Zika FAQs for Clinicians

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Background

How is Zika virus transmitted?

Zika virus is transmitted to humans primarily through the bite of an infected Aedes species mosquito—the same type of mosquito that spreads dengue, chikungunya, and yellow fever. Aedes mosquitoes are aggressive daytime biters and feed both indoors and outdoors. If Aedes mosquitoes enter a home, they can bite at night as well.

Zika virus can also be transmitted from a pregnant mother to her fetus during pregnancy or around the time of birth. We do not know how often congenital or perinatal transmission of Zika virus occurs.

Zika virus can also be transmitted through sex. Zika can be sexually transmitted from a person with Zika before symptoms develop, while symptomatic, and after symptoms end. Zika virus has been detected in the blood, semen, and vaginal fluid of symptomatic and asymptomatic persons, and can persist in semen for several months, causing concern for pregnant women and individuals and couples wishing to conceive. The duration of persistence in semen is unknown, but current knowledge indicates Zika can be cultured from semen up to 69 days post symptom onset, and Zika RNA can be found up to 188 days post symptom onset. Research is ongoing to determine how long Zika can be passed to sex partners.

Transmission is also possible through blood transfusion, laboratory exposure, and possibly through organ donation. One confirmed case occurred in a person with no known risk factors; the person did provide care to another person with very high amounts of Zika in the blood.

The Centers for Disease Control and Prevention (CDC) continues to emphasize the primary mode of Zika virus transmission is through the bite of an infected mosquito. People who have Zika virus infection can protect others by preventing additional mosquito bites after returning from an area with risk of Zika, and using condoms or abstaining from sex to prevent transmission to a sexual partner. Zika virus has also been identified in saliva, urine and breast milk, but the likelihood of transmission from these sources is unknown. Based on the available evidence, the benefits of breastfeeding outweigh the risk of transmission.
What is the epidemiology of Zika virus disease (or Zika)?

Zika virus was discovered in a monkey in the Zika forest of Uganda in 1947. The first human case was detected in 1952. For many years, only sporadic cases in humans were detected in Africa and Southern Asia as the virus expanded into new areas. In 2007, the first documented outbreak of Zika virus disease occurred in the Pacific Islands. This outbreak on Yap Island had an infection rate of 73%; however, only 18% of those infected developed signs or symptoms of illness. In 2015, Zika virus is first detected in Brazil; thereafter, there is detection of Zika virus in many countries throughout South America and the Caribbean.

Zika virus can infect people of all ages. If the person develops symptoms, the disease is typically mild and usually does not lead to hospitalization or death.

Who is at risk of infection?

Anyone who is living in or traveling to an area with risk of Zika and has not been previously infected with Zika virus is at risk of infection; sex partners of those residents or recent travelers are also at risk of infection through sexual exposure. Those who do not travel to areas with risk of Zika are currently at low risk of acquiring the infection via mosquitoes. However, because competent Aedes species mosquitoes are located in Virginia, local transmission of Zika virus in Virginia is possible during the mosquito season (May through October). For a map of where the mosquitoes that could spread Zika virus are located in the U.S., see CDC’s vector range maps.

Specific areas where Zika virus transmission is ongoing is likely to change over time. Please visit CDC’s Zika Travel Information webpage for the most up-to-date information concerning international and U.S. Territory travel, and visit CDC’s Areas with Risk of Zika webpage for the most up to date information concerning travel within the U.S.

How can Zika virus infection be prevented?

There is no vaccine to prevent Zika infection, however, the risk of becoming infected can be reduced by minimizing exposure to Zika virus.

Pregnant women should not travel to areas with risk of Zika. If a pregnant woman must travel to one of these areas, she should talk to her healthcare provider. If she travels, she should be counseled to strictly follow steps to avoid mosquito bites, including using an EPA-registered insect repellent according to the product label. She should also prevent sexual transmission during and after the trip. If a pregnant woman or her sexual partner travels to an area with risk of Zika, the couple should use condoms from start to finish every time they have sex or not have sex during the entire pregnancy, even if the traveler does not have symptoms of Zika. Based on the available evidence, it is thought that Zika virus infection in a woman who is not pregnant would not pose a risk for birth defects in a future pregnancy once the virus has completely cleared from her body.

All travelers to areas with risk of Zika can protect themselves by taking steps to prevent mosquito bites. Travelers should use insect repellent, wear long-sleeved shirts and long pants, and stay in places with air conditioning or with screens on all windows and doors. Also, children and babies can be protected by dressing them in long sleeves and pants, or covering the crib, stroller, or baby carrier with mosquito netting.
insect repellants can be applied to children; for guidance on applying insect repellant to babies and children, see [how to protect against mosquito bites](#).

Zika virus usually remains in the blood of an infected person for about a week, but it can be found longer in some people. Therefore, to prevent introduction and spread of Zika virus into local Virginia mosquitoes during the mosquito season, all travelers returning to the U.S. from an [area with risk of Zika](#) should [take steps to prevent mosquito bites](#) for 3 weeks, which includes a maximum of two weeks for the incubation period plus one additional week of viremia; if a person develops symptoms of Zika, he or she should [take steps to prevent mosquito bites](#) for the first week of illness.

