

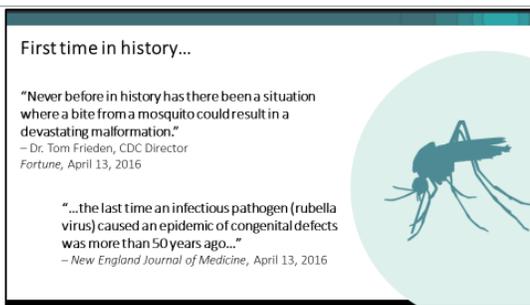
Zika Grand Rounds Facilitation Guide: Nurses

Intended Audience: Nurses

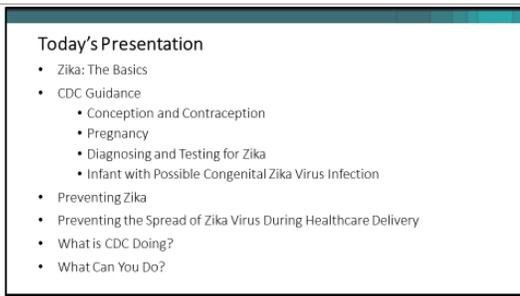
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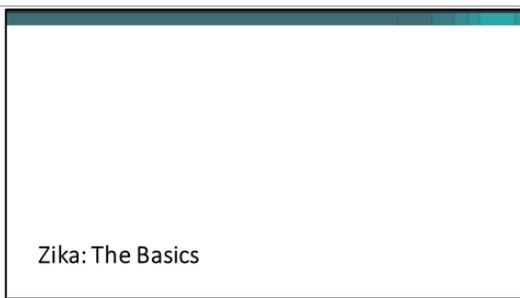
- Good [morning/afternoon/evening]. Today I'd like to share with you what is known about Zika virus.



- Today's Zika outbreak is unprecedented. Zika was first identified almost 70 years ago, but the recognition of the potentially devastating effects on pregnancy is a new phenomenon.
- Some of you here today may remember that the last time an infectious pathogen (rubella virus) caused an epidemic of congenital defects was more than 50 years ago, before an effective vaccine became available.



- My goal today is to share the most current information available, and encourage you to stay up-to-date as the science advances. Here's a brief outline of my presentation.



- First, let's start with some basics.

What is Zika Virus?

- Single-stranded RNA virus
- Closely related to dengue, yellow fever, Japanese encephalitis, and West Nile viruses
- Primarily transmitted by two *Aedes* species mosquitoes
 - *Aedes aegypti* and *Aedes albopictus* mosquitoes
- Additional modes of transmission
 - Intrauterine and perinatal transmission (mother to fetus)
 - Sexual transmission
 - Laboratory exposure
 - Probable: Blood transfusion



Aedes aegypti mosquito



Aedes albopictus mosquito

- Zika is a single-stranded RNA virus that is closely related to dengue, yellow fever, Japanese encephalitis, and West Nile viruses.
- It is primarily transmitted by the bite of two *Aedes* species mosquitoes, *Aedes aegypti* and *Aedes albopictus*.
- Zika is also transmitted through several other routes including
 - Intrauterine and perinatal transmission (transmission from mother to fetus)
 - Sexual transmission
 - Laboratory exposure
 - And probably blood transfusion

Where is Zika Now?

As of December 14, 2016



- As of December 29, 2016, 61 countries and territories worldwide are reporting active Zika virus transmission. Check the CDC website for the latest numbers and locations.
- This map shows countries in which Zika virus is actively being transmitted by mosquitoes. Orange shading of a country doesn't mean that Zika virus is being spread across the entire country; it just means that Zika virus being spread by local mosquitoes has been reported in at least one area of that country. Visit the CDC website for more specific information about where Zika virus is being locally transmitted.
- To date, Florida and Texas have been the only states in the United States that have had local transmission. This occurred in small areas only in Miami-Dade County, FL, and Brownsville, TX.

Clinical Presentation

- Clinical illness usually mild
- Most common symptoms:
 - Fever
 - Rash
 - Joint pain
 - Conjunctivitis
- Symptoms last several days to a week
- Severe disease uncommon
- Fatalities are rare
- Once infected, a person is likely to be protected from future infections



- Now I would like to switch gears and talk about some of the clinical aspects of Zika.
 - Many people infected with Zika virus won't have symptoms or will only have mild symptoms.
 - When symptoms do occur, the most common ones are fever, rash, joint pain, and conjunctivitis (red eyes).
 - Symptoms typically last several days to a week.
 - Severe disease requiring hospitalization has been uncommon and fatalities have been rarely reported.
 - Based on similar infections, once a person has been infected with Zika and cleared the virus from their blood, it is believed that he or she is likely to be protected from future infections.

Clinical Management

- No vaccine or specific antiviral treatment
- Treat the symptoms
 - Rest
 - Drink fluids to prevent dehydration
 - Take medicine such as acetaminophen to reduce fever and pain
 - Avoid aspirin and other non-steroidal anti-inflammatory drugs (NSAIDs) until dengue can be ruled out to reduce the risk of bleeding



- Although research is underway, there is currently no vaccine or specific antiviral treatment for Zika.
- The cornerstone of treatment is supportive care. Patients should be advised to treat the symptoms, including recommending
 - Rest
 - Drink fluids to prevent dehydration.
 - Take medicine, such as acetaminophen to reduce fever and pain.
 - However, aspirin and NSAIDs should be avoided until dengue can be ruled out to reduce the risk of bleeding.

CDC Lab Confirms Zika In Fetal Tissues

- Zika virus has been shown to be present in fetal tissue
- Evidence of Zika virus has been detected in
 - Amniotic fluid
 - Placenta
 - Fetal brain tissue
 - Products of conception
- Zika virus has been found to continue to replicate in infants' brains after birth (Bhatnagar et al., 2017)

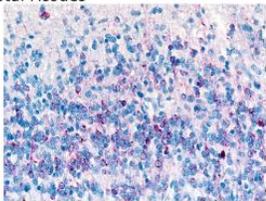


Image 1. Ruben G. Salazar, MD, MSc, MPH, MEd, MChD, Director, Center for Global Health and Population Sciences, University of California, San Francisco, CA. Photo: CDC. Source: <https://www.cdc.gov/zika/qa-fetal-tissue.html>

Immunohistochemical staining of Zika virus antigen (red stain) in fetal brain tissue. This staining is present in the same areas where neuronal cell death/necrosis was identified by microscopic review of tissue morphology.

- Zika virus has been found in fetal tissue.
- There is evidence of Zika virus detected in:
 - Amniotic fluid
 - Placenta
 - Fetal brain tissue
 - Products of conception
- This image shows immunohistochemical staining of Zika virus antigen (red stain) in fetal brain tissue. This staining is present in the same areas where neuronal cell death in the fetal brain was identified by microscopic review of tissue morphology.
- A CDC study released December 13, 2016, found that Zika virus can continue to replicate in infants' brains even after birth. This information could have important implications for Zika-exposed babies born with microcephaly and for babies who are born without visible evidence of congenital Zika infection.

CDC Lab Confirms Zika In Body Fluids

- Evidence of Zika virus identified in
 - Blood
 - Semen
 - Vaginal fluids
 - Urine
 - Saliva
 - Breast milk



- Zika virus has been shown to be present in the following fluids in adults:
 - Blood
 - Semen
 - Vaginal fluids
 - Urine
 - Saliva
 - Breast milk
- Zika virus has been detected in these fluids, but the only known modes of transmission are via semen and vaginal fluids. Transmission via blood is probable but has not yet been established.

