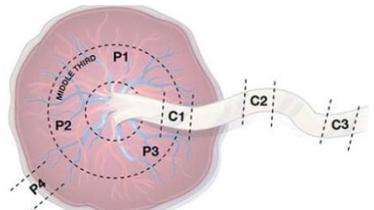
I am concerned about congenital infection in an infant. Which tests should I order?

Laboratory testing for congenital Zika virus infection is recommended for infants born to mothers with laboratory evidence of Zika virus infection, and for infants with findings suggestive of congenital Zika syndrome and a maternal epidemiologic link suggesting possible transmission, regardless of maternal testing results. CDPH will provide an authorization code for testing of placenta/umbilical cord or any other tissue at CDC. The providers attending to the birth or miscarriage should complete the DELIVERY CHECKLIST FOR ZIKA/SUSPECTED ZIKA CASES Form available at: <https://www.chicagohan.org/zforms>.

Infant Specimen Guidelines

Serum	Minimum required for testing is 1.0 ml. Collect in serum separator tube to obtain total volume of 1.0 ml of serum (i.e., amount of whole blood required is approximately 2.5-3 ml). Centrifuge and transfer serum to a separate tube
Urine	Collect at least 1 cc of urine in a sterile leak-proof container and wrap in parafilm.
Whole blood	Minimum volume required is 1.0 ml. Collect samples in EDTA (purple top) tube.
CSF	Only if obtained for other studies, aliquot a sample (minimum 1.0 ml) for Zika testing. Collect in sterile container (15 or 50 ml conical tube). Close tightly and seal with parafilm.

Placenta/Tissue Guidelines

Placenta and fetal membranes	<ul style="list-style-type: none"> • At least 4 full-thickness pieces (0.5-1 cm x 3-4 cm thick) from middle third of placenta and one from placental margin, including maternal and fetal sides of placenta, along with additional samples of fetal membranes (one 5 x 12 cm strip of fetal membranes), and any pathologic lesion, if present • May be refrigerated at +4°C for <24 hours until fixed in formalin • Place the sections in a two twist screw top sterile cup containing formalin. Tightly screw the lid to prevent leakage • Paraffin blocks may be submitted as well • Remainder of placenta can undergo routine, in hospital, pathologic evaluation 
Umbilical cord	≥ 3 (2.5 cm each) segments of cord from proximal, middle, and distal to umbilical cord insertion site on the placenta.
Additional tissues (fetal demise)	<p>Note: It is critical to maintain the tissue architecture to evaluate viral pathology. Certain fetal tissues require longer fixation, please fix brain specimens for 48-72 hours.</p> <ul style="list-style-type: none"> • Brain and spinal cord: 0.5–1.0 cm³ each (5 or more specimens from different parts of brain and spinal cord) • Solid organ (heart, lung, liver, kidneys, skeletal muscle, eyes, bone marrow): 0.5-1.0 cm³ each (1 representative specimen from each solid organ) • Submission of eyes is highly recommended • Fixed in formalin or paraffin • Remainder of tissue can undergo routine, in-hospital, pathologic evaluation

***NOTE: For authorization of pathology specimens, the health department will need the following:

- Maternal ultrasound results (if applicable, please include dates and findings)
- Birth Measurements and Percentiles (e.g., Head Circumference, Birth Weight, Birth Length)
- Newborn exam findings and any additional testing/imaging (including TORCH or genetic testing)

Additionally, maternal Zika RNA rRT-PCR testing on serum, whole blood and urine specimens is indicated if it was not performed prenatally.

How should specimens be stored if they cannot be sent the lab immediately?

- For serum, urine and CSF specimens, freeze to -70°C after collection. If no -70°C freezer is available, refrigerate at +4°C and transport on cold packs within 72 hours of collection.
- Store human whole blood (EDTA) specimens at 2-8°C upon receipt. Do not freeze. Transport/ship human whole blood (EDTA) specimens on cold packs.
- Notes on formalin fixing: fixed tissues should be stored and shipped at room temperature.
 - The volume of formalin used to fix tissues should be 10x the volume of tissue.
 - Place tissue in 10% buffered formalin for a minimum of three days or until fully fixed. After fixation, tissue can be transferred to 70% ethanol for long term storage. DO NOT FREEZE samples that have been fixed in formalin.

For commercial testing, specimen requirements should be obtained directly from the laboratory performing the tests.

Additional guidance about collection and submission of specimens for Zika virus testing at time of birth: <http://www.cdc.gov/zika/pdfs/collection-submission-specimens-zika-testing-at-birth.pdf>

How will I be notified of my patient results from testing performed by public health laboratories?

- Zika rRT-PCR results will be reported as Zika virus detected, Zika virus not detected, or inconclusive. Zika IgM results will be reported as presumptive positive (pending PRNT confirmation at CDC), negative, or equivocal.
- Results are provided to submitters directly by FAX as soon as they are available.
- The IDPH Division of Laboratories will refer Zika reactive specimens (IgM), both positive and inconclusive, to CDC for confirmatory PRNT testing and will indicate when specimens have been referred for additional testing.
- The IDPH Division of Laboratories will reflex positive or equivocal serologic testing for rRT-PCR testing.
- Some IgM/PRNT results will be reported as “Flavivirus unspecified,” and this means that the PRNT test was unable to distinguish Zika from other viruses. These patients are currently being clinically considered (and followed) as Zika positive.

