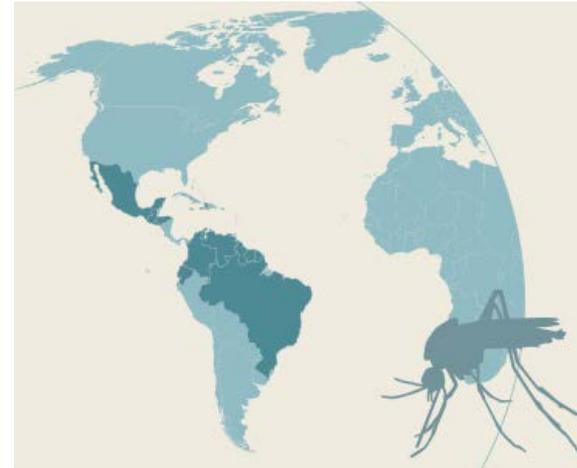




**Department  
of Health**



# Zika Virus

**Update for Healthcare Providers  
of Pregnant Women and Women of Reproductive Age  
in New York State**

March 31, 2016

Nina Ahmad, MD  
Medical Director, Division of Epidemiology  
New York State Department of Health

# Objectives

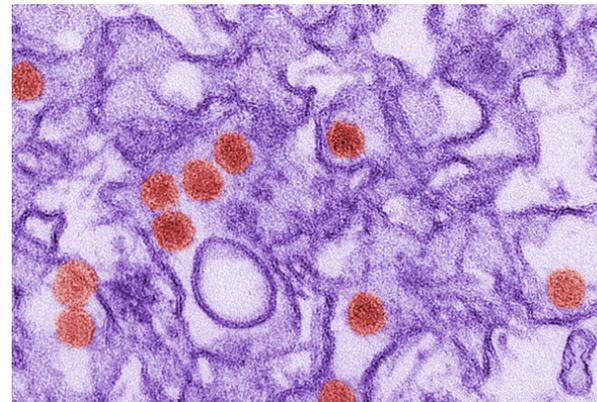
At the conclusion of this webinar, healthcare providers will be able to:

- Describe the epidemiology, transmission patterns, clinical manifestations, complications, and reporting of Zika virus
- Discuss the updated guidance for health care providers caring for women of reproductive age with possible Zika virus exposure
- Articulate NYSDOH's recommendations for Zika virus testing



# Zika Virus – The Basics

- Single stranded RNA Virus
- Genus *Flavivirus*
- Closely related to dengue, yellow fever, Japanese encephalitis and West Nile viruses



Courtesy of the Centers for Disease Control and Prevention

# Zika Virus Vectors

- Transmitted by the *Aedes* species mosquitoes
  - *Aedes aegypti*: more efficient vectors for Zika (Yellow fever mosquito)
  - *Aedes albopictus*: possible vector for Zika (Asian tiger mosquito)
- Also transmit dengue and chikungunya viruses
- Lay eggs in domestic water-holding containers
- Live in and around households
- Aggressive and primarily daytime biters, but can also bite at night