Regarding the possibility of sexual transmission of Zika virus:

- The risk of sexual transmission of many infections can be reduced by consistent and correct use of condoms, and the risk of sexual transmission can be eliminated by abstaining from sexual activity.
- People who reside in or have traveled to an [area with risk of Zika](#), and have a pregnant partner, should abstain from sexual activity or consistently and correctly use condoms during sex (i.e., vaginal sex, anal sex, oral sex, or other activities that might expose a sex partner to genital secretions) for the duration of the pregnancy. Pregnant women should discuss their partner’s potential exposures to mosquitoes and history of Zika-like illness with their healthcare provider.
- For couples who are planning to become pregnant and one or both partners traveled to an [area with risk of Zika](#):
  - **If only the male partner traveled**, the couple should use condoms or abstain from sexual activity for at least 6 months from the date of symptom onset (if symptomatic) or the date of return (if asymptomatic).
  - **If only the female partner traveled**, the couple should use condoms or abstain from sexual activity for at least 2 months from the date of symptom onset (if symptomatic) or the date of return (if asymptomatic).
  - **If both partners traveled**, the couple should use condoms or abstain from sexual activity for at least 6 months from the date of symptom onset (if symptomatic) of the male partner or the date of return (if asymptomatic) of the male partner.
- Couples who do not want to get pregnant and have traveled to an [area with risk of Zika](#), but are concerned about sexual transmission of Zika virus, should abstain from sexual activity or use condoms consistently and correctly during sex for at least 6 months if only the male traveled or both partners traveled; they should abstain from sexual activity or use condoms consistently for 2 months if only the female partner traveled. The time period should begin after symptom onset (if symptomatic) or the date of return (if asymptomatic).

**What are symptoms of Zika?**

Many people that are infected with Zika will not have symptoms or will have only mild symptoms. If symptoms are present, they typically develop 3 to 14 days after exposure. Characteristic signs and symptoms include acute onset of fever with maculopapular rash, arthralgia, or conjunctivitis. Other commonly reported symptoms
include myalgia and headache. Signs or symptoms usually last for several days to a week. Severe disease requiring hospitalization, and death are rare.

Zika may also be mistaken for dengue virus or chikungunya virus infections; clinical features of Zika, dengue, and chikungunya are compared below:

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<th>Features</th>
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Zika virus can cause microcephaly and other severe birth defects (CDC). For the outbreak in the Americas, several countries reported an increase in Guillain-Barré Syndrome (GBS) cases and other neurologic conditions according to the World Health Organization (WHO).

**How long is viremia? (from CDC)**

Viremia persists up to 1 week after symptom onset. Viremia was previously reported to be up to 7 days after symptom onset, however recent studies have indicated Zika virus RNA can be found in serum for a median of 14 days, and can even persist for >60 days. Pregnant women may also have a prolonged time period of Zika virus RNA detection in serum; results of several studies indicate time periods of 46 days, 80 days, or up to 107 days after symptom onset.

**What is the treatment for Zika?**

There is no specific treatment for Zika, but the symptoms of Zika can be treated with pain and fever-reducing medications like acetaminophen, rest, and plenty of fluids to prevent dehydration. Patients should not take aspirin or non-steroidal anti-inflammatory drugs until dengue virus infection has been ruled out.
Is there any association between Zika and birth defects?

Yes, Zika virus infection during pregnancy can cause damage to the brain, microcephaly, and congenital Zika syndrome, a pattern of birth defects that includes brain abnormalities, eye defects, hearing loss, and limb defects.

Not all women who have Zika virus infection during pregnancy will have babies with health problems. CDC’s analysis of the US Zika Pregnancy Registry data for 2016 can be found here. However, due to concerns of possible birth defects, all fetuses and infants of women infected with Zika virus during pregnancy should be evaluated for possible congenital infection and neurologic or other abnormalities. Studies are still underway to learn more about health conditions associated with Zika virus, and the effects of Zika virus infection during pregnancy.

What gaps do we have in our understanding of Zika?

Key issues to be addressed in our understanding of Zika include:

- Epidemiological and molecular characteristics of the virus
- Potential medical countermeasures (including treatments and vaccines) that can be developed
- How Zika virus interacts with other arboviruses (viruses that are transmitted by mosquitoes, ticks and other arthropods), such as dengue
- Development of more sensitive and specific laboratory diagnostic tests for Zika virus that can reduce cross-reactivity with other flaviviruses, such as dengue
- Full spectrum of health effects related to Zika virus infection during pregnancy, and how to manage infants with congenital Zika virus infection

Will patients have lifelong immunity after infection?

Based on what we know with other flavivirus infections, yes, it is likely that patients infected with Zika virus will have prolonged, possibly lifelong, immunity.

Why do I need to be concerned with Zika if it is not here?