Zika Virus Infection in Pregnant Women

- Pregnant women can be infected
 - Through the bite of an infected mosquito
 - Through sex without a condom with an infected partner
- If a woman is infected around conception
 - Zika might present risk to fetus
- If infected during pregnancy
 - Zika can be passed to the fetus during pregnancy or around the time of birth



- Pregnant women can be infected with Zika through the same routes I discussed earlier, mainly
 - Through the bite of an infected mosquito or
 - Through sex without a condom with an infected partner
- Zika may be passed to the fetus early on, around the time of conception. If this happens Zika might present risk to the fetus.
- If a woman is infected during pregnancy, Zika can be passed to the fetus during pregnancy or around the time of birth.

Zika Virus in Pregnant Women



- Incidence of Zika virus infection in pregnant women is not known
- Infection can occur in any trimester
- No evidence of increased susceptibility
- No evidence of more severe disease compared with non-pregnant people
- Does not appear to be a higher incidence of Guillain-Barré syndrome

Centers for Disease Control and Prevention, CDC Health Advisory: Recognizing, Managing, and Reporting Zika Virus Infections in Travelers Returning from Central America, South America, the Caribbean and Mexico, 2016
 Bernard, M., et al. Systemic Immunity to Mosquito Bites and Potential Implications for Zika Virus Infection. *Journal of Infectious Diseases* 2016; 214(12): 1916-1918.
 Oberhelman, S., et al. Zika Virus Infection in Pregnant Women in Brazil. *New England Journal of Medicine* 2016; 374(18): 1320-1330.

- Incidence of Zika virus infection in pregnant women is not known.
- Infection can occur in any trimester.
- There is no evidence that pregnant women are more susceptible to Zika virus infection than non-pregnant women.
- The clinical course of Zika virus infection is similar for pregnant women and non-pregnant people.
- There does not appear to be a higher incidence of Guillain-Barré syndrome in pregnant women.

Zika is a Cause of Microcephaly



THE NEW ENGLAND JOURNAL OF MEDICINE
 SPECIAL REPORT
 Zika Virus and Birth Defects — Reviewing the Evidence for Causality
 Sonja A. Rasmussen, M.D., Denise J. Jamison, M.D., M.P.H., Margaret A. Honein, Ph.D., M.P.H., and Tyler R. Petersen, M.D., M.P.H.
 SUMMARY
 The Zika virus has spread rapidly in the Americas since its first identification in Brazil in early 2015. Prenatal Zika virus infection has been linked to adverse pregnancy and birth outcomes, most notably microcephaly and other serious brain anomalies. To determine whether Zika virus infection

- Before the current Zika outbreak, the relationship between Zika virus infection and microcephaly had not yet been confirmed.
- The initial association between Zika virus and birth defects was suspected based on the number of cases over time. But increasing evidence became available because of the recent outbreaks to investigate a causal relationship.
- In April 2016, in an article published in the New England Journal of Medicine, scientists at CDC concluded that Zika virus is a cause of microcephaly and other brain anomalies.
- To reach this conclusion, the scientists conducted a systematic evaluation of the evidence, which supported a causal relationship between Zika virus infection and microcephaly and other serious brain anomalies.

Potential Risk of Birth Defects Related to Zika

- Among pregnant women in the United States with laboratory evidence of possible Zika virus infection:
 - Overall about **6%** of fetuses or infants had birth defects potentially related to Zika virus
 - The proportion of pregnancies with birth defects was similar (around **6%**) among symptomatic and asymptomatic pregnant women
 - Among women with infection in the 1st trimester of pregnancy, birth defects were reported in **11%** of fetuses or infants



Honein MA, Dawson AL, Petersen ET et al. Birth Defects Among Fetuses and Infants of US Women With Evidence of Possible Zika Virus Infection During Pregnancy. *JAMA*. 2016 Dec 13 [Epub ahead of print].
 Oberhelman S, et al. Zika Virus Infection in Pregnant Women in Brazil. *New England Journal of Medicine*. 2016 May 20 [Epub ahead of print].

- A report from the US Zika Pregnancy Registry found that about 6% of completed pregnancies in women with laboratory evidence of possible recent Zika virus infection had birth defects potentially related to Zika virus.
- The report also found that among women with maternal symptoms OR laboratory evidence of possible Zika virus infection in the first trimester of pregnancy, birth defects were reported in 11% of completed pregnancies.
- The proportion of pregnancies with birth defects was similar (around 6%) among pregnant women who experienced symptoms and pregnant women who were asymptomatic. This emphasizes the importance of screening pregnant women for Zika risk and testing them when indicated,

because asymptomatic women are just as likely to have babies with birth defects.

- These data suggest that Zika virus infection during the first trimester of pregnancy poses danger to pregnancy and fetal development. There is not enough data to estimate the risk for pregnancies infected in the 2nd or 3rd trimester. There are some limitations of this study, noted here, including that some pregnancies are ongoing, and microcephaly cases are still being reported and investigated.

Congenital Zika Syndrome

- Pattern of congenital anomalies associated with Zika virus infection during pregnancy that includes
 - Severe microcephaly (small head size) resulting in a partially collapsed skull
 - Thin cerebral cortices with subcortical calcifications
 - Eye anomalies, including macular scarring and focal pigmentary retinal mottling
 - Congenital contractures or limited range of joint motion
 - Marked early hypertonia, or too much muscle tone, and symptoms of extrapyramidal involvement
- Infants with normal head circumference at birth may
 - Have brain abnormalities consistent with congenital Zika syndrome
 - Develop microcephaly after birth



Baby with Severe Microcephaly

- Congenital Zika syndrome is a recognizable pattern of congenital anomalies associated with Zika virus infection during pregnancy that includes:
 - Severe microcephaly (small head size) resulting in a partially collapsed skull
 - Thin cerebral cortices with subcortical calcifications
 - Eye anomalies, including macular scarring and focal pigmentary retinal mottling
 - Congenital contractures or limited range of joint motion
 - Marked early hypertonia, or too much muscle tone, and symptoms of extrapyramidal involvement
- Infants with a head circumference at birth in the normal range can have brain abnormalities consistent with congenital Zika syndrome.
 - In addition, microcephaly from congenital Zika infection can develop after birth.

Potential Risk of Microcephaly

- 1 - 13% estimated risk of microcephaly due to Zika virus infection in first trimester
 - Modeling based on current outbreak in Bahia, Brazil
 - Not enough data to estimate 2nd or 3rd trimester risk
- *Important to remember*
 - Data are limited (infection rates unknown; microcephaly cases still being reported)
 - Microcephaly is difficult to detect prenatally
 - Microcephaly is only one of a range of possible adverse outcomes



Johnson MA, Miller F, Spear-Romero, Reefhuis, Gibson, Hillis. Zika and the Risk of Microcephaly. N Engl J Med. 2016 May 25. [Epub ahead of print].

- We don't yet know the risk of microcephaly in infants of mothers who were infected with Zika virus during pregnancy, but we are learning more information.
- Based on risk models from the current outbreak in Brazil, the estimated risk of microcephaly was 1-13% when the Zika infection occurred in the first trimester of pregnancy.
- Currently there are not enough data to estimate the risk when the infection occurs in the 2nd or 3rd trimester.
- There are some limitations of this study, noted here, including that some pregnancies are ongoing, microcephaly is difficult to detect prenatally, microcephaly is only one of a range of possible adverse outcomes, and microcephaly cases are still being reported and investigated.

