Zika Virus: What Clinicians Need to Know
10/19/16

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Objectives

1. To understand the modes of transmission for Zika virus infection
2. To review the indications for and limitations of Zika virus testing
3. To develop strategies for preconception counseling and risk of sexual transmission
   • Pre-travel counseling
   • Post-travel counseling
Outline

• Background
  – Geography & Transmission

• Clinical Manifestations
  – Acute Infection
  – Complications

• Prevention
  – Travel
  – Sexual Transmission

• Diagnosis & Testing
What is Zika?

• Zika is a single stranded RNA virus
• Genus *flavivirus*, family *Flaviviridae*
  – Closely related to dengue, yellow fever and West Nile virus
• Primarily transmitted through the bite of an infected Aedes sp. mosquito (*Ae. aegypti* and *Ae. albopictus*)
History of Zika

• First discovered in Uganda in 1947
  – Infecting a monkey in the Zika Forest of Uganda

• Before 2007:
  – Only sporadic cases reported from Africa and SE Asia

• Before 2015:
  – Outbreaks of Zika virus disease occurred in areas of Africa, SE Asia and the Pacific Islands

• 5/7/15: the Pan American Health Organization issued an alert regarding the first confirmed cases of Zika virus infections in Brazil
Zika Virus in the Americas

• 1/22/16: CDC activated its Emergency Operations Center (EOC) to respond to outbreaks of Zika occurring in the Americas
  • Increased reports of birth defects and Guillain-Barré syndrome in areas affected by Zika

• 2/1/16: The World Health Organization (WHO) declared a Public Health Emergency
  • Clusters of microcephaly and other neurological disorders in some areas affected by Zika
Areas with Active Zika Transmission

Aedes aegypti and Aedes albopictus Mosquitoes: Geographic Distribution in the United States

- 128 Locally acquired cases in Florida
- All confined to Miami-Dade County, FL

Zika Cases Reported in the United States

Laboratory-confirmed Zika virus disease cases reported to ArboNET by state or territory (as of October 12, 2016)

*See detailed map of the areas with active Zika virus transmission below.*

- Travel-associated cases in US – 3,808
- Locally-acquired cases – FL – 128
- Puerto Rico – 25,871 locally acquired cases

What Have We Learned About How Zika is Spread?

• Zika virus is transmitted through:
  – Mosquito bites
  – Maternal-fetal transmission
    • Periconceptional
    • Intrauterine
    • Perinatal
  – Sex with an infected person
    • Male to male, male to female and female to male transmission reported
  – Laboratory exposure

• Zika may be spread through blood transfusion
• No reports of Zika transmission through breast feeding
What are the symptoms of Zika?

• Only 1 in 5 cases are symptomatic
• Most common symptoms include:
  – Acute onset of fever
  – Maculopapular rash
  – Joint Pain
  – Conjunctivitis
  – Other symptoms:
    • headache, myalgias
• Incubation period 2-14 days
• Symptoms persist for 2-7 days
Reported clinical symptoms among confirmed Zika virus disease cases

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>N (n=31)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macular or papular rash</td>
<td>28</td>
<td>90%</td>
</tr>
<tr>
<td>Subjective fever</td>
<td>20</td>
<td>65%</td>
</tr>
<tr>
<td>Arthralgia</td>
<td>20</td>
<td>65%</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>17</td>
<td>55%</td>
</tr>
<tr>
<td>Myalgia</td>
<td>15</td>
<td>48%</td>
</tr>
<tr>
<td>Headache</td>
<td>14</td>
<td>45%</td>
</tr>
<tr>
<td>Retro-orbital pain</td>
<td>12</td>
<td>39%</td>
</tr>
<tr>
<td>Edema</td>
<td>6</td>
<td>19%</td>
</tr>
<tr>
<td>Vomiting</td>
<td>3</td>
<td>10%</td>
</tr>
</tbody>
</table>

Yap Island, 2007
Differential Diagnosis

- Key differential diagnosis is other *Flaviviruses* present in similar geographic distribution

<table>
<thead>
<tr>
<th>Features</th>
<th>Zika</th>
<th>Dengue</th>
<th>Chikungunya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Rash</td>
<td>+++</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>++</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Arthralgia</td>
<td>++</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Myalgia</td>
<td>+</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Headache</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>-</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>Shock</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

