

# Zika Virus

## A Toolkit for Healthcare Providers In Maine



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Control and Prevention  
An Office of the  
Department of Health and Human Services

## Welcome

Zika virus infection during pregnancy can cause microcephaly or other severe brain defects. Family planning providers are uniquely positioned to help reduce the impact of Zika, since they have expertise in preventing unplanned pregnancies, sexually transmitted diseases, and are in contact with pregnant women throughout the duration of their pregnancy. Maine CDC created this toolkit for family planning providers to increase their knowledge of Zika, to help counsel patients possibly exposed to Zika, and to guide screening and testing of patients. This toolkit also contains helpful information that you can provide to your patients to help them understand the impact of Zika virus on pregnancy.

We hope you find these materials useful.

If you have any further questions, please email [disease.reporting@maine.gov](mailto:disease.reporting@maine.gov) or call 1-800-821-5821.

## Using Materials in this Toolkit

This toolkit includes materials to assist healthcare providers with **general information** on Zika virus, **screening, testing, counseling and conversation, submitting samples**, and providing **patient materials**. All factsheets and infographics can be printed, shared, and distributed as needed. The following materials are included in this toolkit:

**Part 1: General Information:** These materials are for providers to have a better understanding of Zika virus.

- 1.1 Maine Clinician PowerPoint (page 6)
- 1.2 Key Considerations for Healthcare Providers (page 17)
- 1.3 Zika & Pregnancy Infographic (page 19)

**Part 2: Screening Tools & Testing Algorithms:** These materials can assist healthcare providers with determining which patients need to be tested for Zika and what tests should be performed.

- 2.1 When to Test for Zika Virus (page 22)
- 2.2 Screening Pregnant Women for Zika Testing (page 23)
- 2.3 Maine CDC Zika Virus Testing Algorithm (page 25)
- 2.4 Federal CDC Testing Algorithm for Asymptomatic Pregnant Women with Possible Zika Exposure (page 26)
- 2.5 Federal CDC Testing Algorithm for Symptomatic Pregnant Women with Possible Zika Exposure (page 27)

**Part 3: Counseling & Conversation Guides:** These materials can assist healthcare providers guide conversations around testing for Zika and the limitations associated with testing.

- 3.1 Counseling Travelers of Reproductive Age (page 30)
- 3.2 Conversation Guide for Asymptomatic Pregnant Women With Ongoing Exposure to Zika (page 32)
- 3.3 Conversation Guide for Symptomatic Pregnant Women Without Ongoing Exposure to Zika (page 33)
- 3.4 Conversation Guide for Symptomatic Pregnant Women (page 34)

**Part 4: Submitting Samples:** These materials can assist you in submitting samples to Maine's Health and Environmental Testing Laboratory (HETL).

- 4.1 Zika Virus Laboratory Submission Information Sheet (page 37)
- 4.2 Arboviral Submission Form (page 38)
- 4.3 HETL Requisition Form (page 39)

**Part 5: Patient Materials:** These materials are for healthcare providers to provide to their patients.

- 5.1 Pregnant? Read This Before you Travel (page 41)
- 5.2 Zika Prevention Kit For Travelers (page 43)

5.3 What you Should Know About Zika Virus Testing: For Pregnant Women Who Have Ongoing Exposure

To Zika But No Symptoms (page 44)

5.4 What you Should Know About Zika Virus Testing: For Pregnant Women Who Were Recently Exposed To Zika And Do Not Have Symptoms (page 46)

5.5 What you Should Know About Zika Virus Testing: For Pregnant Women Exposed to Zika Who Have Symptoms (page 47)

5.6 For Pregnant Women: A Positive Zika Virus Test (page 49)

# Part 1: General Information


**1.1 Maine Clinician PowerPoint (page 6)**

**1.2 Key Considerations for Healthcare Providers (page 17)**

**1.3 Zika & Pregnancy Infographic (page 19)**


CDC'S Response to Zika

## ZIKA VIRUS: INFORMATION FOR CLINICIANS IN MAINE



These slides provide clinicians with information about


- Zika virus epidemiology
- Diagnoses and testing
- Case reporting
- Zika and pregnancy
- Clinical management of infants
- Sexual transmission
- Preconception guidance
- Infection control
- What to tell patients about Zika
- What to tell patients about mosquito bite protection




## ZIKA VIRUS EPIDEMIOLOGY

### Zika Virus (Zika)

- Single stranded RNA virus
- Genus *flavivirus*, family *Flaviviridae*
- Closely related to dengue, yellow fever, Japanese encephalitis, and West Nile viruses
- Primarily transmitted through the bite of an infected *Aedes* species mosquito (*Ae. aegypti* and *Ae. albopictus*)



*Aedes aegypti*



*Aedes albopictus*

### Where has Zika virus been found?


- Before 2015, Zika outbreaks occurred in Africa, Southeast Asia, and the Pacific Islands.
- Currently is a risk in many countries and territories.
- For the most recent case counts in the US visit CDC's Zika website: [cdc.gov/zika](http://www.cdc.gov/zika)



<http://www.cdc.gov/zika/geo/index.html>


### Transmission

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




### Transmission

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



### Zika virus incidence and attack rates, Yap 2007

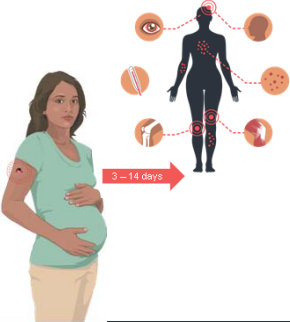
- Infection rate: 73% (95% CI 68–77)
- Symptomatic attack rate among infected: 18% (95% CI 10–27)
- All age groups affected
- Adults more likely to present for medical care
- No severe disease, hospitalizations, or deaths



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


### Incubation and viremia

- Incubation period for Zika virus disease is 3–14 days.
- Zika viremia ranges from a few days to 1 week.
- Some infected pregnant women can have evidence of Zika virus in their blood longer than expected.
- Virus remains in semen and urine longer than in blood.



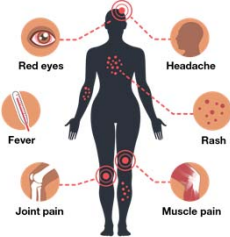
### Zika virus clinical disease course and outcomes

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



### Symptoms

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



### Reported clinical symptoms among confirmed Zika virus disease cases

Symptoms	N (n=31)	%
Macular or papular rash	28	90%
Subjective fever	20	65%
Arthralgia	20	65%
Conjunctivitis	17	55%
Myalgia	15	48%
Headache	14	45%
Retro-orbital pain	12	39%
Edema	6	19%
Vomiting	3	10%

Yap Island, 2007  
Duffy M. N Engl J Med 2009

### Clinical features: Zika virus compared to dengue and chikungunya

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

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

## DIAGNOSES AND TESTING FOR ZIKA

### Assessing pregnant women

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

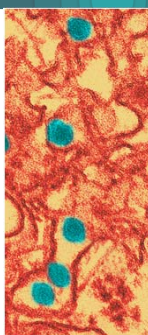


### Who to test for Zika

- Symptomatic pregnant women that:
  - recently traveled to an area with risk of Zika virus transmission
  - recently had unprotected sex with someone that lives in or traveled to an area with risk of Zika virus transmission
- Asymptomatic pregnant women that have ongoing possible Zika virus exposure
- Pregnant women with possible exposure to Zika virus who have a fetus with prenatal ultrasound findings consistent with congenital Zika virus infection

### Diagnostic testing for Zika virus

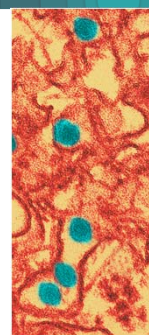
- Zika virus can be diagnosed by performing RNA nucleic acid testing (NAT) on serum and urine. NAT testing can be conducted within the first 12 weeks after symptom onset for pregnant women and three times during pregnancy for asymptomatic pregnant women with ongoing possible exposure to Zika.
- Serology assays can be used to detect Zika virus-specific IgM and neutralizing antibodies, which typically develop toward the end of the first week of illness. IgM testing can be performed on symptomatic pregnant women.
- Plaque reduction neutralization test (PRNT) for presence of virus-specific neutralizing antibodies in serum samples. PRNT can be performed on symptomatic pregnant women with negative NAT tests and non-negative IgM tests.



### Differential diagnosis

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

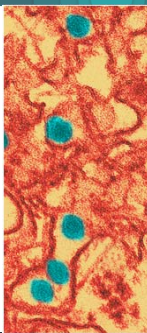
- Dengue
- Chikungunya
- Leptospirosis
- Malaria
- Rickettsia
- Group A Streptococcus
- Rubella
- Measles
- Parvovirus
- Enterovirus
- Adenovirus
- Other alphaviruses (e.g., Mayaro, Ross River, Barmah Forest, o'nyong-nyong, and sindbis viruses)





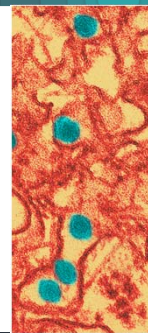
### Serology cross-reactions with other flaviviruses

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



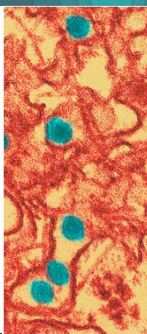
### Testing for infants

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



### Laboratories in Maine for diagnostic testing

- [Health and Environmental Testing Laboratory \(HETL\)](#)
  - » All samples must include the HETL requisition (please write Zika virus testing in the additional information box) as well as the arboviral specimen submission form.
- Commercial laboratories can also perform Zika virus testing.



## REPORTING ZIKA CASES

### Reporting cases

- Zika virus disease is a nationally notifiable condition. Report all confirmed cases to Maine CDC Disease Reporting.
  - » Phone: 1-800-821-5821 (24 hours a day)
  - » FAX: 1-800-293-7534 (24 hours a day)
  - » TTY: Maine relay 711 (24 hours a day)



### Zika pregnancy registries


- Federal CDC is monitoring pregnancy and infant outcomes following Zika infection during pregnancy in US states and territories through the US Zika Pregnancy Registry (USZPR) and the Zika Active Pregnancy Surveillance System (ZAPSS) in Puerto Rico.
- Maine CDC is participating in the USZPR and will report any pregnant women and infants that meet the criteria.




# ZIKA AND PREGNANCY

## Zika and pregnancy

- Knowledge about Zika virus is increasing rapidly and researchers continue to work to better understand the extent of Zika virus' impact on mothers, infants, and children.
- No reports of infants getting Zika through breastfeeding
- No evidence that previous infection will affect future pregnancies

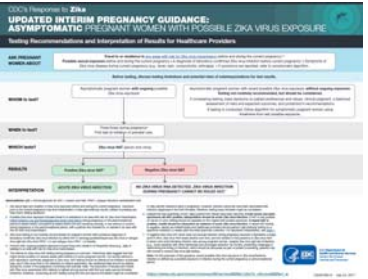


### Testing guidance: Symptomatic Pregnant women with possible Zika exposure



**WHO's Guideline:** For symptomatic pregnant women with possible Zika exposure, the flowchart starts with 'Symptomatic pregnant women with possible Zika exposure'. It branches into 'Symptomatic pregnant women with possible Zika exposure who are also at high risk of Zika exposure' and 'Symptomatic pregnant women with possible Zika exposure who are not at high risk of Zika exposure'. For high-risk women, it recommends 'Rapid testing for Zika virus infection (e.g., RT-qPCR)'. For non-high-risk women, it recommends 'Rapid testing for Zika virus infection (e.g., RT-qPCR) if the woman has symptoms consistent with Zika virus infection'. Both paths lead to 'If positive, refer to a specialist for further management and counseling'. For non-high-risk women, it also includes 'If negative, refer to a specialist for further management and counseling'.

### Testing guidance: Asymptomatic Pregnant women with possible Zika exposure



**WHO's Guideline:** For asymptomatic pregnant women with possible Zika exposure, the flowchart starts with 'Asymptomatic pregnant women with possible Zika exposure'. It branches into 'Asymptomatic pregnant women with possible Zika exposure who are at high risk of Zika exposure' and 'Asymptomatic pregnant women with possible Zika exposure who are not at high risk of Zika exposure'. For high-risk women, it recommends 'Rapid testing for Zika virus infection (e.g., RT-qPCR)'. For non-high-risk women, it recommends 'Rapid testing for Zika virus infection (e.g., RT-qPCR) if the woman has symptoms consistent with Zika virus infection'. Both paths lead to 'If positive, refer to a specialist for further management and counseling'. For non-high-risk women, it also includes 'If negative, refer to a specialist for further management and counseling'.


### Interpretation of results of nucleic acid and antibody testing

Test	Result	Interpretation	Recommended action
Nucleic acid testing (e.g., RT-qPCR)	Positive	Confirmed Zika virus infection	Refer to a specialist for further management and counseling
	Negative	No evidence of Zika virus infection	Refer to a specialist for further management and counseling
	Indeterminate	Further testing required	Refer to a specialist for further management and counseling
	Not done	Further testing required	Refer to a specialist for further management and counseling
Antibody testing (e.g., IgG, IgM)	Positive	Possible Zika virus infection	Refer to a specialist for further management and counseling
	Negative	No evidence of Zika virus infection	Refer to a specialist for further management and counseling
	Indeterminate	Further testing required	Refer to a specialist for further management and counseling
	Not done	Further testing required	Refer to a specialist for further management and counseling

# EVALUATION AND FOLLOW UP OF INFANTS WITH CONFIRMED OR POSSIBLE ZIKA INFECTION

### Zika and pregnancy outcomes


- Zika virus infection during pregnancy is a cause of microcephaly and other severe birth defects.
- All infants born to mothers with laboratory evidence of Zika infection during pregnancy should receive a comprehensive physical exam.
- **Congenital Zika syndrome** is a distinct pattern of birth defects among fetuses and infants infected before birth.



### Congenital Zika syndrome

**Congenital Zika syndrome** is associated with five types of birth defects that are either not seen or occur rarely with other infections during pregnancy:

- **Severe microcephaly** (small head size) resulting in a partially collapsed skull
- **Decreased brain tissue** with brain damage (as indicated by a specific pattern of calcium deposits)
- **Damage to the back of the eye** with a specific pattern of scarring and increased pigment
- **Limited range of joint motion**, such as clubfoot
- **Too much muscle tone** restricting body movement soon after birth




### Case definition of microcephaly

**Definite congenital microcephaly for live births**

- Head circumference (HC) at birth is less than the 3rd percentile for gestational age and sex.
- If HC at birth is not available, HC less than the 3rd percentile for age and sex within the first 6 weeks of life.