*Aedes aegypti*

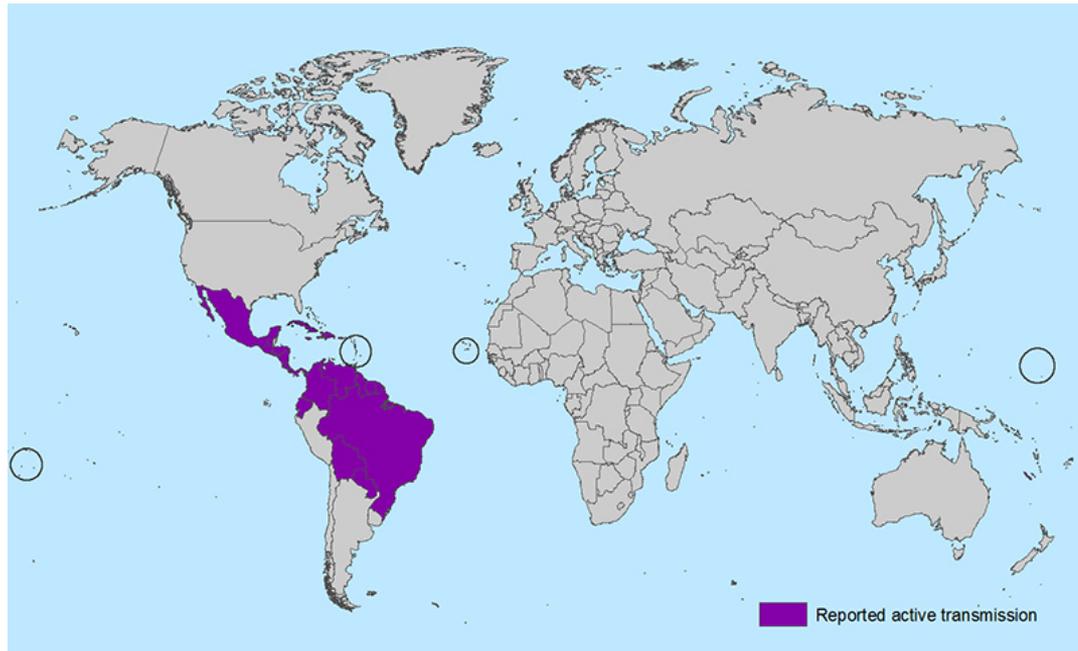


*Aedes albopictus*

# Zika Virus

- Prior to 2015, Zika virus outbreaks occurred in areas of Africa, Southeast Asia, and the Pacific Islands
- In May 2015 - the first confirmed Zika virus infections in Brazil
- No local transmission to date in the continental United States

# Zika Virus: Countries and Territories with Active Zika Virus Transmission



## US Territories:

\*Puerto Rico (*Dec 2015*)

\*U.S. Virgin Islands

-St. Croix

-St. John

-St. Thomas

## Common travel destinations:

-Dominican Republic

-Mexico (*Nov 2015*)

As of March 23, 2016

Courtesy of the Centers for Disease Control and Prevention

# CDC Recommendations: Pregnancy and Women Considering Travel – Level 2 Alert

- Pregnant women in any trimester should consider postponing travel to areas where Zika virus is spreading
- Pregnant women who do travel to one of these areas should talk to their healthcare provider and strictly follow steps to avoid mosquito bites during the trip
- Women trying to get pregnant should discuss with their provider

Warning Level 3, Avoid Nonessential Travel

Alert Level 2, Practice Enhanced Precautions

Watch Level 1, Practice Usual Precautions

# WHO-Declaration of a Public Health Emergency of International Concern

- Given spread and broad geographic range of the mosquito species that transmits the virus
- Given the strong association with the rise in detected congenital malformations and neurological complications
- Lack of vaccines and rapid reliable tests
- Absence of population immunity
  - Urgent need to coordinate international efforts to address this threat

(February 1, 2016)

# Zika Virus Imported Cases in the U.S.

- Approximately 312 cases of Zika virus diagnosed in the continental U.S.
  - All were travel-associated/imported
  - 6 reports of sexual transmission
  - 27 Pregnant women
  - 1 Guillain Barre syndrome
  - **NO** local vector-borne transmission
- New York State
  - 62 cases → All imported/travel-associated
- With outbreaks in the Americas, cases among U.S. travelers will likely increase
- Imported cases may result in virus introduction and local spread in some areas of U.S.



# Clinical Presentation – Zika Virus Disease

- Infection rate: 73%
- Symptomatic attack rate among infected: 18%
- All age groups affected
- Adults more likely to present for medical care
- No severe disease, hospitalizations, or deaths

Note: Rates based on serosurvey on Yap Island, 2007 (population 7,391)

# Reported Clinical Symptoms Among 31 Confirmed Zika Virus Disease Cases

Symptoms	N	%
Macular or papular rash	28	90%
Subjective fever	20	65%
Arthralgia	20	65%
Conjunctivitis	17	55%
Myalgia	15	48%
Headache	14	45%
Retro-orbital pain	12	39%
Edema	6	19%
Vomiting	3	10%

Yap Island, 2007

Duffy M. N Engl J Med 2009



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# Distinguishing Zika from Dengue and Chikungunya

- Dengue and chikungunya viruses transmitted by same mosquitoes with similar ecology
- Dengue and chikungunya can circulate in same area and rarely cause co-infections
- Diseases have similar clinical features
- Important to rule out dengue, as proper clinical management can improve outcome\*

\*WHO dengue clinical management guidelines:  
[http://whqlibdoc.who.int/publications/2009/9789241547871\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241547871_eng.pdf)



# Clinical Features: Zika Virus Compared to Dengue and Chikungunya

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

# Initial Assessment and Treatment

- No specific antiviral therapy
- Treatment is supportive (i.e., rest, fluids, analgesics, antipyretics)
- Suspected Zika virus infections should be evaluated and managed for possible dengue or chikungunya virus infections
- Aspirin and other NSAIDs should be avoided until dengue can be ruled out to reduce the risk of hemorrhage