Women and Their Partners Thinking about Pregnancy

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

- CDC has guidance to help healthcare providers discuss pregnancy planning with women and their partners after possible exposure to Zika. The table on this slide shows the suggested timeframes for waiting to get pregnant after possible exposure to Zika.
- Women should wait at least 8 weeks after exposure or symptoms.
- Men should wait at least 6 months after exposure or symptoms before attempting conception.
 - The waiting period for men is longer because Zika virus can be found in semen longer than in other body fluids.

Pregnancy Planning and Access to Contraception

- Preventing Zika infections during pregnancy
 - Includes supporting women who want to delay or avoid pregnancy to reduce Zika-related pregnancy complications
- If couples decide to wait to conceive, HCPs should discuss
 - Strategies to prevent unintended pregnancy
 - Use of the most effective contraceptive methods (including long-acting reversible contraception) that can be used correctly and consistently
 - Role of correct and consistent use of condoms, in addition to other birth control method used, in reducing the risk for STIs, including Zika

- Preventing Zika infections during pregnancy is CDC's top priority for the Zika response. This includes supporting women who want to delay or avoid pregnancy to avert Zika-related pregnancy complications.
- Healthcare providers should discuss strategies to prevent unintended pregnancy, including counseling on family planning and the use of the most effective contraceptive methods that work for the couple and their lifestyle and can be used correctly and consistently.
- Additionally, healthcare providers should advise patients to consider using condoms correctly and consistently, in addition to other birth control methods, to reduce the risk of acquiring or transmitting Zika and other sexually transmitted infections.

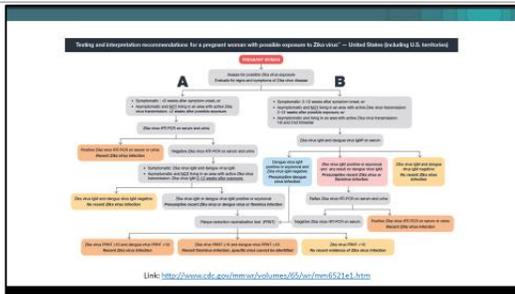
CDC Guidance: Zika and Pregnancy

- Now, I will speak about CDC'S current guidance regarding pregnancy and Zika testing.

CDC Recommendations: Who Should Be Tested



- CDC recommends Zika testing for all pregnant women in the US with possible exposure to Zika virus **and** signs or symptoms of Zika virus infection.
- In addition, pregnant women with possible exposure to Zika virus who do not report symptoms should be offered testing. Pregnant women with ongoing risk of Zika virus exposure and who do not report symptoms should be tested in the 1st and 2nd trimesters of pregnancy.



- The specific testing plan for a pregnant woman depends on several factors, including whether she had symptoms of Zika and how much time has elapsed since her symptoms or last possible Zika exposure. This is described in the CDC guidance.
 - This flow chart was published in the updated pregnancy guidance in CDC’s Morbidity and Mortality Weekly Report on July 29, 2016. In the next few slides, I will briefly describe the updated guidance.

Updated Guidance: Symptomatic Pregnant Women

- Evaluated <2 weeks after symptom onset
 - Should receive Zika virus NAT testing of serum and urine
 - Positive NAT result confirms diagnosis: *recent maternal Zika virus infection*
 - Negative NAT result does not rule out Zika virus infection
 - Zika IgM and dengue IgM antibody testing should be performed immediately on the same specimen or a subsequently collected specimen
- Evaluated 2–12 weeks after symptom onset
 - Should first have a Zika virus immunoglobulin (IgM) test
 - If positive or equivocal, serum and urine NAT should be performed

- Symptomatic pregnant women evaluated within 2 weeks after symptom onset should receive Zika virus testing of their serum and urine using RNA nucleic acid testing (NAT). A positive result confirms a diagnosis of a recent Zika virus infection. A negative result does not rule out infection. Therefore, if the NAT tests on both serum and urine are negative, then Zika IgM and dengue IgM antibody testing should be immediately performed.
- If evaluated within 2-12 weeks after symptom onset, a pregnant woman should first have a Zika IgM test, and if the test is positive or equivocal, NAT should be performed on serum and urine.

Updated Guidance: Asymptomatic Pregnant Women

- Living in areas without Zika, evaluated <2 weeks after last possible exposure
 - RNA NAT testing should be performed on serum and urine
 - If the RNA NAT test is negative, Zika IgM test should be performed 2–12 weeks after exposure
- Living in areas without Zika, evaluated 2–12 weeks after last possible exposure
 - Should receive a Zika virus IgM antibody test
 - If positive or equivocal, serum and urine RNA NAT should be performed
- Living in areas with Zika
 - Asymptomatic pregnant women who live in an area with Zika should receive Zika IgM testing at the start of prenatal care and again during the 2nd-trimester.

- For asymptomatic pregnant women who live in an area without active Zika virus transmission but who may have been exposed to Zika
 - If evaluated within 2 weeks after last possible exposure, NAT testing should be performed on serum and urine. If negative, Zika IgM testing should be performed 2-12 weeks after exposure.
 - If evaluated 2-12 weeks after last possible exposure, Zika IgM testing should be performed. If positive or equivocal, NAT testing should be performed on serum and urine. Asymptomatic pregnant women who live in an area with Zika should receive Zika IgM testing at the start of prenatal care and again during the 2nd trimester.

Updated Guidance: Testing Pregnant Women After 12 Weeks

For symptomatic and asymptomatic pregnant women with possible Zika virus exposure who seek care >12 weeks after symptom onset or possible exposure

- IgM antibody testing might be considered
 - A negative IgM antibody test or RNA NAT result >12 weeks after symptom onset or possible exposure does not rule out recent Zika virus infection because 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.

- For pregnant women with possible Zika virus exposure who seek care more than 12 weeks after symptoms or possible exposure, Zika IgM antibody testing can be considered.
- However, a negative result more than 12 weeks after symptom onset or possible exposure does not rule out infection, because IgM antibody and viral RNA levels decline over time.
- Given the limitations of testing after 12 weeks, serial fetal ultrasounds should be considered.