**Definite congenital microcephaly for still births and early termination**

- HC at delivery is less than the 3rd percentile for gestational age and sex.



Baby with microcephaly


### Definitions for possible congenital microcephaly

**Possible congenital microcephaly for live births**

- If earlier HC is not available, HC less than 3rd percentile for age and sex beyond 6 weeks of life.


**Possible microcephaly for all birth outcomes**

- Microcephaly diagnosed or suspected on prenatal ultrasound in the absence of available HC measurements.



Baby with microcephaly

### Measuring head circumference for microcephaly




Baby with typical head size      Baby with Microcephaly      Baby with Severe Microcephaly

- Use a measuring tape that cannot be stretched
- Securely wrap the tape around the widest possible circumference of the head
  - Broadest part of the forehead above eyebrow
  - Above the ears
  - Most prominent part of the back of the head
- Take the measurement three times and select the largest measurement to the nearest 0.1 cm
- Optimal measurement within 24 hours after birth.
  - Commonly-used birth head circumference reference charts by age and sex based on measurements taken before 24 hours of age

[http://www.cdc.gov/zika/pdf/microcephaly\\_measuring.pdf](http://www.cdc.gov/zika/pdf/microcephaly_measuring.pdf)


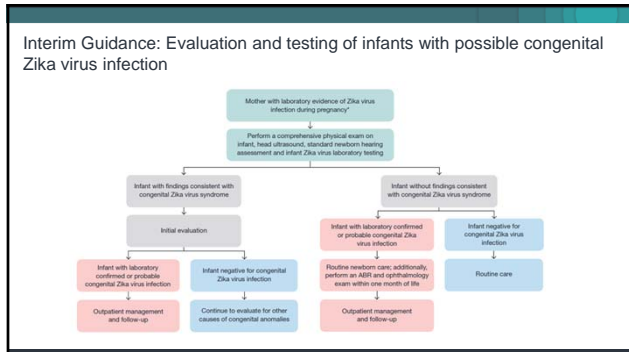
### Not every infection will lead to birth defects

- It's important to remember that even in places with Zika, women are delivering infants that appear to be healthy.
- Many questions remain about the timing, absolute risk, and the spectrum of outcomes associated with Zika virus infection during pregnancy.
- More lab testing and other studies are planned to learn more about the risks of Zika virus infection during pregnancy.




### Infants of mothers with potential maternal exposure to Zika

- Infants born to potentially exposed mothers who were not tested before delivery, or who were tested outside of the recommended window, and the IgM result was negative, should receive
  - Comprehensive assessment including a physical exam
  - Careful measurement of head circumference
  - Head ultrasound to assess the brain's structure
  - Standard newborn screening


### Recommended consultation for initial evaluation and management of infants affected by Zika

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

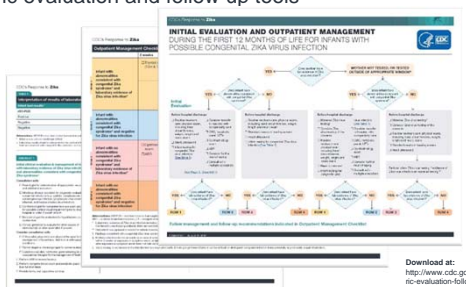


### Considerations for consultation

- Consider consultation with
  - Orthopedist, physiatrist, and physical therapist for the management of hypertension, club foot, or arthrogryposis-like conditions
  - Pulmonologist or otolaryngologist for concerns about aspiration
  - Lactation specialist, nutritionist, gastroenterologist, or speech or occupational therapist for the management of feeding issues.
- Perform auditory brain response (ABR) to assess hearing.
- Perform complete blood count and metabolic panel, including liver function tests.
- Provide family and supportive services.



### Pediatric evaluation and follow up tools



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

# SEXUAL TRANSMISSION

### About sexual transmission

- Zika can be passed through sex from a person who has Zika to his or her sex partners.
  - » It can be passed from a person with Zika before their symptoms start, while they have symptoms, and after their symptoms end.
  - » The virus may also be passed by a person who never has symptoms.
- Sexual exposure includes sex without a condom with a person who traveled to or lives in an area with risk of Zika.
  - » This includes vaginal, anal, and oral sex and the sharing of sex toys.



### Zika in genital fluids

- We know that Zika can remain in semen longer than in other body fluids, including vaginal fluids, urine, and blood.
- Among four published reports of Zika virus cultured from semen, virus was reported in semen up to 69 days after symptom onset.
- Zika RNA has been found in semen as many as 188 days after symptoms began, and in vaginal and cervical fluids up to 14 days after symptoms began.



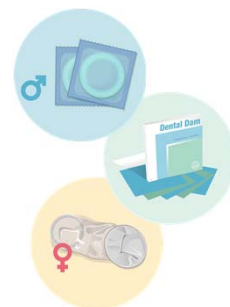
### What we do not know about sexual transmission

- CDC and other public health partners continue research that may help us find out
  - » How long Zika can stay in genital fluids.
  - » How common it is for Zika to be passed during sex.
  - » If Zika passed to a pregnant woman during sex has a different risk for birth defects than Zika transmitted by a mosquito bite.



### Preventing or reducing the chance of sexual transmission

- Not having sex eliminates the risk of getting Zika from sex.
- Condoms can reduce the chance of getting Zika from sex.
  - » Dental dams (latex or polyurethane sheets) may also be used for certain types of oral sex (mouth to vagina or mouth to anus).
  - » Not sharing sex toys can also reduce the risk of spreading Zika to sex partners.
- Pregnant couples with a partner who lives in or recently traveled to an area with risk of Zika should use condoms **correctly** every time they have sex or not have sex during pregnancy.



### Men and women with possible Zika exposure

- People with a partner who traveled to an area with risk of Zika can use condoms or not have sex.
  - » If traveler is female: For at least **8 weeks** after travel or symptom onset.
  - » If traveler is male: For at least **6 months** after travel or symptom onset.



## PRECONCEPTION GUIDANCE

### Asymptomatic couples interested in conceiving

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



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

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



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

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



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

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



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

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



## INFECTION CONTROL IN HEALTHCARE SETTINGS

### Infection control

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



### Labor and delivery settings

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



## WHAT TO TELL PATIENTS ABOUT ZIKA

### Travel

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



### Treating patients who test positive

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



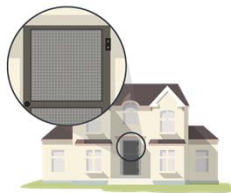
### Patients who have Zika

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



### Preventing Zika: Mosquito bite protection

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



### Preventing Zika: Mosquito bite protection

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



### Preventing Zika: Mosquito bite protection

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



### Additional resources

- <http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/zika/>
- <http://www.cdc.gov/zika>
- <http://www.cdc.gov/zika/hc-providers/index.html>



# KEY ZIKA CONSIDERATIONS FOR HEALTHCARE SETTINGS



## Background

Zika is a mosquito-borne disease that is currently spreading throughout many countries and territories, including a small area in the continental United States. CDC recommends that healthcare systems (including urgent care, hospitals, physician offices, etc.) prepare for patients seeking a diagnosis and /or symptom management.

CDC continues to evaluate cases of Zika in the United States and US territories and updates guidance as new information becomes available. For more information, visit CDC's Zika website ([www.cdc.gov/zika/index.html](http://www.cdc.gov/zika/index.html)).

## Purpose

In order to prepare for Zika patients coming to your clinics, hospital, or physicians' offices, healthcare systems leaders should ensure the following:

- 1. Healthcare providers** should know the clinical manifestation of Zika virus infection and how to access information about areas with active transmission. Clinicians should be able to assess for risk factors and exposures\* to Zika virus when evaluating patients. It is important that providers are aware that people with Zika virus infection can be asymptomatic or mildly symptomatic, and therefore providers should consider Zika virus disease in the differential diagnosis for patients with appropriate risk factors.
- 2. Healthcare providers** should assess all pregnant women for possible Zika virus exposure\* and evaluate for signs and symptoms of Zika virus disease at every clinical encounter. Testing may be indicated. (Updated Interim Pregnancy Guidance Testing Algorithm: [www.cdc.gov/zika/pdfs/testing\\_algorithm.pdf](http://www.cdc.gov/zika/pdfs/testing_algorithm.pdf)) The Zika Pregnancy Hotline can be accessed by clinicians for questions; call 770-488-7100 and ask for the Pregnancy Hotline.
- 3. Healthcare providers** should advise pregnant women about how to prevent sexual transmission of Zika during pregnancy. ([www.cdc.gov/zika/prevention/protect-yourself-during-sex.html](http://www.cdc.gov/zika/prevention/protect-yourself-during-sex.html))
- 4. Discuss preventive measures** with patients and families. Provide materials with information about risk factors to encourage the use of mosquito bite prevention actions. Patients should protect themselves from mosquito bites for 3 weeks post exposure to prevent further spread of
- the virus. Emphasize risks to families and household contacts as these are at the greatest risk for human-mosquito-human transmission.
- 5. All healthcare personnel** should follow Standard Precautions for all patient care ([www.cdc.gov/hicpac/pdf/isolation/Isolation2007.pdf](http://www.cdc.gov/hicpac/pdf/isolation/Isolation2007.pdf)).
- 6. Healthcare providers** caring for pregnant women should be aware of the requirement for Standard Precautions to be used for labor and delivery care. ([www.cdc.gov/mmwr/volumes/65/wr/mm6511e3.htm](http://www.cdc.gov/mmwr/volumes/65/wr/mm6511e3.htm))
- 7. Internal and external hospital websites** should include a link to ([www.cdc.gov/zika/index.html](http://www.cdc.gov/zika/index.html)) CDC's Zika website to ensure that all staff have access to the most up-to-date guidance and other training and clinical resources.
- 8. Appropriate healthcare staff** should report suspected cases to state or local health departments to facilitate diagnosis.
- 9. Healthcare personnel** should report all pregnant women with laboratory evidence of possible Zika virus infection, with or without symptoms, as well as infants born to these women, to state, tribal, territorial, or local health department officials for enrollment in the US Zika Pregnancy Registry ([www.cdc.gov/zika/hc-providers/registry.html](http://www.cdc.gov/zika/hc-providers/registry.html)).



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## Other Considerations

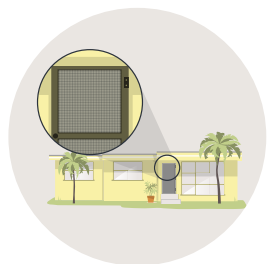
Healthcare systems, urgent care centers, and physician's offices are among the places where patients and visitors expect to see and hear health information. CDC recommends that easy-to-understand educational materials be widely available within healthcare systems for all providers, employees, patients, families, and visitors. **These materials should:**



Encourage pregnant women to avoid travel to areas with Zika and to take steps to prevent mosquito bites.



Wear long-sleeved shirts and long pants.



Stay in places with air conditioning and window and door screens to keep mosquitoes outside.



Treat clothing and gear with permethrin or buy pre-treated items.



Take steps to prevent getting Zika through sex (i.e., use a condom or other barrier against infection).



Encourage patients to contact their healthcare provider if they have other questions about Zika.



Encourage patients and family members to practice simple but effective measures to control mosquitoes at home.



Reducing larval development sites by dumping out small water containers and covering larger water containers are easy ways to reduce the number of mosquitoes around the home. [www.cdc.gov/zika/vector/index.html](http://www.cdc.gov/zika/vector/index.html)

Additional information can be found at: [www.cdc.gov/zika/hc-providers/index.html](http://www.cdc.gov/zika/hc-providers/index.html)

\*Exposure includes travel to an area with Zika and sex without a condom or other barrier protection with a partner who lives in or has traveled to an area with Zika.

# Zika & Pregnancy



## ZIKA & BIRTH DEFECTS



Image courtesy of U.S. News and World Report

Zika virus during pregnancy can cause serious birth defects, such as microcephaly. Microcephaly is the abnormal smallness of the brain.

## PROTECT YOUR BABY



### Do not travel to areas with Zika

Visit [www.cdc.gov/zika](http://www.cdc.gov/zika) to see the areas with risk of Zika.



### Prevent sexual transmission

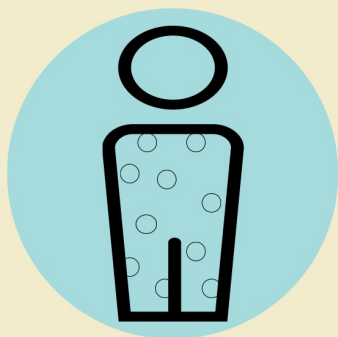
Using condoms or not having sex can prevent Zika from being spread sexually.



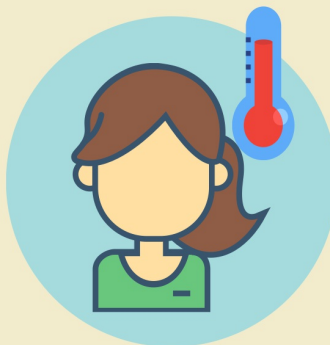
### Talk to your doctor

Talk to your doctor if you or your partner traveled to an area with risk of Zika.