Local mosquito-borne transmission has occurred in the continental United States (in areas in Florida and Texas). Virginia, and other areas in the United States, have one or both of the Aedes species mosquitoes that have the potential to transmit Zika virus. For maps of potential range of Aedes aegypti and Aedes albopictus species in the United States click here.

If travelers visit areas with risk of Zika and return to Virginia while infected, local Aedes species mosquitoes that bite the infected individuals could become infected. These infected mosquitoes could then transmit the virus to other people in the area.
What are high-risk populations for Zika? (from CDC)

Anyone can become infected with Zika virus through the bite of an infected mosquito, unprotected sex with an infected person, infected blood transfusions, and other laboratory exposures. Zika may also be passed by a pregnant woman to her fetus during pregnancy or birth. Because Zika virus is a cause of microcephaly and other birth defects, protecting pregnant women, fetuses, and infants is our top priority.

What are other sequelae/health risks in adults and children exposed to Zika? (from CDC)

There is a strong association between Zika virus and Guillain-Barre Syndrome (GBS), but only a small percentage of people infected with Zika virus will develop GBS. In addition to microcephaly and other neurologic complications, which may be severe, Zika virus has been associated with developmental delays and other adverse health outcomes that may not be evident at birth. CDC has resources available for evaluating and managing patients affected by congenital Zika virus. Cardiac complications have also been described in several reports.

Where is Zika being transmitted?

Currently, the areas with risk of Zika can be viewed on CDC’s website. Zika virus has been found in Africa, South-East Asia, the Western Pacific, and the Americas. Local spread of Zika virus has occurred in the United States. The vector species most commonly associated with local transmission (mosquito-borne transmission) is Aedes aegypti, however, Aedes albopictus mosquitoes are also vectors of Zika virus.

Aedes aegypti mosquitoes live in tropical, subtropical, and some temperate regions, but Aedes albopictus mosquitoes can live in cooler temperatures, and thus have a broader range. Please see the maps of the potential range of each vector species in the United States. Because the vectors of Zika virus are found in the United States, and many other countries in the world, infection of local mosquitoes with Zika virus could be possible again and Zika could also move into new areas.

Patient Educational Materials

There are several educational resources about Zika virus available through the CDC.

Preconception Counseling

How long should a couple wait before trying to conceive if one or both partners traveled to an area with risk of Zika?

- If only the male partner traveled, the couple should use condoms or abstain from sexual activity for at least 6 months from the date of symptom onset (if symptomatic) or the date of return (if asymptomatic).
• **If only the female partner traveled,** the couple should use condoms or abstain from sexual activity for at least **2 months** from the date of symptom onset (if symptomatic) or the date of return (if asymptomatic).

• **If both partners traveled,** the couple should use condoms or abstain from sexual activity for at least **6 months** from the date of symptom onset (if symptomatic) of the male partner or the date of return (if asymptomatic) of the male partner.

**Should either partner be tested for Zika before trying to conceive after returning from travel to an area with risk of Zika? (from CDC)**

Zika virus testing is indicated for all travelers to areas with risk of Zika who experience symptoms of Zika virus disease. This includes pregnant women, non-pregnant women and men. It is not recommended that couples wishing to conceive be tested for Zika virus prior to conception if they are not symptomatic. They should wait the recommended timeframes before trying to conceive. Couples wishing to conceive should receive preconception counseling about how to minimize risks for Zika virus infection.

**Should a non-pregnant woman living in an area with ongoing possible exposure be tested for Zika IgM to establish a baseline prior to trying to conceive?**

Zika virus IgM testing as part of preconception counseling to establish baseline IgM results for non-pregnant women with ongoing possible Zika virus exposure is not warranted because Zika virus IgM testing is no longer routinely recommended for asymptomatic pregnant women with ongoing possible Zika virus exposure. Only NAT testing is recommended for asymptomatic pregnant women with ongoing possible Zika virus exposure, and this is not a useful test for establishing a baseline prior to trying to conceive.

**Laboratory Testing**

**Who should be tested for Zika virus? (from CDC)**

CDC recommends Zika virus testing for

- Anyone with possible Zika virus exposure* who has or recently experienced symptoms of Zika.
- Symptomatic pregnant women with possible Zika virus exposure
- Asymptomatic pregnant women with ongoing possible Zika virus exposure
- Pregnant women with possible Zika virus exposure who have a fetus with prenatal ultrasound findings consistent with congenital Zika virus infection

Zika testing may be considered for

- Asymptomatic pregnant women with recent possible but no ongoing exposure to Zika virus (i.e., travelers)

Zika virus testing is not recommended for
• Non-pregnant asymptomatic individuals
• Preconception screening

*Possible Zika virus exposure includes living in, traveling to, or having unprotected sex with someone who lives in or traveled to an area with risk of Zika.

