Module Four
Zika Virus Precautions, Prevention & Testing
PREVENTION
TRAVEL

Pregnant
  – Do not travel to places with active Zika infection

Trying to get pregnant
  – Consider avoiding traveling to areas with active Zika infection

All Others
  – Review CDC travel warnings to learn which areas have active Zika transmission and consider avoiding travel to those areas
PREVENTION
SEXUAL

Guidance for couples planning to conceive:

- Avoid nonessential travel to areas with active Zika virus transmission.
- CDC preconception counseling tools.

If positive for Zika virus or unspecified flavivirus infection:

- Women - wait 8 weeks from symptom onset (if symptomatic) or last possible exposure (if asymptomatic) to attempt conception.
- Men - wait at least 6 months from symptom onset (if symptomatic) or last possible exposure (if asymptomatic) before attempting conception with their partner.

Source: http://www.cdc.gov/mmwr/volumes/65/wr/mm6539e1.htm?s_cid=mm6539e1_w
PREVENTION

SEXUAL

Guidance for pregnant couples:
• Pregnant women with sex partners (male or female) who live in or who have traveled to an area with active Zika virus transmission should consistently and correctly use barriers against infection during sex or abstain from sex for the duration of the pregnancy.

Special Considerations for Women Undergoing Fertility Treatment:
• Transmission through assisted reproductive technology has not been reported. However, transmission through gametes or embryos is theoretically possible.
  o Recommendations for sexually intimate couples undergoing fertility treatment with their own gametes and embryos should follow recommendations as described above.

Source: http://www.cdc.gov/mmwr/volumes/65/wr/mm6529e2.htm
PREVENTION
BLOOD AND TISSUE SAFETY

The Food and Drug Administration has issued guidance to reduce the risk for Zika virus transmission by donated human cells, tissues, and cellular and tissue-based products, including reproductive tissue.

Living donors should be considered ineligible if they have any of the following risk factors:
• Medical diagnosis of ZIKV infection in the past 6 months.
• Residence in, or travel to, an area with active ZIKV transmission within the past 6 months.
• Sex within the past 6 months with a male who is known to have either of the risk factors listed above.

Donors of umbilical cord blood, placenta, or other gestational tissues should be considered ineligible if the birth mother who seeks to donate gestational tissues has any of the following risk factors:
• Medical diagnosis of ZIKV infection at any point during that pregnancy.
• Residence in, or travel to, an area with active ZIKV transmission at any point during that pregnancy.
• Sex at any point during that pregnancy with a male who is known to have either of the risk factors above.

Source:
PREVENTION
MOSQUITOS PROTECTION FOR CHILDREN

• Insect Repellent:
  o Always follow instructions when applying insect repellent to children.
  o Do not use insect repellent on babies younger than 2 months old.
  o Do not apply insect repellent onto a child’s hands, eyes, mouth, and cut or irritated skin.
  o Adults should spray insect repellent onto your hands and then apply to a child’s face.
  o Do not use products containing oil of lemon eucalyptus (OLE)
  o or para-menthane-diol (PMD) on children under 3 years old.
• Dress your child in clothing that covers arms and legs.
• Cover crib, stroller, and baby carrier with mosquito netting.

PREVENTION: AERIAL SPRAYING FOR MOSQUITOS

When people in a large area are getting sick or when large numbers of mosquitoes are found, airplanes can be used to treat very large areas with insecticides safely, quickly, and efficiently. This process is called aerial spraying. Below is more information on aerial spraying.

Is aerial spraying of insecticides dangerous/harmful to human health?

- No, during aerial spraying, a small amount of insecticide is sprayed over an area, about 1 ounce (two tablespoons) per acre or about the size of a football field.
- This small amount does not pose a health risk to people or pets in the area that is sprayed.
- When aerial spraying is done correctly, it does not cause asthma attacks.
- There is a possibility that spraying of a larvicide, like Bti, can cause eye irritation if a person is outside and looking up when spraying takes place.
- EPA-registered products are used for aerial spraying. The label instructions are followed by a licensed professional.
- If people prefer to stay inside and close windows and doors when spraying takes place they can, but it is not necessary.