## SYMPTOMS OF ZIKA



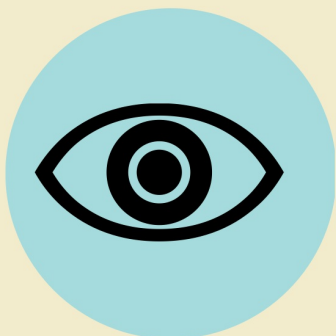
**Rash**



**Fever**



**Joint Pain**



**Red Eyes**



**Headache**



**Muscle Pain**

For more information:

1. Visit [www.maine.gov/dhhs/zika/](http://www.maine.gov/dhhs/zika/)
2. Visit [www.cdc.gov/zika](http://www.cdc.gov/zika)

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An Office of the  
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# Part 2: Screening Tools & Testing Algorithms

**2.1 When to Test for Zika Virus (page 22)**

**2.2 Screening Pregnant Women for Zika Testing (page 23)**

**2.3 Maine CDC Zika virus Testing Algorithm (page 25)**

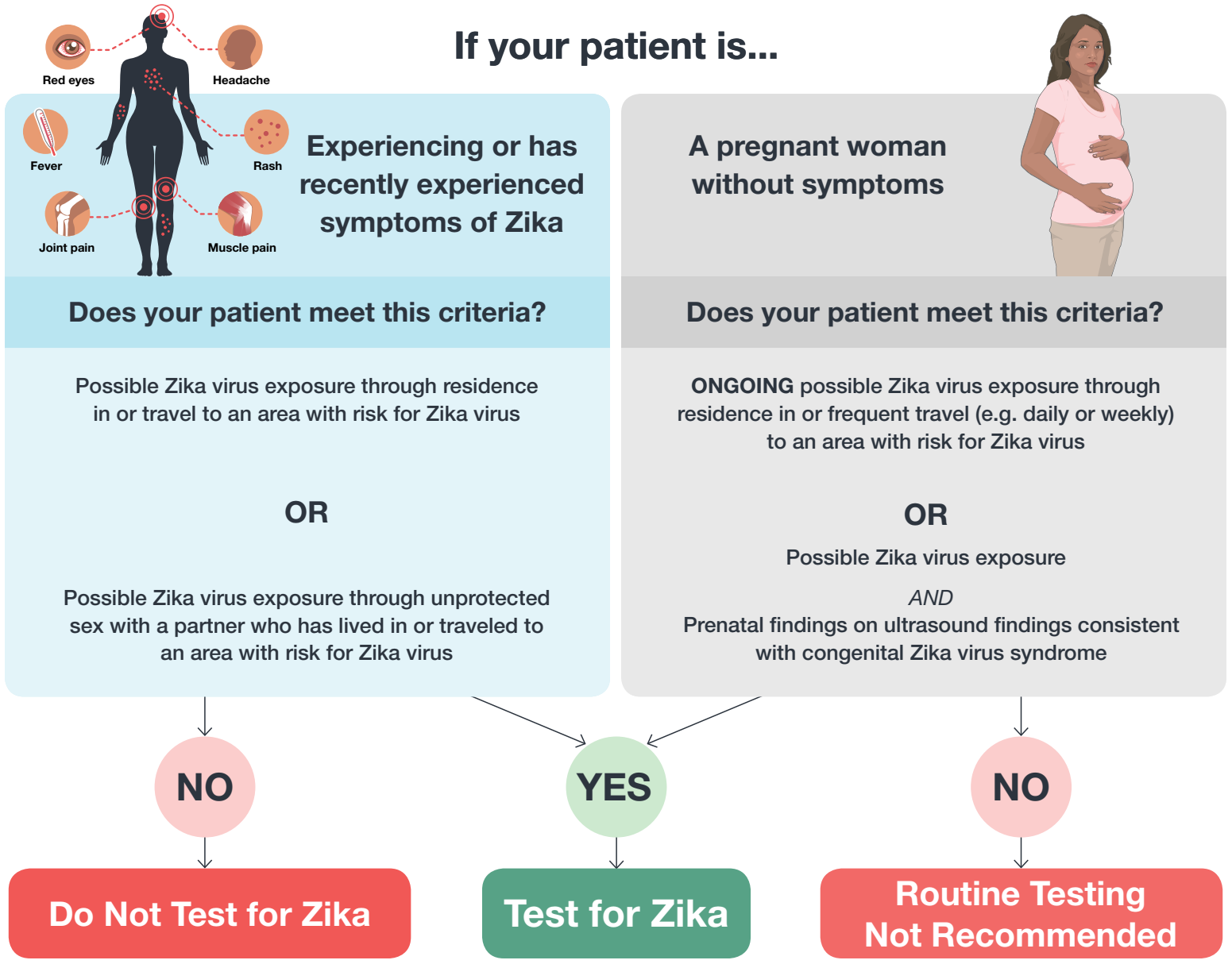
**2.4 Federal CDC Testing Algorithm for Asymptomatic Pregnant Women With Possible Zika Exposure (page 26)**

**2.5 Federal CDC Testing Algorithm for Symptomatic Pregnant Women With Possible Zika Exposure (page 27)**

# WHEN TO TEST FOR **ZIKA VIRUS**



As a healthcare provider, you decide if a patient should be tested for Zika virus infection. The algorithm below will help you determine whether or not to test your patient for Zika virus infection.



- NOTE:**
- Asymptomatic pregnant women with recent possible Zika virus exposure (i.e. through travel or sexual exposure) who do not have ongoing exposure are not routinely recommended to have Zika virus testing. Testing should be considered using a decision-making model, one in which patients and providers work together to make decisions about testing and care plans based on a balanced assessment of risks and expected outcomes, clinical judgement, patient preferences and values, and the jurisdiction's recommendations.
  - Healthcare providers should review their local and state health jurisdiction guidelines regarding testing of patients with clinically compatible illness without known travel or sexual exposures.
  - Find the full testing algorithms and details on which tests to order at <https://www.cdc.gov/zika/hc-providers/testing-guidance.html>.

**CDC does not recommend Zika virus testing for asymptomatic**

- Men
- Children
- Women who are not pregnant



# SCREENING PREGNANT WOMEN FOR ZIKA TESTING



## To Be Administered by a Nurse or Other Healthcare Provider

Pregnant women should be asked about any possible Zika virus exposure, before and during their pregnancy, at each prenatal visit. Use this tool to evaluate pregnant women for exposure to Zika virus and symptoms of Zika virus disease to determine whether testing is indicated. Visit CDC's map to determine [areas with risk of Zika](#).



### Questions to ask your patient to determine if she needs Zika testing:

- ✓ Have you traveled during pregnancy?
  - Where did you travel?
  - How long did you stay?
- ✓ Have you lived in any area where mosquitoes are spreading Zika during your pregnancy?
- ✓ Has your partner lived in or traveled to any area where mosquitoes are spreading Zika during your pregnancy?
  - When and where did your partner travel?
  - Did your partner have any signs or symptoms of Zika (including fever, rash, headache, joint pain, red eyes, or muscle pain) when he or she were on the trip, or after returning?
  - Did you have sex without a condom with your partner after they returned from the trip?
- ✓ Have you had any symptoms of Zika during your pregnancy?
  - Use the chart on page 2 of this document to discuss Zika symptoms. The most common symptoms of Zika are fever, rash, headache, joint pain, red eyes, and muscle pain.

**Use the responses to the questions above to determine if Zika testing is indicated.**

Testing is recommended for

- Symptomatic pregnant women possibly exposed to Zika (who lived in or traveled to or have unprotected sex with a partner who lived in or traveled to an area with risk of Zika), and
- Asymptomatic pregnant women who have ongoing exposure (who live in or frequently travel to) to areas with risk of Zika.

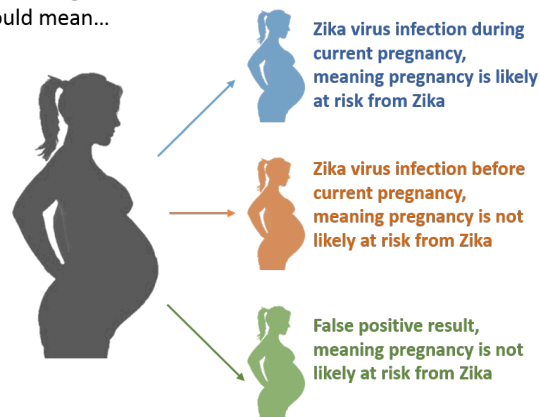
Testing is not routinely recommended for asymptomatic pregnant women with recent possible Zika exposure but without ongoing possible exposure. However, testing may be considered as a shared decision between patients and providers, according to patient preferences and clinical judgement, or if a state or local area recommends it.

### Other considerations that might affect interpretation of Zika test results:

- ✓ Did you live in any area where mosquitoes were spreading Zika before you became pregnant?
- ✓ Have you frequently traveled (for example, daily or weekly) to one of these areas before you became pregnant?
- ✓ If you did visit one of these areas before pregnancy, did you protect yourself from mosquito bites?
  - Did you wear long sleeves and pants?
  - Did you use insect repellent through the day and night? Did you follow the instructions on the label?
  - Did you stay somewhere with window and door screens or air conditioning?

**If your patient reports exposure to any area with risk of Zika before her current pregnancy, the test that looks for Zika IgM antibodies may be difficult to interpret and may have limited usefulness for clinical decision-making. The patient may choose not to be tested. For more information, visit [CDC's website](#).**

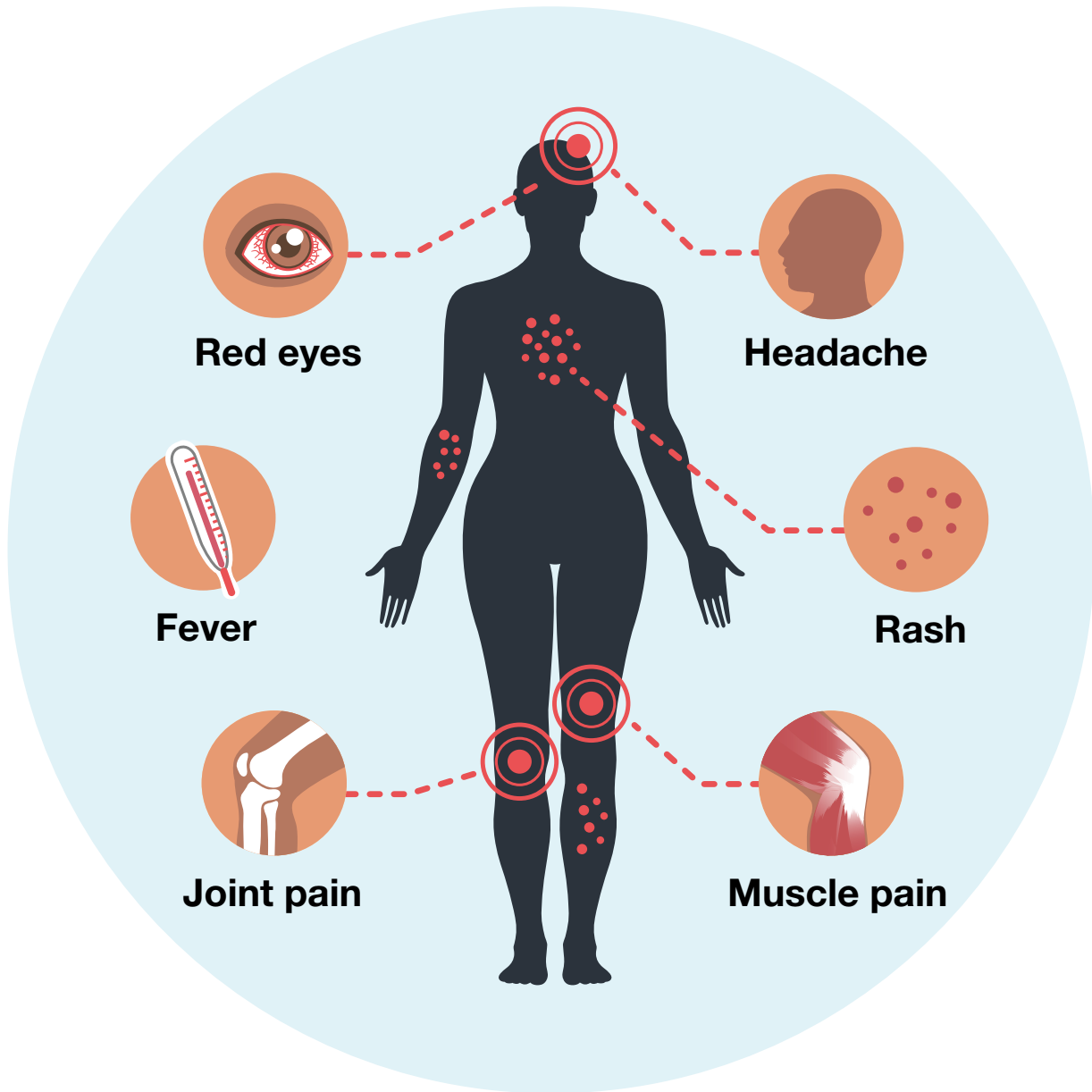
A positive Zika IgM test result could mean...



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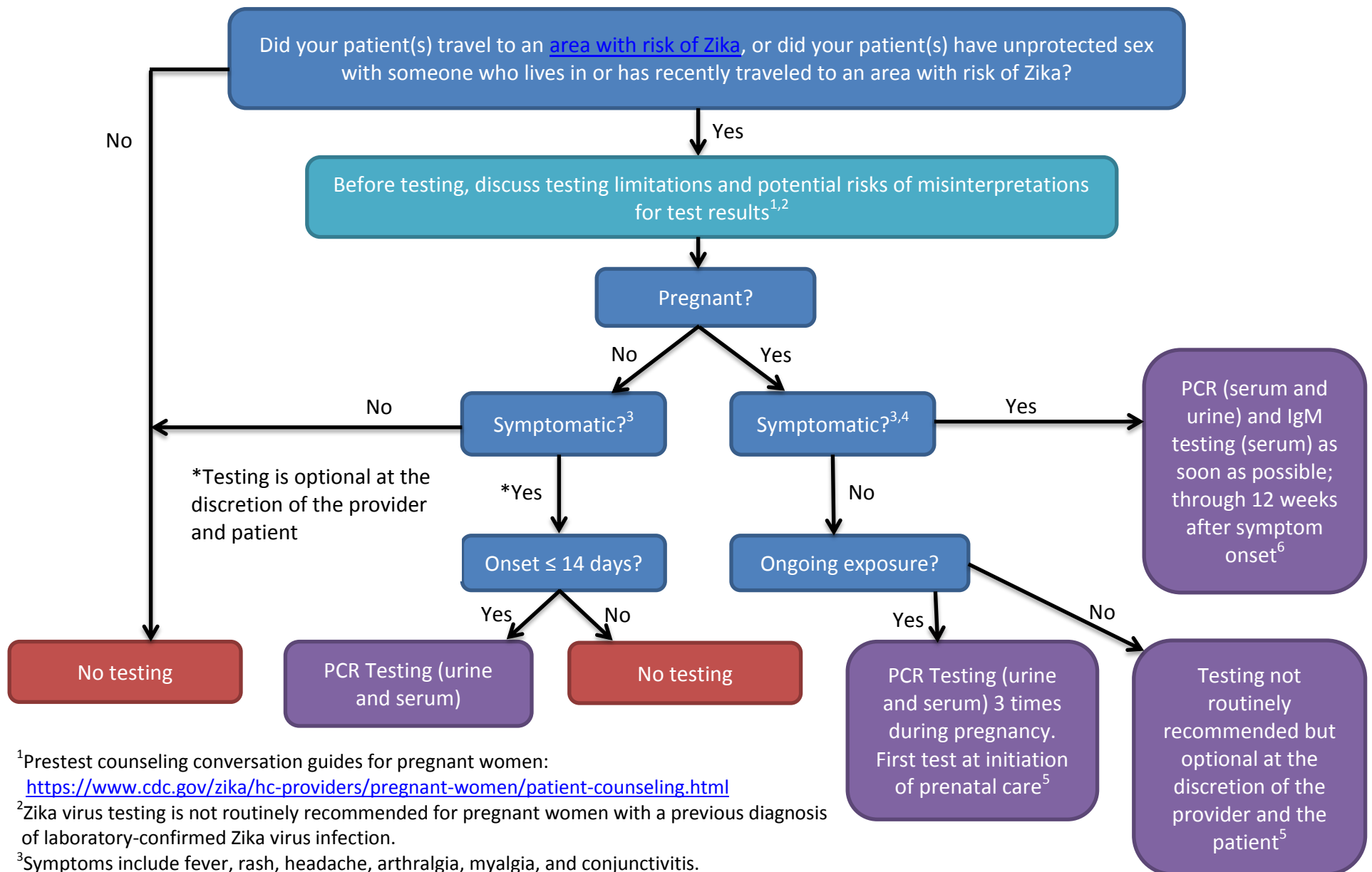
## Zika Symptoms

The most common symptoms for Zika are fever, rash, headache, joint pain, and muscle pain.





