

ZIKA UPDATE SNJPC Cape May, NJ June 15, 2017

Robert A. Graebe, MD
Chair and Program Director
Department of Ob-Gyn
RWJBH – Monmouth Medical Center

ZIKA Case Presentation

- **Hospital Course:**
 - 33 year old G4P3003 at 39.6wga (EDD 3/1/17 by 12 wks US) came to triage with contractions and she was admitted in early labor. She was 4cm dilated.
- **Pregnancy Complications:**
 - Positive Zika testing
 - Positive dengue
- DOH notified of patient's admission as requested

ZIKA Case Presentation cont.

- **Obstetrical History:**
 - G1: 2003, full term, NSVD, Haiti,
 - G2: 2005, full term, NSVD, Haiti
 - G3: 2015, full term, NSVD, MMC
- **Gynecological History:**
 - Denies abnormal Pap smear
- **Medical/ Surgical History**
 - No pertinent past medical or surgical history
- **Family History:**
 - Denies

Prenatal Labs

- Blood type: B positive
- Antibody screen: negative
- Pap smear: normal
- Rubella: immune
- VDRL: nonreactive
- Hep B: negative
- Hep C: negative
- HIV: negative
- GC/Chlamydia: negative
- Hgb electrophoresis: normal

Relevant Pregnancy course

- Patient reports being in Haiti for a family emergency from 9/16/16 – 11/1/17
- She was advised to avoid mosquitos and given precautions
- 1/3/17 – Notified by NJ Department of Health that patient is Zika IgM positive, pending final result
- Patient scheduled for high risk antenatal testing ultrasound on 2/1/17

Zika labs

- Zika IgM Ab – presumptive positive
- Serum PCR – dengue, Zika, chikunguna negative
- Urine PCR – Zika negative
- Plaque reduction neutralization test (PRNT) – Zika and dengue positive

High risk Fetal anatomy on 2/1/17: +Zika IgM

- Vertex
- Posterior fundal placenta
- AFI adequate 15.5
- BPP (breathing, movement, tone, AF) 8/8
- Biparietal diameter and head circumference normal
- Microcephaly is not present
- EFW 2730g 55% (Normal for gestational age)

Repeat ultrasound 2/22/17

- Biometry is appropriate for gestational age
- EFW at 47th%
- Amniotic fluid volume is normal
- Intracranial anatomy appears unremarkable

Delivery

- Uncomplicated normal spontaneous vaginal delivery. Viable female neonate with APGARS 8 and 9 at 1 and 5 minutes, respectively.

Recommendations

- At the time of delivery: placenta and umbilical cord tissue
- Following the delivery and before the infant is discharged:
 1. Infant serum for Zika testing
 2. Infant urine for Zika testing
 3. Comprehensive physical exam, including precise measurement of head circumference, length and weight, assessment of gestational age and examination for neurologic abnormalities and any dystrophic features
 4. Hearing test as per universal screening
 5. Head ultrasound

CDC'S Response to Zika

ZIKA VIRUS: INFORMATION FOR CLINICIANS

Updated May 9, 2017



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Transmission

- Bite from an infected mosquito
- Maternal-fetal
 - Periconceptional
 - Intrauterine
 - Perinatal
- Sexual transmission from an infected person to his or her partners
- Laboratory exposure



Transmission

- Zika may be spread through blood transfusion.
- Zika virus has been detected in breast milk.
 - There are no reports of transmission of Zika virus infection through breastfeeding.
 - Based on available evidence, the benefits of breastfeeding outweigh any possible risk.



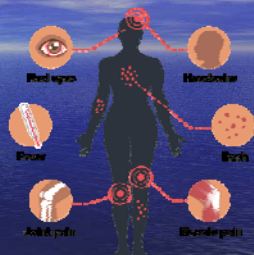
Zika virus clinical disease course and outcomes

- Clinical illness is usually mild.
- Symptoms last several days to a week.
- Severe disease requiring hospitalization is uncommon.
- Fatalities are rare.
- Research suggests that Guillain-Barré syndrome (GBS) is strongly associated with Zika; however only a small proportion of people with recent Zika infection get GBS.