Clinical management of a pregnant woman with suspected Zika virus infection		
Interpretation of Laboratory Results	Prenatal Management	Postnatal Management
Recent Zika virus infection	<ul style="list-style-type: none"> Consider serial ultrasounds every 3-4 weeks to assess fetal anatomy and growth. Decision regarding amniocentesis should be individualized for each clinical circumstance. 	<p>U.S. BEST PRACTICES:</p> <ul style="list-style-type: none"> Infant surveillance should be based on Zika virus serotype, Zika IgM, and dengue virus IgM antibodies. If CSF is obtained for other reasons, it can also be tested. Zika virus and flavivirus (VZV) staining of umbilical cord and placenta is recommended. HEPA, LODS/HS. Zika virus RT-PCR and IHC staining of fetal tissues is recommended.
Recent flavivirus infection, specific virus cannot be identified	<ul style="list-style-type: none"> Consider serial ultrasounds every 3-4 weeks to assess fetal anatomy and growth. Amniocentesis might be considered; decision should be individualized for each clinical circumstance. 	<p>U.S. BEST PRACTICES:</p> <ul style="list-style-type: none"> Infant surveillance should be based on Zika virus serotype, Zika IgM, and dengue virus IgM antibodies. If CSF is obtained for other reasons, it can also be tested. Zika virus and flavivirus (VZV) staining of umbilical cord and placenta is recommended. HEPA, LODS/HS. Zika virus RT-PCR and IHC staining of fetal tissues should be considered.
Presumptive recent Zika virus infection*	<ul style="list-style-type: none"> Consider serial ultrasounds every 3-4 weeks to assess fetal anatomy and growth. Amniocentesis might be considered; decision should be individualized for each clinical circumstance. 	<p>U.S. BEST PRACTICES:</p> <ul style="list-style-type: none"> Infant surveillance should be based on Zika virus serotype, Zika IgM, and dengue virus IgM antibodies. If CSF is obtained for other reasons, it can also be tested. Zika virus and flavivirus (VZV) staining of umbilical cord and placenta is recommended. HEPA, LODS/HS. Zika virus RT-PCR and IHC staining of fetal tissues should be considered.
Presumptive recent flavivirus infection†	<ul style="list-style-type: none"> Consider serial ultrasounds every 3-4 weeks to assess fetal anatomy and growth. Amniocentesis might be considered; decision should be individualized for each clinical circumstance. 	<p>U.S. BEST PRACTICES:</p> <ul style="list-style-type: none"> Infant surveillance should be based on Zika virus serotype, Zika IgM, and dengue virus IgM antibodies. If CSF is obtained for other reasons, it can also be tested. Zika virus and flavivirus (VZV) staining of umbilical cord and placenta is recommended. HEPA, LODS/HS. Zika virus RT-PCR and IHC staining of fetal tissues should be considered.
Recent dengue virus infection	<ul style="list-style-type: none"> Clinical management is consistent with existing guidelines (EPA, CDC, WHO, etc.). HEPA, LODS/HS, IHC, RT-PCR, and IHC. 	<p>U.S. BEST PRACTICES:</p> <ul style="list-style-type: none"> Infant surveillance should be based on Zika virus serotype, Zika IgM, and dengue virus IgM antibodies. If CSF is obtained for other reasons, it can also be tested. Zika virus and flavivirus (VZV) staining of umbilical cord and placenta is recommended. HEPA, LODS/HS. Zika virus RT-PCR and IHC staining of fetal tissues should be considered.
No evidence of Zika virus or dengue virus infection	<ul style="list-style-type: none"> Clinical management is consistent with existing guidelines (EPA, CDC, WHO, etc.). HEPA, LODS/HS, IHC, RT-PCR, and IHC. 	<p>U.S. BEST PRACTICES:</p> <ul style="list-style-type: none"> Infant surveillance should be based on Zika virus serotype, Zika IgM, and dengue virus IgM antibodies. If CSF is obtained for other reasons, it can also be tested. Zika virus and flavivirus (VZV) staining of umbilical cord and placenta is recommended. HEPA, LODS/HS. Zika virus RT-PCR and IHC staining of fetal tissues should be considered.

- This tool is also available online at CDC.gov/Zika and provides information on the prenatal and postnatal management of pregnant women based on their laboratory test results.

Prenatal Management: Confirmed or Presumptive Recent Zika Virus or Flavivirus Infection

- Serial ultrasounds every 3-4 weeks to assess fetal anatomy and growth
- Amniocentesis
 - Individualized for pregnant women with confirmed recent Zika virus or flavivirus infection
 - Can be considered for pregnant women with presumptive recent Zika virus or flavivirus infection

http://www.cdc.gov/mmwr/volumes/65/wr/mm6526a1.htm?_cid=mm6526a1_a

- Prenatal management is similar for pregnant women with confirmed recent Zika or flavivirus and presumptive recent Zika virus or flavivirus infection.
- Clinical management includes serial fetal ultrasounds every 3-4 weeks to assess fetal anatomy and monitor growth.
- Amniocentesis should be individualized for pregnant women with confirmed recent Zika virus or flavivirus infection and can be considered for pregnant women with presumptive recent Zika virus or flavivirus infection.
- It is also important for women who have been found to have confirmed or presumptive recent Zika virus to use mosquito repellent with EPA registered ingredients.
 - Keeping people infected with Zika from getting mosquito bites will prevent Zika from passing from these people to mosquitoes and then to other people, and will help protect household members, close contacts, and others from getting Zika.

CDC Materials for Pregnant Women with Suspected Zika Infection

<http://www.cdc.gov/zika>

- CDC has created different tools to help counsel pregnant women on Zika testing, including pre-testing counseling fact sheets and scripts for clinicians, materials about testing to give directly to the patients, and fact sheets to help women understand the implications of their results.

CDC Guidance: Infants with Possible Congenital Zika Virus Infection

- Now, I will speak about CDC'S current guidance regarding infants with possible congenital Zika virus infection.

Infants with Possible Congenital Zika Virus Infection

- Testing of infants with possible congenital Zika virus infection should be guided by
 - Whether the infant has abnormalities consistent with congenital Zika syndrome
 - The mother's Zika virus testing results
- Congenital Zika virus infection can be diagnosed by RNA NAT and through serologic testing
- All infants should have a comprehensive physical exam and head ultrasound before discharge from the hospital regardless of the presence or not of abnormalities and prenatal ultrasound results



Link: http://www.cdc.gov/zika/pdf/zika_sds.pdf

- Testing of infants with possible congenital Zika virus infection should be guided by
 - Whether the infant has abnormalities consistent with congenital Zika syndrome
 - The mother's Zika virus testing results
- Congenital Zika virus infection can be diagnosed by RNA NAT testing and through serologic testing
- All infants born to mothers with laboratory evidence of congenital Zika virus infection during pregnancy should receive a comprehensive physical exam. This includes a neurologic exam, a postnatal head ultrasound, a standard newborn hearing screen, and Zika virus testing.
- A postnatal head ultrasound should be performed on all infants before discharge from the hospital. This should include those infants with normal prenatal ultrasound findings, because some abnormal findings associated with congenital Zika syndrome might not be readily apparent on prenatal ultrasounds.
- Further evaluation depends on whether the infant has findings consistent with congenital Zika syndrome.

Infants with Possible Congenital Zika Virus Infection

Recommendations for follow up depend on whether these infants have abnormalities consistent with congenital Zika syndrome



Link: <http://www.cdc.gov/zika/pdf/zika-epidemic-evaluation-follow-up-tool.pdf>

- Recommendations for follow up after initial screening and testing depend on whether these infants have abnormalities consistent with congenital Zika infection. This tool is available at www.cdc.gov/zika.

Initial Evaluation

Infants with abnormalities consistent with congenital Zika syndrome born to a mother with lab evidence of Zika

- Before hospital discharge:
 - Routine newborn care: physical exam, including occipitofrontal (head) circumference, weight, length, a neurologic exam, and universal hearing screen
 - Head ultrasound
 - Testing for congenital Zika virus infection
 - Complete blood count, metabolic panel and liver enzyme testing
 - Consult with multiple subspecialists
 - Referral for comprehensive eye exam by an ophthalmologist
 - Referral for auditory brainstem response (ABR) hearing evaluation
 - Consider advanced cranial imaging (e.g., MRI)
 - Consider transfer to hospital with specialty care
- Refer for a comprehensive ophthalmologic exam and evaluation of hearing by ABR testing before 1 month of age

Link: <https://www.cdc.gov/mmwr/pdf/wk/mm5514a1.pdf>

- The initial exam of an infant with abnormalities consistent with congenital Zika syndrome, born to a mother with lab evidence of Zika, should include
 - All the components of routine newborn care, which include a physical exam, including head circumference, weight, length, and a neurologic exam
 - A head ultrasound
 - Specimen testing for congenital Zika virus infection
 - Complete blood count, metabolic panel and liver enzyme testing
 - It may be necessary to consult with multiple subspecialists
 - Comprehensive eye exam by an ophthalmologist
 - A hearing evaluation using auditory brainstem response (ABR)
- Advanced cranial imaging, such as an MRI, and transfer to a hospital that can provide subspecialty care should also be considered.
- Refer for a comprehensive ophthalmologic exam and evaluation of hearing by ABR testing before 1 month of age.