# Maine Zika Testing Algorithm



<sup>1</sup>Pretest counseling conversation guides for pregnant women:

<https://www.cdc.gov/zika/hc-providers/pregnant-women/patient-counseling.html>

<sup>2</sup>Zika virus testing is not routinely recommended for pregnant women with a previous diagnosis of laboratory-confirmed Zika virus infection.

<sup>3</sup>Symptoms include fever, rash, headache, arthralgia, myalgia, and conjunctivitis.

<sup>4</sup>Exposure before the current pregnancy might limit interpretation of Zika virus IgM antibody results; pretest counseling can inform decision. Some women may choose to not receive Zika virus IgM testing.

<sup>5</sup>For interpretation of results, see federal CDC's algorithm for [asymptomatic pregnant women with possible Zika virus exposure](#)

<sup>6</sup>For interpretation of results, see federal CDC's algorithm for [symptomatic pregnant women with possible Zika virus exposure](#)



# UPDATED INTERIM PREGNANCY GUIDANCE: ASYMPTOMATIC PREGNANT WOMEN WITH POSSIBLE ZIKA VIRUS EXPOSURE

## Testing Recommendations and Interpretation of Results for Healthcare Providers

### ASK PREGNANT WOMEN ABOUT

**Travel to or residence in any areas with risk for Zika virus transmission before and during the current pregnancy<sup>1,2</sup>**  
**Possible sexual exposure before and during the current pregnancy** • A diagnosis of laboratory-confirmed Zika virus infection before current pregnancy<sup>3</sup> • Symptoms of Zika virus disease during current pregnancy (e.g., fever, rash, conjunctivitis, arthralgia) • If symptoms are reported, refer to symptomatic algorithm.

Before testing, discuss testing limitations and potential risks of misinterpretations for test results.

### WHOM to test?

Asymptomatic pregnant women **with ongoing** possible Zika virus exposure<sup>4</sup>

Asymptomatic pregnant women with recent possible Zika virus exposure, **without ongoing exposure:**  
**Testing not routinely recommended, but should be considered.**  
 If considering testing, base decisions on patient preferences and values, clinical judgment, a balanced assessment of risks and expected outcomes, and jurisdiction's recommendations  
 If testing is conducted, follow algorithm for symptomatic pregnant women using timeframe from last possible exposure.

### WHEN to test?

Three times during pregnancy<sup>5</sup>  
 First test at initiation of prenatal care.

### WHICH tests?

Zika virus NAT (serum and urine)

### RESULTS

Positive Zika virus NAT<sup>6</sup>

Negative Zika virus NAT

### INTERPRETATION

**ACUTE ZIKA VIRUS INFECTION**

**NO ZIKA VIRUS RNA DETECTED. ZIKA VIRUS INFECTION DURING PREGNANCY CANNOT BE RULED OUT.<sup>7</sup>**

**Abbreviations:** IgM = immunoglobulin M; NAT = nucleic acid test; PRNT = plaque reduction neutralization test

- 1 Ask about type and duration of Zika virus exposure before and during the current pregnancy. Exposure prior to the current pregnancy may limit interpretation of Zika IgM antibody results; pretest counseling can help inform testing decisions.
- 2 Possible Zika virus exposure includes travel to or residence in an area with risk for Zika virus transmission (<https://wwwnc.cdc.gov/travel/page/zika-travel-information>) during pregnancy or the periconceptional period (8 weeks before conception [6 weeks before the last menstrual period]), or sex without a condom during pregnancy or the periconceptional period, with a partner who traveled to, or resides in an area with risk for Zika virus transmission.
- 3 Zika virus testing is not routinely recommended for pregnant women with a previous diagnosis of laboratory-confirmed Zika virus infection by either NAT or serology (positive/equivocal Zika virus or dengue virus IgM and Zika virus PRNT ≥10 and dengue virus PRNT <10 results).
- 4 Persons with ongoing possible exposure include those who reside in or frequently travel (e.g., daily or weekly) to an area with risk for Zika virus transmission.
- 5 The interval for Zika virus NAT testing during pregnancy is unknown. Preliminary data suggest that NAT might remain positive for several weeks after infection in some pregnant women. For women without a prior laboratory-confirmed diagnosis of Zika virus, NAT testing should be offered at the initiation of prenatal care, and if Zika virus RNA is not detected on clinical specimens, two additional tests should be offered during the course of the pregnancy coinciding with prenatal visits. The proportion of fetuses and infants with Zika virus-associated birth defects is highest among women with first and early second trimester infections; therefore, conducting all NAT testing during the first and second trimesters might be considered

to help identify infections early in pregnancy. However, adverse outcomes have been associated with infection diagnosed in the third trimester; therefore, testing every trimester might be considered.

- 6 Despite the high specificity of NAT, false positive NAT results have been reported. **If both serum and urine specimens are NAT positive, interpretation should be acute Zika virus infection.** If NAT is only positive on serum or urine, testing should be repeated on the original NAT-positive specimen. **If repeat NAT is positive, results should be interpreted as evidence of acute Zika virus infection.** If repeat NAT testing is negative, results are indeterminate and healthcare providers should perform IgM antibody testing on a specimen collected ≥2 weeks after the initial specimen collection. For laboratory interpretation, see [Table 1](#).
- 7 A negative Zika virus NAT result does not exclude infection during pregnancy because it represents a single point in time. Zika virus RNA levels decline over time, and the duration of the presence of Zika virus RNA in serum and urine following infection vary among pregnant women. Despite Zika virus IgM test limitations (e.g., cross-reactivity with other flaviviruses and prolonged detection for months, presenting challenges in determining the timing of infection), which should be discussed as part of pretest counseling, patients may still choose to receive Zika virus IgM testing.

**Note:** For the purposes of this guidance, recent possible Zika virus exposure or Zika virus/ flavivirus infection is defined as a possible exposure or infection during the current pregnancy or periconceptional period.



# UPDATED INTERIM PREGNANCY GUIDANCE: SYMPTOMATIC PREGNANT WOMEN WITH POSSIBLE ZIKA VIRUS EXPOSURE

## Testing Recommendations and Interpretation of Results for Healthcare Providers

### ASK PREGNANT WOMEN ABOUT

Travel to or residence in any areas with risk for Zika virus transmission *before and during* the current pregnancy<sup>1,2</sup> • Possible sexual exposure *before and during* the current pregnancy  
A diagnosis of laboratory-confirmed Zika virus infection before current pregnancy<sup>3</sup> • Symptoms of Zika virus disease during current pregnancy (e.g., fever, rash, conjunctivitis, arthralgia)  
If no symptoms reported, refer to asymptomatic algorithm.

Before testing, discuss testing limitations and potential risks for misinterpretations of test results.

### WHOM to test?

Pregnant women reporting possible exposure during current pregnancy and symptoms of Zika virus disease<sup>4</sup>

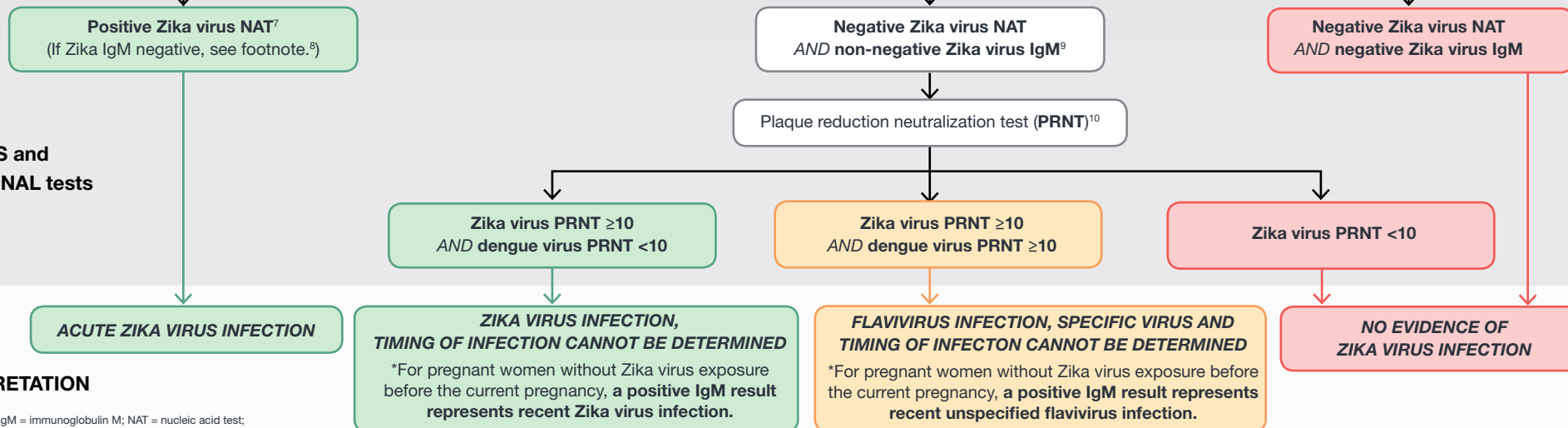
### WHEN to test?

Test as soon as possible; through 12 weeks after symptom onset

### WHICH tests?

Zika virus NAT (serum and urine) AND Zika virus IgM serology (serum)<sup>5,6</sup>

### RESULTS and ADDITIONAL tests



### INTERPRETATION

Abbreviations: IgM = immunoglobulin M; NAT = nucleic acid test; PRNT = plaque reduction neutralization test

1 Ask about type and duration of Zika virus exposure before and during the current pregnancy. Exposure before the current pregnancy might limit interpretation of Zika virus IgM antibody results; pretest counseling can help inform testing decisions. Some patients may choose not to receive Zika virus IgM testing.  
2 Possible Zika virus exposure includes travel to or residence in an area with risk for Zika virus transmission (<https://www.cdc.gov/travel/page/zika-travel-information>) during pregnancy or the periconceptional period (8 weeks before conception [6 weeks before the last menstrual period]), or sex without a condom during pregnancy or the periconceptional period, with a partner who traveled to, or resides in an area with risk for Zika virus transmission.  
3 Zika virus testing is not routinely recommended for pregnant women with a previous diagnosis of laboratory-confirmed Zika virus infection by either NAT or serology (positive/equivocal Zika virus or dengue virus IgM and Zika virus PRNT ≥10 and dengue virus PRNT <10 results).  
4 This algorithm also applies to pregnant women with possible Zika virus exposure who have a fetus with prenatal ultrasound findings consistent with congenital Zika syndrome.  
5 The duration of detectable ZIKA virus in pregnant women following infection is not known. Preliminary data suggest NAT may remain positive for several weeks after symptom onset in some pregnant women. Zika virus IgM antibodies are most likely to be detected within 12 weeks after infection however IgM antibodies

might be detected for months after infection, limiting the ability to determine whether infection occurred before or during the current pregnancy.  
6 Dengue virus IgM antibody testing is recommended for symptomatic pregnant women. For laboratory interpretation in the presence of dengue virus IgM results, refer to <https://www.cdc.gov/dengue/clinicallab/laboratory.html>  
7 Despite the high specificity of NAT, false positive NAT results have been reported. If both serum and urine specimens are NAT-positive, regardless of IgM antibody results, results should be interpreted as evidence of acute Zika virus infection. If either serum or urine specimen is NAT positive in conjunction with a positive Zika virus IgM (see Table 1), results should be interpreted as evidence of acute Zika virus infection.  
8 If NAT is only positive on serum or urine and IgM antibody testing is negative, repeat testing on the original NAT positive specimen. If repeat NAT is positive, results should be interpreted as evidence of acute Zika virus infection. If repeat NAT testing is negative, results are indeterminate and healthcare providers should repeat Zika virus IgM antibody testing on a serum specimen collected ≥ 2 weeks after symptom onset. If subsequent IgM antibody test is positive, interpret as evidence of acute Zika virus infection but if negative, interpret as no evidence of Zika virus infection.

9 Non-negative results include positive, equivocal, presumptive positive, or possible positive. These are examples of assay interpretations that might accompany test results; non-negative serology terminology varies by assay. For explanation of a specific interpretation, refer to the instructions for use for the specific assay performed. Information on each assay can be found at <https://www.fda.gov/MedicalDevices/Safety/EmergencySituations/ucm161496.htm#zika>, under the "Labeling" for the specific assay.  
10 Currently, PRNT confirmation is not routinely recommended for individuals living in Puerto Rico. For laboratory interpretation in the absence of PRNT testing, refer to Table 1.  
Note: For the purposes of this guidance, recent possible Zika virus exposure or Zika virus/ flavivirus infection is defined as a possible exposure or infection during the current pregnancy or periconceptional period.



