Zika Virus Infection: Implications for Family Planning

Brent N Davidson MD FACOG
MDCH Medical Director of Family Planning
Vice-Chair Women’s Health
Henry Ford Medical Group
Zapping Zika: Univ of Michigan
Objectives

By the end of this presentation, participants will be able to:

- Apply recommendations for couples who want to conceive
- Describe understanding of the CDC’s assessment on contraception in regards to Zika
First time in history...

“Never before in history has there been a situation where a bite from a mosquito could result in a devastating malformation.”
– Dr. Tom Frieden, CDC Director
Fortune, April 13, 2016

“...the last time an infectious pathogen (rubella virus) caused an epidemic of congenital defects was more than 50 years ago...”
– New England Journal of Medicine, April 13, 2016
Zika Virus Transmission

- Primary mode of transmission
  - *Aedes aegypti* and *Aedes albopictus* mosquitoes

- Additional modes of transmission
  - Intrauterine and perinatal transmission (mother-to-fetus)
  - Sexual transmission
  - Laboratory exposure
  - Blood Bank
The Millennials’ STD: Basic Reproduction Number

- Seasonal Influenza Virus 1.3
- HIV 2-5
- Zika 3-6.6
ZIKA Proven to Cause Microcephaly and other Adverse Outcomes

- Brain has not developed properly during pregnancy or has stopped growing after birth
- Linked to pregnancy loss
  - Evidence insufficient to confirm Zika virus as cause
- Range of problems detected in infants infected with Zika virus before birth:
  - Seizures
  - Developmental delay
  - Intellectual disability
  - Problems with movement and balance
  - Feeding problems, such as difficulty swallowing
  - Hearing loss
  - Visions problem
Late Onset Microcephaly

8/11/2016

Normal size heads at birth
Not detectable on in utero sonography
Damaged brains have stopped growing
By 6 months of age microcephaly develops
Mothers were infected during 3rd trimester
89% Head Circumference
How Can Pregnant Women and Their Fetuses Become Infected?

- Pregnant women can be infected through:
  - A mosquito bite
  - Sex with an infected male/female partner

- If infected around conception:
  - Zika might present risk to fetus

- If infected during pregnancy:
  - Zika can be passed to the fetus during pregnancy or around the time of birth
The issue

- Rapid spread of Zika virus in South America with increasing reports of cases of congenital abnormalities associated with Zika virus infections led WHO to declare a Public Health Emergency of International Concern on Feb 1, 2016
Over 70% of the population infected within a 13-week period.
The Virus

• Flavivirus: RNA virus
  • Related to Yellow fever, dengue virus, Japanese encephalitis and West Nile Virus
  • Until now, little knowledge on pathogenesis
    • Viral replication at dendritic cells → spreads to lymph nodes and bloodstream
    • Viremia occurs within 3 to 4 days of symptom onset
      • Can be detected in blood from day of symptoms to 11 days after onset
      • Can be detected in urine, sperm, and saliva of infected individuals

Nature Reviews Microbiology 3, 13-22 (January 2005)
Zika Virus Associated with Microcephaly

Figure 3. Electron Microscopy of Ultrathin Sections of Fetal Brain and Staining of a Flavivirus-like Particle.
Zika Virus Transmission Cycle

Transmitted to humans from Aedes mosquitoes
- *A. aegypti* – confined to tropical and subtropical regions
- *A. albopictus* - found in temperate regions as well
  - Much wider range of *A. albopictus* in US
  - Aggressive daytime biter
  - Found in densely populated urban environments
  - With return of infected travelers it is a concern for local spread
- Regions above 6500 feet (2000 meters) are excluded from travel precautions
- Sexual transmission
  - Present in sperm
  - How long the virus persists
- Blood Transfusions
- Organ transplantation
- Lactation—no documented cases to date

How Mosquitoes Spread Zika

The Aedes aegypti mosquito is thought to be responsible for most of the spread of Zika. The virus is carried by female mosquitoes (males do not bite) that have fed on infected blood.

1. Mosquito feeds on virus-infected blood.
2. Infected blood travels to the midgut.
3. Virus enters the circulatory system ...
4. ... and travels to the salivary glands.
5. Mosquito bites again, injecting virus-infected saliva into victim before feeding.