When and what tests should be performed for eligible patients for Zika virus testing? (from CDC)

For non-pregnant symptomatic individuals (from CDC)

• NAT (nucleic acid test) (serum and urine) <14 days after symptom onset
• Zika IgM +/- dengue IgM (serum) testing performed on NAT negative samples that are collected <14 days after symptom onset or samples collected ≥ 14 days after symptom onset

For symptomatic pregnant women (from CDC)

• NAT (serum and urine) testing as soon as possible and up to 12 weeks after symptom onset
• IgM (serum) testing as soon as possible and up to 12 weeks after symptom onset

For asymptomatic pregnant women with ongoing possible Zika exposure (i.e., residence in or frequent travel to an area with risk of Zika) (from CDC)

• NAT (serum and urine) testing is recommended three times during pregnancy
  o Recommendations for the timing of NAT testing are at the initial prenatal care visit, followed by two additional NAT tests performed during pregnancy, coinciding with non-consecutive prenatal visits. Timing of additional NAT testing may be informed by jurisdictional trends in Zika virus transmission, the expected length of Zika virus nucleic acid detection in serum, and the duration of exposure during pregnancy.
  o For women who have a positive NAT test during pregnancy, additional NAT testing is not recommended.
• IgM testing is not routinely recommended
  o Although not routinely recommended, physicians and patients, through a shared decision-making model, may collaboratively elect to have IgM testing performed concurrent with NAT testing.
  o If a patient has previously been confirmed positive for Zika virus infection, no additional IgM testing is recommended.

For asymptomatic pregnant women with recent possible exposure to Zika virus but no ongoing exposure (i.e., travelers) (from CDC)

• Although not routinely recommended, testing may be considered on a case-by-case basis using a shared physician-patient decision-making model and in line with jurisdictional recommendations
• If testing of asymptomatic pregnant women is performed, the same algorithm as for symptomatic pregnant women should be followed using the timeframe from the last possible exposure to Zika virus.

For pregnant women with possible exposure to Zika virus and who have a fetus with prenatal ultrasound findings consistent with congenital Zika virus infection (from CDC)

• NAT (serum and urine) testing should be performed on mother
  o If amniocentesis is being performed as part of clinical care, NAT testing of amniocentesis specimens should also be performed
• IgM (serum) testing should be performed on mother
• Testing of placental and fetal tissues may also be considered (at birth)

What types of testing can/should be sent through public health?

Public health testing at Virginia’s Division of Consolidated Laboratory Services (DCLS) is available if testing at a private laboratory is not feasible (e.g., uninsured patient) and criteria on the Virginia Department of Health’s public health testing algorithm have been met. For public health testing of specific pregnant women, infants with possible congenital infection, those diagnosed with Guillain-Barré Syndrome or other neurological manifestation, or those with an unusual exposure (e.g., transfusion, transplant, laboratory exposure), or any individuals with suspected local mosquito-borne exposure, healthcare providers should contact their local health department to facilitate testing at DCLS. DCLS has testing capacity for Zika virus through RT-PCR (serum and urine specimens) and IgM (serum only). DCLS is also assisting with specimen submission and shipping to CDC when warranted. Tissue testing to be performed by CDC is submitted through DCLS after CDC approves testing.

Because of overlapping clinical presentations, testing for chikungunya, dengue and Zika should be considered if a patient is symptomatic. DCLS is able to test for chikungunya (RT-PCR and serology) and dengue (RT-PCR and serology).

What are the challenges in interpreting Zika virus testing?

There are multiple challenges in interpreting Zika virus test results.

NAT testing may not demonstrate Zika virus RNA in someone with Zika if the period of viremia has passed.

An enzyme-linked immunosorbent assay (ELISA) can be performed to detect anti-Zika IgM antibodies; however, cross-reactivity with related flaviviruses (e.g., dengue, and yellow fever viruses) is common. Zika virus IgM antibodies decrease over time; if a specimen was collected >12 weeks after illness onset or exposure, the IgM levels might be too low for detection.

Plaque-reduction neutralization testing (PRNT) can be performed to measure virus-specific neutralizing antibodies to Zika virus, but neutralizing antibodies may still yield cross-reactive results in persons who were previously infected with another flavivirus, such as dengue, or have been vaccinated against yellow fever or Japanese encephalitis. The PRNT results are also not reliable for interpreting infant antibody levels at birth because Zika-specific neutralizing antibodies measured are primarily IgG antibodies that can cross the placenta. Therefore, PRNT cannot differentiate maternal and infant antibodies. Because maternal antibodies in the infant are expected to wane by 18 months of age, in some circumstances, retesting infants with possible congenital infection at 18 months may be recommended.

Because of all these factors, it is important to work closely with your local health department to ensure the appropriate test is ordered and that the results are interpreted correctly.
When and why is convalescent testing necessary? (from CDC)

Collecting and testing a convalescent specimen for Zika virus is recommended in certain situations. If a person that meets the testing criteria for Zika is IgM negative, but NAT positive (serum or urine), and on repeat testing is negative, a convalescent specimen should be collected ≥2 weeks after symptom onset or possible exposure or specimen collection date for repeat IgM testing.

Zika and Pregnancy

What is the US Zika Pregnancy Registry?