# Modes of Transmission

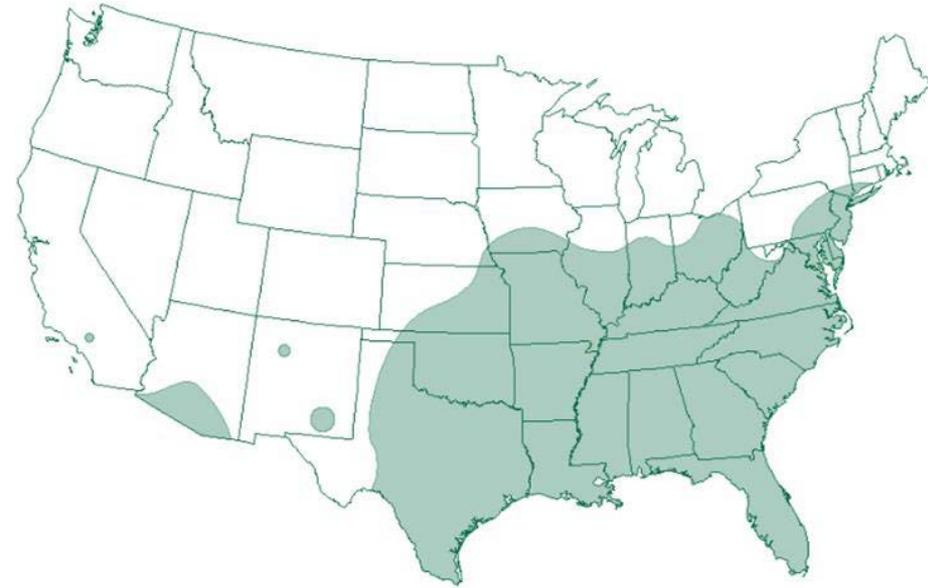
- **Mosquito Bite**
  - From infected to uninfected humans and primates by bite of a mosquito
- Maternal-fetal
  - Intrauterine
  - Perinatal
- Other
  - Sexual Transmission
  - Blood transfusion
- Theoretical
  - Organ or tissue transplantation
  - Breast milk