By Sarah Almukhtar and Mika Grindal | Sources: Dr. W. Augustine Dunn; Qx CBC; The Anatomical Life of the Mosquito, R. E. Broodgrass

Figure 1: Cumulative number of countries, territories and areas reporting Zika virus transmission, 2007-2014, and monthly from 1 January 2015 to 16 March 2016.
Zika Virus and Risk for Neurological Abnormalities
Figure 1. Areas in Which Zika Virus Infections in Humans Have Been Noted in the Past Decade (as of March 2016).
Only sporadic infections have occurred in Southeast Asia, the Philippines, and Indonesia.
Studies of Guillain–Barré Syndrome in Association with Zika Virus Infection
According to Study Design and Date of Publication

<table>
<thead>
<tr>
<th>Study Type</th>
<th>Countries (Yr of Publication)</th>
<th>No. of Studies</th>
<th>Main Findings</th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecologic</td>
<td>French Polynesia (2015), Pacific Islands (2016)</td>
<td>2</td>
<td>French Polynesia: 8750 suspected Zika cases; 52% of 885 tested Zika-positive in saliva or blood; 73 with neurologic or autoimmune complications, including GBS; Pacific islands: AFP surveillance in children not associated with Zika emergence</td>
<td>French Polynesia: temporal ecologic association; studies cover several Pacific island countries</td>
<td>Mostly clinical diagnoses; AFP surveillance in children only and aggregated to yearly level</td>
</tr>
<tr>
<td>Surveillance</td>
<td>Brazil, Colombia, El Salvador, Venezuela (2016)</td>
<td>1</td>
<td>GBS cases in countries with reported Zika virus circulation: Brazil, 1708; Colombia, 201; El Salvador, 118 in 6 wk (vs. monthly average of 15); Venezuela, 252 in 1 mo</td>
<td>Covers multiple countries in the Americas</td>
<td>Ecologic association; no report of numbers of Zika cases; inconsistent or no GBS comparison data</td>
</tr>
<tr>
<td>Case reports</td>
<td>French Polynesia (2014), Puerto Rico (2016)</td>
<td>2</td>
<td>Patients with rash followed by GBS diagnosis; serum positive for ZIKV IgM; some other infections excluded in one case</td>
<td>Laboratory-confirmed ZIKV infections</td>
<td>Other infections not completely excluded</td>
</tr>
<tr>
<td>Case–control</td>
<td>French Polynesia (2016)</td>
<td>1</td>
<td>Cases: 42 people hospitalized with GBS during Zika outbreak; control group 1: 98 hospital inpatients with nonfebrile illness in same period; control group 2: 70 patients with RT-PCR-confirmed ZIKV infection; comparison of ZIKV antibodies, GBS vs. control group 1: OR, 59.7 (95% CI, 10.4–∞)</td>
<td>Two control groups; strong association</td>
<td>Cross-reactivity between DENV and ZIKV; few other infections investigated</td>
</tr>
</tbody>
</table>

Zika Virus
Clinical presentation

<table>
<thead>
<tr>
<th>Sign or Symptom</th>
<th>No. of Patients (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macular or papular rash</td>
<td>28 (90)</td>
</tr>
<tr>
<td>Fever*</td>
<td>20 (65)</td>
</tr>
<tr>
<td>Arthritis or arthralgia</td>
<td>20 (65)</td>
</tr>
<tr>
<td>Nonpurulent conjunctivitis</td>
<td>17 (55)</td>
</tr>
<tr>
<td>Myalgia</td>
<td>15 (48)</td>
</tr>
<tr>
<td>Headache</td>
<td>14 (45)</td>
</tr>
<tr>
<td>Retro-orbital pain</td>
<td>12 (39)</td>
</tr>
<tr>
<td>Edema</td>
<td>6 (19)</td>
</tr>
<tr>
<td>Vomiting</td>
<td>3 (10)</td>
</tr>
</tbody>
</table>

* Cases of measured and subjective fever are included.