To understand more about Zika virus infection during pregnancy and congenital Zika virus infections, CDC has established the US Zika Pregnancy Registry. Information collected through this registry will help guide recommendations for clinical care and testing, plan for services for pregnant women and families affected by Zika virus, and improve prevention of Zika virus infection during pregnancy. Pregnant women with laboratory evidence of Zika virus infection and their infants are eligible to participate; infants with laboratory evidence of Zika virus infection and their mothers are also eligible to participate.

Local health departments will reach out to the health care providers caring for eligible women and infants. The providers will be asked to provide information at the following points: upon initial identification, at the end of the second trimester (24 weeks) and at the end of the third trimester (35 weeks), at the time of delivery, and when the infant is 2, 6, and 12 months of age. For more information, please visit CDC's US Zika Pregnancy Registry website or VDH's US Zika Pregnancy Registry website.

What is known about the effects of Zika virus on pregnant women?

We expect that the course of Zika in pregnant women is similar to that in the general population. No evidence exists to suggest that pregnant women are more susceptible or experience more severe disease during pregnancy. It is not known if pregnant women are more susceptible to Guillain-Barré Syndrome. Zika virus can be passed from a pregnant woman to her fetus, and infection during pregnancy can cause birth defects, such as microcephaly and other severe fetal brain defects. A CDC Vital Signs report indicated about 10% of pregnant women in the United States with confirmed Zika have a fetus or baby with birth defects, and 15% with confirmed Zika in the first semester had birth defects. The proportion of reported birth defects was similar between symptomatic and asymptomatic women.

Is there any association between Zika and congenital microcephaly?

Yes. Scientists at the CDC have concluded, after careful review of existing evidence, that Zika virus is a cause of microcephaly and other severe fetal brain defects. Additional studies are underway to investigate further details about timing of infection, risk of birth defects, the full range of effects of Zika virus infection during pregnancy, and other relevant scientific questions.
What is the definition of microcephaly?
Microcephaly is defined as a head circumference that is smaller than two standard deviations below average, or less than the third percentile, for the same age and sex.

What causes congenital microcephaly?
Causes of congenital microcephaly may include genetic conditions, such as chromosomal abnormalities, or during pregnancy, fetal malnutrition or maternal exposures to harmful substances, such as alcohol, mercury or arsenic, radiation, smoking, or certain drugs. Also, during fetal development, interruption of blood flow to the infant’s brain or trauma can be a cause of microcephaly. In addition to Zika virus, maternal infections during pregnancy that are associated with microcephaly include cytomegalovirus (CMV), herpes simplex virus, rubella virus, human immunodeficiency virus (HIV), lymphocytic choriomeningitis virus (LCMV), Treponema pallidum (i.e., syphilis), and Toxoplasma gondii. Often the cause of microcephaly is unknown.

When is microcephaly diagnosed? (from CDC)
Microcephaly can be diagnosed during pregnancy or after the baby is born.

- During Pregnancy – Microcephaly may be diagnosed late in the 2nd trimester or early in the 3rd trimester using ultrasound.
- After Birth – Microcephaly is diagnosed by a healthcare provider who measures the circumference of a newborn baby’s head. The healthcare provider will compare the head circumference to population standards by sex and age. Although head circumference measurements may be influenced by molding and other factors related to delivery, the measurements should be taken on the first day of life because birth head circumference reference charts by age and sex are based on measurements taken before 24 hours of age. The most important factor is that the head circumference is carefully measured and documented. If measurement within the first 24 hours of life is not done, the head circumference should be measured as soon as possible after birth.

How is microcephaly diagnosed? (from CDC)
Microcephaly can be determined during pregnancy using ultrasound. Multiple ultrasounds may be needed to detect an abnormality. (from CDC)
Microcephaly can be determined by measuring head circumference after birth. There are head circumference growth charts for newborns, infants, and children up to 20 years old. You can find the head circumference charts for CDC's clinical growth charts. Microcephaly can be diagnosed based on head circumference and gestational age at birth, which takes into account how far along the pregnancy was at the time of birth. You can find head circumference charts based on gestational age at birth at Intergrowth-21st. CDC recommends that health care providers use the WHO growth charts to monitor growth for infants and children ages 0 to 2 years of age in the United States.
If the healthcare provider suspects the baby has microcephaly, he or she can request one or more tests to help confirm the diagnosis. For example, special tests like magnetic resonance imaging can provide critical information on the structure of the baby’s brain that can help determine if the newborn baby had an infection during pregnancy. They also can help the healthcare provider look for other problems that might be present.

Is there any known association between maternal Zika and other adverse pregnancy outcomes?

The full spectrum of outcomes that might be associated with Zika during pregnancy is unknown and is being investigated. However, a distinct pattern of birth defects, called congenital Zika syndrome, has emerged among fetuses and infants of women infected with Zika during pregnancy. In addition to cognitive, sensory, and motor disabilities that are shared with other birth defects, congenital Zika syndrome is associated with these five types of birth defects that are either not seen or occur rarely with other infections during pregnancy: severe microcephaly in a partially collapsed skull; decreased brain tissue with a specific pattern of brain damage; damage (i.e., scarring, pigment changes) to the back of the eye; limited range of joint motion (such as clubfoot), too much muscle tone restricting body movement soon after birth.