# *Aedes aegypti* and *Aedes albopictus* Mosquitoes: Geographic Distribution in the United States

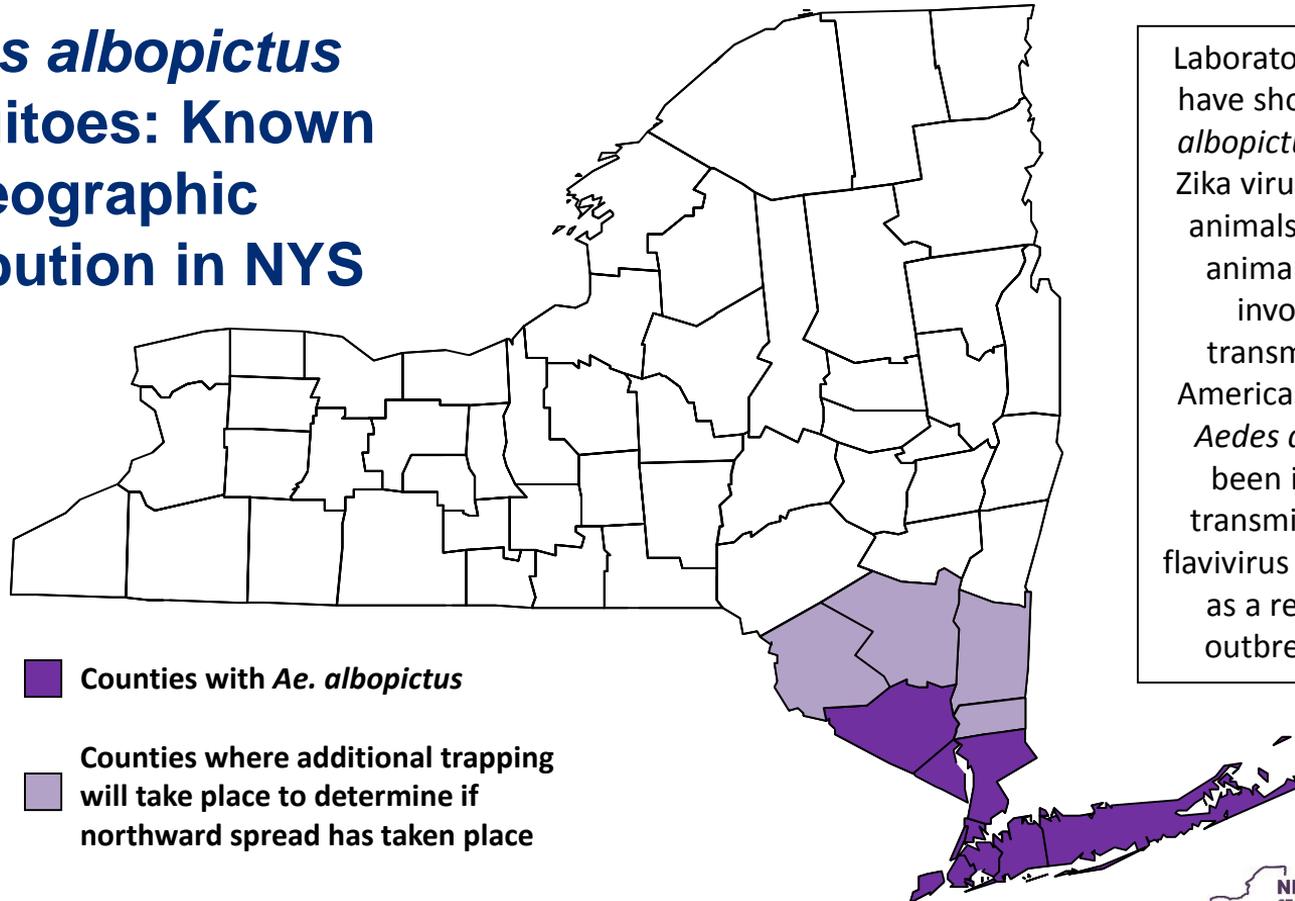


*Aedes aegypti*



*Aedes albopictus*

# *Aedes albopictus* Mosquitoes: Known Geographic Distribution in NYS



 Counties with *Ae. albopictus*

 Counties where additional trapping will take place to determine if northward spread has taken place

Laboratory experiments have shown that *Aedes albopictus* can transmit Zika virus from infected animals to uninfected animals. Its current involvement in transmission in the Americas is not known. *Aedes albopictus* has been implicated in transmission of other flavivirus outbreaks, such as a recent Dengue outbreak in Hawaii.

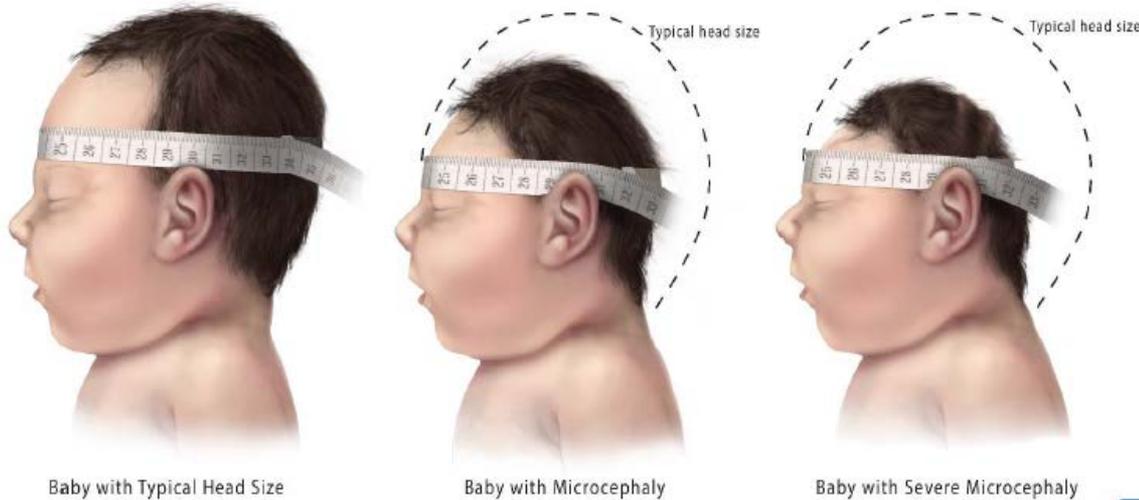
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- Mosquito Bite
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- **Maternal-fetal**
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  - **Perinatal**
- Other
  - Sexual Transmission
  - Blood transfusion
- Theoretical
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# Microcephaly

Microcephaly is the clinical finding of a small head when compared with infants of the same sex and age. The size of the head is considered a reliable assessment of the volume of the underlying brain