Consult with Specialists

Infants with abnormalities consistent with congenital Zika syndrome and lab evidence of Zika

- **Neurologist** to determine appropriate neuroimaging and additional evaluation
- **Infectious disease specialist** to evaluate other congenital infections
- **Ophthalmologist** to examine the eye and evaluate for possible cortical visual impairment prior to discharge from hospital or within 1 month of birth
- **Endocrinologist** to evaluate for hypothalamic or pituitary dysfunction
- **Clinical geneticist** to evaluate for other causes of microcephaly or other anomalies if present

- For infants with abnormalities consistent with congenital Zika syndrome AND lab evidence of Zika, the following specialists should be consulted to assist in the management of care:
 - Neurologist
 - Infectious disease specialist
 - Ophthalmologist
 - Endocrinologist
 - Clinical geneticist

Consult with Specialists

Infants with abnormalities consistent with congenital Zika syndrome and lab evidence of Zika

Consultation with the following should also be considered:

- **Orthopedist, physiatrist, physical medicine, rehabilitation physician, and physical therapist** to manage hypertonica, club foot, or arthrogryptic-like conditions
- **Pulmonologist or otolaryngologist** to consult about aspiration
- **Lactation specialist, nutritionist, gastroenterologist, or speech or occupational therapist** to manage feeding issues

- Clinicians should also consider consulting with
 - Orthopedist, physiatrist or physical medicine, rehabilitation physician, and physical therapist
 - Pulmonologist or otolaryngologist
- Lactation specialist, nutritionist, gastroenterologist, or speech or occupational therapist.

Outpatient Management

Infants with abnormalities consistent with congenital Zika syndrome and lab evidence of Zika

- Establish a medical home to facilitate coordination of care
- Provide routine preventive pediatric health care, including immunizations and monthly primary care visits for at least the first 6 months
- Conduct developmental monitoring at each routine visit
- Complete neurologic exam at age 1 and 2 months, then as needed
- Refer patients to developmental specialist and early intervention services
- Repeat ophthalmology exam with retinal assessment at 3 months
- Repeat ABR hearing assessment at age 4–6 months
- Conduct thyroid screening at age 2 weeks and age 3 months
- Provide family support services
- Provide appropriate referrals

- To effectively manage an infant with congenital Zika syndrome AND lab evidence of congenital Zika syndrome, the following steps should be taken:
 - Establish a medical home to facilitate coordination of care
 - Provide routine preventive pediatric health care, including immunizations
 - Conduct developmental monitoring at each routine visit
 - Complete a neurologic exam at age 1 and 2 months, then as needed
 - Refer to developmental specialist and early intervention services
 - Repeat ophthalmology exam with retinal assessment at 3 months
 - Repeat ABR hearing assessment at age 4–6 months
 - Conduct thyroid screening at age 2 weeks and age 3 months
 - Provide family support
- Families should be referred to early intervention services.
- Additionally family and psychosocial support should be provided. I will go into detail about what this entails a little bit later.

Initial Evaluation & Outpatient Management

Infants with lab evidence of Zika and **without** abnormalities consistent with congenital Zika syndrome

- Before hospital discharge infants should receive
 - Routine care including monitoring of occipitofrontal circumference, length, and weight
- Outpatient management includes routine follow up and
 - Establish medical home
 - Perform vision screening at every well child visit
 - Evaluate hearing, consider repeat ABR testing at 4–6 months or perform behavioral diagnostic testing at age 9 months if ABR is not done at 4-6 months
- Provide referrals: Any children with identified or suspected delays should be referred to a developmental specialist or early intervention programs
- Provide family support services, such as counseling, as needed

- An infant who is born **with** lab evidence of congenital Zika infection but **without** abnormalities consistent with congenital Zika syndrome should receive:
 - Routine care including monitoring of head (occipitofrontal) circumference, length, and weight before hospital discharge
- A medical home should be established for the infant.
 - Emphasize anticipatory guidance for families regarding developmental milestones, feeding and growth, sleep and irritability, and abnormal movements.
 - Conduct developmental monitoring at every visit
 - Conduct age-appropriate standardized validated developmental screening at 9 months
 - Vision screening and assessment of visual regard should be performed at every well child visit.
 - To evaluate hearing, consider repeat ABR testing at 4–6 months or perform behavioral diagnostic testing at age 9 months if ABR is not done at 4-6 months.
 - Any children identified with or suspected of delays should be referred to early intervention programs in the states or Puerto Rico
 - Family and support services need to be provided

Initial Evaluation & Outpatient Management

Infants **with** abnormalities consistent with congenital Zika syndrome born to a mother **without** lab evidence of Zika

- Maternal and infant Zika virus testing
- Infants should receive
 - Routine newborn care including monitoring of occipitofrontal circumference, length, and weight
 - Head ultrasound
 - Age-appropriate standardized validated developmental screening at 9 months
 - CBC, metabolic panel, LFTs
 - Vision screening and assessment of visual regard
 - ABR Testing
- Any children identified with or suspected of delays should be referred to early intervention programs
- Consider
 - Testing placenta for Zika virus
 - Further neuroimaging
 - Transfer to hospital with subspecialty care

- Initial evaluation of infants with abnormalities consistent with congenital Zika syndrome born to a mother without lab evidence of Zika should include
 - Maternal and infant Zika virus testing
 - Routine newborn care including monitoring of occipitofrontal circumference, length, and weight
 - Head ultrasound
 - Age-appropriate standardized validated developmental screening at 9 months
 - CBC, metabolic panel, LFTs
 - Vision screening and assessment of visual regard
 - ABR testing
 - Any children identified with or suspected of delays should be referred to early intervention programs
 - Providers may also consider
 - Testing placenta for Zika virus
 - Further neuroimaging
 - Transfer to hospital with subspecialty care

Family and Psychosocial Support

- Families and caregivers of infants with congenital Zika virus infection may require ongoing psychosocial support.
- Families should be empowered to be active participants in their child's monitoring and care.
- Healthcare providers should work closely with parents to ensure that the care plan is consistent with the infant's needs and the family's wishes.
- Families with already limited access to medical care might be affected with a disproportionate burden of Zika virus infection.
- Barriers to care for all affected infants and their families should be addressed by linking them with national, state, and local health programs as well as social services.
- Additional resources for families can be found at:
<http://www.cdc.gov/zika/parents/families-of-newborns-affected-zika.html>

- Families and caregivers of infants with congenital Zika virus infection will require ongoing psychosocial support. Supporting the family of a child with a birth defect is part of the health care provider's job.
 - Families should be empowered to be active participants in their child's monitoring and care.
 - Healthcare providers should work closely with parents to ensure that the care plan is consistent with the infant's needs and the family's wishes.
 - Families with already limited access to medical care might be affected with a disproportionate burden of Zika virus infection
 - Barriers to care for all affected infants and their families should be addressed through links to national, state, and local health programs.
 - Additional resources for families can be found by following the link shown here where you can find other sources of help like support groups, public health and medical services, and current medical information.

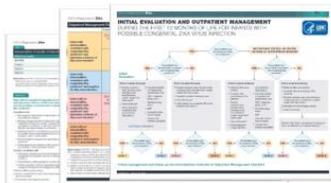
Special Nursing Care Considerations for Newborns with Suspected Congenital Zika Syndrome

- Ensure that recommended screening is received
- Follow up with lab results and counseling of family
- Screen mothers for Zika virus exposure
- Follow standard precautions in nursery
- USZPR reporting

- The following are special considerations for nursing staff working with newborns and families affected by congenital Zika syndrome
 - Ensure that recommended screening is received
 - Follow up with lab results and counseling of family
 - Follow standard precautions in nursery
 - Assist with reporting to the US Zika Pregnancy Registry
- CDC has toolkits, algorithms, and other guides to assist nurses and other healthcare providers with these actions.