Based on an April 2017 Vital Signs publication using US Zika Pregnancy Registry data, authors concluded that approximately one in 10 pregnancies with laboratory-confirmed Zika virus infection resulted in a fetus or infant with Zika virus-associated birth defects. The proportion of fetuses and infants with these birth defects was highest among those with infections during the first trimester. The proportion of reported birth defects was similar between symptomatic and asymptomatic women. There is more information about microcephaly and other birth defects and congenital Zika syndrome available from CDC.

How should pregnant patients who are considering travel to an area with Zika virus transmission be counseled?

CDC recommends that pregnant women in any trimester should avoid travel to any area with risk of Zika. If a pregnant woman is considering travel to one of these areas, she should talk to her healthcare provider. If she travels, she should strictly follow steps to avoid mosquito bites and she should use a condom or other barrier protection every time she has sex or abstain from sex during the trip.

Which pregnant women should be tested for Zika? (from CDC)

The recommendations for testing of pregnant women were updated on July 24, 2017 (see MMWR and FAQ). All pregnant women in US states, the District of Columbia, and territories should be screened for possible Zika virus exposure and symptoms at each prenatal care visit. Possible exposure to Zika virus that might warrant testing includes recent travel to or residence in an area with risk of Zika (during pregnancy or the periconceptional period [the 6 weeks before last menstrual period or 8 weeks before conception]), or sex (vaginal, anal, or oral sex) or sharing sex toys without a condom during pregnancy with a person who traveled to or lives in an area with risk of Zika. Healthcare providers should also ask patients about potential exposure to Zika before their current pregnancy to help guide decisions about testing and interpretation of test results.
Testing Symptomatic Pregnant Women

Pregnant women who report signs or symptoms consistent with Zika virus disease (acute onset of fever, rash, arthralgia, conjunctivitis) should be tested for Zika virus infection. For symptomatic pregnant women who live in or traveled to an area with risk of Zika or had sex without a condom with a partner who lived in or traveled to an area with risk of Zika, concurrent testing of serum and urine by RNA NAT and Zika virus IgM testing of serum is recommended as soon as possible up through 12 weeks after symptoms began.

Testing Asymptomatic Pregnant Women

Asymptomatic pregnant women with ongoing possible Zika virus exposure (i.e., residence in or frequent travel to an area with risk of Zika) should be offered RNA NAT testing three times during pregnancy. Although there is no way to determine the timing of testing of asymptomatic pregnant women with only NAT testing, testing at the initiation of prenatal care with two additional tests performed during the course of the pregnancy, coinciding with prenatal visits should be considered. For this group, testing for Zika virus IgM antibodies is no longer routinely recommended because of the emerging evidence on persistence of Zika IgM antibodies, which could make it difficult for healthcare providers to use these test results to determine whether an infection occurred before or during the current pregnancy.

Asymptomatic pregnant women with recent possible exposure to Zika but no ongoing exposure should no longer receive routine testing. Testing should be considered using a shared decision-making model that includes pretest counseling, individualized risk assessment, clinical judgment, patient preferences, and the jurisdiction’s recommendations. If testing is conducted, similar concurrent NAT and IgM testing should be used as is recommended for testing symptomatic pregnant women; however, timeframes for testing should be calculated based on the last possible exposure to Zika. When deciding whether to advise testing, healthcare providers should consider factors such as length of possible exposure, type and location of exposure as well potential symptoms, protective measures taken, preferences and concerns, and jurisdiction recommendations.

Note: Jurisdictions may take into account local epidemiologic considerations (e.g., seasonality, geography, and mosquito surveillance and control factors) in making recommendations for Zika virus testing for this group of pregnant women; therefore, testing recommendations for this group of pregnant women may differ by jurisdiction. Please contact your state, tribal, local, or territorial health department for jurisdiction specific guidance.

Testing Pregnant or Postpartum Women with Possible Zika Virus Exposure who Have a Fetus with Prenatal Ultrasound Findings or an Infant with Physical Exam Findings Consistent with Possible Zika Virus-Associated Birth Defects

For pregnant women exposed to Zika whose fetus has birth defects potentially associated with Zika detected on ultrasound or whose infant has physical exam findings consistent with possible Zika-virus associated birth defects, concurrent testing of serum and urine by RNA NAT and Zika virus IgM testing of serum is recommended, following the algorithm for symptomatic pregnant women. If amniocentesis is performed as part of clinical care, healthcare providers should consider RNA NAT testing of amniocentesis specimens and results should be interpreted within the context of the limitations of amniotic fluid testing. It is unknown
how sensitive or specific RNA NAT testing of amniotic fluid is for congenital Zika virus infection or what proportion of infants born after infection will have abnormalities.

Should Partners of Pregnant Women be Tested for Zika? (from CDC)

CDC recommends Zika virus testing for anyone who has been exposed to Zika and who also has Zika symptoms, including sex partners of pregnant women.

Testing does not determine how likely a person is to pass Zika virus through sex. Because Zika virus can remain in some fluids (e.g., semen) longer than blood, someone might have a negative blood test, but still carry Zika in their genital secretions.