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# Diagnosing Microcephaly

- Prenatally:
  - Can be detected prenatally by routine ultrasound at 18-20 weeks
  - However, best identified on prenatal US later in pregnancy (late second trimester, early third trimester)
  - Serial prenatal US helpful to detect microcephaly in utero
- Infant:
  - Most often defined as head circumference  $< 3^{\text{rd}}$  percentile
  - Standard growth charts by gestation, sex, and age
  - Asymmetric more concerning than symmetric

# Ascertainment of Microcephaly and Other Adverse Outcomes Related to Zika

- The Congenital Malformations Registry (CMR) will focus on active ascertainment of microcephaly and other adverse outcomes
- Assistance from health care providers will be essential for this effort
- Microcephaly is reportable
- More guidance on reporting will be available soon

# Update: Interim Guidance for Health Care Providers Caring for Women of Reproductive Age with Possible Zika Virus Exposure — United States, 2016

- Increasing evidence supports a link between Zika virus infection during pregnancy and adverse pregnancy and birth outcomes
  - pregnancy loss
  - microcephaly
  - brain abnormality
  - eye abnormalities
- Critical knowledge gap - level of risk for adverse pregnancy and birth outcomes associated with infection
  - A retrospective analysis of the 2013–2014 Zika virus outbreak in French Polynesia
    - 8 fetuses and infants with microcephaly
    - 1% of fetuses or infants born to women infected with Zika virus during 1<sup>st</sup> trimester
  - Recent study from Brazil
    - 42 women with laboratory-confirmed Zika virus infection at any time during pregnancy who had an U/S
    - 12 (29%) had abnormal findings (microcephaly, intracranial calcifications, other brain abnormalities, abnormal cerebral artery flow, intrauterine growth restriction, and/ or fetal death)

# Special Considerations for Women Undergoing Fertility Treatment

- No instances of Zika virus transmission during fertility treatment
  - Theoretically possible
- Using own gametes and embryos
  - Maybe able to follow the timing recommendations for persons attempting conception
- FDA guidance for donated tissues
  - donated sperm, oocytes, and embryos



## Future Pregnancies

- No evidence Zika virus will cause congenital infection in pregnancies conceived after resolution of maternal zika viremia
  - Limited data on incubation and viremia duration
    - Incubation: 3-14 days
    - Viremia: After symptom onset, a few days to 1 week
      - Longest published data was 11 days

# Suggested Timeframe to Wait Before Trying to Get Pregnant

## Possible exposure via recent travel or sex without a condom with a man infected with Zika

	Women	Men
Zika symptoms	Wait <u>at least</u> 8 weeks after symptoms start	Wait <u>at least</u> 6 months after symptoms start
<b>No</b> Zika symptoms	Wait <u>at least</u> 8 weeks after exposure	Wait <u>at least</u> 8 weeks after exposure. Talk with your healthcare provider

## People living in areas with Zika

	Women	Men
Zika symptoms	Wait <u>at least</u> 8 weeks after symptoms start	Wait <u>at least</u> 6 months after symptoms start
<b>No</b> Zika symptoms	Talk with doctor or healthcare provider	Talk with doctor or healthcare provider

# PRECONCEPTION COUNSELING

For Women and Men Living in Areas with Ongoing Spread of Zika Virus Who Are Interested in Conceiving



This guide describes recommendations for counseling women and men living in areas with Zika who want to become pregnant and have not experienced clinical illness consistent with Zika virus disease. This material includes recommendations from CDC's updated guidance<sup>1</sup>, key questions to ask patients, and sample scripts for discussing recommendations and preconception issues. Because a lot of content is outlined for discussion, questions are included throughout the sample script to make sure patients understand what they are being told.