Rabe, Ingrid MBChB, MMed “Zika Virus- What Clinicians Need to Know?” (presentation, Clinician Outreach and Communication Activity (COCA) Call, Atlanta, GA, January 26 2016)
Complications of Zika

• Pregnancy-related Complications
  – No evidence to suggest that women are more susceptible or experience more severe disease during pregnancy
  – Zika infection in pregnancy can cause microcephaly and other severe brain defects
    • True risk of microcephaly still being studied with estimates of 1-30% in 1st trimester infection
  – Zika also linked to:
    • Miscarriage, stillbirth, eye defects, hearing defects, limb abnormalities and impaired growth
  – U.S. Outcomes – 23 liveborn infants with birth defects
Table 3. Countries and territories reporting microcephaly and/or CNS malformation cases potentially associated with Zika virus infection

<table>
<thead>
<tr>
<th>Reporting country or territory</th>
<th>Number of microcephaly and/or CNS malformation cases suggestive of congenital Zika infections or potentially associated with a Zika virus infection</th>
<th>Probable location of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>2001³</td>
<td>Brazil</td>
</tr>
<tr>
<td>Cabo Verde</td>
<td>9</td>
<td>Cabo Verde</td>
</tr>
<tr>
<td>Canada</td>
<td>1</td>
<td>Undetermined</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>1</td>
<td>Costa Rica</td>
</tr>
<tr>
<td>Colombia</td>
<td>42³</td>
<td>Colombia</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>10⁴</td>
<td>Dominican Republic</td>
</tr>
<tr>
<td>El Salvador</td>
<td>4</td>
<td>El Salvador</td>
</tr>
<tr>
<td>French Guiana</td>
<td>10⁵</td>
<td>French Guiana</td>
</tr>
<tr>
<td>French Polynesia</td>
<td>8</td>
<td>French Polynesia</td>
</tr>
<tr>
<td>Guatemala</td>
<td>17⁶</td>
<td>Guatemala</td>
</tr>
<tr>
<td>Haiti</td>
<td>1</td>
<td>Haiti</td>
</tr>
<tr>
<td>Honduras</td>
<td>1</td>
<td>Honduras</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>1</td>
<td>Marshall Islands</td>
</tr>
<tr>
<td>Martinique</td>
<td>12⁶</td>
<td>Martinique</td>
</tr>
<tr>
<td>Panama</td>
<td>5</td>
<td>Panama</td>
</tr>
<tr>
<td>Paraguay</td>
<td>2⁷</td>
<td>Paraguay</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>2⁸</td>
<td>Puerto Rico</td>
</tr>
<tr>
<td>Slovenia</td>
<td>1⁹</td>
<td>Slovenia</td>
</tr>
<tr>
<td>Spain</td>
<td>2</td>
<td>Spain</td>
</tr>
<tr>
<td>Suriname</td>
<td>1</td>
<td>Suriname</td>
</tr>
<tr>
<td>Thailand</td>
<td>2</td>
<td>Thailand</td>
</tr>
<tr>
<td>United States of America</td>
<td>27¹⁰</td>
<td>Undetermined*</td>
</tr>
</tbody>
</table>

*The probable locations of three of the infections were Brazil (1 case), Haiti (1 case) and Mexico, Belize or Guatemala (1 case).
Zika and Guillain-Barre Syndrome

• Current CDC research suggests that GBS is strongly associated with Zika
  – Only a small proportion of people with recent Zika virus infection get GBS.

Table 4. Countries and territories reporting Guillain-Barré syndrome (GBS) potentially associated with Zika virus infection

<table>
<thead>
<tr>
<th>Classification</th>
<th>Country / territory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported increase in incidence of GBS cases, with at least one GBS case with confirmed Zika virus infection</td>
<td>Brazil, Colombia, Dominican Republic, El Salvador*, French Guiana, French Polynesia, Guadeloupe**, Honduras, Jamaica, Martinique, Suriname**, Venezuela (Bolivarian Republic of)</td>
</tr>
<tr>
<td>No increase in GBS incidence reported, but at least one GBS case with confirmed Zika virus infection</td>
<td>Costa Rica, Grenada**, Guatemala, Haiti, Mexico, Panama, Puerto Rico</td>
</tr>
</tbody>
</table>

*GBS cases with previous history of Zika virus infection were reported by the International Health Regulations (2005) National Focal Point in the United States of America.