Intermittent shedding in semen can occur with other viruses and the pattern of Zika virus shedding in semen is unknown. In addition, the detection of Zika virus RNA in semen might not indicate the presence of infectious virus in semen. Testing semen and vaginal fluids for Zika virus is not currently available outside of the research setting. Studies are underway to better understand the performance of these tests, the persistence of Zika virus in these fluids, and how best to interpret the results.

How long do risks persist for women with Zika who want to get pregnant in the future? (from CDC)

Once someone has been infected with Zika, it is very likely they will be protected from future infections. Currently, there is no evidence that a woman who has recovered from Zika virus infection (the virus has cleared her body) will have Zika-related pregnancy complications in the future. Also, based on information about similar infections, once a person has been infected with Zika virus and has cleared the virus from his or her body, he or she is likely to be protected from future Zika infections.

If a couple is planning to become pregnant and one or both partners traveled to an area with risk of Zika, see below for timeframes to wait before trying to conceive:

- **If only the male partner traveled**, the couple should use condoms or abstain from sexual activity for at least 6 months from the date of symptom onset (if symptomatic) or the date of return (if asymptomatic).
- **If only the female partner traveled**, the couple should use condoms or abstain from sexual activity for at least 2 months from the date of symptom onset (if symptomatic) or the date of return (if asymptomatic).
- **If both partners traveled**, the couple should use condoms or abstain from sexual activity for at least 6 months from the date of symptom onset (if symptomatic) of the male partner or the date of return (if asymptomatic) of the male partner.

More information can be found at [Women and Their Partners Trying to Become Pregnant](https://www.cdc.gov/zika/).
Why is the timeframe for male travelers longer than for female travelers? (from CDC)

Detection of Zika virus RNA in semen has been reported up to 188 days after illness onset. It is important to note that the presence of Zika virus RNA does not necessarily represent the presence of infectious virus. Even so, current evidence suggests that Zika virus capable of infection persists longer in semen than in other body fluids, including vaginal fluids, urine, and blood.

The longer precautionary period recommended for men with Zika takes into consideration the fact that Zika virus RNA can persist in the semen of infected men after they have recovered from illness, that we don’t yet know how long it takes for an infected man’s semen to clear the virus, and that we don’t have good evidence that Zika illness differs between infected men with symptoms and infected men who never develop symptoms. Ongoing studies are systematically examining the incidence and duration of Zika virus shedding in the genital secretions of people with both symptomatic and asymptomatic Zika infection.

Information on Infants with Zika

Which newborns should be tested for Zika? (from CDC)

Zika virus testing is recommended for:

- Infants with birth defects consistent with congenital Zika syndrome born to mothers with possible Zika virus exposure during pregnancy (regardless of mother’s Zika test results)
- Infants without birth defects consistent with congenital Zika syndrome who were born to mothers with laboratory evidence of possible Zika virus infection during pregnancy.

Laboratory testing of infants should be performed as early as possible, preferably within the first few days after birth, although testing specimens within the first few weeks to months after birth might still be useful. However, distinguishing between congenital, perinatal, and postnatal infection is difficult in infants who live in areas where there is ongoing transmission of Zika virus and who are not tested soon after birth.

Testing is not routinely recommended for infants without birth defects consistent with congenital Zika syndrome who were born to mothers with possible Zika virus exposure during pregnancy but without laboratory evidence of possible Zika virus infection during pregnancy.

What type of Zika testing should be performed for newborns that meet the testing criteria? (from CDC)

The optimal assays, specimens, and timing of testing for congenital Zika virus infection are unknown. Recommended laboratory testing for possible congenital Zika virus infection includes evaluation for Zika virus RNA (NAT) in infant serum and urine and Zika virus IgM antibodies in serum. In addition, if cerebrospinal fluid (CSF) is obtained for other purposes, NAT and IgM antibody testing should be performed on CSF because CSF was the only sample that tested positive in some infants with congenital Zika virus infection. Testing of cord blood is not recommended because it can yield false positive and false negative test results.

A Zika virus NAT positive result in an infant sample confirms the diagnosis of congenital Zika virus infection. Zika virus IgM detected in an infant with a negative NAT result should be interpreted as probable congenital Zika
virus infection. If neither Zika virus RNA nor Zika IgM antibodies are detected on the appropriate specimens (e.g., serum or urine) obtained within the first few days after birth, congenital Zika virus infection is unlikely.

PRNT, which measures virus-specific neutralizing antibodies, can be used to help identify false-positive Zika virus IgM results. If the infant’s initial sample is IgM non-negative and NAT negative, but PRNT was not performed on the mother’s sample, then PRNT for Zika and dengue viruses should be performed on the infant’s initial sample. If Zika virus PRNT is negative, this suggests that the infant’s Zika virus IgM test is a false positive.