Recommendation	Key Issue	Questions to Ask	Sample Script
Assess pregnancy intentions	Introduce importance of pregnancy planning	<p><i>Have you been thinking about having a baby?</i></p> <p><i>Would you like to become pregnant in the next year?</i></p> <p><i>Are you currently using any form of birth control?</i></p>	<p>If you are thinking of having a baby, I would like to help you have a healthy and safe pregnancy. With the Zika virus outbreak, planning pregnancy is more important than ever. Preparing and planning for a healthy pregnancy means getting as healthy as you can before becoming pregnant, and also taking the time now to learn about how best to care for yourself during pregnancy.</p>
Assess risk of Zika virus exposure	Environment	<p><i>Do you have air conditioning in your home? At work?</i></p> <p><i>Do you have window and door screens in your home? At work?</i></p> <p><i>Do you have a bed net? Would you consider using one?</i></p> <p><i>Do you live in an area with a lot of mosquitoes?</i></p>	<p>The best way to prevent Zika is to prevent mosquito bites. To protect yourself at home and work, use air conditioning if possible. Install window and door screens and repair any holes to help keep mosquitoes outside. Sleep under a bed net, if air conditioning or screened rooms are not available. Since you live in an area where Zika is spreading, you are at risk of getting Zika. It is important that we discuss the timing of your pregnancy, and ways to prevent infection when you are pregnant.</p> <p><b>Knowledge check:</b> What are some ways to protect yourself at home and work?</p>
	Personal measures to prevent mosquito bites	<p><i>Are you willing to wear clothes that cover your skin, like long pants and long-sleeved shirts?</i></p> <p><i>Do you clip or spray your clothes with permethrin or wear permethrin-treated clothing (specially treated clothing to keep mosquitoes away)?</i></p> <p><i>Do you use insect repellents throughout the day and night? How often do you reapply? Are you following the directions on the label?</i></p> <p><i>Do you have standing water near or around your home or workplace?</i></p> <p><i>Do you empty standing water you find near your home?</i></p>	<p>Now and throughout your pregnancy, you and your partner should take important steps to protect yourselves from getting Zika. Wearing long-sleeved shirts and long pants protects your arms and legs. Treating clothing with permethrin adds another layer of protection, just don't put it directly on your skin. Use EPA-registered insect repellents with one of the following active ingredients: DEET, picaridin, IR3535, or oil of lemon eucalyptus. These insect repellents are safe to use during pregnancy. Always follow the product label instructions and use as directed. This includes reapplying throughout the day as directed on the product label instructions. Help reduce the number of mosquitoes around your home by emptying standing water from flowerpots, gutters, buckets, pool covers, pet water dishes, discarded tires, and birdbaths on a regular basis.</p> <p><b>Knowledge check:</b> How would you describe the steps to protect yourself from mosquito bites?</p>
	Personal measures to prevent sexual transmission	<p><i>After you become pregnant, are you and your partner willing to either use condoms or not have sex for the duration of your pregnancy?</i></p>	<p>Zika virus can also be transmitted through sexual contact. Your partner might be bitten by a mosquito and become infected with Zika, and then he could infect you. Most people who get infected with Zika virus don't get sick, so your partner might not have any symptoms of Zika. While you're trying to get pregnant, it's important to protect yourselves from mosquito bites. Once you know you're pregnant, you and your partner should use a condom the right way, every time you have vaginal, anal, or oral (mouth-to-penis) sex or you should not have sex while you are pregnant.</p> <p><b>Knowledge check:</b> How can you protect yourself from sexual transmission?</p>

<http://www.cdc.gov/zika/hc-providers/tools.html>



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## Individuals Living in Areas with Ongoing Zika Virus Transmission



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- Recommendations
- Key issues
- Questions to ask
- Sample script



Department of Health

# Recommendations

- Assess pregnancy intentions
- Assess risk of Zika virus exposure
- Discuss Zika virus infection in pregnancy
- Explore reproductive life plan
- Discuss risks and benefits of pregnancy at this time with woman and partner
- If pregnancy is not desired now, discuss contraception options

# Modes of Transmission

- Mosquito Bite
  - From infected to uninfected humans and primates by bite of a mosquito
- Maternal-fetal
  - Intrauterine
  - Perinatal
- **Other**
  - **Blood transfusion**
  - **Sexual Transmission**
- Theoretical
  - Organ or tissue transplantation
  - Breast milk





# DCHHS

*Safe families, healthy lives.*

Dallas County Health and Human Services

## CONTACTS

**Erikka D. Neroes, Public Information Officer**

214.819.6329 (office) 214.394.8109 (cell)

**Zachary Thompson, Director**

214.755.9299 (cell)

## FOR IMMEDIATE RELEASE

### **DCHHS Reports First Zika Virus Case in Dallas County Acquired Through Sexual Transmission**

**DALLAS (Feb. 2, 2016)** – Dallas County Health and Human Services (DCHHS) has received confirmation from the Centers for Disease Control and Prevention (CDC) of the first Zika virus case acquired through sexual transmission in Dallas County in 2016. The patient was infected with the virus after having sexual contact with an ill individual who returned from a country where Zika virus is present. For medical confidentiality and personal privacy reasons, DCHHS does not provide additional identifying information.