**One case living in continental Netherlands was diagnosed in mid-January 2016 and reported by the Netherlands.

Who Should Be Tested?

• The CDC does not recommend testing for asymptomatic men, children and women who are not pregnant
• Testing should be considered only in the following groups:
  – Anyone who has or recently had symptoms and lives in or recently traveled to areas with Zika
  – Anyone who has or recently had Zika symptoms and had unprotected sex with a partner who lived in or traveled to an area with Zika
  – Pregnant women who live in or recently traveled to an area with Zika, regardless of symptoms
Who Should Be Tested?

• Due to the variable duration of viremia and complexities of serologic interpretation, results should NOT be used for decision making about timing of conception or risk of sexual transmission.

• All testing must be paired with counseling.
What testing is available?

• Real-time reverse transcription-polymerase chain reaction (rRT-PCR)
  – Must be performed during first 2 weeks of symptom onset or last possible exposure (pregnant women only)
  • Currently being testing on serum & urine
  • (+) result confirms Zika infection however (-) result does not exclude infection

• Zika MAC-ELISA – IgM
  – Generally (+) starting at day 4 to 12 weeks
  – Should be performed if PCR (-) in acute symptoms
  – Must also send Dengue and Chikungunya serologic testing due to cross-reactivity
  – (+) Results are confirmed by plaque-reduction neutralization testing
# Testing

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Symptoms?</th>
<th>Sample types</th>
<th>Availability</th>
<th>Turn-around Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>RT-PCR for Zika virus RNA</td>
<td>Symptomatic</td>
<td>serum</td>
<td>• MA SPHL</td>
<td>MA SPHL &lt; 7 days after sample receipt</td>
</tr>
<tr>
<td></td>
<td>Symptomatic</td>
<td>urine</td>
<td>• MA SPHL</td>
<td>MA SPHL &lt; 7 days after sample receipt</td>
</tr>
<tr>
<td></td>
<td>N/A</td>
<td>amniotic fluid</td>
<td>MA SPHL</td>
<td>MA SPHL &lt; 7 days after sample receipt</td>
</tr>
<tr>
<td></td>
<td>Symptomatic</td>
<td>CSF</td>
<td>MA SPHL</td>
<td>MA SPHL &lt; 7 days after sample receipt</td>
</tr>
<tr>
<td>IgM MAC-ELISA for Zika virus antibodies</td>
<td>Symptomatic and Asymptomatic</td>
<td>serum</td>
<td>• MA SPHL</td>
<td>MA SPHL &lt; 7 days after sample receipt</td>
</tr>
<tr>
<td>Plaque reduction neutralization test (PRNT) for Zika virus neutralizing antibodies</td>
<td>Symptomatic and Asymptomatic</td>
<td>serum</td>
<td>CDC</td>
<td>CDC – longer than 3 weeks</td>
</tr>
</tbody>
</table>

What to Tell Patients Considering Travel

- Discuss the risk/benefit of Travel to areas with Zika transmission
- If they must travel:
  - Wear long-sleeved shirts and long pants
  - Stay in places with air conditioning or that use window and door screens to keep mosquitoes outside
  - Sleep under a mosquito bed net if you are overseas or outside and are not able to protect yourself from mosquito bites
  - Use Environmental Protection Agency (EPA)-registered insect repellents.
- If you have a baby or child:
  - Do not use insect repellent on babies younger than 2 months of age
  - Dress your child in clothing that covers arms and legs, or
  - Cover crib, stroller, and baby carrier with mosquito netting
- Treat clothing and gear with permethrin or purchase permethrin-treated items
Counseling about Sexual Transmission

• Zika can be passed through sex from a person who has Zika to his or her sex partners
  – It can be passed from a person with Zika before their symptoms start, while they have symptoms, and after their symptoms end
  – The virus may also be passed by a person who never has symptoms

• Sexual exposure includes sex without a condom with a person who traveled to or lives in an area with Zika
  – This includes vaginal, anal, and oral sex and the sharing of sex toys
Zika in Genital Fluids

• Studies ongoing to determine duration of persistence of Zika in semen and vaginal fluids
  – Zika can remain in semen longer than in other body fluids, including vaginal fluids, urine, and blood

• Zika virus reported in semen up to 69-188 days after symptom onset
Preventing or Reducing the Risk of Sexual Transmission