PRNT cannot distinguish between maternal or infant antibodies. Maternal antibodies in the infant are expected to wane by 18 months. PRNT might help confirm or rule out infection in a sample collected from an infant aged 18 months whose initial sample collected at birth was IgM non-negative and neutralizing antibodies were detected by PRNT in either the infant’s or mother’s sample. If PRNT results at 18 months are negative, the infant is considered not to have congenital Zika virus infection. If PRNT results are positive, congenital Zika virus infection is presumed, but postnatal infection cannot be excluded, especially among infants living in an area with active Zika virus transmission.

What treatment exists for infants with congenital Zika?

No treatment is currently available for Zika. Care for these infants is focused on diagnosing and managing conditions that are present, monitoring the child’s development over time, and addressing problems as they arise.

Microcephaly is a lifelong condition. There is no known cure or standard treatment for microcephaly. Because microcephaly can range from mild to severe, treatment options can range as well. Babies with mild microcephaly often do not experience any other problems besides small head size. These babies will need routine check-ups to monitor their growth and development.

For more severe microcephaly, babies will need care and treatment focused on managing their other health problems. Developmental services early in life will often help babies with microcephaly to improve and maximize their physical and intellectual abilities. These services, known as early intervention, can include speech, occupational, and physical therapies. Sometimes medications also are needed to treat seizures or other symptoms.

What is the prognosis for a newborn with congenital Zika? (from CDC)

The prognosis for infants with congenital Zika is not known. In infants with severe microcephaly from other causes, a range of neurologic sequelae have been reported (e.g., developmental delay, intellectual disability, problems with movement or balance, feeding problems, hearing loss, vision problems, and seizures). These problems can range from mild to severe, are often life-long, and in some cases can be life-threatening.

It is important to note that some infants might not have apparent abnormalities at birth; this is because some neurologic sequelae of congenital Zika virus infection (e.g., seizures, cognitive impairment, and vision and hearing abnormalities) might be subtle or have delayed onset.
How should infants with possible congenital Zika virus exposure be evaluated? (from CDC)

All infants born to mothers with possible Zika virus exposure during pregnancy should receive a standard evaluation by a healthcare provider at birth and at each well-child visit. A standard evaluation should include a comprehensive physical exam (including growth parameters), age-appropriate vision screening and developmental monitoring and screening, and a standard newborn hearing screening at birth, preferably using auditory brainstem response (ABR) methodology.

Laboratory testing and additional clinical evaluation are recommended for infants with birth defects consistent with congenital Zika syndrome born to mothers with possible Zika virus exposure during pregnancy (regardless of the mother’s Zika virus testing results) and for infants without birth defects consistent with congenital Zika syndrome who were born to mothers with laboratory evidence of possible Zika virus infection during pregnancy. Infants with findings consistent with congenital Zika syndrome, in addition to a standard evaluation, should receive a cranial ultrasound and a comprehensive ophthalmologic exam within the first month of life.

For infants without clinical findings whose mothers did not have laboratory evidence of Zika virus infection during pregnancy, further testing for Zika virus and clinical evaluation are not recommended.

For more in-depth guidance on infant evaluation, recommended diagnostics, and follow-up care, see Update: Interim Guidance for the Diagnosis, Evaluation and Management of Infants with Possible Congenital Zika Virus Infection - United States, October 2017.

What are the potential sequelae of microcephaly?

For infants diagnosed with microcephaly, head size correlates with underlying brain size, and babies with more severe microcephaly can have more problems. However, it is difficult to predict at birth what problems a baby will have from microcephaly. Microcephaly has been linked to seizures, developmental delays, intellectual disability, problems with movement and balance, feeding issues (e.g., difficulty swallowing), hearing loss and vision problems; symptoms range from mild to severe. Severe microcephaly can also be life-threatening. The symptoms of microcephaly are not always detectable at birth. Infants with microcephaly or other problems related to Zika virus infection may appear normal at birth and then develop symptoms later. More information on microcephaly can be found here: http://www.cdc.gov/ncbddd/birthdefects/microcephaly.html

How common was microcephaly before Zika virus? (from CDC and MMWR)

Microcephaly is not a common condition. State birth defects tracking systems have estimated that microcephaly ranges from 2 babies per 10,000 live births to about 12 babies per 10,000 live births in the United States.

If a mother had Zika during pregnancy, should she breastfeed her infant? (from CDC)

Zika virus has been identified in breast milk, but infant Zika virus infection associated with breastfeeding has not been reported. Current evidence suggests that the benefits of breastfeeding outweigh the theoretical risk of Zika virus infection transmission through breast milk. CDC encourages mothers with Zika virus infection and mothers living in areas with ongoing Zika virus transmission to breastfeed their infants.
Resources

CDC’s updated guidance on Zika

- See CDC’s Zika website for healthcare providers for all clinical guidance
- See CDC’s MMWR Zika Reports

Additional Information

- CDC. Clinical Guidance for Healthcare Providers Caring for Pregnant Women
- CDC. Clinical Guidance for Healthcare Providers Caring for Infants & Children
- CDC. Key Messages – Zika Virus Disease (10/6/2017)
- CDC. Questions About Zika
- World Health Organization. Zika virus and complications: Questions and answers
- World Health Organization. Zika Virus Situation Report