Symptoms

- Many infections are asymptomatic
- Acute onset of fever
- Maculopapular rash
- Headache
- Joint pain
- Conjunctivitis
- Muscle pain

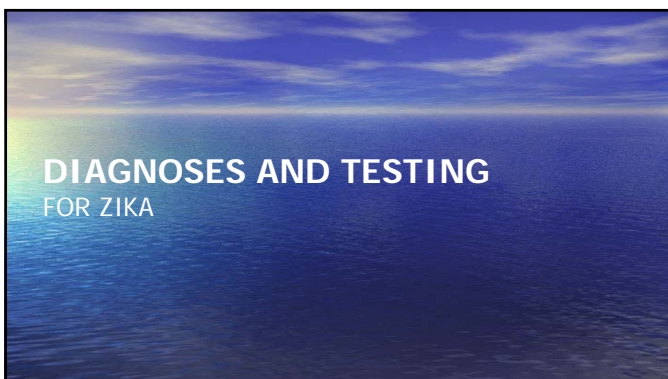




Clinical features: Zika virus compared to dengue and chikungunya

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

Rabe, Ingrid MScD, MMed "Zika Virus: What Clinicians Need to Know" presentation, Clinician Outreach and Communication Activity (COCA) Call, Atlanta, GA, January 26, 2016



Assessing pregnant women

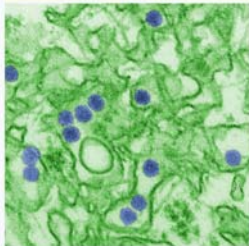
- All pregnant women should be asked at each prenatal care visit if they
 - Traveled to or live in an area with risk of Zika during their pregnancy or periconceptional period (the 6 weeks before last menstrual period or 8 weeks before conception).
 - Had sex without a condom with a partner who has traveled to or lives in an area with risk of Zika.
- Pregnant women who have a possible exposure to Zika virus are eligible for testing for Zika virus infection.



Who to test for Zika

- Anyone who has or recently experienced symptoms of Zika **and** lives in or recently traveled to an area with risk of Zika
- Anyone who has or recently experienced symptoms of Zika **and** had unprotected sex with a partner who lived in or traveled to an area with risk of Zika
- Pregnant women who have possible exposure to
 - An area with risk of Zika with a CDC Zika travel notice, regardless of symptoms
 - An area with risk of Zika but **without** a CDC Zika travel notice if they develop symptoms of Zika or if their fetus has abnormalities on an ultrasound that may be related to Zika

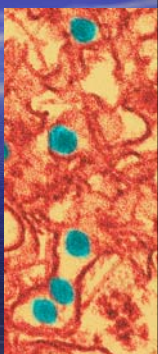
Zika virus



Electron micrograph of the virus. Virus particles (digitally colored purple) are 40 nm in diameter, with an outer envelope and a dense inner core.^[1]

Diagnostic testing for Zika virus

- During first 2 weeks after the start of illness (or exposure, in the case of asymptomatic pregnant women), Zika virus infection can often be diagnosed by performing RNA nucleic acid testing (NAT) on serum and urine, and possibly whole blood, cerebral spinal fluid, or amniotic fluid in accordance with EUA labeling.
- Serology assays can also be used to detect Zika virus-specific IgM and neutralizing antibodies, which typically develop toward the end of the first week of illness.
- Plaque reduction neutralization test (PRNT) for presence of virus-specific neutralizing antibodies in serum samples.

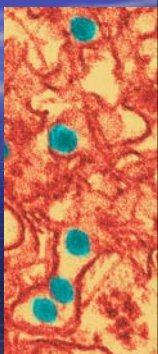


Differential diagnosis

Based on typical clinical features, the differential diagnosis for Zika virus infection is broad.

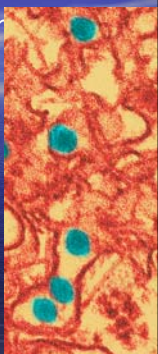
Considerations include

- | | |
|-------------------------|-----------------------------|
| • Dengue | • Parvovirus |
| • Chikungunya | • Enterovirus |
| • Leptospirosis | • Adenovirus |
| • Malaria | • Other alphaviruses (e.g., |
| • Rickettsia | Mayaro, Ross River, |
| • Group A streptococcus | Barmah Forest, o'nyong- |
| • Rubella | nyong, and sindbis |
| • Measles | viruses) |



