

## Chikungunya, Dengue and Zika Virus Testing

**All testing for Chikungunya, Dengue and/or Zika virus infections must be approved by the Virginia Department of Health (VDH) before testing can be performed at DCLS or CDC. Please contact your local Health Department for consultation.**

\*Serum specimens submitted for Zika virus testing should be collected in a SERUM SEPARATOR (tiger top or gold top) TUBE and should be centrifuged prior to shipment to DCLS. Red-top blood tubes should not be used. Specimens submitted in red-top tubes or specimens not centrifuged will be individually evaluated by DCLS in consultation with VDH in order to determine if testing will be performed.

### **I. CURRENT DCLS LABORATORY TESTING** (See Pages 2-3 for current testing algorithm and results interpretation)

- **RT-PCR:** Zika, Chikungunya and Dengue viruses (Serum and urine ONLY)
- **Zika, Dengue and Chikungunya IgM ELISA:** Zika, Dengue and Chikungunya viruses (Serum ONLY)
  - Dengue and Chikungunya IgM testing performed as a reflex test for symptomatic patients.
  - Dengue and Chikungunya IgM testing can be performed individually upon request by VDH.

### **II. SPECIMENS**

- **Serum:** 2mL sera
- **Urine:** 2-5ml and must be paired with a matched serum specimen
- **Infant serum and urine:** send volume collected if preferred amount cannot be obtained.
- **Placental/Fetal tissue:** CDC performs placental or fetal tissue testing pursuant to their most current guidelines. Prior approval from the CDC is required BEFORE submitting specimens. Contact VDH for assistance with the approval process. See CDC link for most current fetal tissue testing criteria: <https://www.cdc.gov/zika/laboratories/test-specimens-tissues.html>.
  - **Fixed tissues (formalin-fixed or paraffin embedded) should be stored and shipped at room temperature.**
  - Fix tissues in formalin for no more than 72 hours, and then transfer to 70% ethanol for long-term storage and transport.
  - Wet tissues fixed in formalin for more than 4 weeks will not be accepted for testing.

### **III. SPECIMEN TRANSPORT** (NOTE: Testing may be delayed or rejected if information is incomplete.)

- **Submission Form:** Include a completed **VDH Zika Virus Testing Approval Form** and **DCLS Micro/Viro Test Request Form** for each patient to be tested. The forms **MUST** contain the following information for testing at DCLS and CDC:
  - 1) symptoms & onset date
  - 2) specimen collection date
  - 3) last day of sexual exposure
  - 4) last day of travel & location
  - 5) exposure type: indicate “**recent**” or “**ongoing**”
  - 6) complete submitter information
  - 7) patient clinical summary
  - 8) pregnancy status
- **Shipping Instructions:** Store/ship specimens refrigerated only using the DCLS courier, USPS or commercial carrier. (1) Seal lids tightly and wrap specimen in absorbent material; (2) pack in a sealable, leak-proof plastic bag; (3) place the bag in a rigid secondary shipping container (puncture/leak-proof) and (4) place the secondary container and cold packs in a plastic or Styrofoam cooler.

*Ship to: Division of Consolidated Laboratory Services  
Attn: DCLS Zika Response  
600 North 5<sup>th</sup> Street  
Richmond, Virginia 23219*

**\*NOTE:** Zika collection/shipping kits can be requested by contacting the DCLS Kit Prep Dept. at 804-648-4480, x104.

### **IV. RESULTS REPORTING**

- **DCLS Results:** Reports are sent to the specimen submitter listed on the DCLS Test Request form, and to VDH’s Division of Surveillance and Investigation (DSI). A final report will be provided only after all required testing is complete (See Page 3).
- **CDC Results:** All CDC results are verbally reported via phone and sent to the submitter listed on the DCLS Test Request form upon receipt, and copies of reports are provided to VDH’s Division of Surveillance and Investigation (DSI).

### **V. CONTACT INFORMATION:** For questions regarding testing, specimen collection or shipment:

- DCLS 24/7 Emergency Mobile Number (804-335-4617)
- Dr. LaToya Griffin-Thomas (804-648-4480, ext. 281)
- Sean Kelly (804-648-4480, ext. 227)
- Dr. Heather Masri (804-648-4480, ext. 269)

Updated information on Zika virus testing can be found on the DCLS website, under the “Hot Topics” link:  
<http://www.dgs.state.va.us/DivisionofConsolidatedLaboratoryServices/HotTopics/tabid/1531/Default.aspx>

Commonwealth of Virginia  
 Department of General Services  
 Division of Consolidated Laboratory Services  
 Richmond, Virginia

