Congenital Zika Virus

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Pediatric Infectious Diseases
Pediatric Specialists of Virginia
November 4, 2017
Objectives

1. Understand Congenital Zika Virus and why evaluating for congenital Zika virus is important

2. Understand the newest CDC and VDH guidance on evaluating pregnant women and babies

3. Be aware of your responsibility to communicate with the local health department about possible Zika virus

4. Be aware of your responsibility to complete the Zika Infant Registry forms

5. Be aware of late manifestations of Congenital Zika Virus
Background and Epidemiology
Background and Epidemiology

The spread of the Zika virus

- 1947: Uganda
- 2007: Yap Island (Micronesia)
- 2013: Tahiti (Fr. Polynesia)
- 2014: New Caledonia (France), Cook Islands
- 2015: Brazil, Easter Island (Chile)

LARS KARKLIS/THE WASHINGTON POST
Congenital Zika Virus Infection
Congenital Zika Virus

**SPECIAL REPORT**

Zika Virus and Birth Defects — Reviewing the Evidence for Causality
Sonja A. Rasmussen, M.D., Denise J. Jamieson, M.D., M.P.H., Margaret A. Honein, Ph.D., M.P.H., and Lyle R. Petersen, M.D., M.P.H.

**BRIEF REPORT**

Zika Virus Infection with Prolonged Maternal Viremia and Fetal Brain Abnormalities
Driggers RW, et al., NEJM March 2016
Fetal Brain Disruption Sequence

- First described in 1984 but noted in earlier literature
- Brain destruction resulting in collapse of the fetal skull, microcephaly, scalp rugae and neurologic impairment
- Images below from 1990 series; phenotype appears to be present in some affected babies in Brazil (2015—present)

Moore et al., J Peds, 1990
Adverse Outcomes in Congenitally Infected Zika Babies

- Eye abnormalities
- Hearing impairment
- Seizures
- Swallowing impairment
- Hypertonicity and posturing
- Contractures including club foot and arthrogryposis
- Severe irritability
- Developmental Delay
- Growth abnormalities including IUGR and disproportionate growth
Congenital Zika Syndrome

1. Severe microcephaly with partially collapsed skull
2. Thin cerebral cortices with subcortical calcifications
3. Macular scarring and focal pigmentary retinal mottling
4. Congenital contractures
5. Marked early hypertonia and symptoms of extrapyramidal involvement
Baby A

Term infant born to mother who spent first 4 months of pregnancy in Latin America

• Family did not admit travel until microcephaly diagnosed
• Mother denied Zika symptoms

Had prenatal US near term that showed all growth parameters were “low”
At 2 weeks, 2mo, 4 months

Baby A had overt hypertonia and microcephaly by 2 weeks life

Worsening spasticity over time, fisted hands
No hearing defects, ?astigmatism in future
Lost to follow up
Which Infants to Test?

1. Test Every Baby Born to Mother with Non-Negative Tests

2. Test Every Baby with concerns for Congenital Zika Virus Syndrome at birth:
   - Microcephaly (<3%ile) for age
   - Intracranial Calcifications at birth
   - Structural Brain or Eye Abnormalities
   - Other congenital CNS related abnormalities
   REGARDLESS of Mom’s Test Results

Test within 2 days of life
Recommended Tests

• Congenital Zika features or born to mom with non-negative tests
  – Zika PCR (blood, urine) and IgM (blood)
  – CSF PCR and IgM if LP being performed

• All labs to be sent to commercial lab (eg., Quest or Labcorp) unless unsure
<table>
<thead>
<tr>
<th>Zika Blood PCR:</th>
<th>negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zika Urine PCR:</td>
<td>negative</td>
</tr>
<tr>
<td>Zika Serum IgM:</td>
<td>equivocal</td>
</tr>
<tr>
<td>Reflex to PRNT:</td>
<td>Zika PRNT &gt; 1280</td>
</tr>
<tr>
<td></td>
<td>Dengue PRNT &gt; 10</td>
</tr>
</tbody>
</table>

How to Interpret Results
Testing of Pregnant Women
Testing Pregnant Women

• Symptomatic disease during pregnancy
  – Fever, rash, conjunctivitis, arthralgias, myalgias

• **Ongoing** possible Zika exposure
  – Residence or daily/weekly travel to area with Zika transmission
  – Sexual contact
Evaluation of Pregnant Women

Ask Pregnant Women about:

- Whom to test?
- When to test?
- Which tests?