**TABLE 1. Interpretation of results<sup>1</sup> of nucleic acid and antibody<sup>2,3</sup> testing for suspected Zika virus infection — United States (including US territories), 2017**

Zika NAT (serum) <sup>4</sup>	Zika NAT (urine) <sup>4</sup>	Zika virus IgM <sup>5</sup>	Zika virus PRNT	Dengue virus PRNT	Interpretation and recommendations
Positive	Positive	Any result	Not indicated	Not indicated	<b>Acute Zika virus infection</b>
Negative	Positive	Positive	Not indicated	Not indicated	<b>Acute Zika virus infection</b>
Negative	Positive	Negative	Not indicated	Not indicated	<b>Suggests acute Zika virus infection</b> <i>Repeat testing on original urine specimen</i> <ul style="list-style-type: none"> <li>If repeat NAT result is positive, interpret as <b>evidence of acute Zika virus infection</b></li> <li>If repeat NAT result is negative, repeat Zika virus IgM antibody testing on a serum specimen collected ≥2 weeks after symptom onset or possible exposure or specimen collection date                             <ul style="list-style-type: none"> <li>If repeat IgM antibody result is positive,<sup>6</sup> interpret as <b>evidence of acute Zika virus infection</b></li> <li>If repeat IgM antibody result is not positive, interpret as no evidence of Zika virus infection</li> </ul> </li> </ul>
Positive	Negative or not performed	Positive	Not indicated	Not indicated	<b>Acute Zika virus infection</b>
Positive	Negative or not performed	Negative	Not indicated	Not indicated	<b>Suggests acute Zika virus infection</b> <i>Repeat testing on original serum specimen</i> <ul style="list-style-type: none"> <li>If repeat NAT result is positive, interpret as <b>evidence of acute Zika virus infection</b></li> <li>If repeat NAT result is negative, repeat Zika virus IgM antibody testing on a serum specimen collected ≥2 weeks after symptom onset or possible exposure or specimen collection date                             <ul style="list-style-type: none"> <li>If repeat IgM antibody result is positive,<sup>6</sup> interpret as <b>evidence of acute Zika virus infection</b></li> <li>If repeat IgM antibody result is not positive, interpret as no evidence of Zika virus infection</li> </ul> </li> </ul>
Negative	Negative or not performed	Any non-negative result <sup>7</sup>	≥10	<10	<b>Zika virus infection; timing of infection cannot be determined.</b> <ul style="list-style-type: none"> <li>For persons without prior Zika virus exposure, a positive IgM result represents recent Zika virus infection</li> </ul>
Negative	Negative or not performed	Any non-negative result <sup>7</sup>	≥10	≥10	<b>Flavivirus infection; specific virus cannot be identified; timing of infection cannot be determined</b> <ul style="list-style-type: none"> <li>For persons without prior Zika virus exposure, a positive IgM result represents recent unspecified flavivirus infection</li> </ul>
Negative	Negative or not performed	Any non-negative result <sup>7</sup>	<10	Any result	<b>No evidence of Zika virus infection</b>
<b>For areas where PRNT is not recommended<sup>3</sup></b>					
Negative	Negative or not performed	Positive for Zika virus AND negative for dengue virus	Not performed because PRNT is not recommended		<b>Presumptive Zika virus infection; timing of infection cannot be determined<sup>8</sup></b>
Negative	Negative or not performed	Positive for Zika virus AND positive for dengue virus	Not performed because PRNT is not recommended		<b>Presumptive flavivirus infection; specific virus cannot be identified; timing of infection cannot be determined<sup>8</sup></b>
Negative	Negative or not performed	Equivocal (either or both assays)	Not performed because PRNT is not recommended		<b>Insufficient information for interpretation</b> <ul style="list-style-type: none"> <li>Consider repeat testing</li> </ul>
Negative	Negative or not performed	Negative on both assays	Not performed because PRNT is not recommended		<b>No laboratory evidence of Zika virus infection</b>

**Abbreviations:** IgM = immunoglobulin M; NAT = nucleic acid test; PRNT = plaque reduction neutralization test.

1 Final interpretations of results of Zika virus tests should be performed after all testing is complete.

2 Serology test results that indicate flavivirus infection should be interpreted in the context of circulating flaviviruses.

3 Currently, PRNT confirmation is not routinely recommended for persons living in Puerto Rico.

4 Serum must be submitted for all persons tested for Zika virus infection; a urine specimen for Zika virus NAT testing should always be submitted concurrently with a serum specimen.

5 Dengue virus IgM antibody testing is recommended for symptomatic pregnant women, as well as for asymptomatic pregnant women residing in areas where PRNT confirmation is not recommended. For laboratory interpretation in the presence of dengue virus IgM results, refer to <https://www.cdc.gov/dengue/clinlab/lab/laboratory.html>.

6 Positive results include "positive," "presumptive Zika virus positive," or "possible Zika virus positive." These are examples of assay interpretations that might accompany test results; positive serology terminology varies by assay. For explanation of a specific interpretation, refer to the instructions for use for the specific

assay performed. Information on each assay can be found at <https://www.fda.gov/MedicalDevices/Safety/EmergencySituations/ucm161496.htm#zika> under the "Labeling" for the specific assay.

7 Non-negative results include "positive," "equivocal," "presumptive positive," or "possible positive." These are examples of assay interpretations that might accompany test results; nonnegative serology terminology varies by assay. For explanation of a specific interpretation, refer to the instructions for use for the specific assay performed. Information on each assay can be found at <https://www.fda.gov/MedicalDevices/Safety/EmergencySituations/ucm161496.htm#zika> under "Labeling" for the specific assay.

8 Zika virus IgM positive result is reported as "presumptive positive or flavivirus infection" to denote the need to perform confirmatory PRNT titers against Zika virus, dengue virus, and other flaviviruses to which the person might have been exposed to resolve potential false-positive results that might have been caused by cross-reactivity or nonspecific reactivity. In addition, ambiguous test results (e.g., inconclusive, equivocal, and indeterminate) that are not resolved by retesting also should have PRNT titers performed to rule out a false-positive result. However, PRNT confirmation is currently not routinely recommended for persons living in Puerto Rico.

# Part 3: Counseling & Conversation Guides

**3.1 Counseling Travelers of Reproductive Age (page 30)**

**3.2 Conversation Guide for Asymptomatic Pregnant Women with Ongoing Exposure to Zika (page 32)**

**3.3 Conversation Guide for Asymptomatic Pregnant Women without Ongoing Exposure to Zika (page 33)**

**3.4 Conversation Guide for Symptomatic Pregnant Women (page 34)**

# COUNSELING TRAVELERS



## Women and Men of Reproductive Age Who are Considering Travel to Areas with Risk of Zika

This guide describes recommendations to providers for counseling women and men of reproductive age who are considering travel to areas with risk of Zika. This material includes recommendations from CDC's interim guidance<sup>1</sup> and talking points to cover while discussing recommendations.

Recommendation	Key Issues	Talking Points
<b>Assess risk of Zika exposure and prevention</b>	Environment	Discuss whether the planned area of travel is an area with risk of Zika ( <a href="#">see CDC Zika Travel Information website*</a> ).
		Advise couples who are considering conceiving in the near future to postpone non-essential travel to areas with a <a href="#">CDC travel notice</a> .
		Discuss environment in which patient will be staying: advise traveler to stay in hotel rooms or other accommodations that are air conditioned or have good window and door screens to keep mosquitoes outside.
		Discuss mosquito bite prevention, including insect repellent, clothing (including permethrin-treated <sup>2</sup> ), and bed net use.
		Discuss how to prevent sexual transmission during and after the trip.
<b>Discuss Zika infection</b>	<ol style="list-style-type: none"> <li>Signs and symptoms of Zika virus disease</li> <li>When to seek care</li> <li>Treatment</li> <li>Preventing transmission after returning home</li> </ol>	Many people infected with Zika won't have symptoms or will have only mild symptoms. The most common symptoms of Zika are fever, rash, arthralgias, and conjunctivitis; other common symptoms include myalgia and headache.
		Illness usually lasts about a week.
		Zika infection during or just before pregnancy may cause poor pregnancy and infant outcomes, including birth defects. Guillain-Barré syndrome is possibly triggered by Zika in a small proportion of infections, as it is after a variety of other infections.
		People who have possibly been exposed and develop symptoms consistent with Zika should see a healthcare provider and report their (or their sexual partner's) recent travel if they have been to an area with risk of Zika.
		If travelers develop symptoms of Zika, they should rest, stay hydrated, and take acetaminophen for fever or pain. To reduce the risk of hemorrhage, aspirin or other NSAIDs should not be taken until dengue can be ruled out.
To help prevent others from getting sick, people infected with Zika should prevent the spread of Zika through sex by using condoms or not having sex for 8 weeks (women) or 6 months (men). They should also strictly follow steps to prevent mosquito bites during the first week of illness. Even if they do not feel sick, travelers returning from an area with risk of Zika should take steps to prevent mosquito bites for 3 weeks. These steps will prevent them from passing Zika to mosquitoes that could spread the virus to other people.		
<b>Discuss Zika infection and pregnancy</b>	Possible adverse outcomes of Zika infection during pregnancy	Zika can be passed to the fetus during pregnancy or at delivery if a woman is infected during pregnancy.
		Zika infection during pregnancy can cause microcephaly and other severe fetal brain defects.
		Children with microcephaly often have serious problems with development and can have other neurologic problems, such as seizures.
		Zika has been linked to other problems in pregnancies and among fetuses and infants infected with Zika before birth, such as miscarriage, stillbirth, defects of the eye, hearing deficits, and impaired growth.
		There is no evidence that Zika infection poses an increased risk for birth defects in future pregnancies after the virus has cleared from the blood.



Recommendation	Key Issues	Talking Points
<b>Assess pregnancy plans related to timing of travel</b>	1. Timing of conception 2. Avoiding travel to areas with risk of Zika while pregnant	CDC recommends that women who are pregnant not travel to any <a href="#">area with risk of Zika</a> .
		If a pregnant woman must travel to one of these areas, discuss potential risks and the steps she should take to prevent mosquito bites and sexual transmission of Zika during and after the trip.
		CDC recommends that travelers returning from areas with a <a href="#">CDC Zika travel notice</a> wait to conceive (see table below).
<b>Discuss Zika – risk of sexual transmission and need for contraception</b>	1. Preventing sexual transmission 2. Contraception	Zika can be passed through sex from a person who has Zika to his or her sex partners.
		Anyone who is not pregnant or trying to get pregnant who wants to avoid getting or passing Zika during sex can use condoms every time they have sex, or not have sex. <ol style="list-style-type: none"> <li>If traveler is female: Use condoms or do not have sex for at least 8 weeks after travel to an area with risk of Zika (if she doesn't have symptoms), or for at least 8 weeks from the start of her symptoms (or Zika diagnosis) if she develops Zika.</li> <li>If traveler is male: Use condoms or do not have sex for at least 6 months after travel to an area with risk of Zika (if he doesn't have symptoms), or for at least 6 months from the start of his symptoms (or Zika diagnosis) if he develops Zika.</li> </ol>
		To avoid conceiving for the advised periods of time (see table below), a woman or couple should also use the most effective contraceptive methods that can be used correctly and consistently (See Effectiveness of Family Planning Methods: <a href="http://www.cdc.gov/reproductivehealth/unintendedpregnancy/pdf/contraceptive_methods_508.pdf">http://www.cdc.gov/reproductivehealth/unintendedpregnancy/pdf/contraceptive_methods_508.pdf</a> ).

**Length of time to wait to conceive after travel to areas with a CDC Zika travel notice**

Female traveler	Male traveler
Use condoms or do not have sex for at least 8 weeks after travel to an area with a CDC Zika travel notice (if she doesn't have symptoms) or for at least 8 weeks from the start of her symptoms (or Zika diagnosis).	Use condoms or do not have sex for at least 6 months after travel to an area with a CDC Zika travel notice (if he doesn't have symptoms) or for at least 6 months from the start of his symptoms (or Zika diagnosis).

Note: If traveling as a couple, both travelers should use condoms or not have sex for at least 6 months.

**Recommendations for women and men who want to conceive after travel to areas with a risk of Zika but no CDC travel notice**

Because the level of this risk in this area is unknown and information is limited about the risk of infection to the fetus around the time of conception, talk with your female and male patients about their plans for pregnancy, their travel plans, their risk of Zika virus infection, the possible health effects of Zika virus infection on a baby, and ways to protect themselves from Zika.

**Related websites:**

- Zika Virus - <http://www.cdc.gov/zika/index.html>
- \* Zika Travel Information - <http://wwwnc.cdc.gov/travel/page/zika-travel-information>
- Guillain-Barré Syndrome - <http://www.cdc.gov/zika/about/gbs-qa.html>
- Zika Virus Prevention - <http://www.cdc.gov/zika/prevention/index.html>
- For Providers Caring for Pregnant Women - <http://www.cdc.gov/zika/hc-providers/pregnant-women/zika-and-pregnancy.html>

- Timeframes to Wait Before Trying to Conceive by Geographic Location - <https://www.cdc.gov/zika/geo/countries-territories.html>
- Zika Transmission & Risks - <http://www.cdc.gov/zika/transmission/index.html>
- Zika Symptoms, Diagnosis & Treatment - <http://www.cdc.gov/zika/symptoms/index.html>
- \*\* For updates, please check <http://www.cdc.gov/zika/hc-providers/index.html>; updated clinical guidance is marked as "UPDATE" \*\***

References:

- Petersen EE, Meaney-Delman D, Neblett-Fanfair R, et al. Update: Interim Guidance for Preconception Counseling and Prevention of Sexual Transmission of Zika Virus for Persons with Possible Zika Virus Exposure - United States, September 2016. MMWR 2016;65(39):1077-1081.
- In some places, such as Puerto Rico, there is widespread permethrin resistance, and it is unlikely to be effective. Contact local authorities or a mosquito control district for more information on pesticides.

# PRETEST COUNSELING CONVERSATION GUIDE FOR HEALTHCARE PROVIDERS

## FOR ASYMPTOMATIC PREGNANT WOMEN WITH ONGOING EXPOSURE TO ZIKA



This guide describes recommendations for conducting pretesting counseling for asymptomatic pregnant women with ongoing exposure to Zika. CDC recommends Zika testing for asymptomatic pregnant women with ongoing exposure to Zika (meaning they live in or frequently travel to [an area with risk of Zika](#)). This material includes sample scripts to guide discussions with your patients about the complexity of Zika testing and the testing process with patients. Because a lot of content is outlined for discussion, make additional information available to support messaging and ensure that patients understand what they are being told.

**Pregnant women coming in for Zika testing may feel worried or anxious. Support them by providing them with clear and easy-to-understand information, avoiding technical terms and expressing empathy by acknowledging their concerns and feelings during pretesting counseling.**

### Recommendation

### Sample Script

**Provide the patient with information on the complexity of Zika testing.**

You may be at risk for getting Zika at any time during your pregnancy because you (*replace “you” with “your sex partner” as appropriate*) live in (*replace “live in” with “frequently travel to” as appropriate*) an area with risk of Zika. Many people who get infected with Zika do not have symptoms, so you could get infected and not know you have Zika.

Because Zika infection during pregnancy can cause birth defects, I will test you for Zika during your pregnancy. You may be tested for Zika three times; we will perform the first test during this visit. The second and third tests will happen during routine prenatal care visits during your pregnancy.

Before we begin, I would like to tell you what to expect throughout this process.

Inform the patient that it can be challenging to understand test results and provide them with information on the type of test you will be conducting.

