Arizona
Interim Zika Testing Algorithms for Healthcare Providers

*Testing guidance is subject to change*

Please note that the Sept 2019 update from the Oct 2017 guidance concerns only the definition of areas with Zika due to changes to the CDC Zika map.

Sept 6, 2019
Zika Testing & Counseling Considerations

• Consult with local public health to coordinate Zika virus testing.

• All pregnant women in the United States should be assessed for possible Zika virus exposure and symptoms during each prenatal visit. Pregnant women should be counseled on Zika virus prevention.

• A summary document for providers with Zika prevention messaging for patients is available here.

• No treatment is available for Zika virus, and the decision to test should be made carefully after conversations between the patient and healthcare provider.

• Zika testing can lead to inconclusive results due to IgM antibody cross-reactivity with infections from other flaviviruses including dengue and West Nile, as well as yellow fever and Japanese encephalitis virus vaccination. A positive or inconclusive serologic test result might not indicate true Zika virus infection.

• IgM antibodies may persist after infection. A positive IgM test may not necessarily indicate recent infection.

• Patients should be informed that presumptive positive IgM results need to be confirmed. Do not rely on presumptive positive Zika IgM test results as the sole basis of significant patient management decisions.

• For pregnant women with exposure to Zika virus, there are potential risks for microcephaly, birth defects, and other complications. Consultation with a perinatologist is recommended.

• Although some countries have ongoing Zika virus transmission, the risk level for disease transmission is not the same in all areas. Decisions to test based on travel history can be made on an individual basis at the discretion of the local health department and healthcare provider.
Case Reporting and Specimen Submission

• All suspected cases should be reported immediately to the local health department:  
  http://www.azhealth.gov/localhealth  
  – Local health departments can help coordinate testing.

• If testing is approved, specimens can be sent to the Arizona State Public Health Laboratory accompanied by the laboratory submission form:  http://azdhs.gov/documents/preparedness/state-laboratory/public-health-microbiology/clinical-microbiology-submission-form.pdf  
  – On the submission form, indicate Zika virus (IgM EIA/PCR) under the Virology/Serology section.

• **Serum and urine should be collected for testing.** Serum is a required specimen for testing; whole blood (EDTA), CSF, urine, and amniotic fluid may also be tested alongside a patient-matched serum specimen at the Arizona State Public Health Laboratory.

• Simultaneous testing for dengue and chikungunya is recommended.

• Results for Zika virus testing might not be available until 3-4 weeks after the specimen is collected. Zika test interpretation guidance is available from the CDC:  
  – Fact Sheets for Zika test interpretations  
  – Interim Guidance for Interpretation of Zika Virus Results
Zika Virus Terminology

• **IgM testing**— a diagnostic assay that measures the level of virus-specific antibodies in the blood or other body fluids. *Zika IgM cross-reactivity with similar viruses, such as dengue can occur. IgM antibodies can also persist after infection, so an IgM response may not necessarily indicate recent infection.*

• **Polymerase Chain Reaction (PCR)**— a diagnostic assay that detects genetic material (RNA or DNA) specific to a certain virus.

• **Plaque Reduction Neutralization Antibodies (PRNT)**— a virus-specific serological diagnostic method for measuring antibodies that neutralize and prevent viruses from infecting cultured cells.

• **Immunohistochemical staining**— a diagnostic method to visualize antigen-antibody binding reactions by using fluorescence dyes and microscopy techniques.

• **Last menstrual period (LMP)**— the first day of a woman’s last menstrual period.

• **Confirmed Zika**— all indicated diagnostic testing has been completed and the individual has evidence of a recent Zika virus infection.

• **Not Zika**— all indicated diagnostic testing has been completed and the individual does not have evidence of a recent Zika virus infection.

• **SToRCH**— syphilis, toxoplasmosis, rubella, cytomegalovirus, herpes testing.

• **U.S. Zika Pregnancy Registry**— a national registry to monitor the frequency and types of pregnancy and infant outcomes following Zika virus infection during pregnancy with the aim of informing prevention efforts and services for Zika virus infections in this population.
Zika Testing for Men and Non-Pregnant Women

**Does the person have a history of travel to an area with risk of Zika virus transmission** OR **history of unprotected sexual contact** with a partner who traveled to or lived in an area with ongoing Zika virus transmission?