- Abstinence eliminates the risk of sexual transmission
- Condoms can reduce the risk of Zika transmission
  - Condoms include male and female condoms
  - Dental dams (latex or polyurethane sheets) may also be used for certain types of oral sex (mouth to vagina or mouth to anus)
  - Not sharing sex toys can also reduce the risk of spreading Zika to sex partners
- Pregnant couples with a partner who lives in or recently traveled to an area with Zika should use condoms correctly every time they have sex or not have sex during pregnancy
Duration of Risk for Sexual Transmission

Preventing Sexual Transmission to Pregnant Women: individuals who reside in or have traveled to an area with a Zika virus outbreak who have a pregnant partner should:

- abstain from sex; or
- consistently and correctly use latex condoms every time they have sex* for the duration of the pregnancy.

*Sex includes vaginal, anal and oral sex, as well as the sharing of sex toys.

Preventing Sexual Transmission and Delaying Conception for Non-Pregnant Couples: Individuals with a sex partner who lives in, or has traveled to, an area with Zika virus transmission should abstain from sex or use condoms in order to prevent transmission and delay conception for a duration based on the following:

- at least 8 weeks after a Zika diagnosis or start of symptoms if the traveling partner is female;
- at least 6 months after a Zika diagnosis or start of symptoms if the traveling partner is male; or
- at least 8 weeks after returning if the traveling partner (male or female) has no symptoms.

* New Update 10/3/16 - Men are now advised to wait 6 months following symptoms onset or the date of their last possible exposure, regardless of the presence or absence of symptoms, before attempting conception.

CDC’s Response to Zika
TRAVELERS CAN PROTECT THEMSELVES FROM ZIKA

Zika Prevention Kit for Travelers
The products below can help protect you from Zika. Build your own Zika prevention kit and bring your kit with you on your trip.

Bed Net
- If your room is not well screened and air conditioned, use a bed net when sleeping or resting.
- Mosquitoes can live indoors and will bite at any time, day or night.

Insect Repellent
- Use EPA-registered insect repellent containing DEET, picaridin, OLE, PMD, or IR3535.
- Always use as directed.
- Do not apply repellent under clothing.
- If you are also using sunscreen, apply sunscreen first and insect repellent second.
- When used as directed, these insect repellents are proven safe and effective even for pregnant and breastfeeding women.
- Most repellents, including DEET, can be used on kids older than 2 months. Mosquito netting can be used to cover babies <2 months old in carriers, strollers, or cribs to protect them from mosquito bites.

Condoms
- Zika can be passed through sex. Bring male or female condoms with you when traveling. Use condoms during and after travel to protect yourself and your partner.
- If you are pregnant, use condoms for the rest of your pregnancy.
- Not having sex eliminates the risk of getting Zika through sex.

Permethrin Spray
- Spray your clothing and gear with permethrin to help protect you from mosquito bites or bring pre-treated items.
- Always follow the directions on the bottle. Reapply as directed.
- Do not spray permethrin on your skin.
- Long sleeves and long pants help protect against Zika.

www.cdc.gov/zika
Case #1

- 39 year old woman G2P1 at 14 weeks gestation
- Previously living in San Juan territory of Puerto Rico and returned to Boston 10 days ago
  - Moved back out of caution and plans to remain until delivery
  - Febrile illness x 2 days notable for vomiting and diarrhea
- Husband is asymptomatic
Questions

1. Should you test for Zika, if so, what should you send?
2. Is any additional counseling or testing necessary?
Recommendations about Zika virus testing should be adapted to specific patient circumstances. This table provides the current, best available guidance for the most common scenarios. More complex situations should be handled on a case-by-case basis and consultation with MDPH is available 24/7 by calling 617-983-6800.