PREGNANCY SPECIFIC GUIDANCE

Can my pregnant patient travel to areas affected by Zika virus?

Pregnant women should not travel to areas with ongoing Zika transmission. Women trying to become pregnant should discuss travel to these areas with their healthcare provider. If a woman must travel or lives in an area with Zika transmission, she should strictly prevent mosquito bites and prevent sexual transmission. Consider Zika virus testing and ultrasound if your patient is pregnant and traveled to a region where Zika is present during the pregnancy.

My pregnant patient had Zika serology done and results were “Flavivirus unspecified” or “confirmed Zika.” What additional testing is indicated?

Serial ultrasounds should be considered to monitor fetal anatomy and growth every 3–4 weeks. Referral to a maternal-fetal medicine or infectious disease specialist with expertise in pregnancy management is recommended. Amniocentesis is no longer part of the routine testing recommendation for women with positive tests. This is because there are still too many unknowns about what a positive result means (e.g., how likely the baby will have microcephaly). Therefore, the decision to perform amniocentesis remains a choice between patient and individual health care provider. For any “Flavivirus unspecified” or “confirmed Zika” case, CDPH will assist with completing all required forms for the Zika Pregnancy registry (see below section for more details). See additional CDC guidance in the September 2, 2016 MMWR at the following link: http://www.cdc.gov/mmwr/volumes/65/wr/mm6529e1.htm?s_cid=mm6529e1_w.

What about breastfeeding?

As of December 23, 2016, there have been no reports of transmission through breast milk. While it is a theoretical route of transmission, because of the benefits of breastfeeding, mothers are encouraged to breastfeed even in areas where Zika virus is found.

Is Zika virus conclusively linked to microcephaly?

Yes, Zika virus has been defined as a teratogen (New England Journal of Medicine, 2016 vol 374 (20)p. 1981). However, there are still many unanswered questions. Specifically, there is not enough data to conclusively counsel women about the risk of microcephaly and other potential complications until more is known. Zika virus infection during pregnancy can cause other problems with the brain and eye, and hearing and growth problems in the fetus. However, not all women infected with Zika during pregnancy have poor pregnancy outcomes.

What is the US Zika Pregnancy Registry?

Information about the timing, absolute risk, and spectrum of outcomes associated with Zika virus infection during pregnancy is needed to direct public health action related to Zika virus and to guide testing, evaluation, and management. To understand more about Zika virus infection, CDC established the US Zika Pregnancy Registry and is collaborating with state, tribal, local, and territorial health departments to collect information about pregnancy and infant outcomes following laboratory evidence of Zika virus infection during pregnancy.

Individuals who are eligible for inclusion in the Registry include:

- Pregnant women in the United States with laboratory evidence of Zika virus infection (positive or equivocal test results, regardless of whether they have symptoms) and periconceptionally, prenatally or perinatally exposed infants born to these women.
- Infants with laboratory evidence of congenital Zika virus infection (positive or equivocal test results, regardless of whether they have symptoms) and their mothers.

CDPH staff will contact providers to obtain all prenatal data required for the registry, assist with sending specimens for testing at time of delivery, and collect information about pregnancy and infant outcomes following laboratory evidence of Zika virus infection during pregnancy. The data collected through this registry will be used to update recommendations for clinical care, to plan for services for pregnant women and families affected by Zika virus, and to improve prevention of Zika virus infection during pregnancy (<http://www.cdc.gov/zika/hc-providers/registry.html>).

What additional complications are associated with Zika virus infection?

There have been cases of Guillain-Barre syndrome reported following suspected Zika virus infection. For more information, see CDC MMWR: http://www.cdc.gov/mmwr/volumes/65/wr/mm6534e1.htm?s_cid=mm6534e1_e

TREATMENT

What treatment is available for Zika virus?

No specific antiviral treatment is available for Zika virus disease. Treatment is supportive and can include rest, fluids, and use of analgesics and antipyretics. Because of similar geographic distribution and symptoms, patients with suspected Zika virus infection also should be evaluated and managed for possible

dengue or chikungunya virus infection. Aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) should be avoided until dengue can be ruled out to reduce the risk of hemorrhage. People infected with Zika, chikungunya, or dengue virus should be protected from further mosquito exposure in the first few days of illness to prevent other mosquitoes from becoming infected, reducing the risk of local transmission.

RISK ASSESSMENT

What is the risk of getting Zika virus in Chicago?

