10/4/2016

Get the Facts for Providers: Zika

Zika is a mosquito-borne disease that is currently spreading throughout many countries and territories, including a small area 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. The Florida Department of Health identified two areas of Miami-Dade County with active local mosquito-borne Zika virus transmission; as of September 20, 2016, only Miami Beach remains an area of active transmission. 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. Mosquito-borne transmission at elevations greater than 2,000 meters above sea level is unlikely. 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.
- Zika virus may be transmitted from mother to fetus during pregnancy or around the time of birth; Zika virus causes microcephaly and other severe fatal brain 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? Note criteria for Zika testing at public health laboratories in symptomatic patients who are not pregnant requires 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. Healthcare 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

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.

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

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 is still investigating the link between Zika and Guillain-Barre syndrome.
- 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 of exposure with or without history of symptoms.

I'm thinking about testing my patient. Where do I ship samples and how do I get testing approved?

Testing for Zika virus is available 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 contact the CDPH Communicable Disease Program at **tel. 312-746-4835** or complete the **Test Authorization Form** available at the following link: https://www.chicagohan.org/zforms.

Specimens may be collected in advance of obtaining approval code, however specimens should not be sent to IDPH laboratory without the authorization code. There is no charge to provider or patient for testing performed by public health laboratories.

Completed forms should be sent by fax to: Chicago Department of Public Health Communicable Disease program **FAX: 312-746-4683.**

Please contact the CDPH Communicable Disease Program at **tel. 312-746-4835** with 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 and CDPH may reach out to providers to ascertain symptoms and onset date of symptoms, exposure history and timing (travel or through sexual exposure), pregnancy status and ultrasound findings. Pregnant women with negative real-time reverse transcription-polymerase chain reaction (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.

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

For symptomatic persons with Zika virus infection, Zika virus RNA can sometimes be detected early in the course of illness. rRT-PCR testing should be performed on serum collected during the first two weeks after symptom onset. rRT-PCR should also be conducted on urine samples collected less than 14 days after symptom onset. Urine should always be collected with a patient-matched serum specimen. 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.

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 Antibody Capture Enzyme-Linked Immunosorbent Assay (Zika MAC-ELISA) 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.

The Illinois Department of Public Health has compiled an algorithm to identify appropriate Zika Virus Testing for authorized specimens: Illinois Flow Chart: Choosing Appropriate Zika Virus Test for Authorized Patients

I've decided to test my NON-PREGNANT patient. Which specific test should I order, based on how long it has been since symptom onset?

Specimen Type	# days specimen collected after symptom onset	
	≤14 days	2-12 weeks
Serum	rRT-PCR	Zika MAC-ELISA
Urine*	rRT-PCR	

* Urine specimens must be submitted with a paired serum specimen for additional PCR and serology testing.

I've decided to test my PREGNANT patient. Which specific test should I order, based on how long it has been since symptom onset or possible exposure to Zika virus occurred? (See pregnancy specific section for more discussion of diagnostic testing in pregnant women)

Specimen Type	# days specimen collected after symptom onset or possible Zika virus exposure		
	Presenting ≤ 14 days	Presenting at 2-12 weeks	Presenting at >12 weeks[1]
STEP 1: initial specimen to be obtained			
Serum rRT-PCR	x		
Urine rRT-PCR[2]	x		
MAC-ELISA Zika and Dengue[3]		x	x
STEP 2 follow up specimen to be obtained if: 1) PCR is negative (at ≤ 14 days presentation) or 2) Zika MAC-ELISA is positive			
Serum rRT-PCR		x	x
Urine rRT-PCR[2]		x	x
MAC-ELISA Zika and Dengue[3]	x		
STEP 3 Reflex Plaque reduction neutralization test (PRNT) done at CDC if Zika MAC-ELISA is positive			
PRNT	x	x	x

[1]For symptomatic and asymptomatic pregnant women with possible Zika virus exposure who seek care >12 weeks after symptom onset or possible exposure, serum Zika MAC-ELISA antibody testing *might be considered*. If fetal abnormalities are present on ultrasound, rRT-PCR testing should also be performed on maternal serum and urine. However, a negative Zika MAC-ELISA antibody test or rRT-PCR result >12 weeks after symptom onset or possible exposure does not rule out recent Zika virus infection because serum IgM antibody and viral RNA levels decline over time. Given the limitations of testing beyond 12 weeks after symptom onset or possible exposure, serial fetal ultrasounds should be considered. (http://www.cdc.gov/mmwr/volumes/65/wr/mm6529e1.htm?s_cid=mm6529e1_w)

[2] Urine specimens must be submitted with a paired serum specimen for additional PCR and serology testing.

[3]Zika MAC-ELISA should be drawn > 2 weeks after symptom onset or possible Zika virus exposure.

What are the currently available diagnostic tests options, who does them, and for which do I need authorization from CDPH?