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

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

Pregnant women reporting possible exposure during current pregnancy and symptoms of Zika virus disease

As soon as possible, through 12 weeks after symptom onset

- Zika virus NAT (serum and urine)
- AND Zika virus IgM serology (serum)
Which tests?

Results and Additional Tests

Interpret Results

- **Zika virus NAT (serum and urine)**
  - **AND** Zika virus IgM serology (serum)

  - **Positive Zika virus NAT**
    - If Zika virus IgM result negative, further testing may be warranted

  - **Negative Zika virus NAT AND nonnegative Zika virus IgM**

    - Plaque reduction neutralization test (PRNT)

      - **Zika virus PRNT ≥10** AND dengue virus PRNT <10
        - **Acute Zika virus infection**
        - **Zika virus infection; timing of infection cannot be determined**
        - For pregnant women without Zika virus exposure before the current pregnancy, positive IgM represents recent Zika virus infection

      - **Zika virus PRNT ≥10** AND dengue virus PRNT ≥10
        - **Flavivirus infection; specific virus and timing of infection cannot be determined**
        - For pregnant women without Zika virus exposure before the current pregnancy, positive IgM represents recent unspecified flavivirus infection

      - **Zika virus PRNT <10**
        - **No evidence of Zika virus infection**

Communication between OB and Peds at Delivery

“BTW, Mom tested positive, equivocal, non-negative for Zika!”
# Evaluations at Birth

## Congenital Zika Syndrome
- Standard Evaluation*
- Zika labs (PCR, IgM)
- Consider CSF labs
- HUS by 1 mo
- Ophthal eval by 1 mo
- ABR by 1 mo
- Eval for other causes of congenital anomalies

## Normal PE & Maternal Lab Evidence
- Standard Evaluation*
- Zika labs (PCR, IgM)
- HUS by 1 mo
- Ophthal eval by 1 mo
- ABR by 1 mo

*Standard evaluation: comprehensive PE, vision & development screen
FIGURE. Recommendations for the evaluation of infants with possible congenital Zika virus infection based on infant clinical findings,§,¶ and infant testing results**,†† — United States, October 2017

Ask about possible maternal Zika virus exposure

Possible Zika virus exposure

Does infant have findings consistent with CZS?

Yes

Initial evaluation:
- Standard evaluation*
- Zika virus NAT and IgM testing
- Consider Zika virus NAT and IgM testing on CSF
- Head ultrasound by age 1 month
- Comprehensive ophthalmologic exam by age 1 month
- Automated ABR by age 1 month
- Evaluate for other causes of congenital anomalies

Refer to developmental specialist and early intervention services
Provide family support services
Consider additional consultations with:
- Infectious disease specialist
- Clinical geneticist
- Neurologist
- Other clinical specialists based on clinical findings of infant

No

Is there laboratory evidence of possible maternal Zika virus infection during pregnancy?

Labotatory evidence of possible maternal Zika virus infection during pregnancy

Initial evaluation:
- Standard evaluation*
- Zika virus NAT and IgM testing
- Head ultrasound by age 1 month
- Comprehensive ophthalmologic exam by age 1 month
- Automated ABR by age 1 month

Is initial evaluation normal?

Is there laboratory evidence of congenital Zika virus infection?

Laboratory evidence of congenital Zika virus infection

- Congenital Zika virus infection is unlikely
- Infant should continue to receive routine care, and health care providers should remain alert for any new findings of congenital Zika virus infection

No laboratory evidence of congenital Zika virus infection

No laboratory evidence of possible maternal Zika virus infection during pregnancy

Testing and clinical evaluation for congenital Zika virus infection beyond a standard evaluation* is not routinely recommended. If findings suggestive of CZS are identified at any time, refer to appropriate specialists and evaluate for congenital Zika virus infection.
Case definition of microcephaly

- 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.
Measuring head circumference

- 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.

