

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^{1,2} • Possible sexual exposure *before and during* the current pregnancy
A diagnosis of laboratory-confirmed Zika virus infection before current pregnancy³ • 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 disease⁴

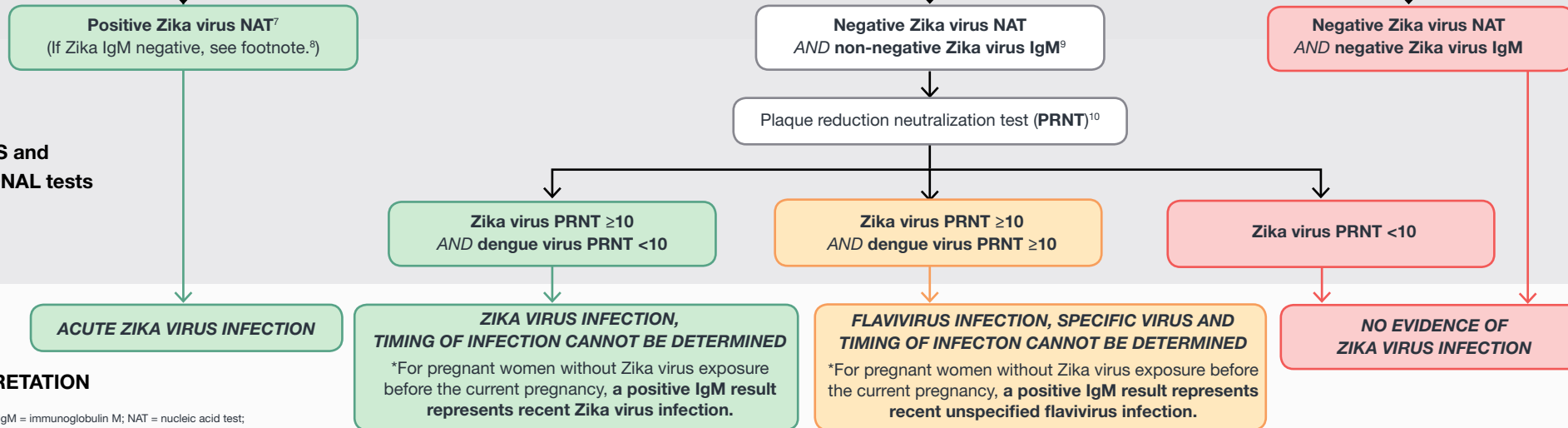
WHEN to test?

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)^{5,6}

RESULTS and ADDITIONAL tests



INTERPRETATION

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

- 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.
- 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.
- 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).
- 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.
- 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.
- 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>
- 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.**
- 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.**

- 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.
- 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 results¹ of nucleic acid and antibody^{2,3} testing for suspected Zika virus infection — United States (including US territories), 2017

Zika NAT (serum) ⁴	Zika NAT (urine) ⁴	Zika virus IgM ⁵	Zika virus PRNT	Dengue virus PRNT	Interpretation and recommendations
Positive	Positive	Any result	Not indicated	Not indicated	Acute Zika virus infection
Negative	Positive	Positive	Not indicated	Not indicated	Acute Zika virus infection
Negative	Positive	Negative	Not indicated	Not indicated	Suggests acute Zika virus infection <i>Repeat testing on original urine specimen</i> <ul style="list-style-type: none"> If repeat NAT result is positive, interpret as evidence of acute Zika virus infection 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"> If repeat IgM antibody result is positive,⁶ interpret as evidence of acute Zika virus infection If repeat IgM antibody result is not positive, interpret as no evidence of Zika virus infection
Positive	Negative or not performed	Positive	Not indicated	Not indicated	Acute Zika virus infection
Positive	Negative or not performed	Negative	Not indicated	Not indicated	Suggests acute Zika virus infection <i>Repeat testing on original serum specimen</i> <ul style="list-style-type: none"> If repeat NAT result is positive, interpret as evidence of acute Zika virus infection 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"> If repeat IgM antibody result is positive,⁶ interpret as evidence of acute Zika virus infection If repeat IgM antibody result is not positive, interpret as no evidence of Zika virus infection
Negative	Negative or not performed	Any non-negative result ⁷	≥10	<10	Zika virus infection; timing of infection cannot be determined. <ul style="list-style-type: none"> For persons without prior Zika virus exposure, a positive IgM result represents recent Zika virus infection
Negative	Negative or not performed	Any non-negative result ⁷	≥10	≥10	Flavivirus infection; specific virus cannot be identified; timing of infection cannot be determined <ul style="list-style-type: none"> For persons without prior Zika virus exposure, a positive IgM result represents recent unspecified flavivirus infection
Negative	Negative or not performed	Any non-negative result ⁷	<10	Any result	No evidence of Zika virus infection
For areas where PRNT is not recommended³					
Negative	Negative or not performed	Positive for Zika virus AND negative for dengue virus	Not performed because PRNT is not recommended		Presumptive Zika virus infection; timing of infection cannot be determined⁸
Negative	Negative or not performed	Positive for Zika virus AND positive for dengue virus	Not performed because PRNT is not recommended		Presumptive flavivirus infection; specific virus cannot be identified; timing of infection cannot be determined⁸
Negative	Negative or not performed	Equivocal (either or both assays)	Not performed because PRNT is not recommended		Insufficient information for interpretation <ul style="list-style-type: none"> Consider repeat testing
Negative	Negative or not performed	Negative on both assays	Not performed because PRNT is not recommended		No laboratory evidence of Zika virus infection

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/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.