Diagnostic Test Assays				
PCR test	**Appropriate specimen**	**Virus detection**	**Authorization required**	**Available lab**
Trioplex Real-Time RT-PCR Assay	Serum, CSF	Dengue, Chikugunya, Zika	Yes	e.g., IDPH
	Urine, amniotic fluid	Zika only		
Focus Diagnostic Zika Virus RNA Qualitative real time RT-PCR	Serum only	Zika only	No	e.g. Quest
Altona RealStar Zika Virus rRT-PCR	Serum and urine	Zika only	No	e.g. LabCorp
Serology	**Appropriate specimen**	**Virus detection**	**Authorization required**	**Available lab**
Zika MAC-ELISA antibody test	Serum, CSF	Zika	Yes	IDPH, CDC
Zika serologic assay*	Serum	Zika	No	e.g. LabCorp, ACL
Confirmatory Antibody Test	**Appropriate specimen**	**Virus detection**	**Authorization required**	**Available lab**
Plaque-reduction neutralization Assay	Serum	Dengue, Chikungunya, Zika	Yes	CDC

* 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 the specimen is Zika virus positive on the test 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.

From CDC MMWR http://www.cdc.gov/mmwr/volumes/65/wr/mm6533e2.htm?s_cid=mm6533e2_w:

- Zika virus rRT-PCR testing should be performed on both infant serum and urine, and Zika virus IgM enzyme-linked immunosorbent assay (ELISA) should concurrently be performed on infant serum.
- Laboratory testing should be performed on infant specimens; cord blood is not recommended because it can yield false positive results through contamination with maternal blood and might also yield false negative results.
- If cerebrospinal fluid (CSF) is obtained for other studies, rRT-PCR testing for Zika virus RNA and Zika virus IgM should be performed on CSF.
- Infant laboratory testing for Zika virus should be performed within the first 2 days after birth; if testing is performed later, distinguishing between congenital, perinatal, and postnatal infection will be difficult. If the timing of infection cannot be determined, infants should be managed as if they have congenital Zika virus infection.
- Consider histopathologic evaluation of the placenta and umbilical cord with Zika virus immunohistochemical staining on fixed tissue and Zika virus rRT-PCR on fixed and frozen tissue.
- Infants born to mothers with risk factors for maternal Zika virus infection and for whom maternal testing was not performed before delivery, should have a comprehensive physical examination, including standardized measurement of head circumference. Maternal diagnostic testing should be performed and testing of the placenta for Zika virus PCR should be considered. CPDH will assist with facilitating appropriate maternal diagnostic testing.

Serum and CSF specimens should be stored refrigerated and submitted to IDPH lab after obtaining authorization from CDPH. In advance of submitting specimens, providers should first complete the Test Authorization form and fax to CDPH, as above.

How should specimens be requested, collected, stored and shipped?

Specimen submission to IDPH laboratories requires prior approval (authorization code) from Chicago Department of Public Health for Chicago residents. **Do not ship specimens to the IDPH Chicago Laboratory without the authorization code acquired from the local health department.** Schedule shipping to ensure specimens are delivered to IDPH during routine business hours (8am-4:30pm M-F; excluding state holidays). Test Authorization Form to obtain an authorization code is available at: https://www.chicagohan.org/zforms. Specimens should be shipped to IDPH Chicago laboratory using Category B shipping requirements. IDPH will automatically submit specimens that require further testing to CDC. Specimens should never be submitted directly to CDC.

Specimen Testing Information*				
Specimen	**Test performed**	**Volume**	**Storage and Shipment**	**Comments**
Serum	Chikungunya, dengue and Zika rRT-PCR and virus specific IgM; Flavivirus PRNT	2-5cc	Refrigerated (4°C), Specimens should be transported on ice packs and received at the IDPH lab within 72 hours of collection. If specimens need to be held longer than 72 hours prior to shipping, they should be frozen at -70°C and shipped on dry ice.	Serum separator tube and centrifuge
CSF	Chikungunya, dengue and Zika rRT-PCR and virus specific IgM; Flavivirus PRNT	1-5cc		At least 1.0 mL is required for testing. Transfer CSF to a plastic tube with screw cap and secure with thermoplastic, self-sealing lab film
Urine	Zika rRT-PCR	1-3cc		Provide 0.5–1.0 mL of the specimen in a sterile screw capped vial secured with thermoplastic, self-sealing lab film
Amniotic Fluid	Zika rRT-PCR	0.5-3cc		
Placental tissue	Zika rRT-PCR; viral culture	2-5 grams	Freeze at -70°C and ship on dry ice	Place tissue in sterile containers
Placental tissue and Cord	Immunohistochemical Staining	2-5 grams of tissue and/or paraffin blocks	Tissue should be formalin fixed or paraffin-embedded. Ship specimens at room temperature	Place tissues in sterile containers

* 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 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.

What specific diagnostic tests are recommended for pregnant women? (See also table in diagnostic tests section and http://www.cdc.gov/mmwr/volumes/65/wr/mm6529e1.htm?s_cid=mm6529e1_w).