**DIAGNOSTIC TESTING GUIDANCE TABLE: UPDATED 8-3-2016**

**PREGNANT WOMEN - Testing requires pre-approval by MDPH, contact 617-983-6800**

<table>
<thead>
<tr>
<th>Category</th>
<th>Symptomatic or Asymptomatic</th>
<th>Sample Type and Timing</th>
<th>Additional Notes About Testing</th>
<th>Patient Counseling Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women who were pregnant</td>
<td>Symptomatic&lt;sup&gt;1&lt;/sup&gt;</td>
<td>≤12 weeks post-symptom onset: serum and urine&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Testing is not recommended if more than 12 weeks have passed since symptom onset. Negative results after 12 weeks do not assure absence of exposure.</td>
<td>• If the woman’s sex partner also has possible exposure to Zika virus because of travel, the couple should be counseled on using latex condoms, consistently and correctly, for all sexual contact for the duration of the pregnancy. • Testing of sex partners for the assessment of risk for sexual transmission is not recommended.</td>
</tr>
<tr>
<td>OR conceived during, or within 8 weeks, of travel to an area with a Zika virus outbreak</td>
<td>Asymptomatic&lt;sup&gt;2&lt;/sup&gt;</td>
<td>≤12 weeks after last possible exposure: serum and urine&lt;sup&gt;4&lt;/sup&gt;</td>
<td>• Convalescent specimen might be requested depending upon timing of specimen collection and test results. • Testing is not recommended if more than 12 weeks have passed since last possible exposure. Negative results after 12 weeks do not assure absence of exposure.</td>
<td></td>
</tr>
<tr>
<td>Women that became pregnant while residing in an area with a Zika virus outbreak AND Pregnant women that have been in and will be returning to an area with a Zika virus outbreak</td>
<td>Symptomatic&lt;sup&gt;1&lt;/sup&gt;</td>
<td>≤12 weeks post-symptom onset: serum and urine&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Testing is not recommended if more than 12 weeks have passed since last possible exposure. Negative results after 12 weeks do not assure absence of exposure.</td>
<td>• If the woman’s sex partner also has possible exposure to Zika virus because of travel, the couple should be counseled on using latex condoms, consistently and correctly, for all sexual contact for the duration of the pregnancy. • Testing of sex partners for the assessment of risk for sexual transmission is not recommended.</td>
</tr>
<tr>
<td></td>
<td>Asymptomatic&lt;sup&gt;2&lt;/sup&gt;</td>
<td>Testing recommended during first and second trimester: serum and urine&lt;sup&gt;4&lt;/sup&gt;</td>
<td>Because residing in an area a Zika virus outbreak presents a high risk for exposure AND the timing of that exposure is likely not identifiable, testing is recommended but may not be sufficient. Negative results do not assure absence of exposure.</td>
<td></td>
</tr>
</tbody>
</table>

**Testing indicated:** IgM + PCR from serum + urine if symptoms within 12 weeks

Additional Counseling

• Abstinence or consistent condom use for the duration of pregnancy
• OB-Gyn Ultrasound follow up
Case 1 (Cont.)

• Do your recommendations change if only the husband had travelled to an area of active Zika transmission?
Case #2

• 26 year old woman presents recent travel to Cape Verde to visit her family
• She and her husband are planning conception and heard about Zika virus and are now concerned about whether or not they need to wait
• They ask if they can both be tested to that they can attempt pregnancy as soon as possible
Questions

• Is testing indicated?
• How long do they need to wait to consider pregnancy?
**Case #2**

- No testing recommended, low sensitivity and negative IgM could be falsely reassuring.
- Follow guidance for sexual transmission:
  - Asymptomatic –
    - Women - delay conception for 8 weeks following the last possible exposure. Consistent condom use or abstinence during this duration.
    - Men – delay conception for 6 months following the last possible exposure. Consistent condom use or abstinence during this duration.

---

**Couples Planning Conception**

<table>
<thead>
<tr>
<th>Couples planning on attempting conception (naturally or IVF), after travel to an area with ongoing Zika virus transmission</th>
<th>Regardless of presence of symptoms in either partner</th>
<th>Testing not recommended</th>
<th>Testing does not change clinical recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Symptomatic female: delay conception for 8 weeks after symptom onset.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Symptomatic male: delay, conception for 6 months.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Both partners asymptomatic: delay conception for 8 weeks following the last possible exposure of both individuals.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• The couple should be counseled on abstinence or using latex condoms, consistently and correctly, for all sexual contact for the appropriate duration.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Link to guidance](http://www.mass.gov/eohhs/docs/dph/infectious-disease/dph-zika-advisory-8-8-2016.pdf)
Duration of Risk for Sexual Transmission

Preventing Sexual Transmission to Pregnant Women: individuals who reside in or have traveled to an area with a Zika virus outbreak who have a pregnant partner should:

- abstain from sex; or
- consistently and correctly use latex condoms every time they have sex* for the duration of the pregnancy.