**PREVENTION**

**ZIKA PREVENTION KIT**

The CDC’s Response to Zika

**PREGNANT AND LIVING IN AN AREA WITH ZIKA?**

**Zika Prevention Kit for Pregnant Women**

- **Use this bag to carry your items that will help you prevent mosquito bites and protect yourself against Zika.**
- CDC is not responsible for any adverse reactions or injuries arising from use of the items in this kit. This kit is not intended to replace the advice of a medical professional. The kit contains items that should be used as part of a broader medical strategy to protect against Zika, and is not intended to replace professional medical advice.

- **Bed Net**
  - A mosquito net will help keep mosquitoes away from you at night.
  - Mosquitoes can enter through holes in the net.
  - Use only bed nets with a tight weave of纱net, mesh, or an equal net such as e-66, netback with no gaps larger than 25 mm.

- **Standing Water Treatment Tablets**
  - Use water treatment tablets to kill any pests that might be in standing water near your home.
  - You can use these in your home during the day.

- **Permethrin Spray**
  - Spray your clothes with the bug spray and spray it on your skin too.
  - Do not use sprays on children under the age of two.

- **Condoms**
  - A condom should be used every time you have sex.
  - Condoms should be used with a contraceptive method.

- **Mosquitoes**
  - Zika virus is spread by mosquito bites.
  - Use insect repellent with at least 20% DEET to protect against mosquito bites.

- **Repellent of insects**
  - Use insect repellent with at least 20% DEET to protect against mosquito bites.
  - Do not use sprays on children under the age of two.

- **Condoms**
  - A condom should be used every time you have sex.
  - Use insect repellent with at least 20% DEET to protect against mosquito bites.

- **Permethrin in at other places**
  - Use insect repellent with at least 20% DEET to protect against mosquito bites.

TESTING
GENERAL INFORMATION

• CDC has a Web tool intended to help healthcare providers apply the updated recommendations for Zika virus testing, interpretation of results, and clinical management for a pregnant woman with possible exposure to Zika virus: http://www.cdc.gov/zika/hc-providers/testing-for-zikavirus.html

• Healthcare providers should contact their state or local health department to facilitate testing.

• Zika virus is a nationally notifiable condition.

• Pregnant patients or infants with positive test results should be added to the U.S. Pregnancy Registry or the Puerto Rico Pregnancy Registry depending on their location.
Testing Pregnant Women

CONTINUUM OF CARE

Obstetricians and/or nurses should share information with pediatricians about pregnant women who test positive for Zika virus syndrome.
**Testing: Infants**

Mother with laboratory evidence of Zika virus infection during pregnancy

- Perform a comprehensive physical exam on infant, head ultrasound, standard newborn hearing assessment and infant Zika virus laboratory testing

**Infant with findings consistent with congenital Zika syndrome**
- Initial evaluation
  - Infant with confirmed or probable congenital Zika virus infection
    - Outpatient management and follow-up
  - Infant negative for congenital Zika virus infection
    - Continue to evaluate for other causes of congenital anomalies

**Infant without findings consistent with congenital Zika syndrome**
- Infant with confirmed or probable congenital Zika virus infection
  - Routine newborn care. Additionally, perform an ABR and ophthalmology exam within 1 month of life
  - Outpatient management and follow-up
- Infant negative for congenital Zika virus infection
  - Routine care

Testing

Types of tests:
- Trioplex Real-time RT-PCR Assay
- Zika MAC-ELISA IgM

Interpretation of Results

<table>
<thead>
<tr>
<th>rRT-PCR</th>
<th>IgM</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>Positive or Negative*</td>
<td>Confirmed congenital Zika virus infection</td>
</tr>
<tr>
<td>Negative</td>
<td>Positive*</td>
<td>Probable congenital Zika virus infection†</td>
</tr>
<tr>
<td>Negative</td>
<td>Negative</td>
<td>Negative for congenital Zika virus infection†</td>
</tr>
</tbody>
</table>

*If immunoglobulin (Ig) M test results are positive, equivocal, or inconclusive, performing a plaque reduction neutralization test (PRNT) is needed to confirm the diagnosis. There is chance of cross-reactivity with other flaviviruses, so conservative interpretation recommended.