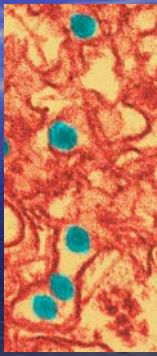
Serology cross-reactions with other flaviviruses

- Zika virus serology (IgM) can be positive due to antibodies against related *flaviviruses* (e.g., dengue and yellow fever viruses).
- If Zika virus RNA NAT results are negative for both specimens, serum should be tested by antibody detection methods.
- Neutralizing antibody testing by PRNT (Plaque-reduction neutralization testing) may discriminate between cross-reacting antibodies in primary *flavivirus* infections.
- Difficult to distinguish Zika virus in people previously infected with or vaccinated against a related *flavivirus*.



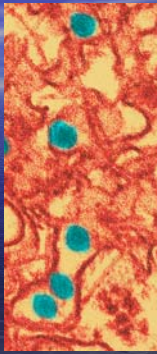
Testing for infants

- CDC recommends laboratory testing for
 - All infants born to mothers with laboratory evidence of possible Zika virus infection during pregnancy.
 - Infants who have abnormal clinical or neuroimaging finds suggestive of congenital Zika syndrome and a mother with a possible exposure to Zika virus, regardless of maternal Zika virus testing results.
- Infant samples for Zika virus testing should be collected ideally within the first 2 days of life; if testing is performed later, distinguishing between congenital, perinatal, and postnatal infection will be difficult.



Laboratories for diagnostic testing

- Testing performed at CDC, select commercial labs, and a few state health departments.
- CDC is working to expand diagnostic testing capacity with both public and commercial partners in the United States.
- Healthcare providers should work with their state health department to facilitate diagnostic testing and report results.



REPORTING ZIKA CASES

Reporting cases

- Zika virus disease is a nationally notifiable condition. Report all confirmed cases to your state health department.



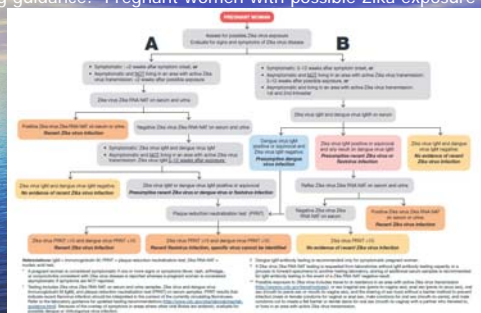
Zika pregnancy registries

- CDC is monitoring pregnancy and infant outcomes following Zika infection during pregnancy in US states and territories through the US Zika Pregnancy Registry (USZPR) and the Zika Active Pregnancy Surveillance System (ZAPSS) in Puerto Rico.
- CDC maintains a 24/7 consultation service for health officials and healthcare providers caring for pregnant women. To contact the service, call 800-CDC-INFO (800-232-4636), or email ZIKAMCH@cdc.gov.



ZIKA AND PREGNANCY

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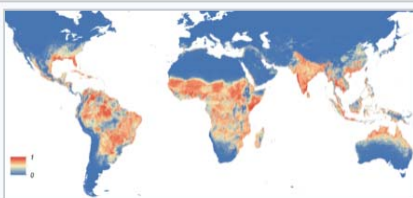