Specialist Evaluation of Congenital Zika

- **Peds Infectious Disease Specialist** - diagnostic evaluation of other congenital infections

- **Peds Neurologist** - determination of appropriate neuroimaging and evaluation

- **Peds Ophthalmologist** - comprehensive eye exam and evaluation for possible cortical visual impairment prior to discharge from hospital or within 1 month of birth

- **Clinical Geneticist** - evaluate for other causes of microcephaly or other anomalies if present

May need: Pediatric Endocrine, Ortho, PM&R, PT, OT, Speech, Pulmonary, ENT, GI, nutritionist
Congenital Zika Eye Disease

- Retinal Pigment Epithelium
- Optic Nerve Hypoplasia with Chorioretinal Atrophy

Follow Up Care of Congenital Zika Syndrome

• Multi-D team
• Medical home
## U.S. Zika Pregnancy Registry
### Infant Follow-Up Form

*These data are considered confidential and will be stored in a secure database at the Centers for Disease Control and Prevention.*

Please return completed form via SAMS or secure FTP—request access from ZIKApregnancy@cdc.gov. The form can also be sent by encrypted email to this address or by secure fax to 404-718-1013 or 404-718-2200.

<table>
<thead>
<tr>
<th>Infant follow up:</th>
<th>☐ 2 months</th>
<th>☐ 6 months</th>
<th>☐ 12 months</th>
<th>☐ ____ months</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IFU.1.</strong> State/Territory reporting</td>
<td>Select State</td>
<td><strong>IFU.2.</strong> Date of infant examination</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IFU.3.</strong> Infant’s State/Territory ID</td>
<td></td>
<td><strong>IFU.4.</strong> Mother’s State/Territory ID</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IFU.5.</strong> DOB:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IFU.6.</strong> Sex:</td>
<td>☐ Male</td>
<td>☐ Female</td>
<td>☐ Ambiguous/undetermined</td>
<td></td>
</tr>
<tr>
<td><strong>IFU.7.</strong> Infant Death:</td>
<td>☐ No</td>
<td>☐ Yes</td>
<td><strong>IFU.8.</strong> If yes, cause of death</td>
<td></td>
</tr>
<tr>
<td><strong>IFU.9.</strong> If yes, Date</td>
<td></td>
<td>or</td>
<td>Age at death</td>
<td>☐ Unknown</td>
</tr>
<tr>
<td><strong>IFU.10.</strong> Weight:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>_______ grams or</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lbs ______ oz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IFU.11.</strong> Length:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>_______ cm or</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>_______ in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IFU.12.</strong> Head circumference:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>_______ cm or</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>_______ in</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IFU.13.</strong> Infant findings for corrected age at examination: (For Infants born preterm, please account for corrected age: chronological age minus weeks born before 40 weeks’ gestation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Check all that apply*
Estimated Rate of Birth Defects

- At least 10% of lab confirmed pregnancies resulted in birth defects in US
- Higher in first trimester but no trimester spared
- Late manifestations in babies with normal evaluations, HC at birth
Figure 2. Pregnancy and Infant Outcomes According to the Week of Gestation at the Time of ZIKV Infection.

Adverse outcomes included 9 cases of fetal death in 125 pregnancies (7.2%) and 49 abnormal clinical findings, imaging findings, or both during the newborn period in 117 infants (42%) born from 116 pregnancies. Adverse outcomes occurred in women who were infected during the period from 6 to 39 weeks of gestation. Abnormalities are detailed in Table S2 in the Supplementary Appendix.
Late Manifestations
Late Microcephaly with Congenital Zika

- Reports of babies born to mothers with positive or equivocal testing for Zika who have normal exams at birth
- Months later... Baby B
  - Microcephaly
  - Developmental delays
  - Hypertonicity
Twin Differences
Zika Twins as Insight into the Virus

New York Times: May 1, 2017

Twin studies are showing differential effects in babies born to Zika infected mothers
Updated CDC Guidance Places Burden To Detect Problems on Pediatricians