Risk of locally transmitted Zika virus for Chicago residents is very low. The primary species of mosquito that has been found to transmit Zika virus (*Aedes aegypti*) is not native to Chicago and cannot survive our cold winters. A secondary species of mosquito (*Aedes albopictus*) has been found in Chicago and may be able to transmit Zika, presenting a very small risk of locally acquired cases. Health officials are closely monitoring *Aedes* mosquitoes in Chicago and are working to control the mosquito population in Chicago to help protect against all mosquito-borne illnesses, including West Nile Virus. The estimated range of *Aedes aegypti* and *Aedes albopictus* mosquitos in the U.S. can be seen at <http://www.cdc.gov/zika/pdfs/zika-mosquito-maps.pdf>

What is the risk of getting Zika virus with travel to areas where limited locally-acquired Zika virus has been reported, such as Florida and Texas?

Locally acquired Zika virus infection has been documented in Miami-Dade County in Florida and in Cameron County in Texas; pregnant women should consider postponing travel to these areas. *Aedes aegypti* mosquitos are found in much of the southern U.S. We have occasionally seen previous transmission of dengue virus, which is also spread by *Aedes aegypti* mosquitos, in southern states and Hawaii. Local transmission in these regions is not unexpected; we may see additional localized Zika transmission in areas with *Aedes aegypti* mosquitos in the future. Check the [CDC website](#) for up-to-date information on confirmed Zika cases, especially in states where *Aedes aegypti* mosquitos are common. Most cases in the continental U.S. have been in people returning from areas outside of the continental U.S. with ongoing Zika transmission, or in sexual partners of travelers.

PREVENTION

What are recommendations to avoid Zika virus transmission for pregnant women and their male sexual partners?

Pregnant woman who did not travel to a Zika-affected area	Postpone travel until health experts say it is safe.
Pregnant woman who did travel to a Zika-affected area	Call your health care provider to discuss Zika testing.
Pregnant woman's sex partner traveled to a Zika-affected area	Plan together to abstain from sexual activity or use condoms correctly every time you have vaginal, anal and/or oral sex for the duration of the pregnancy. If you're pregnant and had unprotected vaginal, anal or oral sex with a partner who spent time in a Zika-affected area, contact your health care provider to discuss Zika testing.

What are the recommendations for couples with a history of travel to Zika-affected areas who are trying to conceive?

Pre-conception testing is not recommended for non-pregnant women and individuals who are asymptomatic. Regardless of testing results, couples attempting to conceive should follow the CDC guidance below:

Possible exposure via recent travel or sex without a condom with a partner infected with Zika*		
	Women	Men
Wait at least 8 weeks after symptom start or last possible Zika exposure before trying to conceive		Wait at least 6 months after symptoms start or last possible exposure before trying to conceive
People living in or frequently traveling to areas with Zika		
	Women	Men
Positive Zika test	Wait at least 8 weeks after symptom start	Wait at least 6 months after symptoms start
No testing performed or negative test	Talk with a healthcare provider	Talk with a healthcare provider

*This includes persons who traveled to a Zika-affected area or had unprotected sex (including vaginal, anal, oral sex, and the sharing of sex toys) with a partner

who spent time in a Zika-affected area.

The recommendations above minimize the likelihood that peri-conceptional sexual transmission will result in fetal exposure to Zika virus. The recommendation to wait at least 6 months for asymptomatic men is based on the range of time after symptom onset that Zika virus RNA has been detected in semen of symptomatic men and the absence of definitive data that the risk for sexual transmission differs between symptomatic and asymptomatic men.

To encourage compliance to the recommendations above, Providers should discuss effective methods of birth control. Pregnant women and women who could become pregnant should use condoms or abstain from sex to prevent acquiring Zika sexually. Their partners should also be counseled to take the necessary precautions to prevent transmitting Zika sexually.

What are the recommendations for individuals and couples who are not trying to conceive?

Prevention of unplanned pregnancies is also critical to prevent congenital Zika infection. All individuals of reproductive age should have a reproductive life plan, and those individuals who are not planning a pregnancy should be counseled about the full range of contraceptive options:

<http://www.cdc.gov/preconception/documents/rlphealthproviders.pdf>

How can my patients protect themselves from Zika virus?

The best protection is to avoid getting mosquito bites. Even here in Chicago, where we do *not* have the mosquito of primary concern for Zika virus, patients should protect themselves from all mosquito-borne viruses, including West Nile Virus.

- Use insect repellent as directed
- Close windows/doors without screens and, when traveling, sleep under mosquito nets
- Wear long-sleeved shirts and long pants
- Empty or cover outdoor containers that hold water, where mosquitos like to lay eggs
- When traveling, stay in lodging with air conditioning

How can I learn about new Zika virus information locally?

Register to receive Health Alert Network (HAN) notices by calling 312-747-7987 or going to <https://www.chicagohan.org/registration>

To see Zika-specific HAN notices, go to <https://www.chicagohan.org/zika>.

All fact sheets are also accessible at the CDPH #StopZika webpage: http://www.cityofchicago.org/city/en/depts/cdph/supp_info/infectious/get-the-facts--zika.html.

Source: Centers for Disease Control and Prevention, December 23, 2016; www.cdc.gov/zika