# Update: Interim Guidance for Prevention of Sexual Transmission of Zika Virus — United States, 2016

- March 18, 2016
  - 6 confirmed cases
    - Vaginal or anal sex with men
    - Intercourse occurred shortly before onset or shortly after resolution of an illness consistent with Zika virus disease

# Recommendations for Men Who Traveled or Resided in Area with Active Zika Transmission

- For men and their **pregnant** partners
  - Abstinence or use of condoms during sex for the duration of the pregnancy.
  - Pregnant women should discuss their male sex partner's history of travel to areas with active Zika virus transmission and history of illness consistent with Zika virus disease
  
- For men and their **nonpregnant** sex partners
  - Abstinence or use of condoms during sex
  - Recommended duration of condom use or abstinence
    - Men had confirmed infection or clinical illness consistent with Zika virus disease
    - Men are residing in an area with active transmission
  - Couples who do not desire pregnancy should use available strategies to prevent unintended pregnancy

# Zika Virus Testing and Sexual Transmission

- Uncertain value for assessment of risk for sexual transmission
  - Limited understanding of duration and pattern of shedding of virus in male GU
  - No recommendation for serum or semen testing of men for sexual transmission risk assessment
  
- Recommendations
  - Testing for those with possible sexual exposure to Zika virus and signs or symptoms
  - A pregnant woman with possible sexual exposure to Zika virus should be tested if either she or her male partner developed symptoms consistent with Zika virus disease

# Preventing Transmission of Zika Virus in Labor and Delivery Settings Through Implementation of Standard Precautions — United States, 2016

- Zika virus RNA detected in body fluids
  - Blood, urine, saliva, and amniotic fluid
- No occupational exposure documented
- Standard precautions recommended and should be reemphasized

# Reporting Suspect Zika Virus Cases

- As an arboviral disease, Zika virus disease is a nationally notifiable disease
  - Healthcare providers are required to report all suspected cases to their local health department where the patient resides



# NYSDOH Zika Testing Eligibility

Identify a patient presenting for care who meets the following criteria:

1. Pregnant woman who had possible exposure (travel to an area with Zika virus transmission while pregnant or unprotected sex with partner who traveled) **OR**
2. Non-pregnant woman, man, or child who develops (or developed) compatible symptoms during or within 4 weeks of travel to an area with Zika virus transmission **OR**
3. A person who traveled to an area with active Zika virus transmission and who presents with Guillain-Barré syndrome **OR**
4. Infant with microcephaly, intracranial calcifications or other abnormality whose mother had exposure during pregnancy (or born to mothers with positive or inconclusive test results)



# NYSDOH Zika Testing Procedures

## Patient needs three things:

1. Lab order (**PROVIDER**)

Order “Zika blood and urine PCR and Zika blood for serology”

2. Infectious Disease Requisition Form (IDR) (**PROVIDER**)
3. LHD authorization form (*Local Health Department*)

# NYSDOH Zika Testing Results

- Results of Zika virus testing will be made available to providers
- Providers can access public health consultation for assistance with interpretation of results by calling the

**NYSDOH Zika Information Line at:**

**1-888-364-4723**

**Weekdays between 9AM and 5PM**

# NYC- Process for Ordering Zika Virus Testing as of March 21, 2016

- Healthcare providers must now call the NYC Health Department's Provider Access Line (PAL) to request Zika testing



[PAL:1-866-692-3641](tel:1-866-692-3641)

- This is to ensure that appropriate tests are ordered and specimens are correctly collected, labeled, processed, packaged and transported

# NYC- What to Expect When You Call

- Health Department representative will review case with you to ensure testing criteria are met
- If testing is appropriate then the representative on the phone will:
  - Collect the information needed to order the correct testing
  - Complete the required laboratory submission form
  - Advise on the type(s) of specimen(s) to collect
- The completed lab submission form(s) for your patient(s) and instructions for specimen collection and handling will be sent to you within 30 minutes via email or fax