It can be hard to understand Zika test results for a number of reasons. The type of test that is recommended for you requires a blood or urine sample. This test will look for Zika virus genetic material. Results from this test may or may not tell us if you’ve been infected with Zika, which I’ll explain in a minute. I am going to start today’s testing process by ordering this test that looks for genetic material of Zika, known as RNA.

*Ask the patient if she has any questions before you move forward with providing information on the testing process.*

**Inform patients of what each possible test result could mean for their pregnancy**

Now we’ll go over what each test result could mean for your pregnancy.

If Zika test results are positive.

If you test positive for Zika RNA, this means you have recently been infected with Zika virus and I will need to watch your pregnancy more closely. I may do more ultrasounds or other tests to check for your fetus’s growth and development.

If Zika test results are not clearly positive or negative.

Sometimes test results will not come back as a clear negative or positive. If this happens, I’d rather be cautious and still do more ultrasounds and test you at least two more times during your pregnancy.

If Zika test results are negative.

If your test results are negative, it means that no Zika RNA was detected. This could mean that you have never been infected with Zika, or it could mean that you previously had Zika and the virus is no longer in your body.

A negative result does not mean that you are not at risk of becoming infected in the future. I will test you two more times during your pregnancy. If there are still no signs of Zika after these additional tests, we will continue with routine prenatal care. If you test positive at a later date (refer above to “If Zika test results are positive”).



# COUNSELING CONVERSATION GUIDE FOR HEALTHCARE PROVIDERS

## FOR ASYMPTOMATIC PREGNANT WOMEN WHO WERE RECENTLY EXPOSED TO ZIKA BUT DO NOT HAVE ONGOING EXPOSURE

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This guide provides talking points for discussing why testing is not routinely recommended for asymptomatic pregnant women who were recently exposed to Zika (meaning they or their sex partner recently traveled to [an area with risk of Zika](#)) but do not have ongoing exposure. However, testing can be considered on a case-by-case basis depending on patient preferences, your clinical judgement, or if your state or local jurisdiction recommends it. This material includes sample scripts to guide discussions with your patients about why Zika testing is not recommended for asymptomatic pregnant women who do not have ongoing exposure. To increase patient understanding, it may be helpful to make additional information available to support messaging.

**Pregnant women who may have been exposed to Zika may feel worried or anxious. Support them by providing them with clear and easy-to-understand information and expressing empathy by acknowledging their concerns and feelings during discussions.**

### Recommendation

### Sample Script

**Discuss with the patient why Zika testing is no longer routinely recommended for asymptomatic pregnant women without ongoing exposure**

Thank you for coming in to discuss your concerns about possibly being exposed to Zika virus. Possible exposure means that you or your sex partner recently traveled to [an area with risk of Zika](#).

As you may know, the Centers for Disease Control and Prevention (CDC) issues up-to-date recommendations for pregnant women possibly affected by Zika as more continues to be learned about the virus. Currently, routine Zika testing is not recommended for pregnant women if they don't have ongoing exposure and do not have symptoms. The most common symptoms of Zika virus disease are fever, rash, headache, joint pain, red eyes, and muscle pain.

Overall, the number of people with reported Zika infection in the Americas is decreasing. Testing people without symptoms when there is a smaller number of new cases occurring could increase the chances of test results being positive when they may actually be negative. This means the test might tell you that you have Zika when you actually don't.

False test results are a concern. They may cause stress and anxiety and lead to me performing more tests and procedures than are necessary. Testing is typically recommended when it can provide us with valuable information for us to make informed decisions about care during your pregnancy. When more positive results will be false, we should only consider testing after discussing the possibility of false results and what this might mean for you.

What questions do you have?

- Consider providing the fact sheet [What You should Know about Zika Virus Testing for pregnant women without symptoms who were recently exposed to an area with risk of Zika but do not have ongoing exposure](#).
- If the patient still requests to be tested, refer to [What You Should Know About Zika Virus Testing for Pregnant Women with Symptoms of Zika](#) to guide them through the steps of the testing process.

# PRETEST COUNSELING CONVERSATION GUIDE FOR HEALTHCARE PROVIDERS

## FOR PREGNANT WOMEN WITH SYMPTOMS OF ZIKA



This guide describes recommendations for conducting pretesting counseling for symptomatic pregnant women with possible recent exposure (they or their sex partner live in or recently traveled to [an area with risk of Zika](#)). Symptoms of Zika include red eyes, fever, joint pain, rash, muscle pain, and headache. CDC recommends testing for pregnant women with symptoms of Zika. This material includes sample scripts to guide discussions with your patients about the complexity of Zika testing and the testing process with patients. Because a lot of content is outlined for discussion, make additional information available to support messaging and ensure that patients understand what they are being told.

**Pregnant women coming in for Zika testing may feel worried or anxious. Support them by providing them with clear and easy-to-understand information and expressing empathy by acknowledging their concerns and feelings during pretesting counseling.**

### Recommendation

### Sample Script

**Provide the patient with information on why you will be testing them for Zika and a brief overview of what to expect**

*Use one of the two following sentences to begin the discussion:*

1. You may be at risk for having Zika since you or your sex partner recently traveled to (*replace “recently traveled to” with “live in” as appropriate*) an area with risk of Zika within the past 12 weeks and you have had (*replace ‘have had’ with “during your pregnancy you previously had” as appropriate*) symptoms of Zika.  
OR/AND
2. You may be at risk of having Zika because you recently had sex without a condom with a person who traveled to (*replace “traveled to” with “lives in” as appropriate*) an area with risk of Zika within the past 12 weeks and you have had (*replace ‘have had’ with “during your pregnancy you previously developed” as appropriate*) symptoms of Zika.

Since you were exposed to Zika and are experiencing symptoms (*replace “are experiencing” with “during your pregnancy you previously experienced” as appropriate*), I think it is best to move forward with testing you for Zika. Before we begin, I would like to tell you what to expect throughout this process.

Patients should be informed that a combination of Zika tests will be required before a final result is determined

You will need a combination of tests to determine whether or not you have Zika. Finding out if you have Zika can require up to three different kinds of tests because the result of one test may require more testing to find out if you recently had a Zika infection. The tests we use to detect Zika can detect other similar viruses often found in the same areas with risk of Zika. Sometimes even after several tests, we may not know which type of virus you were infected with. Each test result is important, because it may help me decide how best to care for you during pregnancy.

I want to be sure we take all of the necessary steps to make sure your results are accurate. Each test can take different amounts of time to receive results, which I know can be frustrating. As your healthcare provider I am here to answer any questions you may have.

- Reassure the patient that this method of testing is normal
- Consider providing the fact sheet [What You Should Know About Zika Virus Testing for Pregnant Women with Symptoms of Zika](#).

Let the patient know that you will be ordering two tests; one to look for Zika RNA and one to look for Zika antibodies. Define these terms as they may be unfamiliar

I am going to start the testing process by ordering two tests:

- The first test looks for pieces of Zika virus, known as RNA. RNA can be found in blood and urine.
- The second test looks for Zika antibodies, which are proteins that your body makes to fight off a Zika infection.

Zika test results can be difficult to interpret. If you’ve had exposure to Zika virus or another similar virus before this pregnancy, it’s possible that you’ve been infected before, and this could affect today’s test results.

Patients should be informed that it can be challenging to understand test results and that previous exposure to Zika could affect their test results

Scientists have learned that Zika antibodies can stay in the body for several months after infection. Antibodies show evidence that your body fought off a recent Zika infection. It is possible that you may have already developed antibodies against Zika virus if you've lived in or frequently traveled to an area with risk of Zika before becoming pregnant. Because of this, it is possible that your Zika antibody test results may not tell me if you were infected in the past or if you were infected more recently during your current pregnancy. This means if you test positive, we may not know if you are currently infected or not.

*Ask the patient if she has any questions before you move forward with providing information on the testing process.*

Inform the patient of what the possible results of the Zika RNA and antibody tests may be

- If your Zika RNA test comes back with a positive result, regardless of your test result for Zika antibodies, it means that you have recently been infected with Zika.
- If your Zika RNA test comes back negative and your antibody test is positive, we will need to do one more round of testing to figure out whether or not you actually have or recently had Zika. It may mean that you had Zika but the virus is no longer in your body or it could mean that you had an infection with another similar virus.
- If your Zika RNA test and your antibody test are both negative, it means there is no evidence that you have Zika or another similar virus and I will continue evaluating you to find out what may be causing your symptoms.

*Ask the patient if they have any questions before you move forward with providing information on step two of testing.*

If the patient requires further testing after the Zika RNA and Zika antibody test, inform the patient and provide them with information on what to possibly expect next.

If you test negative for Zika RNA and your antibody test is positive, I will need to order a third test to confirm whether the antibodies are for Zika or a similar virus. This test takes the longest to receive results because I have to send the results to a specialized lab and then work with the state or local health department to interpret the results.

*Ask the patient if they have any questions on what to expect during each step of the testing process.*

**Inform patients of each what each test result could mean for their pregnancy.**

Now we'll go over what each test result could mean for your pregnancy.

If Zika test results are positive

If you test positive for Zika, I will need to watch your pregnancy more closely. I may do more ultrasounds or other tests to check for your fetus's growth and development.

If Zika test results are not clearly positive or negative

Sometimes test results will not come back as a clear negative or positive. If this happens, I'd rather be more cautious and still do more ultrasounds and other tests to closely monitor your pregnancy.

If Zika test results are negative.

If your test results are negative, I will do an ultrasound to check the growth and development of your fetus and check for any signs of Zika virus infection. If I see any signs of Zika during the ultrasound, then I may order additional tests. If there are no signs of Zika, we will continue with routine prenatal care.

# **Part 4: Submitting Samples to Maine's Health and Environmental Testing Laboratory**

**4.1 Zika Virus Laboratory Submission Information Sheet (page 37)**

**4.2 Arboviral Submission Form (page 38)**

**4.3 HETL Requisition Form (page 39)**



## Zika virus

### Laboratory Submission Information Sheet

Reporting of suspect case to Maine CDC	<ul style="list-style-type: none"> <li>• Yes: Zika Virus is a Notifiable Condition. If you have not already done so, please report suspect or confirmed cases to the Maine CDC via the disease reporting line: 1-800-821-5821 (24hrs/day 7 days/week.)</li> </ul>
Required To Submit Laboratory Specimen	<ul style="list-style-type: none"> <li>• NO, Submission of samples of suspect cases is recommended.</li> <li>• HETL Requisition AND Arbovirus submission form IS REQUIRED to perform Zika Virus PCR testing.</li> <li>• <b>Travel to an area with risk of Zika or unprotected sex with someone who lives or recently traveled to area with risk of Zika.</b></li> </ul>
Required Information	<ul style="list-style-type: none"> <li>• Information on requisition must include: suspected organism, patient name, DOB, date of collection, specimen source or type, submitter name and contact information.</li> <li>• <b>Important: all specimens must be labeled with patient name and be accompanied by a HETL requisition and Arboviral submission form. Pregnancy status must be noted if applicable.</b></li> </ul>
Specimen Requirements	<ul style="list-style-type: none"> <li>• Required: Collect a minimum of 0.5mL <b>serum</b> into a GOLD or TIGER top serum separator vacutainer tube.</li> <li>• Recommended: Collect 3-5mL <b>urine</b> into a sterile leak-proof urine collection cup.</li> <li>• Refer to the Maine Zika Testing Algorithm below for further guidance</li> <li>• <a href="http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/zika/">http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/zika/</a></li> </ul>
Collection Instructions	<ul style="list-style-type: none"> <li>• Serum: Collect acute specimen <math>\leq 7</math> days after onset of symptoms.</li> <li>• Serum must be centrifuged and immediately stored at 4°C within 6 hours of collection. For short term storage (&lt;24 hours) all samples must be kept at 4°C. For long term storage (&gt;24hours) all samples must be frozen at -20°C or colder. Samples must be shipped cold, preferably on dry ice.</li> </ul>
Turn Around Time	<ul style="list-style-type: none"> <li>• Results should be expected within 1 - 2 business days of specimen receipt.</li> <li>• Serum specimens from symptomatic individuals may be forwarded to Federal CDC or Massachusetts Public Health Laboratory for confirmation testing.</li> </ul>
Unacceptable Conditions	<ul style="list-style-type: none"> <li>• HETL: Specimens received without a form and clinical details or with insufficient material to analyze. Sample diluted in Viral Transport Media (VTM), specimen not refrigerated or not frozen, incorrect specimen type. Whole blood will not be accepted.</li> </ul>
Results	<ul style="list-style-type: none"> <li>• Zika virus RNA DETECTED. Zika virus RNA NOT Detected. Zika virus Equivocal.</li> <li>• All results will be reported only to submitter as stated on requisition via mail or fax.</li> <li>• Specimens deemed equivocal by PCR will be forwarded to Federal CDC for further testing.</li> </ul>
Laboratory Testing Fee	<ul style="list-style-type: none"> <li>• \$110 for rtReal Time PCR</li> <li>• There is no charge for specimens forwarded to Federal CDC or Massachusetts PHL for confirmation testing.</li> </ul>
Applicable CPT Codes	<ul style="list-style-type: none"> <li>• 87798</li> </ul>
Additional Information	<ul style="list-style-type: none"> <li>• Bacteriology at 207-287-1704, Virology, Respiratory, Arbovirus, and Serology at 207-287-1722</li> <li>• Molecular Biology, Sequencing, and Foodborne at 207-287-5769</li> <li>• Mycobacterium and Rabies at 207-287-1706</li> <li>• CT/GC at 207-287-6244</li> </ul>



# Maine Center for Disease Control and Prevention Human Arbovirus Specimen Submission Form

Rev. 03/2017

In order to submit a sample for Arbovirus testing, the health care provider needs to **completely fill in** this form for all tests. The lab also needs to complete and submit the HETL requisition form.