• Zika not tested in asymptomatic pregnant women
  – No differential viral load
  – CDC Recs Based on Epidemiology and Test Limitations

• Male to Pregnant Female Transmission During Pregnancy Is Important

• Important to Maintain High Index of Suspicion
My Recommendations

• Ask about Travel & Sexual Exposure
  – Keep abreast of new regions
• Measure HC several times at birth
• Don’t dismiss drop in HC
• Monitor development very closely at every visit
• If concerns, feel free to call
• Involve Early Intervention Services early
Zika Vaccine and Treatment

• In Phase 1&2 clinical trials now
  – Inactivated vaccine
  – DNA vaccine
  – mRNA vaccine

• No therapeutics

• No treatment to reverse brain damage in these babies
World Map of Areas with Risk of Zika

International areas and US territories
- Area with risk of Zika infection (below 6,500 feet)*
- Area with low likelihood of Zika infection (above 6,500 feet)*
- Areas with no known risk of Zika infection

United States areas
- State Reporting Zika
- No Known Zika

*Mosquitoes that can spread Zika usually live in places below 6,500 feet. The chances of getting Zika from mosquitoes living above that height are very low.
Summary

• Zika Virus Causes Birth Defects including Late Effects and Possible Twin Differences
• Testing Pregnant Women at Risk is Important
• Evaluating and Testing Babies is Imperative
• Long-term Monitoring of Babies and Maximizing Neurodevelopmental Outcomes
• Prevention, Protection, Vaccination on the horizon?
Questions?

Welcome to Zika Care Connect (ZCC), a web-based link to information, resources, and services for pregnant women with Zika and parents and families of infants with Zika.

Have you or your partner been diagnosed with Zika virus disease (Zika)? Did you receive a positive Zika test while pregnant? Do you have a baby with Zika? Do you care for patients with possible or diagnosed Zika? If so, we are here to help.
VDH Testing Algorithm

Patients Eligible for Public Health Testing if Private Lab Testing is Not Feasible*

I. Pregnant women who:
   - Had travel* or possible sexual† exposure and ≥1 Zika-compatible symptoms‡, including prenatal ultrasound findings consistent with congenital Zika virus infection
   - Have ongoing travel* or ongoing possible sexual† exposure, regardless of symptoms

II. Infants who:
   - Have suspected or confirmed microcephaly or other neurologic abnormality (diagnosed prenatally or at birth) and mother was potentially exposed to Zika virus

III. Pregnant or non-pregnant individuals who:
   - Were born to mothers with laboratory evidence of Zika virus infection during pregnancy
   - Had potential transfusion, transplant, or laboratory exposure, regardless of symptoms

IV. People who developed Guillain-Barré Syndrome or other neurological manifestation and had potential exposure to Zika virus

Did not have travel* or sexual† exposure, but had local (Virginia) mosquito exposure and ≥2 Zika-compatible symptoms‡ within 2 weeks of exposure

Effective 8/24/17
Algorithm will be updated as new information becomes available

Testing at private laboratories is encouraged.

Public health testing is available if private lab testing is not feasible (e.g., uninsured patient). Public health testing requires approval by local health departments. For more information, see DCLS testing instructions.
Outcomes of Pregnancies with Laboratory Evidence of Possible Zika Virus Infection, 2015-2017

The following numbers represent completed pregnancies, liveborn infants with birth defects, and pregnancy losses with birth defects that have been associated with possible Zika virus infection. Any birth defects that have not been associated with Zika virus infection are not shown in these numbers, even if the pregnancies are affected by another type of birth defect.

Outcomes for US States and the District of Columbia

<table>
<thead>
<tr>
<th>Completed pregnancies with or without birth defects</th>
<th>Liveborn infants with birth defects</th>
<th>Pregnancy losses with birth defects</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,993</td>
<td>98</td>
<td>8</td>
</tr>
</tbody>
</table>

As of October 17, 2017, a total of 92 additional completed pregnancies with or without birth defects in the US States and the District of Columbia have been included since the last reporting date, September 13, 2017.