Source: https://www.cdc.gov/mmwr/volumes/65/wr/mm6521e1.htm
## Testing: Infants

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>General Instructions</th>
<th>Notes</th>
<th>Storage</th>
<th>Shipping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant serum</td>
<td>• At least 1 ml</td>
<td>• For antibody and rRT-PCR testing, specimens should be kept cold (2–6 °C) or frozen (-70 °C). • For virus isolation testing, specimens should be frozen as soon as possible (-70 °C).</td>
<td>• For cold specimens, the sample should be placed in an insulated container with adequate ice packs to ensure specimen (“cold chain”) integrity. • For frozen specimens, ship the sample on enough dry ice to ensure specimens remain frozen until received.</td>
<td>• Arboviral Diseases Branch Diagnostic Laboratory Centers for Disease Control and Prevention 3156 Rampart Road Fort Collins, Colorado 80521</td>
</tr>
</tbody>
</table>

Transfer serum to a plastic tube measuring approximately 50 mm tall and 15 mm in diameter (e.g., 1.8 mL cryotube or 2.0 mL microtube) with screw cap and secure with thermoplastic, self-sealing lab film.

## Testing: Infants (continued)

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>General Instructions</th>
<th>Notes</th>
<th>Storage</th>
<th>Shipping</th>
</tr>
</thead>
</table>
| Placenta and fetal membranes      | • Several full thickness pieces including at least 3 full thickness pieces (0.5–1 cm x 3–4 cm in depth) from middle third of placental disk and at least 1 from the placental disk margin  
• 5 x 12 cm strip of fetal membranes  
• Please include sections of the placental disk, fetal membranes, and pathologic lesions when possible. | • Please include information about placenta weight and sample both maternal and fetal side of the placenta.  
• Label all specimens to identify location of sample. | • Fix specimens in formalin  
• Volume of formalin used should be about 10x mass of tissue. Place in 10% neutral buffered formalin for a minimum of 3 days. Once fully fixed the tissue can be transferred to 70% ethanol for long term storage.  
• Storage and shipping at room temperature. | • Infectious Diseases Pathology Branch  
Centers for Disease Control and Prevention  
1600 Clifton Rd. NE, MS G-32  
Atlanta GA 30329-4027  
<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>General Instructions</th>
<th>Notes</th>
<th>Storage</th>
<th>Shipping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Urine</td>
<td>Provide 0.5–1.0 mL of the specimen in a sterile screw capped vial secured with a small piece of thermoplastic, self-sealing lab film. Please ensure a tight seal as leaking specimens cannot be accepted.</td>
<td>Sterile specimen is not required.</td>
<td>• For rRT-PCR testing, specimens should be kept cold (2–8 °C) or frozen (≤ 20 °C) for storage and shipping. • For frozen specimens, ship the sample on enough dry ice to ensure specimens remain frozen until received.</td>
<td>• Arboviral Diseases Branch Diagnostic Laboratory Centers for Disease Control and Prevention 3156 Rampart Road Fort Collins, Colorado 80521 • Get <a href="#">more information about collecting, handling, and shipping</a></td>
</tr>
</tbody>
</table>
Infants should be screened by the following specialists:

- Audiology
- Ophthalmology
- Neurology
- Endocrinology
- Genetics
SCREENING: HEAD CIRCUMFERENCE

CDC's Response to Zika
MEASURING HEAD CIRCUMFERENCE

- Use a measuring tape that cannot be stretched
- Securely wrap the tape around the widest possible circumference of the head
  - Breakfast 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

Head circumference measurements should be taken on the first day of life because commonly-used birth head circumference reference charts by age and sex are based on measurements taken before 24 hours of age.

For more information: www.cdc.gov/zika

American Academy of Pediatrics
DEDICATED TO THE HEALTH OF ALL CHILDREN®
CONTINUUM OF CARE

For children who test positive for Zika virus, whether symptomatic or asymptomatic, a medical home should be established, in which the primary care physician coordinates care from all the specialists, ensuring the parents are not faced with undue burden.

Resource for pediatricians: Recognition and Management of Medical Complexity by AAP Council on Children with Disabilities (Pediatrics, December 2016)
WHAT’S NEXT?

Module five: Congenital Abnormalities