Symptomatic pregnant women (acute fever, rash, arthralgias, conjunctivitis) with possible exposure presenting in areas without active Zika virus transmission:

- **Within 2 weeks of symptom onset:**

  Collect serum and urine for rRT-PCR. A positive rRT-PCR confirms the diagnosis of recent maternal Zika virus infection. A negative rRT-PCR result should be followed with both Zika and dengue virus IgM antibody testing, ideally 2 weeks after symptom onset. When rRT-PCR testing is done by commercial laboratories that do not have IgM antibody testing capabilities, the specimen should be obtained at least 2 weeks after symptom onset and forwarded to IDPH Chicago Laboratory for IgM serologic testing. Any testing to be done at IDPH public health laboratory requires public health authorization. Please call 312-746-4835 to obtain authorization or you may obtain the Zika Authorization form at: https://www.chicagohan.org/zforms.

If serologic testing is positive or equivocal, plaque-reduction neutralization antibody testing (PRNT) will be performed on the same IgM-tested sample or a subsequently collected sample to rule out false-positive results.

- **From 2-12 weeks after symptom onset:**

Perform Zika and dengue virus IgM antibody testing. Positive or equivocal Zika virus IgM antibody testing performed at the IDPH lab will reflex to rRT-PCR testing performed on the same serum sample to determine whether Zika virus RNA is present. A urine sample may be obtained by provider for rRT-PCR testing along with serum. A positive rRT-PCR test confirms infection. If rRT-PCR is negative, a positive or equivocal Zika virus IgM antibody will be followed by PRNT. Positive or equivocal dengue virus results will also be followed with PRNT.

- **Greater than 12 weeks after symptom onset:**

Consider IgM antibody. If fetal abnormalities are present on ultrasound, perform rRT-PCR on maternal serum and urine. However, a negative IgM antibody test or rRT-PCR result >12 weeks after symptom onset does not rule out recent Zika virus infection. Consider serial fetal ultrasounds every 3-4 weeks.

Asymptomatic pregnant women with possible Zika exposure presenting in areas without active Zika virus transmission:

- **Within 2 weeks after possible Zika virus exposure:**

Collect serum and urine rRT-PCR testing. A positive rRT-PCR confirms the diagnosis. If rRT-PCR is negative, return 2-12 weeks after possible Zika virus exposure for Zika virus IgM antibody testing. A positive or equivocal Zika virus IgM antibody result will be followed up by PRNT testing performed through IPDH Laboratories.

- **From 2-12 weeks after possible Zika virus exposure:**

Collect Zika virus IgM antibody testing. If Zika IgM antibody is positive or equivocal, reflex rRT-PCR will be performed on the same sample to attempt a definitive diagnosis. If the rRT-PCR is negative, PRNT will be performed through IDPH laboratories.

- **Greater than 12 weeks after possible Zika virus exposure**

Consider IgM antibody testing. If fetal abnormalities present on ultrasound, perform rRT-PCR on maternal serum and urine. However, a negative IgM antibody test or rRT-PCR result >12 weeks after possible exposure does not rule out recent Zika virus infection. Consider serial fetal ultrasounds every 3-4 weeks.

Pregnant women with ongoing risk of Zika virus transmission (living in or frequent travel to Zika affected area):

Obtain IgM antibody testing in first and second trimester with reflex serum and urine PCR in cases of positive/equivocal IgM results. Negative reflex rRT-PCR will prompt reflex to PRNT testing.

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 October 4, 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.

People 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 locally-acquired dengue virus has been a problem, such as Florida?

July 29, 2016, the first cases of Zika transmission by mosquitos were reported in Miami-Dade County; as of September 20, 2016, only Miami Beach remains an area of active transmission. *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:

Woman has or might have Zika*	**Symptoms within 2 weeks of travel**	Wait **at least 8 weeks** after symptoms started before trying to conceive
	No symptoms	Wait **at least 8 weeks** after last possible Zika exposure before trying to conceive
Man has or might have Zika	**Symptoms within 2 weeks of travel**	Wait **at least 6 months** after symptoms started before trying to conceive
	No symptoms	Wait **at least 6 months** after last possible Zika exposure before trying to conceive

*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.

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.

From CDC September, 30 MMWR (https://www.cdc.gov/mmwr/volumes/65/wr/mm6539e1.htm?s_cid=mm6539e1_e):

- CDC now recommends that men with possible Zika virus exposure, regardless of symptom status, wait at least 6 months from symptom onset (if symptomatic) or last possible exposure (if asymptomatic) before attempting conception with their partner. CDC previously recommended that men with possible Zika virus exposure who were asymptomatic wait at least 8 weeks from last possible exposure.
- The updated recommendation minimizes 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.

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

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, October 4, 2016; www.cdc.gov/zika

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CHICAGO DEPARTMENT OF PUBLIC HEALTH