**Chikungunya, Dengue and Zika Virus Testing**

Patient/Pregnancy Status	Symptomology	Exposure Type	PCR Test (serum and urine)	Zika IgM Test (serum)	Concurrent PCR & IgM Testing	Comments
<b>Pregnant Women</b>	Symptomatic	Recent (8 weeks before conception; 6 weeks before last menstrual period <b>OR</b> during pregnancy)	YES	YES	YES  (through 12 weeks after onset)	IgM testing <u>only</u> may be considered after 12 weeks  Reflex Dengue and Chikungunya IgM testing, if Zika negative
	Asymptomatic	Ongoing (lives in <b>OR</b> travels weekly/daily to a Zika Affected Area)	YES – 3 times during pregnancy  (2 <sup>nd</sup> and 3 <sup>rd</sup> tests <u>not</u> required if 1 <sup>st</sup> test is positive)	No longer recommended	n/a	If previously laboratory confirmed positive, Zika testing is <u>not</u> recommended
	Asymptomatic	Recent, <b>BUT NOT</b> ongoing	Not routinely recommended	Not routinely recommended	n/a	Symptomatic algorithm used if testing approval is granted
	n/a	Recent <b>AND</b> Prenatal Findings consistent with Congenital Zika Virus Syndrome	YES	YES	YES	n/a
<b>Infants</b>	Symptomatic  Suspected <u>or</u> confirmed microcephaly/neurologic abnormality <b>AND</b> ...	Mom was potentially exposed to Zika virus	YES	YES	YES	Specimens should be collected within 3 (< 3) days of birth
	Asymptomatic	Born to moms with laboratory evidence of Zika virus infection during pregnancy				
<b>Non-Pregnant Individuals</b>	n/a	Potential transfusion, transplant or laboratory exposure	YES	YES	YES	n/a
	Symptomatic  ≥2 Zika-compatible symptoms within 2 weeks of exposure <b>AND</b> ...	Local (Virginia) mosquito exposure suspected	YES – if date of collection is <b>within 14 (&lt;14) days</b> of symptom onset	YES – if date of collection is <b>14 days or more (≥14)</b> from symptom onset	NO	Reflex Dengue and Chikungunya IgM testing, if Zika negative
<b>Other Individuals</b>	Guillain-Barre Syndrome (GBS) <u>or</u> other neurological symptoms <b>AND</b> ...	Potential exposure to Zika virus	YES – if date of collection is <b>within 14 (&lt;14) days</b> of onset or diagnosis	YES - if date of collection is <b>14 days or more (≥14)</b> from symptom onset or diagnosis	NO	n/a

### Chikungunya, Dengue and Zika Virus Testing

First Round of Testing – Original Specimen*				
PCR Serum Result	PCR Urine Result	Zika IgM Result	Interpretation	Additional Testing
<i>Positive</i>	<i>Positive</i>	<i>Positive**/Negative</i>	“Acute Zika virus infection”	n/a
Negative	<i>Positive</i>	<i>Positive**</i>	“Acute Zika virus infection”	n/a
Negative	<i>Positive</i>	Negative	Suggests acute Zika virus infection, <b>additional testing required.</b>	Repeat PCR on <b>original</b> urine
<i>Positive</i>	Negative or Not tested	<i>Positive**</i>	“Acute Zika virus infection”	n/a
<i>Positive</i>	Negative or Not tested	Negative	Suggests acute Zika virus infection, <b>additional testing required.</b>	Repeat PCR on <b>original</b> serum
Repeat PCR Testing – Original Specimen*				
PCR Serum Result	PCR Urine Result	Zika IgM Result	Interpretation	Additional Testing
n/a	<i>Positive</i>	n/a	“Evidence of acute Zika virus infection”	n/a
n/a	Negative	n/a	Collect convalescent serum specimen for Zika IgM testing.***	Convalescent Zika IgM testing
<i>Positive</i>	n/a	n/a	“Evidence of acute Zika virus infection”	n/a
Negative	n/a	n/a	Collect convalescent serum specimen for Zika IgM testing.	Convalescent Zika IgM testing
Repeat Zika IgM Testing – Convalescent Specimen				
PCR Serum Result	PCR Urine Result	Zika IgM Result	Interpretation	Additional Testing
n/a	n/a	<i>Positive**</i>	“Evidence of acute Zika virus infection”	n/a
n/a	n/a	Negative	“No evidence of Zika virus infection”	n/a

\*A final DCLS laboratory report **will not** be provided until all **concurrent** testing is complete.

\*\* PRNT testing will be performed for all non-negative IgM results at a Zika PRNT Reference Center Laboratory and/or the CDC.

\*\*\* Convalescent specimen = specimen collected more than 14 days from symptom onset or collection of original specimen.