Interpretation of Laboratory Results*	Prenatal Management	Postnatal Management
Recent Zika virus infection	<ul style="list-style-type: none"> • Consider routine ultrasound every 4-6 weeks to assess fetal anatomy and growth • Consider amniocentesis for fetal infection if ultrasound is abnormal for each clinical circumstance 	<p>LAB TESTING</p> <ul style="list-style-type: none"> • Infant serum and infant urine should be tested for Zika virus by PCR and IgM antibody testing • Infant's RBCs are obtained for other markers, i.e. anemia • Do Zika RNA PCR and IgM testing of umbilical cord and placenta if recommended <p>FETAL ISSUES</p> <ul style="list-style-type: none"> • Does the Zika RNA test and IgM testing of fetal blood suggest fetal infection?
Recent Rubeola infection, serologic status unclear	<ul style="list-style-type: none"> • Consider routine ultrasound every 4-6 weeks to assess fetal anatomy and growth • Amniocentesis (IgM in amniotic fluid) should be considered for each clinical circumstance 	<p>LAB TESTING</p> <ul style="list-style-type: none"> • Infant serum and infant urine should be tested for Zika virus by PCR and IgM antibody testing • Infant's RBCs are obtained for other markers, i.e. anemia • Do Zika RNA PCR and IgM testing of placenta and umbilical cord <p>FETAL ISSUES</p> <ul style="list-style-type: none"> • Does the Zika RNA test and IgM testing of fetal blood suggest fetal infection?
Presumptive recent Zika virus infection**	<ul style="list-style-type: none"> • Clinical management is consistent with routine obstetric management 	
Presumptive recent Rubeola infection***	<ul style="list-style-type: none"> • Clinical management is consistent with routine obstetric management 	
Recent disease status unclear	<ul style="list-style-type: none"> • Clinical management is consistent with routine obstetric management 	
No evidence of Zika virus or disease status unclear	<ul style="list-style-type: none"> • Prenatal ultrasound to evaluate for fetal abnormalities consistent with congenital Zika virus syndrome • Fetal amniocentesis, serum, umbilical cord, and placenta PCR and IgM test, based on clinical circumstance • Fetal amniocentesis, serum, umbilical cord on the ongoing risk of Zika virus exposure is the pregnant woman 	

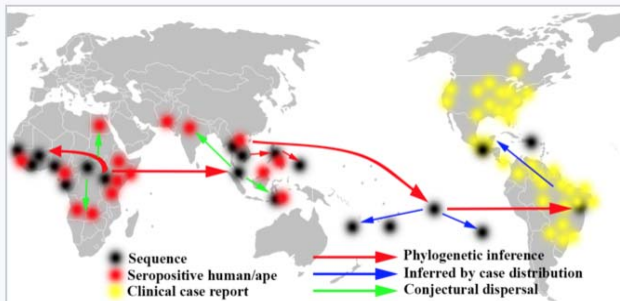
* Adapted from <http://www.cdc.gov/zika/clinical-guidance/2016-08-18>

** Presumptive Zika infection based on: 1) confirmed IgM, 2) seroconversion to IgG, 3) seroconversion to IgG > 12 weeks after onset of symptoms, 4) confirmed IgM, 5) seroconversion to IgG > 12 weeks after onset of symptoms, 6) confirmed IgM, 7) seroconversion to IgG > 12 weeks after onset of symptoms, 8) confirmed IgM, 9) seroconversion to IgG > 12 weeks after onset of symptoms, 10) confirmed IgM, 11) seroconversion to IgG > 12 weeks after onset of symptoms, 12) confirmed IgM, 13) seroconversion to IgG > 12 weeks after onset of symptoms, 14) confirmed IgM, 15) seroconversion to IgG > 12 weeks after onset of symptoms, 16) confirmed IgM, 17) seroconversion to IgG > 12 weeks after onset of symptoms, 18) confirmed IgM, 19) seroconversion to IgG > 12 weeks after onset of symptoms, 20) confirmed IgM, 21) seroconversion to IgG > 12 weeks after onset of symptoms, 22) confirmed IgM, 23) seroconversion to IgG > 12 weeks after onset of symptoms, 24) confirmed IgM, 25) seroconversion to IgG > 12 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PRECONCEPTION GUIDANCE



Global *Aedes aegypti* predicted distribution. The map depicts the probability of occurrence (blue=none, red=highest occurrence).



Spread of Zika^{[29][74][75]}

Asymptomatic couples interested in conceiving

- Testing is NOT recommended for asymptomatic couples in which one or both partners has had possible exposure to Zika virus:
 - A negative blood test or antibody test could be falsely reassuring.
 - No test is 100% accurate.
 - We have limited understanding of Zika virus shedding in genital secretions or of how to interpret test results of genital secretions.
 - Zika shedding may be intermittent, in which case a person could test negative at one point but still carry the virus and shed it again in the future.



Couples interested in conceiving who live in or frequently travel to an area with risk of Zika

- Women and men interested in conceiving should talk with their healthcare providers.
- Factors that may aid in decision-making:
 - Reproductive life plan
 - Environmental risk of exposure
 - Personal measures to prevent mosquito bites
 - Personal measures to prevent sexual transmission
 - Education about Zika virus infection in pregnancy
 - Risks and benefits of pregnancy at this time.
- Long-lasting IgM may complicate interpretation of IgM results in asymptomatic pregnant women. Pre-conception IgM testing may be considered to help interpret any subsequent IgM results post-conception. Pre-conception results should not be used to determine whether it is safe for a woman to become pregnant nor her Zika infection risk.



