

# Zika Virus Testing Guidance: Asymptomatic Pregnant Women with Possible Zika Virus Exposure



Accessible Version: [https://www.cdc.gov/mmwr/volumes/66/wr/mm6629e1.htm?s\\_cid=mm6629e1\\_w](https://www.cdc.gov/mmwr/volumes/66/wr/mm6629e1.htm?s_cid=mm6629e1_w)

## Testing Guidance 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, test for Zika only (not dengue) following the 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  $\geq 10$  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  $\geq 2$  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.



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 Centers for Disease Control and Prevention

**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/clinicallab/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.