Outcomes for US Territories and Freely Associated States

<table>
<thead>
<tr>
<th>Completed pregnancies with or without birth defects</th>
<th>Liveborn infants with birth defects</th>
<th>Pregnancy losses with birth defects</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,375</td>
<td>137</td>
<td>8</td>
</tr>
</tbody>
</table>

As of October 17, 2017, a total of 37 additional completed pregnancies with or without birth defects in the US territories and freely associated states have been included since the last reporting date, September 13, 2017.
A single mutation in the prM protein of Zika virus contributes to fetal microcephaly

Ling Yuan,1,2# Xing-Yao Huang,2# Zhong Yu Liu,2# Feng Zhang,1,2# Xing-Liang Zhu,1,2# Jiu-Yang Yu,2# Xue Ji,3 Yan-Peng Xu,3 Guanhui Li,1,2# Cui Li,1,2# Hong-Jiang Wang,3 Yong-Qiang Deng,3 Menghua Wu,4 Meng-Li Cheng,3,5 Qing Ye,3 Dong-Yang Xie,3,5 Xiao-Feng Li,3 Xiangxi Wang,8 Weifeng Shi,7 Baoyang Hu,4 Pei-Yong Shi,8 Zhiheng Xu,1,2,8† Cheng-Feng Qin2†

1State Key Laboratory of Molecular Developmental Biology, CSA Center for Excellence in Brain Science and Intelligence Technology, Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Beijing, China. 2University of Chinese Academy of Sciences, Beijing 100101, China. 3Department of Virology, State Key Laboratory of Pathogen and Biosecurity, Beijing Institute of Microbiology and Epidemiology, Beijing 100071, China. 4State Key Laboratory of Stem Cell and Reproductive Biology, Institute of Zoology, Chinese Academy of Sciences, Beijing, 100101, China. 5Graduate School, Anhui Medical University, Hefei 230032, China. 6National Laboratory of Macromolecules, Institute of Biophysics, Chinese Academy of Science, Beijing, 100101, China. 7Shandong Universities Key Laboratory of Etiology and Epidemiology of Emerging Infectious Diseases, Taishan Medical College, Taian, 271000, China. 8Department of Biochemistry and Molecular Biology, Department of Pharmacology and Toxicology, Sealy Center for Structural Biology & Molecular Biophysics, University of Texas Medical Branch, Galveston, TX 77555, USA. 9Parkinson’s Disease Center, Beijing Institute for Brain Disorders, Beijing 100101, China.

*These authors contributed equally to this work.

†Corresponding author. Email: qinf@bmi.ac.cn (C.F.Q.); zhxu@genetics.ac.cn (Z.X.)

Zika virus (ZIKV) has evolved into a global health threat due to its unexpected causal link to microcephaly. Phylogenetic analysis reveals that contemporary epidemic strains have accumulated multiple substitutions from their Asian ancestor. Here, we show that a single serine to asparagine substitution (S139N) in the viral polyprotein substantially increased ZIKV infectivity in both human and mouse neural progenitor cells (NPCs), led to more significant microcephaly in the mouse fetus, and higher mortality in neonatal mice. Evolutionary analysis indicates that the S139N substitution arose before the 2013 outbreak in French Polynesia and has been stably maintained during subsequent spread to the Americas. This functional adaption makes ZIKV more virulent to human NPCs, thus contributing to the increased incidence of microcephaly in recent ZIKV epidemics.
### Table 1. ZIKV classification\(^{1,2}\)