*Sex includes vaginal, anal and oral sex, as well as the sharing of sex toys.

Preventing Sexual Transmission and Delaying Conception for Non-Pregnant Couples: Individuals with a sex partner who lives in, or has traveled to, an area with Zika virus transmission should abstain from sex or use condoms in order to prevent transmission and delay conception for a duration based on the following:

- at least 8 weeks after a Zika diagnosis or start of symptoms if the traveling partner is female;
- at least 6 months after a Zika diagnosis or start of symptoms if the traveling partner is male; or
- at least 8 weeks after returning if the traveling partner (male or female) has no symptoms.

* New Update 10/3/16 - Men are now advised to wait 6 months following symptoms onset or the date of their last possible exposure, regardless of the presence or absence of symptoms, before attempting conception.

Case #3

- 32 year old male returns from a recent mission trip to El Salvador
- Reports onset of fever, faint rash, red eyes and myalgias starting 72 hours after return from his trip
- He is not currently sexually active
Questions

• What is your differential?
• What testing would you send?
# Question #3

<table>
<thead>
<tr>
<th>Features</th>
<th>Zika</th>
<th>Dengue</th>
<th>Chikungunya</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>++</td>
<td>+++</td>
<td>+++</td>
</tr>
<tr>
<td>Rash</td>
<td>+++</td>
<td>+</td>
<td>++</td>
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<tr>
<td>Conjunctivitis</td>
<td>++</td>
<td>-</td>
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</tr>
<tr>
<td>Arthralgia</td>
<td>++</td>
<td>+</td>
<td>+++</td>
</tr>
<tr>
<td>Myalgia</td>
<td>+</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Headache</td>
<td>+</td>
<td>++</td>
<td>++</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>-</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>Shock</td>
<td>-</td>
<td>+</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individuals Not Captured in Other Categories - Testing Requires Pre-Approval by MDPH, Contact 617-983-6800</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Women, men and children with travel to an area with Zika virus transmission not addressed in other categories</strong></td>
</tr>
<tr>
<td><strong>Patients with rare manifestations that may be associated with Zika virus</strong></td>
</tr>
<tr>
<td><strong>Sample type dependent upon manifestation and timing of sample collection relative to symptom onset</strong></td>
</tr>
<tr>
<td><strong>Identified rare manifestations include: Guillain-Barré syndrome, thrombocytopenia, or evidence of neuroinvasive disease</strong></td>
</tr>
<tr>
<td><strong>Symptomatic</strong>¹</td>
</tr>
<tr>
<td>Provider wishing to test will likely be referred to commercially available options</td>
</tr>
<tr>
<td>≤14 days post-symptom onset: consider RT-PCR on serum and urine</td>
</tr>
<tr>
<td>≤12 weeks post-symptom onset: consider IgM ELISA</td>
</tr>
<tr>
<td><strong>Asymptomatic</strong>²</td>
</tr>
<tr>
<td>Testing not recommended Provider wishing to test will likely be referred to commercially available options</td>
</tr>
<tr>
<td>Due to the variable duration of viremia and complexities of serologic interpretation, results should NOT be used for decision making about timing of conception or risk of sexual transmission. Provider can call MDPH for assistance with determining test type or result interpretation.</td>
</tr>
</tbody>
</table>

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Rabe, Ingrid MBChB, MMed “Zika Virus- What Clinicians Need to Know?” (presentation, Clinician Outreach and Communication Activity (COCA) Call, Atlanta, GA, January 26 2016)

Case #3

- Would send basic lab evaluation including CBC/diff, LFTs, renal function
- Dengue and Chikungunya IgM/IgG
- Consider Zika IgM/PCR testing, MDPH will likely decline, alternate option includes use of a commercial lab
  - Limited utility in this case
Teaching Points

• Zika virus transmission is ongoing in multiple countries and US territories
• Zika is transmitted via mosquito, maternal-fetal transmission and sexual transmission
• Testing is generally indicated for pregnant women regardless of symptoms, symptomatic men and women and who have traveled to areas with Zika transmission or had unprotected sex with someone who has traveled
• Testing should be individualized based on risk factors
• Counseling regarding risk of sexual transmission must accompany all discussions regarding travel risk or use of testing after return from travel
Questions