Couples interested in conceiving who DO NOT live in an area with risk of Zika

- For women with possible exposure to an area with a CDC Zika travel notice
 - Discuss signs and symptoms and potential adverse outcomes associated with Zika.
 - Wait at least 8 weeks after last possible exposure to Zika or symptom onset before trying to conceive.
 - If male partner was also exposed, wait at least 6 months after his last possible exposure or symptom onset before trying to conceive.
 - During that time, use condoms every time during sex or do not have sex.



Couples interested in conceiving who DO NOT reside in an area with risk of Zika

- For men with possible exposure to with a CDC Zika travel notice
 - Wait at least 6 months after last possible exposure to Zika or symptom onset before trying to conceive.
 - During that time, use condoms every time during sex or do not have sex.



Couples interested in conceiving who DO NOT reside in an area with risk of Zika

- For couples with exposure to areas with risk of Zika but no CDC Zika travel notice
 - The level of risk for Zika in these areas is unknown
 - Healthcare providers should counsel couples about travel to these areas and risk, including potential consequences of becoming infected



**INFECTION CONTROL IN
HEALTHCARE SETTINGS**

Infection control

- Standard Precautions should be used to protect healthcare personnel from all infectious disease transmission, including Zika virus.
 - Body fluids, including blood, vaginal secretions, and semen, have been implicated in transmission of Zika virus.
 - Occupational exposure that requires evaluation includes percutaneous exposure or exposure of non-intact skin or mucous membranes to any of the following: blood, body fluids, secretions, and excretions.



Labor and delivery settings

- Healthcare personnel should assess the likelihood of the presence of body fluids or other infectious material based on the condition of the patient, the type of anticipated contact, and the nature of the procedure or activity that is being performed.
- Apply practices and personal protective equipment to prevent exposure as indicated.



WHAT TO TELL PATIENTS ABOUT ZIKA

Travel

- Pregnant women should not travel to areas with risk of Zika.
 - If they must travel to areas with risk of Zika, they should protect themselves from mosquito bites and sexual transmission during and after travel.
- Women planning pregnancy should consider avoiding nonessential travel to areas with CDC Zika travel notices.



Treating patients who test positive

- There is no vaccine or medicine for Zika.
- Treat the symptoms of Zika
 - Rest
 - Drink fluids to prevent dehydration
 - Take acetaminophen (Tylenol®) to reduce fever and pain.



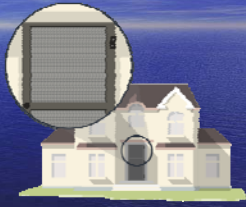
Patients who have Zika

- Protect from mosquito bites during the first week of illness, when Zika virus can be found in blood.
- The virus can be passed from an infected person to a mosquito through bites.
- An infected mosquito can spread the virus to other people.



Preventing Zika: Mosquito bite protection

- Wear long-sleeved shirts and long pants.
- Stay and sleep in places with air conditioning and window and door screens to keep mosquitoes outside.
- Take steps to [control mosquitoes inside and outside your home](#).
- Sleep under a mosquito bed net if air conditioned or screened rooms are not available for if sleeping outdoors.



Preventing Zika: Mosquito bite protection

- Use [Environmental Protection Agency \(EPA\)-registered](#) insect repellents with one of the following active ingredients: DEET, picaridin, IR3535, oil of lemon eucalyptus, para-menthane-diol, or 2-undecanone.
- Always follow the product label instructions.
- Do not spray repellent on the skin under clothing.
- If you are also using sunscreen, apply sunscreen before applying insect repellent.



Preventing Zika: Mosquito bite protection

- Do not use insect repellent on babies younger than 2 months old.
- Do not use products containing oil of lemon eucalyptus or para-menthane-diol on children younger than 3 years old.
- Dress children in clothing that covers arms and legs.
- Do not apply insect repellent onto a child's hands, eyes, mouth, and cut or irritated skin.



Much remains unknown....

- How likely the virus will affect pregnant woman or her pregnancy
- How likely virus gets passed to the fetus
- How likely the fetus will have birth defects
- What is the critical period of infection that affects the fetus

Additional resources

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