Patient Name: \_\_\_\_\_ DOB: \_\_\_\_\_

Address: \_\_\_\_\_

Gender: \_\_\_\_\_ Race/Ethnicity: \_\_\_\_\_ Pregnant:  Yes  No

If patient is pregnant, how far along is she (approximate gestational age)? \_\_\_\_\_

Health Care Provider: \_\_\_\_\_ Phone Number: \_\_\_\_\_

Hospitalized?  Yes  No Hospital: \_\_\_\_\_

Admitted: \_\_\_/\_\_\_/\_\_\_ Discharged: \_\_\_/\_\_\_/\_\_\_

Travel out of **state** within last 30 Days Where: \_\_\_\_\_

Travel Dates: From \_\_\_\_\_ to \_\_\_\_\_  
mm/dd/yyyy mm/dd/yyyy

International travel within last **90** Days Where: \_\_\_\_\_

Travel Dates: From \_\_\_\_\_ to \_\_\_\_\_  
mm/dd/yyyy mm/dd/yyyy

### CLINICAL INFORMATION

Symptom Onset Date: \_\_\_\_\_

Acute Flaccid Paralysis  Altered Mental Status  Arthralgia

Aseptic Meningitis  Conjunctivitis  CNS involvement

Encephalitis  Fever: Highest reading: \_\_\_\_\_ Duration, in days: \_\_\_\_\_

Headache  Myalgias  Rash – Where? \_\_\_\_\_

Other \_\_\_\_\_

Information on specimens being submitted:	Other testing done (CSF):
<input type="checkbox"/> Acute Serum: Collection Date: _____	Y N
<input type="checkbox"/> Convalescent Serum: Collection Date: _____	Enterovirus <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> CSF: Collection Date: _____	HSV 1&2 <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <b>Urine (3-5mL) for Zika only</b> Collection Date: _____	VZV <input type="checkbox"/> <input type="checkbox"/>

### FOR ZIKA PATIENTS ONLY

Has patient's partner traveled?  Yes  No

If yes, please provide travel history of partner: \_\_\_\_\_

Has the couple had unprotected sex since returning from travel?  Yes  No

# Maine Health and Environmental Testing Laboratory

221 State Street, SHS 12  
Augusta, Maine 04333-0012  
Phone: 207-287-2727 Fax: 207-287-1727

This form and others available for download or printing from our website: [www.mainepublichealth.gov/lab](http://www.mainepublichealth.gov/lab)

## (\*REQUIRED FIELDS)

* <b>Submitter Name/Address</b>  Submitter Phone  Submitter Fax#	Hospital/Lab ID#	Physician Fax
	Physician Name (First/Last)	Physician Practice/Affiliation
	Physician Address and Phone	Physician NPI#
* <b>Patient Name</b> (*Last, *First, MI)	* <b>Gender</b> <input type="checkbox"/> M <input type="checkbox"/> F	* <b>Specimen source:</b> <input type="checkbox"/> Anal <input type="checkbox"/> Bronch wash <input type="checkbox"/> Buccal/Oral <input type="checkbox"/> CSF <input type="checkbox"/> Nasal/Nasal Wash <input type="checkbox"/> Nasopharyngeal <input type="checkbox"/> Throat <input type="checkbox"/> Sputum <input type="checkbox"/> Stool <input type="checkbox"/> Cervical <input type="checkbox"/> Endocervical <input type="checkbox"/> Labial <input type="checkbox"/> Penile <input type="checkbox"/> Urethral <input type="checkbox"/> Urine <input type="checkbox"/> Vaginal <input type="checkbox"/> Vulva <input type="checkbox"/> Whole blood <input type="checkbox"/> Serum <input type="checkbox"/> Plasma <input type="checkbox"/> Other:
Is patient hospitalized? <input type="checkbox"/> Yes <input type="checkbox"/> No	* <b>Date of Birth</b> (mm/dd/yyyy)  Symptom Onset Date	* <b>Date of Collection</b> (mm/dd/yyyy)

Information highlighted below is required for ALL test requests; Blood lead testing requires additional fields

* <b>Patient Street Address</b>	* <b>Apt#</b>	* <b>City/Town</b>	* <b>State</b>	* <b>Zip Code</b>
Race <input type="checkbox"/> White <input type="checkbox"/> American Indian or Alaskan Native <input type="checkbox"/> Asian <input type="checkbox"/> Black or African American <input type="checkbox"/> Native Hawaiian/Pacific Islander <input type="checkbox"/> Some other race <input type="checkbox"/> Two or more races	Ethnicity <input type="checkbox"/> Hispanic or Latino <input type="checkbox"/> Non-Hispanic/Non-Latino	MaineCare# (if primary) Please include copy of MaineCare Card	<b>Blood Lead</b> Parent/Guardian Name	<b>Blood Lead</b> Parent/Guardian Phone:
<b>Blood Lead – ONLY</b> <input type="checkbox"/> Check only if patient has No Private Insurance Coverage AND No MaineCare Coverage				

### BACTERIOLOGY

- Chlamydia/Gonorrhea screen (Amplified Probe)
  - Bordetella species – PCR
  - Campylobacter Identification
  - Carbapenem resistance (CRE) PCR-Isolate
  - Clostridium difficile PCR
  - C. difficile PFGE Subtyping
  - Cryptosporidium PCR
  - E. coli Identification/serotyping
  - E. coli Shiga Toxin by PCR
  - Enteric Pathogen Screen (Salmonella, E.coli, Shigella, Campylobacter)
  - MRSA – Isolate only
  - Neisseria meningitidis grouping
  - Neisseria meningitidis PCR/CSF only
  - SALMONELLA Identification/serotyping
  - SHIGELLA Identification/serotyping
  - Vancomycin resistance (VRE) PCR-Isolate
  - Vibrio Identification
  - Yersinia Identification
  - Reference Culture Identification
- Organism Suspected:

### ARBOVIRUS PCR

- \*\*All Require Arboviral Submission Form
- Anaplasma/Ehrlichia PCR\*\*
  - Babesia PCR\*\*
  - Chikungunya RT-PCR\*\*
  - Dengue 1-4 RT-PCR\*\*
  - Deer Tick virus/Powassan RT-PCR\*\*
  - Zika virus RT-PCR\*\*

### VIROLOGY

- Adenovirus PCR
- Enterovirus RT-PCR
- Herpes simplex (HSV1/2) PCR
- Influenza A/B RT-PCR (includes pdmH1N1)
- Mumps RT-PCR
- Norovirus RT-PCR
- Rhinovirus RT-PCR
- Respiratory Enterovirus RT-PCR
- RSV RT-PCR
- Rubeola (Measles) RT-PCR
- Varicella/Herpes Zoster PCR (“chicken pox”/“shingles”)
- Reflex to Viral Culture if PCR Test Selected is Negative
- Viral Culture, Routine, (10 days)

**CSF Panel by real time PCR**  
Enterovirus, HSV1, HSV2, VZV and Neisseria meningitidis screen  
May be Reflexed to Arbovirus Panel; Requires 1.5mL of spinal fluid.

**Respiratory Panel by real time PCR**  
Adenovirus, Influenza A/B, Respiratory Syncytial Virus (RSV), Rhinovirus and Respiratory Enterovirus screen

### BLOOD LEAD

- Venous  Venous in Microtainer
- Capillary
- Check if Symptomatic or Repeat Test

### SEROLOGY

- Arbovirus IgM Serology Panel (West Nile, SLE, EEE) \*\*
- Hepatitis C IgG Antibody screen
- HIV-1/HIV-2 Antibody/Antigen screen
- HIV-1/2 Screen and Confirmation
- Mumps IgG Antibody screen
- Mumps IgM Antibody screen
- Quantiferon®-TB Gold /IGRA - Serology
- Rubeola (Measles) IgG Antibody screen
- Rubeola (Measles) IgM Antibody screen
- RPR Syphilis screen
- Syphilis serum confirmation
- Syphilis VDRL, Spinal Fluid Only
- Varicella zoster IgG Antibody screen

### MYCOBACTERIOLOGY

- Acid fast (AFB) smear
- AFB smear and culture
- M. tuberculosis complex PCR
- Reference Culture Identification

Additional Information:

MECDC Outbreak Investigation ID#:

Investigator:

## **Part 5: Patient Materials**

**5.1 Pregnant? Read This Before You travel (page 41)**

**5.2 Zika Prevention Kit for Travelers (page 43)**

**5.3 What You Should Know About Zika Virus Testing: For Pregnant Women Who Have Ongoing Exposure To Zika But No Symptoms (page 44)**

**5.4 What You Should Know About Zika Virus Testing: For Pregnant Women Who Were Recently Exposed To Zika And Do Not Have Symptoms (page 46)**

**5.5 What You Should Know About Zika Virus Testing: For Pregnant Women Exposed To Zika Who Have Symptoms (page 47)**

**5.6 For Pregnant Women: A Positive Zika Virus Test (page 49)**





# PREGNANT? READ THIS BEFORE YOU TRAVEL

## What we know about Zika

- Zika can be passed from a pregnant woman to her fetus.
- Zika infection during pregnancy can cause certain birth defects.
- Zika is spread mostly by the bite of an infected *Aedes aegypti* or *Aedes albopictus* mosquito.
  - » These mosquitoes bite during the day and night.
- There is no vaccine to prevent or medicine to treat Zika.
- Zika can be passed through sex from a person who has Zika to his or her sex partners.



## What we don't know about Zika

- If there's a safe time during your pregnancy to travel to an area with risk of Zika.
- If you do travel and are infected, how likely it is that the virus will infect your fetus and if your baby will have birth defects from the infection.

## Travel Notice

CDC has issued a travel notice (Level 2-Practice Enhanced Precautions) for people traveling to areas where Zika virus is spreading.

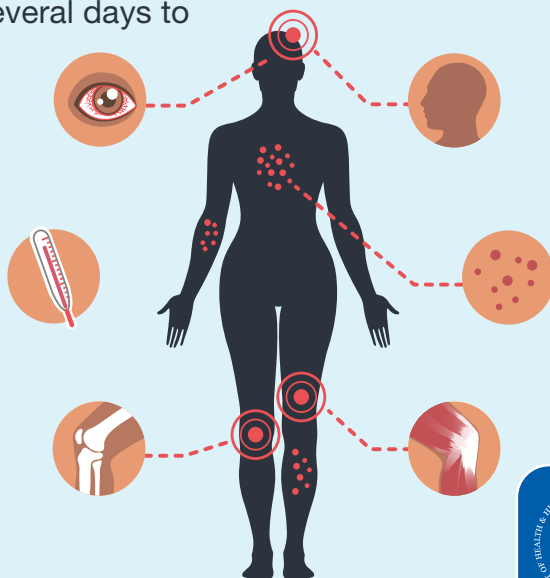
- For a current list of places with Zika outbreaks, see CDC's Travel Health Notices: <http://wwwnc.cdc.gov/travel/page/zika-travel-information>

## Symptoms of Zika

Most people with Zika won't even know they have it. The illness is usually mild with symptoms lasting for several days to a week.

The most common symptoms of Zika are

- Fever
- Rash
- Headache
- Joint pain
- Red eyes
- Muscle pain



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## CDC recommends special precautions for pregnant women and women trying to become pregnant

### Pregnant?

Pregnant women should not travel to areas with risk of Zika.

Pregnant women and their sex partners should strictly follow steps to prevent mosquito bites.

If you have a sex partner who lives in or travels to an area with risk of Zika, you should use condoms from start to finish every time you have sex, or do not have sex during the pregnancy.

If you develop the symptoms of Zika, see a healthcare provider right away for testing.

### Trying to become pregnant?

Women trying to become pregnant and their male partners should consider avoiding nonessential travel to areas with risk of Zika.

Strictly follow steps to prevent mosquito bites.

Talk to your healthcare provider about plans to become pregnant.



## Your Best Protection: Prevent Mosquito Bites

### Clothing

- Wear long-sleeved shirts and long pants.
- Treat clothing and gear with permethrin or purchase permethrin-treated items.
  - » Treated clothing remains protective after multiple washings. See product information to learn how long the protection will last.
  - » If treating items yourself, follow the product instructions carefully.
- Do NOT use permethrin products directly on skin. They are intended to treat clothing.



### Indoor Protection

- Stay in places with air conditioning or that use window and door screens to keep mosquitoes outside.
- Sleep under a mosquito bed net if air conditioned or screened rooms are not available or if sleeping outdoors.



### Repellent

Use Environmental Protection Agency (EPA)-registered insect repellents. When used as directed, these insect repellents are safe and effective for pregnant and breastfeeding women.

- Always follow the product label instructions.
- Reapply as directed.
- Do not spray repellent on the skin under clothing.
- If you are also using sunscreen, apply sunscreen before applying insect repellent.
- Use a repellent with one of the following active ingredients: DEET, picaridin, IR3535, oil of lemon eucalyptus or para-menthane-diol, or 2-undecanone.

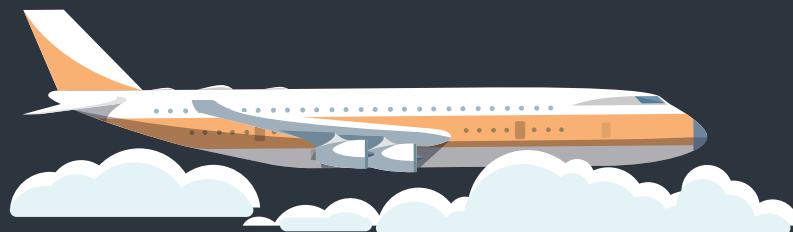


# TRAVELERS CAN PROTECT THEMSELVES **FROM ZIKA**



## Zika Prevention Kit for Travelers

The products below can help protect you from Zika. Build your own Zika prevention kit and bring your kit with you on your trip.



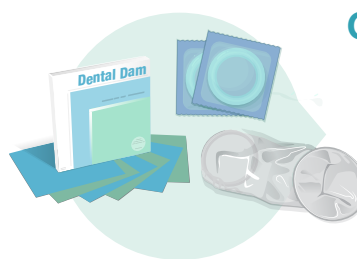
### Bed Net

- If your room is not well screened and air conditioned, use a bed net when sleeping or resting.
- Mosquitoes can live indoors and will bite at any time, day or night.



### Insect Repellent

- Use EPA-registered insect repellent containing DEET, picaridin, IR3535, oil of lemon eucalyptus or para-menthane-diol, or 2-undecanone.
- Always follow the directions on the bottle.
- Do not spray repellent under clothing.
- If you are also using sunscreen, apply sunscreen first and insect repellent second.
- When used as directed, these insect repellents are proven safe and effective even for pregnant and breastfeeding women.
- Most repellents, including DEET, can be used on kids older than 2 months. Mosquito netting can be used to cover babies <2 months old in carriers, strollers, or cribs to protect them from mosquito bites.



### Condoms

- Zika can be passed through sex. Bring male or female condoms with you when traveling. Use condoms during and after travel to protect yourself and your partner.
- If you are pregnant, use condoms for the rest of your pregnancy.
- Not having sex eliminates the risk of getting Zika through sex.



### Permethrin Spray

- Spray your clothing and gear with permethrin to help protect you from mosquito bites or bring pre-treated items.
- Always follow the directions on the bottle. Reapply as directed.
- Do not spray permethrin on your skin.
- Long sleeves and long pants help protect against Zika.