Pediatric Evaluation and Follow-up Tools

Initial Evaluation and Outpatient Management During the First 12 Months of Life for Infants with Possible Congenital Zika Virus Infection



Download at:
<http://www.cdc.gov/zika/pdfs/b-ediatric-evaluation-follow-up-tool.pdf>

- This guidance on evaluation and outpatient management has also been summarized in a tool or pocket guide for clinicians. You can download this from the CDC website.

Preventing Zika

- As I mentioned, Zika virus infection has serious potential health implications for pregnant women and their fetuses. Now I will discuss information and tips for Zika virus infection prevention.

Do Not Travel to Areas with Zika

- Pregnant women should **not** travel to areas with Zika
- If a pregnant woman *must* travel, she should
 - Talk with her healthcare provider before she goes
 - Strictly follow steps to prevent mosquito bites during the trip
 - Take steps to prevent sexual transmission
 - Talk with her healthcare provider after she returns, even if she doesn't feel sick



<http://www.cdc.gov/travel/page/zika-information>

- First, CDC recommends that pregnant women not travel to areas with Zika.
- If a pregnant woman must travel to an area with Zika, she should talk to her healthcare provider before departing and strictly follow steps to prevent mosquito bites and prevent sexual transmission during her trip.
- She should also talk to her healthcare provider once she returns from traveling, even if she doesn't feel sick.

Prevent Mosquito Bites

People who live in or travel to an area with Zika should

- Wear long-sleeved shirts and long pants
- Stay and sleep in places with air conditioning or that use window and door screens
- Use insect repellents with one of the following EPA-registered active ingredients:
 - DEET, picaridin, IR3535, oil of lemon eucalyptus, para-menthane-diol, or 2-undecanone
- Once a week, empty and scrub, turn over, cover, or throw out items that hold water, such as trash containers, tires, buckets, toys, planters, flowerpots, birdbaths or pools



- All people who live in or travel to an area where Zika is being spread can reduce the risk of Zika virus infection by preventing mosquito bites. It is important for all people to take steps to prevent mosquito bites because during the first week of infection, Zika virus can be found in the blood and passed from an infected person to another mosquito through mosquito bites. An infected mosquito can then spread the virus to other people.
- Mosquito bites can be prevented by wearing long-sleeved shirts and long pants.
- Whenever possible, people should also stay and sleep in air-conditioned places or places that have windows and door screens.
- The use of insect repellants containing EPA-registered ingredients is important. Insect repellents should contain one of the following active ingredients, such as DEET, listed on this slide. When used as directed, these insect repellents are proven safe and effective, even for pregnant and breastfeeding women.
- Finally, items that hold water such as tires, planters, and birdbaths should be emptied and scrubbed, turned over, covered, or thrown out once a week since mosquitoes lay eggs on the surface of water.

Prevent Sexual Transmission of Zika Virus

A pregnant woman whose partner lives in or has [traveled to an area with Zika](#) should

- Use condoms correctly every time they have sex, or
- Not have sex

For the duration of the pregnancy, even if the pregnant woman's partner does not have symptoms or feel sick.



- I discussed sexual transmission earlier in this presentation, but as a reminder, Zika can be passed through sex from a person who has Zika to his or her sex partners, so travelers are encouraged to use condoms or not have sex for the duration of the pregnancy, even if the pregnant woman's partner does not have symptoms or feel sick.
- The following messages should be shared with patients:
 - Not having sex eliminates the risk of getting Zika from sex.
 - Condoms can reduce the chance of getting Zika from sex. To be effective, condoms should be used consistently and correctly from start to finish, every time.

- Not sharing sex toys may reduce the risk of spreading Zika to sex partners.

- It is important to follow these precautions for the entire pregnancy, even if the woman's partner does not have Zika symptoms or feel sick. People can spread Zika without ever knowing they had it.

Zika and Breastfeeding

- Transmission of Zika virus through breast milk has not been documented
- Benefits of breastfeeding outweigh theoretical risk of Zika virus transmission through breast milk
- CDC and the World Health Organization recommend that infants born to women with suspected, probable, or confirmed Zika virus infection, or who live in or have traveled to areas of Zika, should be fed according to usual infant feeding guidelines



- There are currently no cases of Zika virus transmission associated with breastfeeding that have been reported.
- Zika virus RNA has been identified in breast milk; but based on the current evidence, the benefits of breastfeeding outweigh the theoretical risks of Zika virus transmission through breast milk.
 - There's no evidence that it can be transmitted from mother to child through breastfeeding.
- CDC and the World Health Organization recommend that infants born to women with possible or confirmed Zika virus infection, or who live in or have traveled to areas of Zika, should be fed according to usual infant feeding guidelines.

Tips for Parents and Caregivers

- For babies and children
- Dress children in clothing that covers arms and legs.
 - For children older than 2 months, use insect repellent on exposed skin.
 - Do not use insect repellent on babies younger than 2 months old.
 - Cover crib, stroller, and baby carrier with mosquito netting.



- To help prevent Zika virus infections in children, parents and caregivers in areas with Zika should
 - Dress their children in clothing that covers arms and legs
 - For children older than 2 months, use insect repellent on exposed skin.
 - Do not use insect repellent on babies younger than 2 months old.
 - Cover a child's crib, stroller, and baby carrier with mosquito netting.

Tips for Parents and Caregivers

- Applying insect repellent for babies and children
- Do not apply repellent onto hands, eyes, mouth, and cut or irritated skin.
 - Adults: Spray onto your hands and then apply to a child's face.
 - 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.



- Remind parents that when applying insect repellent with EPA-registered ingredients, they should follow these rules:
 - Do not apply repellent onto hands, eyes, mouth, or cut or irritated skin.
 - Adults should spray the repellent onto your hands and then apply to a child's face.
 - Do not use insect repellent on babies younger than 2 months.
 - Do not use products containing oil of lemon eucalyptus or para-menthane-diol on children younger than 3 years old.

<p>Standard Precautions to Prevent the Spread of Zika Virus and Other Infectious Agents During Healthcare Settings</p>	<ul style="list-style-type: none"> • Now I will discuss Zika control and prevention in healthcare settings.
<p>Zika Virus Disease in Healthcare Settings</p> <ul style="list-style-type: none"> • No reports to date of transmission of Zika virus from infected patients to healthcare personnel or other patients in healthcare settings • Zika virus has been detected in blood, amniotic fluid, urine, saliva, and genital fluids (including semen and vaginal fluids) 	<ul style="list-style-type: none"> • To date, there have been no reports of transmission of Zika virus from infected patients to healthcare personnel or other patients in healthcare settings. • Zika virus has been detected in blood, amniotic fluid, urine, saliva, and genital fluids (including semen and vaginal fluids), so standard infection prevention precautions are still necessary.
<p>Standard Precautions</p> <ul style="list-style-type: none"> • Basic measures to prevent infections that apply to all patient care • Based on principle that all blood, body fluids, secretions, excretions (except sweat), non-intact skin, and mucous membranes may contain transmissible infectious agents • Goals <ul style="list-style-type: none"> • Prevent direct contact between a patient's body fluids and HCP mucous membranes or broken skin • Protect HCP and prevent them from transmitting potentially infectious material from one patient to another • Avoid percutaneous exposure to contaminated sharp implements 	<ul style="list-style-type: none"> • Healthcare personnel must adhere to Standard Precautions in all healthcare settings. • This is existing guidance, but Zika provides an opportunity to emphasize the importance of following these existing protective recommendations. • Standard Precautions are basic measures to prevent infection and are a group of practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which health care is delivered. • The goals of implementing standard precautions are to <ul style="list-style-type: none"> ○ Prevent direct contact between a patient's body fluids and the healthcare provider's mucous membranes or broken skin, ○ To protect healthcare providers and prevent them from transmitting potentially infectious material from one patient to another; and ○ To avoid percutaneous exposure to contaminated sharp implements.