- **YES**
  - Does the person have **two or more** of the following symptoms**:
    - fever
    - maculopapular rash
    - arthralgia
    - conjunctivitis
    - with onset in the past 12 weeks?

  - **YES**
    - Contact public health to coordinate Zika virus testing.

  - **NO**
    - Does the person have **maculopapular rash plus two** of the following symptoms:
      - fever
      - arthralgia
      - conjunctivitis
      - with onset in the past 12 weeks?

      - **YES**
        - Contact public health to coordinate Zika virus testing.

      - **NO**
        - Do not test

- **NO**
  - Do not test

**Does the person have two or more of the following symptoms**:

- **<2 weeks since symptom onset**
  - Collect serum and urine
  - Test by PCR
    - PCR positive, **CONFIRMED ZIKA**
    - PCR negative, then test by IgM
    - IgM positive, then test by PRNT
    - IgM negative, **NOT ZIKA**

- **2-12 weeks since symptom onset**
  - Collect serum
  - Test by IgM
    - IgM negative, **NOT ZIKA**
    - IgM positive, then test by PRNT

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* Areas with risk of Zika transmission are countries or territories with current Zika outbreak or that have ever reported Zika cases (red and purple areas, respectively, in the [CDC Zika map](https://www.cdc.gov/). **Simultaneous testing for dengue and chikungunya is recommended.

*Note: Healthcare providers should consult with local public health for patients that may not fit above criteria.*
Zika Testing for Pregnant Women

Does the woman have a **history of travel** to an area with risk of Zika virus transmission OR **history of unprotected sexual contact** with a partner who traveled to or lived in an area with ongoing Zika virus transmission?

- **NO**
  - Do not test

- **YES**
  - Has the asymptomatic pregnant woman had ongoing exposure† to Zika virus during her pregnancy?
    - **NO**
      - Do not test
    - **YES**
      - Contact public health to coordinate Zika virus testing.

- **NO**
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- **YES**
  - Does the woman have two or more of the following symptoms**: fever, maculopapular rash, arthralgia, or conjunctivitis?
    - **NO**
      - Do not test
    - **YES**
      - Contact public health to coordinate Zika virus testing.

- **NO**
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- **YES**
  - Does the woman have maculopapular rash plus two of the following symptoms: fever, arthralgia, or conjunctivitis with onset in the past 12 weeks?
    - **NO**
      - Do not test
    - **YES**
      - 

If exposure is ongoing:
- TEST ONCE PER TRIMESTER
- **IF exposure has ended:** SINGLE TEST

- Collect serum and urine
  - Test by PCR & IgM
    - **PCR positive, CONFIRMED ZIKA**
    - IgM positive, then test by PRNT

- <12 weeks since symptom onset
  - Consider serial fetal ultrasounds every 3-4 weeks to assess fetal anatomy and growth.

- >12 weeks since symptom onset
  - See infant follow-up and testing algorithms.

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†Ongoing exposure is defined living in or sustained daily/weekly travel to an area with risk of Zika virus transmission. In addition, daily/weekly unprotected sexual contact with a partner who meets ongoing exposure criteria should be considered.

Note: Healthcare providers should **consult with local public health** for patients that may not fit above criteria.
**Infant Follow-up and Infant/Placental Testing**

Does the infant have abnormalities consistent with **congenital Zika syndrome** (including but not limited to: microcephaly, structural brain abnormalities, contracture of one or more joints, functional neurological abnormalities)?

- **NO**
  - Clinically evaluate for other possible etiologies (e.g. SToRCH, genetic, drug exposure).
  - Consider Zika virus testing.

- **YES**
  - Contact public health to coordinate Zika virus testing.

  - **NO**
    - Was the mother positive for Zika or other unspecified flaviviruses?
      - **NO/NOT TESTED**
        - Routine care**
      - **YES**
        - Collect infant serum and urine within 2 days of birth
          - Test by PCR and IgM
          - Fix and store placenta. May be tested based on infant/maternal test results.

  - **YES**
    - AT BIRTH perform standard evaluation; BY ONE MONTH OF AGE perform a head ultrasound, newborn hearing assessment using auditory brainstem response (ABR) methodology, and ophthalmologic examination. **CDC evaluation guidelines.**

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*Note: Healthcare providers should consult with local public health for patients that may not fit above criteria.*