[www.cdc.gov/zika](http://www.cdc.gov/zika)



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# WHAT YOU SHOULD KNOW ABOUT ZIKA VIRUS TESTING



## For Pregnant Women Who Have Ongoing Exposure to Zika but No Symptoms

If you or your sex partner live in an area with risk of Zika or frequently travel to such an area, you may have been exposed to Zika during pregnancy or before you became pregnant. You may have questions about Zika and you may want to know how to find out if you've been infected. Keep reading to learn more.

### Zika testing is complex

In general, testing for Zika can include looking for Zika genetic material (pieces of the virus called RNA) and antibodies that the body would make to fight a Zika infection.

- Testing for Zika genetic material is recommended for you because it can tell your doctor if you were recently infected with Zika.
- Testing for Zika antibodies is not routinely recommended for pregnant women who have ongoing exposure to Zika but no symptoms because the results cannot be interpreted. We know that Zika antibodies can stay in the body for several months. If you lived in or frequently traveled to an area where local mosquitoes spread Zika, you may have been infected before pregnancy. This means you may have already developed antibodies against Zika before you became pregnant. Because of this, Zika antibody test results may not tell your doctor if you were infected in the past or if you were infected more recently during your current pregnancy. This means that these results would not tell us if your pregnancy is at risk from Zika infection.



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## Testing Process

Testing for Zika genetic material is recommended for pregnant women without symptoms who live in or frequently travel to an area with risk of Zika. Because you have ongoing exposure to Zika, you may receive up to three rounds of Zika testing at various points throughout your pregnancy.

Your doctor or other healthcare provider will order a test to look for Zika genetic material, RNA, which can be in blood and urine.

- If you test positive for Zika RNA, it means that you have recently been infected with Zika.
- If you test negative, no Zika RNA was detected. A negative test may mean that you have never been infected with Zika. However, it may also mean that you had Zika, but the virus is no longer in your body. Therefore, a negative test cannot rule out a recent Zika infection.



## Testing Results

### Positive test results

Testing positive for Zika during pregnancy lets your doctor or other healthcare provider know to watch your pregnancy more closely. This means you might have more ultrasounds or other tests to check the growth and development of your fetus and check for Zika infection.

### Not clearly positive or negative test results

Sometimes, the test results aren't clearly positive or negative. If this happens, your doctor or other healthcare provider may choose to follow the CDC recommendations for a positive test result, meaning he or she might do more ultrasounds or other tests to monitor the pregnancy.

### Negative test results

Your doctor or other healthcare provider may check the growth and development of your fetus during an ultrasound and check for any signs of Zika virus infection. If there are no signs of Zika infection, you will get routine prenatal care, which is what CDC recommends. If your doctor or other healthcare provider sees signs of Zika infection during an ultrasound, then you may need additional tests.



# WHAT YOU SHOULD KNOW ABOUT ZIKA VIRUS TESTING



## For Pregnant Women Who Were Recently Exposed to Zika and Do Not Have Symptoms

If you or your sex partner recently traveled to an area with risk of Zika, you may have been exposed to Zika. You may have questions about Zika and how to find out if you've been infected. Keep reading to learn more.

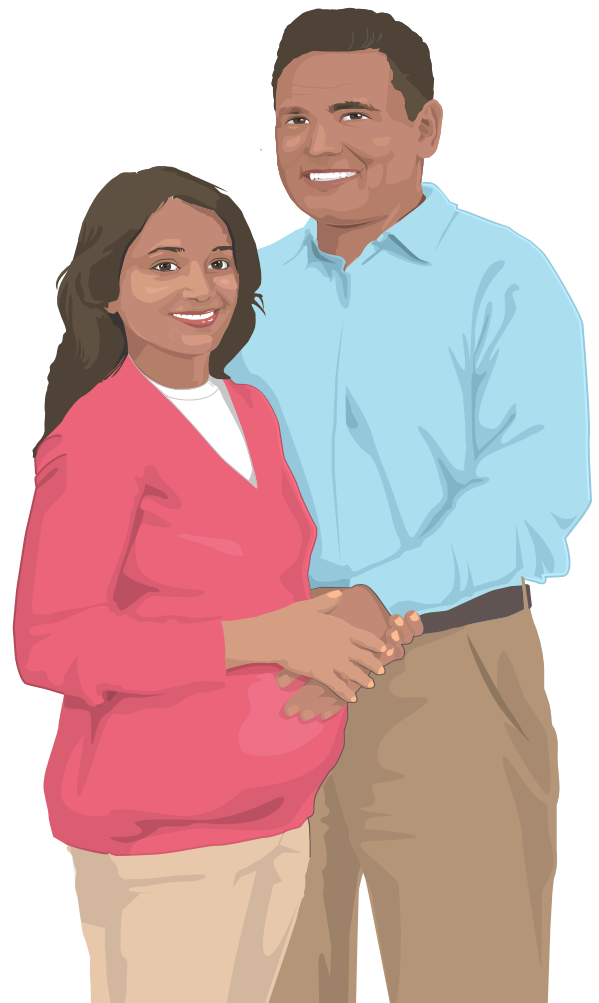
**Routine testing for Zika is not recommended for you, but it can be considered if you and your healthcare provider determine it is best for your specific situation.**

CDC does not recommend routine Zika testing for pregnant women who were recently exposed to Zika but did not develop symptoms and do not have ongoing exposure (for example, if you live in or frequently travel to an area with risk of Zika). However, you and your healthcare provider may discuss your specific situation and decide together that it is best for you to be tested. Some state or local areas may also recommend routine testing.

**Why is routine testing not recommended for me?**

Testing people when a disease is not spreading widely can lead to more positive tests being inaccurate (called a false positive), meaning the test might look like you have Zika when you don't actually have it.

False test results can cause stress and anxiety. It can also lead your healthcare provider to perform more tests and procedures than are necessary. In general, testing is recommended when it can provide necessary information for you or your healthcare provider to make informed decisions about your care during pregnancy. However, since it is possible that a higher number of Zika positive results will be false, testing should only be considered on a case-by-case basis after discussing the risks and benefits of Zika testing with your healthcare provider. Despite the risks of false test results, some patients may still prefer to be tested.



# WHAT YOU SHOULD KNOW ABOUT ZIKA VIRUS TESTING

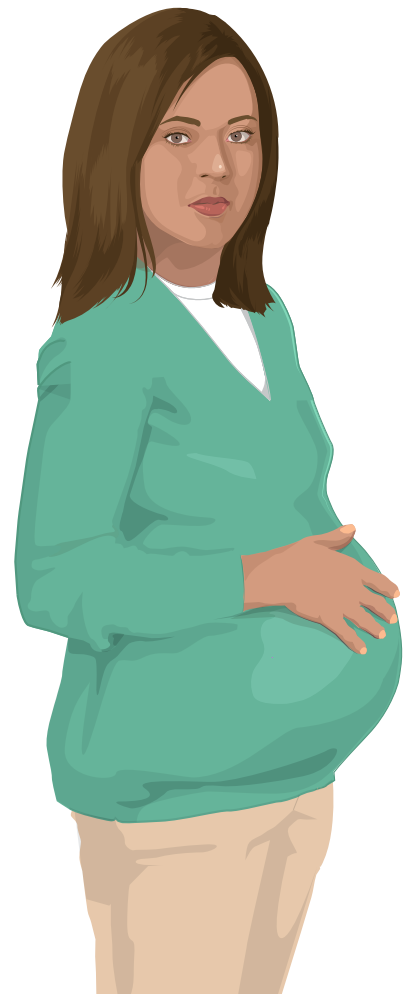


## For Pregnant Women Exposed to Zika Who Have Symptoms

If you or your sex partner live in or recently traveled to an area with risk of Zika, you may have been exposed to Zika. If you have red eyes, fever, joint pain, rash, muscle pain, or headache, there is a chance that these symptoms may be caused by Zika. Testing for Zika is recommended as soon as possible within 12 weeks of when your symptoms began. You may have questions about Zika and how to find out if you've been infected. Keep reading to learn more.

### Zika testing is complex

- **You will need a combination of Zika tests:**  
Finding out if you have Zika can require having up to three different kinds of tests. You may wait different amounts of time for the results of each test to come back.
- **Understanding test results can be challenging:**  
Zika is similar to other viruses. Zika tests can sometimes detect other viruses. Sometimes even after several tests, we may not know which type of virus you were infected with. Each test result is important because it may help your doctor or other healthcare provider decide how best to care for you during your pregnancy.
- **Previous exposure to Zika could affect your current test results:**  
One of the tests looks for Zika antibodies, which the body makes to fight a Zika infection. We know that these antibodies can stay in the body for several months after a person is infected. If you previously lived in or frequently traveled to an area where local mosquitoes spread Zika, you may have been infected before pregnancy. This means you may have already developed antibodies against Zika before you became pregnant. If you were infected with Zika before pregnancy, Zika antibodies may still be in your body and there would be no way to tell if you were infected in the past or if you were infected more recently during your current pregnancy. This means that these results would not tell us if your pregnancy is at risk from Zika infection.



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## Testing Process

Testing is recommended for pregnant women with symptoms who may have recently been exposed to Zika. You may have been exposed if you lived 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. Because you have been exposed to Zika within the last 12 weeks, your doctor may order the following tests to look for evidence of Zika infection.

### Step One

Your doctor or other provider will start by ordering two tests:

1. The first test looks for Zika genetic material, called RNA, which can be in blood and urine.
2. The second test looks for Zika antibodies.

If you test positive for Zika RNA, regardless of the test results for Zika antibodies, it means that you most likely have recently been infected with Zika.

If you test negative for Zika RNA and your antibody test is positive, more testing is needed. The antibody test can sometimes show results that are positive even when a person isn't actually infected. For example, the test might find antibodies to a similar mosquito-borne infection, such as dengue, which is why additional tests are needed.

If you test negative for Zika RNA and your antibody test is negative, it means there is no evidence you were recently infected with Zika.

### Step Two

If you tested negative for Zika RNA and your antibody test is positive, the third test that is needed is a separate test to confirm the type of antibodies. This test takes the longest for results. Your doctor or other healthcare provider will work with your state or local health department or the commercial laboratory to interpret your test results.

At any time during the testing process, if your doctor doesn't have a sample of your blood or urine, you may have to provide another sample.

## Testing Results

### Positive test results

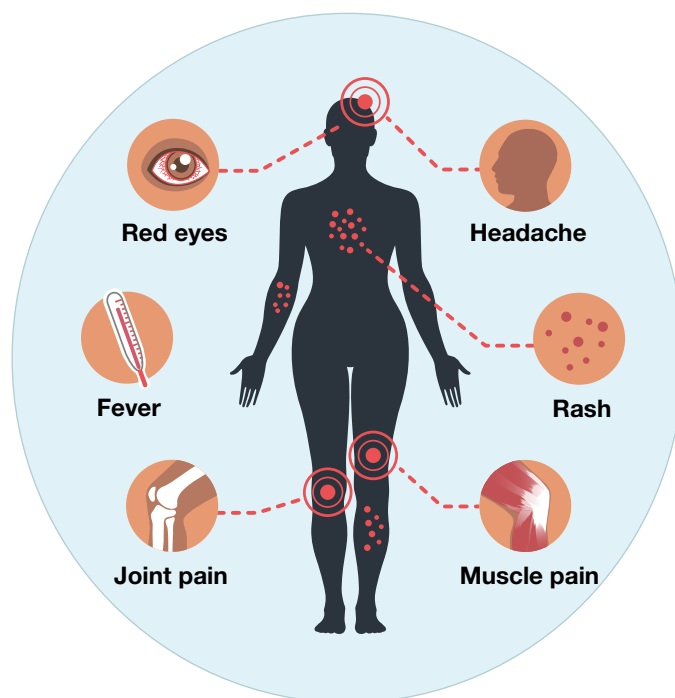
Testing positive for Zika during pregnancy lets your doctor or other healthcare provider know to watch your pregnancy more closely. This means you might have more ultrasounds or other tests to check the growth and development of your fetus and check for Zika infection.

### Not clearly positive or negative test results

Sometimes, the test results aren't clearly positive or negative. If this happens, your doctor or other healthcare provider may choose to follow the CDC recommendations for a positive test result, meaning he or she might do more ultrasounds or other tests to monitor the pregnancy.

### Negative test results

Your doctor or other healthcare provider may check the growth and development of your fetus during an ultrasound and check for any signs of Zika virus infection. If there are no signs of Zika infection, you will get routine prenatal care, which is what CDC recommends. If your doctor or other healthcare provider sees signs of Zika infection during an ultrasound, you may need additional tests.





# For Pregnant Women: A Positive Zika Virus Test

## What does it mean for me?



**CDC understands that pregnant women may be worried and have questions about Zika virus. A positive test result might cause concerns, but it doesn't mean your baby will have birth defects. Learn more about what you might expect for your pregnancy if you get a positive test result for Zika.**



### I tested positive. What happens next?

If you get a positive test result for Zika during pregnancy, it signals to your doctor or other healthcare provider to watch your pregnancy more carefully. CDC recommends steps your doctor can take to help care for you during your pregnancy. Your doctor or other healthcare provider might do more ultrasounds or other tests to check the growth and development of your fetus and to look for signs of Zika virus infection during your pregnancy.

### What are ultrasounds?

Ultrasounds are a safe and routine way for doctors or other healthcare providers to see the fetus during pregnancy. An ultrasound is usually done between 18-20 weeks of pregnancy as part of normal care. Extra ultrasounds are sometimes done later in pregnancy when doctors need more information about the fetus.

### Does Zika virus cause microcephaly or other problems for the fetus?

Recently, researchers concluded that Zika virus infection during pregnancy can cause microcephaly and other severe brain defects. They are working quickly to study the full range of other potential health problems that Zika virus infection during pregnancy may cause.

### Does a positive Zika virus test mean my baby will have birth defects?

Studies reported that some, but not all, babies born to women with positive Zika test results during pregnancy were born with microcephaly and other problems. At this time, we don't know how often a baby will have microcephaly or other problems if a woman is infected with Zika while she is pregnant. Your doctor or other healthcare provider will watch your pregnancy more closely if you have a positive Zika virus test.

### How will my doctor or other healthcare provider know if my baby has microcephaly?

Your doctor or other healthcare provider will use ultrasound screening to look for microcephaly and other birth defects during your pregnancy. Ultrasounds can show some, but not all, problems with your baby's development during pregnancy. For example, microcephaly can sometimes be seen on the 18-20 week ultrasound but is more commonly detected later in the second trimester or early in the third trimester. To look for problems after birth, your baby's doctor will perform a careful physical exam of your baby, recommend routine hearing screening, and follow up with more exams and tests as needed.