Standard Precautions: Personal Protective Equipment (PPE)

- Healthcare personnel education and training in the use of PPE is an Occupational Safety and Health Administration (OSHA) requirement
- Gloves, gowns, face masks, face shields, goggles
- Facilities should assure availability and accessibility of PPE to HCP
- Educate all HCP on proper selection and correct use of PPE
 - HCPs must assess their risk for exposure and select appropriate PPE
- Examples of obstetric procedures that require increasing amount of PPE
 - Vaginal exam particularly during amniotomy
 - Vaginal delivery including manual removal of placenta
 - Operative procedures

- One component of Standard Precautions is the use of personal protective equipment (or PPE), such as gloves, gowns, face masks, face shields, and goggles.
- Facilities should assure that sufficient and appropriate PPE is available and readily accessible to healthcare personnel. In addition, healthcare personnel should be educated on the proper selection and correct use of PPE.
- Examples of high risk obstetric procedures that require increasing amounts of PPE in the labor and delivery setting include
 - Vaginal examinations, particularly during amniotomy, when exposure to fluids would be expected;
 - Performing a vaginal delivery or manual removal of a placenta when exposure to larger volumes of fluids would be anticipated; and
 - Procedures in an operating room setting.

What is CDC Doing?

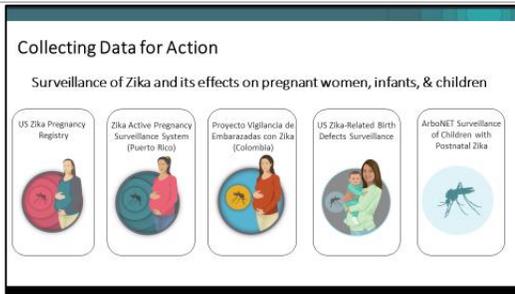
- CDC is working with many partners to better understand the health effects of Zika virus and to identify prevention and control strategies.

Many Questions Remain

- What is the level of risk from a Zika virus infection during pregnancy?
- When during pregnancy does Zika virus infection pose the highest risk to the fetus?
- What is the full range of potential health problems that Zika virus infection may cause?
- What other factors (e.g., co-occurring infection, nutrition, symptomatic vs. asymptomatic) might affect the risk for birth defects?
- What is the risk for later health problems in an infant who is infected or who has had exposure to Zika virus but is born without abnormalities?



- Our understanding of Zika virus continues to evolve. Although we have learned about the association of Zika and poor pregnancy outcomes in a short amount of time, many questions remain.
- For example:
 - What is the level of risk from a Zika virus infection during pregnancy?
 - When during pregnancy does Zika virus infection pose the highest risk to the fetus?
 - What is the full range of potential health problems that Zika virus infection may cause?
 - What other factors (e.g., co-occurring infection, nutrition, symptomatic vs. asymptomatic) might affect the risk for birth defects?
 - What is the risk for later health problems in an infant who is infected or who has had exposure to Zika virus but is born without abnormalities?
- Answering these critical questions is a focus of ongoing CDC research and may help improve prevention efforts and ultimately help reduce the effects of Zika infection during pregnancy.



- This slide lists some of what CDC is doing to learn more about Zika infection during pregnancy.
 - CDC established the US Zika Pregnancy Registry in collaboration with state, tribal, local, and territorial health departments in the United States and US territories (excluding Puerto Rico). The Registry collects information about women with laboratory evidence of possible Zika virus infection during pregnancy, whether or not they have symptoms, and their infants.
 - CDC collaborated with the Puerto Rico Department of Health to develop a similar system in Puerto Rico, the Zika Active Pregnancy Surveillance System.
 - Additionally, enhanced surveillance of pregnant women with Zika in Colombia has been established.
 - CDC has funded 45 jurisdictions in the US to establish or enhance Zika-related birth defects surveillance systems that monitor brain abnormalities, including microcephaly, and central nervous system defects, to better understand Zika exposure during pregnancy and adverse outcomes.
 - CDC manages the collection of data through ArboNET in collaboration with state and territorial health departments. ArboNET is the national arboviral surveillance system that collects information on laboratory-confirmed Zika virus disease cases reported from US states and territories, including Puerto Rico, the US Virgin Islands, and American Samoa. The data from this system can help us understand the effects of postnatal Zika infection.
- Data will be used to update recommendations for clinical care, plan for services for pregnant women, their infants and families affected by Zika, and improve prevention of Zika infection during pregnancy.

Sharing Up-to-Date Information

- Providing updated clinical guidance
- Responding to your inquiries:
 - Email: ZikaMCH@cdc.gov
 - Zika Pregnancy Hotline: 770-488-7100
 - CDC-INFO: (800-232-4636)

<http://www.cdc.gov/zika>

MMWR Morbidity and Mortality Weekly Report
Division of Field Epidemiology

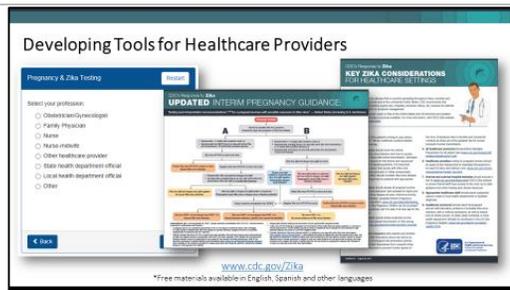
Update: Interim Guidance for Health Care Providers Caring for Pregnant Women with Possible Zika Virus Exposure – United States, July 2016

MMWR, Vol. 65, No. 27, July 18, 2016. DOI: 10.1093/mmwr/mmw27a1. This report is part of a series of reports on Zika virus infection. For more information, see the full report at www.cdc.gov/mmwr.

- CDC is rapidly translating new findings into public health action, messages for the public and updated clinical guidance. CDC is committed to sharing what we know when we know it.
- To that end, CDC has published updated clinical guidelines for healthcare providers caring for pregnant women, infants, and children with possible Zika virus infection, as well as other guidance relating to children’s well-being such as for schools and camps. These guidelines are available on CDC’s website and are updated as new information becomes available.
- In addition, CDC maintains a 24/7 Zika Pregnancy Hotline for healthcare providers of pregnant patients with possible Zika virus infection. Through this service, CDC scientists and clinicians are available for any concerns

about clinical management and to answer questions about the US Zika Pregnancy Registry by telephone or email consultation.

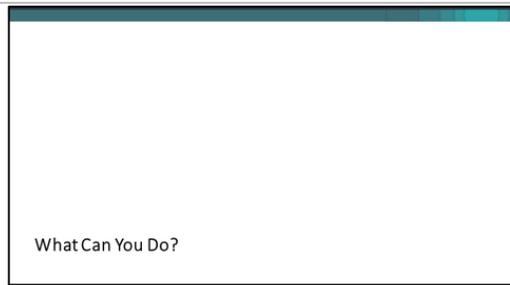
- Providers and the general public can also ask questions through CDC INFO at 800-CDC-INFO (800-232-4636) or www.cdc.gov/cdc-info.