<table>
<thead>
<tr>
<th>WHO Regional Office</th>
<th>Country / territory / subnational area</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AFRO</strong></td>
<td>Angola; Cabo Verde; Guinea-Bissau</td>
<td>3</td>
</tr>
<tr>
<td><strong>AMRO/PAHO</strong></td>
<td>Anguilla; Antigua and Barbuda; Argentina; Aruba; Bahamas; Barbados; Belize; Bolivia (Plurinational State of); Bonaire, Sint Eustatius and Saba; British Virgin Islands; Costa Rica; Cuba; Curaçao; Dominica; Dominican Republic; Ecuador; El Salvador; French Guiana; Grenada; Guatemala; Guyana; Honduras; Jamaica; Mexico; Montserrat; Nicaragua; Panama; Paraguay; Peru; Puerto Rico; Saint Kitts and Nevis; Saint Lucia; Saint Martin; Saint Vincent and the Grenadines; Sint Maarten; Suriname; Trinidad and Tobago; Turks and Caicos Islands; United States of America; United States Virgin Islands; Venezuela (Bolivarian Republic of)</td>
<td>41</td>
</tr>
<tr>
<td><strong>WPRO</strong></td>
<td>Marshall Islands; Micronesia (Federated States of); Palau; Samoa; Singapore; Solomon Islands; Tonga</td>
<td>7</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td></td>
<td>51</td>
</tr>
<tr>
<td><strong>Category 2: Area either with evidence of virus circulation before 2015 or area with ongoing transmission that is no longer in the new or re-introduction phase, but where there is no evidence of interruption</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AFRO</strong></td>
<td>Burkina Faso; Burundi; Cameroon; Central African Republic; Côte d’Ivoire; Gabon; Nigeria; Senegal; Uganda</td>
<td>9</td>
</tr>
<tr>
<td><strong>AMRO/PAHO</strong></td>
<td>Brazil; Colombia; Haiti</td>
<td>3</td>
</tr>
<tr>
<td><strong>SEARO</strong></td>
<td>Bangladesh; India; Indonesia; Maldives; Thailand</td>
<td>5</td>
</tr>
<tr>
<td><strong>WPRO</strong></td>
<td>Cambodia; Fiji; Lao People’s Democratic Republic; Malaysia; Papua New Guinea; Philippines; Viet Nam</td>
<td>7</td>
</tr>
</tbody>
</table>

Subtotal: 34
Women's healthcare needs are different than a man's. Our collaborative interdisciplinary team includes board-certified specialists in the areas most important to women: primary care, obstetrics and gynecology, breast care and cardiology. Our woman-centric care means our physicians and staff are especially attuned to these areas of key health for the adult female. We offer women 18 and older a lifetime of access to state-of-the-art, high-quality clinical care.

Learn more about the Inova Women's Comprehensive Health Center: [www.inova.org/healthwoman](http://www.inova.org/healthwoman)
Zika Virus

Public health guidance on Zika virus is updated as more information becomes known. Zika is mainly spread through the bite of an infected Aedes mosquito. Zika also can be spread from a pregnant woman to her fetus, through sexual contact and possibly through blood transfusion. Take steps to prevent mosquito bites to lower your chance of infection. If you think you may have Zika, contact your health care provider.

Outreach Materials

Fairfax businesses can request printed materials for employees and customers.

Clinical Testing for Zika

Health care providers, complete the Zika testing request form.

Zika Virus Disease and Prevention Presentation Slides

Zika Pregnancy Registry

- About the Zika Pregnancy Registry
- Maternal Health History Form
- Neonatal Assessment at Delivery Form
- Infant Follow-Up Form

*Contact the Communicable Disease/Epidemiology Unit for the VA, Zika ID.
Fairfax County Health Dept. Zika Testing Request

- Complete and submit the Zika Testing Request. Please fill in all required fields.
- The Communicable Disease/Epidemiology Unit will respond to your request regarding testing eligibility determination and next steps by close of the next business day. Please know that this is a request for testing and that testing eligibility will have to be determined. Approval by the Fairfax County Health Department’s Communicable Disease Epidemiology Unit must be obtained for Zika Virus testing. Any specimens submitted to the Health Department without prior approval or necessary paperwork will not be tested.
- If you experience any problems requesting Zika testing or have additional questions, please call the Communicable Disease/Epidemiology Unit at 703-246-2433.

Provider Information

Provider Last Name: [ ]
Provider First Name: [ ]
Address: [ ]
Email: [ ]
Phone: [ ]
Fax: [ ]

Patient Information

Last Name: [ ]
First Name: [ ]
Patient Address: [ ]
City: [ ] State: VA Zip code: [ ]
Street: [ ]
Phone: [ ]
Fax: [ ]
Date of Birth: [ ]
Gender: [Male] [Female]