## Diagnostic Testing for Zika Virus

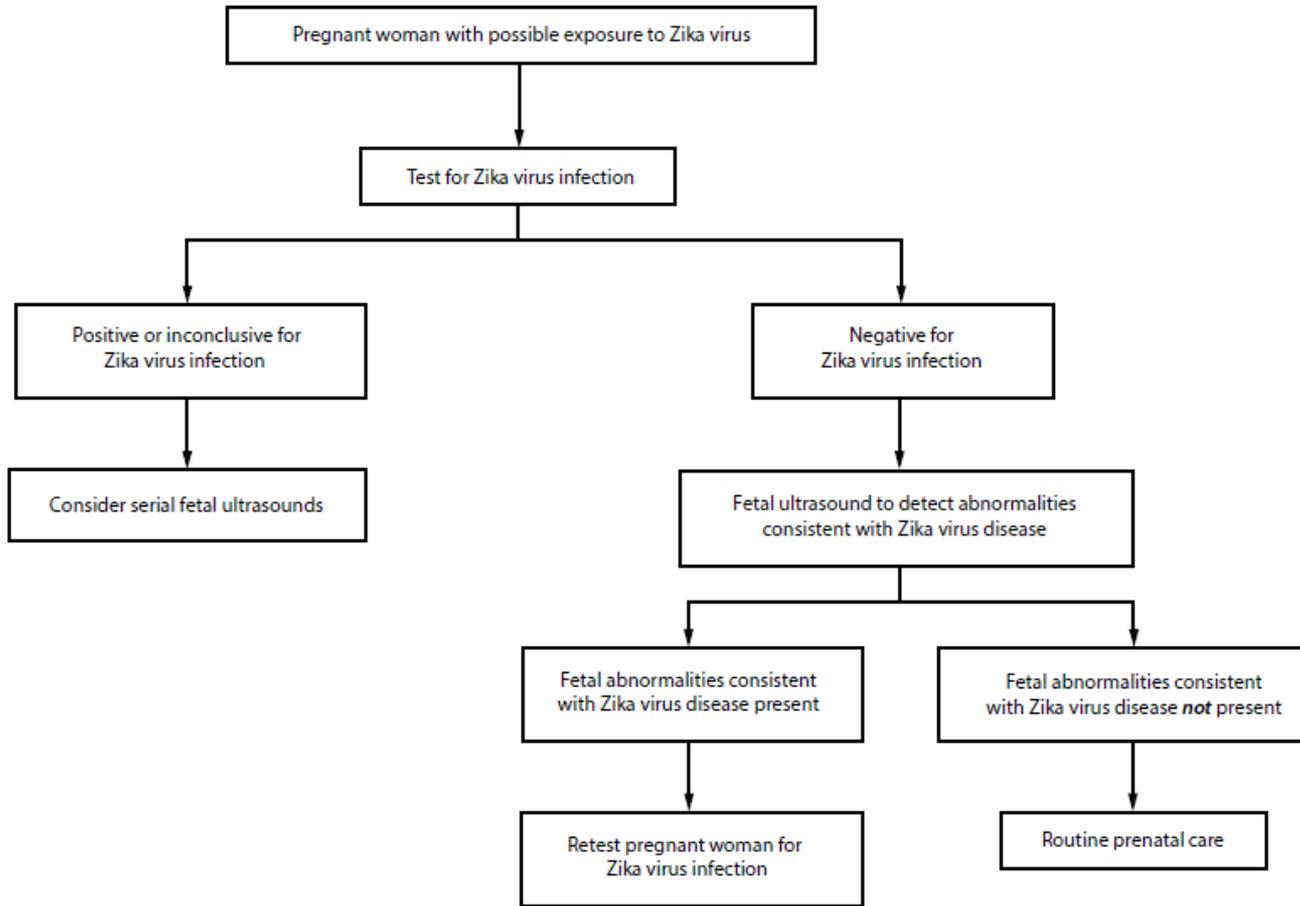
1. PCR assay to detect viral RNA in serum and urine
2. Two-step antibody testing:
  - Screening antibody test
    - Zika Igm and Flavivirus total antibody (IgG and IgM)
  - Confirmatory antibody test (Plaque reduction neutralization test - PRNT) to detect a  $\geq 4$ -fold rise in Zika virus-specific neutralizing antibodies in paired sera

# Zika Testing Timings

- PCR
  - Approximately less than 1 week from receipt at Wadsworth
  - Positive=disease
  - If negative, need serology
- Serology may be negative early in illness
  - From start to finish about 3 weeks to receive results
- Some patients will need a repeat specimen drawn 3 weeks after the first specimen to look for a rise in antibodies

## Amniocentesis Update

- Removed from the updated testing algorithms
- Unknown
  - Sensitivity of RT-PCR
  - Positive result predictive of fetal abnormality
  - Optimal time to test
- Detected as early as 17 weeks gestation



# Acknowledgements

- **The Centers for Disease Control and Prevention**
- **The NYSDOH Wadsworth Center**
- **The NYSDOH Congenital Malformations Registry**
- **NYC DOHMH**