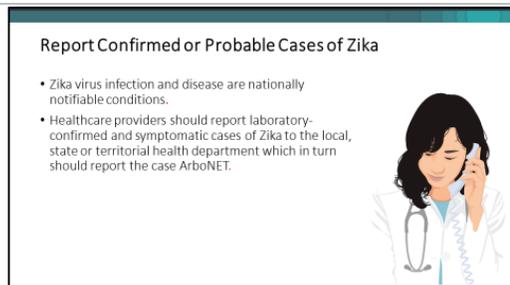
- As I mentioned earlier, CDC is also continuously developing additional guidance tools for healthcare providers.
- All these tools are available online.



- CDC also has many resources available designed for families, as well as scripts and guides to assist healthcare providers when helping families.



- Here are some steps that you can take to help.



- In February 2016, Zika virus disease and congenital Zika virus infections became nationally notifiable conditions in the United States.
- Healthcare providers should report laboratory-confirmed and symptomatic (probable) cases of Zika virus to their local, state or territorial health department.
- The following cases should be reported to your state health department
 - Symptomatic and asymptomatic cases with laboratory evidence of Zika virus infection
 - Babies born with or without abnormalities consistent with congenital Zika syndrome and laboratory evidence of Zika virus infection

Report Cases to US Zika Pregnancy Registry

- Healthcare providers are encouraged to report and actively monitor pregnancies and congenital outcomes among symptomatic and asymptomatic women with laboratory evidence of possible Zika virus infection

More information

- Available on the [US Zika Pregnancy Registry website](http://www.cdc.gov/zika/hc-providers/registry.html) (<http://www.cdc.gov/zika/hc-providers/registry.html>)
- To contact CDC Registry staff, call the CDC Emergency Operations Center watch desk at 770-488-7100 and ask for the Zika Pregnancy Hotline or email ZikaPregnancy@cdc.gov
- For non-urgent requests, call 800-CDC-INFO (800-232-4636)



- In February 2016, CDC, in collaboration with state, local, tribal, and territorial health departments, launched a comprehensive surveillance system, US Zika Pregnancy Registry, to report and actively monitor pregnancies and congenital outcomes among symptomatic and asymptomatic women with laboratory evidence of possible Zika virus infection
- USZPR casts a wider net than ArboNET and National Notifiable Diseases Surveillance System as it pertains to Zika, because the registry includes symptomatic and asymptomatic pregnant women with positive, equivocal, or inconclusive Zika test results with or without symptoms. It also includes all infants born to these women, not only those with identified congenital infection, and they will be followed for 1 year.

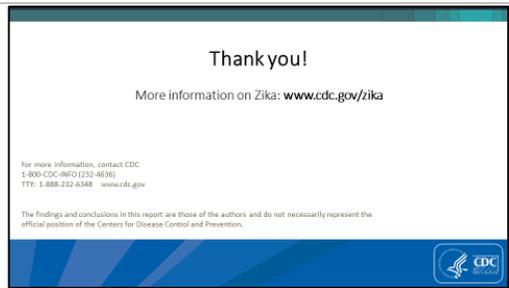
In Summary

- Stay up to date on Zika and where it is being spread
- Know the basics about Zika transmission in your community
- Know the basics about Zika transmission in healthcare settings
- Provide support to diagnose and test for Zika for those with symptoms in your community
- Understand the assessment and management of Zika among pregnant women and infants and how to protect them from exposure
- Counsel couples on how to avoid Zika infection as they plan for pregnancy
- Support access to effective contraception to those not planning pregnancy
- Provide support for families of newborns affected by Zika
- Inform your local or state health department and the US Zika Pregnancy Registry as indicated

- In summary, here are a few bulleted key takeaways from this presentation:
 - Stay up to date on Zika transmission and where it is being spread
 - Know the basics about Zika transmission in your community
 - Know the basics about Zika transmission in healthcare settings
 - Provide support to diagnose and test for Zika for those with symptoms in your community
 - Understand the assessment and management of Zika among pregnant women and infants and how to protect them from exposure
 - Counsel couples on how to avoid Zika infection as they plan for pregnancy
 - Support access to effective contraception to those not planning pregnancy
 - Provide support for families of newborns affected by Zika
 - Inform your local or state health department and the US Zika Pregnancy Registry as indicated



- Additional information and resources can be found on the CDC website.



- All of this is the work of many people. Many thanks to all of our collaborators, and thank you all for listening today.

Frequently Asked Questions

How do you define people with possible exposure to Zika?

Possible exposure to Zika is defined as

- Recent travel to areas where Zika is actively spreading
- Living in an area where Zika is actively spreading
- Sexual contact with a partner who traveled to or lived in an area where Zika is actively spreading

What is the cost of testing for Zika? Does insurance pay?

The Zika PCR and IgM tests are available through health departments and some commercial laboratories. Prices vary. For information, please contact the commercial lab or health department. Coverage policies vary by health insurance plan.

Are pregnant women prioritized for laboratory testing?

To prioritize testing, identify pregnancies affected by Zika, and consistently interpret laboratory results, all laboratory testing requests and results reports for pregnant women should clearly indicate pregnancy status. We are working to incorporate pregnancy status when ordering laboratory testing.

How can clinicians get help with testing?

Healthcare providers should work closely with their state, local, or territorial health department to ensure that the appropriate test is ordered and interpreted correctly. In addition, CDC maintains a 24/7 Zika consultation service for health officials and healthcare providers caring for pregnant women. To contact the service, call 770-488-7100 and ask for the Zika Pregnancy Hotline or email ZIKAMCH@cdc.gov.

Will all pregnant women with Zika virus have a baby with congenital Zika syndrome?

No. Zika can cause microcephaly and brain abnormalities, but not every pregnant woman infected with Zika will have a baby with congenital Zika syndrome. Zika virus infection during pregnancy increases the chances for these problems. Although studies to date have linked Zika with certain birth defects or other pregnancy problems, even in places with active Zika virus transmission, women are delivering infants that appear to be healthy.

Is CDC recommending a pregnant woman with Zika virus seek an elective abortion?

CDC recommends that women consult with their healthcare providers regarding any questions, or treatment decisions, regarding Zika. CDC has provided information about the potential risks to pregnant women who contract Zika, and ways that pregnant women – as well as the broader public – can limit their risk of Zika infection.

How should healthcare providers counsel women of reproductive age who want to delay or avoid pregnancy in areas with active Zika virus transmission?

Preventing unintended pregnancy during the Zika virus outbreak is one of the primary strategies to reduce the number of pregnancies affected by Zika virus. Healthcare providers counseling women who want to delay or avoid pregnancy should counsel women on the full range of contraceptive methods and in the context of Zika help them to select that most effective method they can use correctly and consistently while recognizing the

decision about what type of contraceptive method to use is a personal decision and should be made by the individual or couple in consultation with their healthcare provider.

CDC has [contraceptive guidance for healthcare providers](#) that may be used when counseling patients about contraceptive choice, how to use contraceptive methods, and how to manage problems with contraceptive use. CDC has also developed [teen pregnancy prevention tools](#) for healthcare providers, including ideas to make clinics youth-friendly and recommendations on how to apply CDC's evidence based guidance to their practices.

Healthcare providers should also discuss how to prevent sexual transmission of Zika, if the woman or her partner has had possible Zika virus exposure or Zika virus disease, including the correct and consistent use of condoms to protect against sexual transmission of Zika virus.