Zika Virus
Differential diagnosis

• Other viral causes of arthritis:
  • Dengue fever
  • Chikungunya
  • Parvovirus
  • Rubella
  • Other viruses: enterovirus, adenovirus, and alphaviruses

• Measles
• Leptospirosis
• Malaria
• Rickettsial infection
• Group A Streptococcus
Zika Virus
Clinical presentation

A- Maculopapular rash on the face
B- Conjunctival and palpebral erythema
C- Retroauricular lymphadenopathy
D- Conjunctival injection with prominence of vasculature

DOI: 10.1056/NEJMoa1602412
Zika Virus
Clinical presentation

E- Rash on the legs, with a lacy reticular pattern
F- Maculopapular rash on the inner arm
G- Edema of the foot, which the patient reported was painful
H- Blanching macular rash on the gravid abdomen.

DOI: 10.1056/NEJMoa1602412
Zika Virus Diagnosis

Suspected case

A person presenting with rash and/or fever and at least one of the following signs or symptoms:

- arthralgia; or
- arthritis; or
- conjunctivitis (non-purulent/hyperaemic).

Probable case

A suspected case with presence of IgM antibody against Zika virus\(^1\) and an epidemiological link\(^2\).

Confirmed case

A person with laboratory confirmation of recent Zika virus infection:

- presence of Zika virus RNA or antigen in serum or other samples (e.g. saliva, tissues, urine, whole blood); or
- IgM antibody against ZIKV positive and PRNT\(_{90}\) for ZIKV with titre \(\geq 20\) and ZIKV PRNT\(_{90}\) titre ratio \(\geq 4\) compared to other flaviviruses; and exclusion of other flaviviruses

---

1- With no evidence of infection with other flaviviruses
2- Contact with a confirmed case, or a history of residing in or travelling to an area with local transmission of Zika virus within 2 weeks prior to onset of symptoms.
Zika Virus

Treatment

No active treatment nor prevention via vaccination available to date
Countries, territories and areas with autochthonous Zika virus circulation, 2007–2016

<table>
<thead>
<tr>
<th>Classification</th>
<th>WHO Regional Office</th>
<th>Country/Territory/Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported or indication of autochthonous Zika virus transmission AND Guillain-Barré syndrome AND microcephaly (2)</td>
<td>AMRO/PAHO (1)</td>
<td>Brazil</td>
</tr>
<tr>
<td></td>
<td>WPRO (1)</td>
<td>French Polynesia¹</td>
</tr>
<tr>
<td>Reported or indication of autochthonous Zika virus transmission, Guillain-Barré syndrome and no reports of microcephaly cases (10)</td>
<td>AMRO/PAHO (10)</td>
<td>Colombia, El Salvador, French Guiana, Haiti, Honduras, Martinique, Panama, Puerto Rico, Suriname, Venezuela (Bolivarian Republic of)</td>
</tr>
</tbody>
</table>

- Between March 2015 and April 2016, >5,000 cases of microcephaly were reported among newborns born to Brazilian mothers with Zika virus infection
- Represents >20-fold increase in microcephaly compared with previous years

Countries, territories and areas with autochthonous Zika virus circulation, 2007–2016

<table>
<thead>
<tr>
<th>Classification</th>
<th>WHO Regional Office</th>
<th>Country/Territory/Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported or indication of autochthonous Zika virus transmission and</td>
<td>AFRO (2)</td>
<td>Cabo Verde, Gabon</td>
</tr>
<tr>
<td>no reports of Guillain-Barré syndrome or microcephaly cases (40)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AMRO/PAHO (22)</td>
<td></td>
<td>Aruba, Barbados, Bolivia (Plurinational State of), BONAIRE - Netherlands, Costa Rica,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cuba, Curaçao, Dominica, Dominican Republic, Ecuador, Guadeloupe, Guatemala, Guyana,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jamaica, Mexico, Nicaragua, Paraguay, Saint Martin, Saint Vincent and the Grenadines,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sint Maarten, Trinidad &amp; Tobago, United States Virgin Islands</td>
</tr>
<tr>
<td>SEARO (4)</td>
<td></td>
<td>Bangladesh, Indonesia, Maldives, Thailand</td>
</tr>
<tr>
<td>WPRO (12)</td>
<td></td>
<td>American Samoa, Cambodia, Fiji, Lao People’s Democratic Republic, Malaysia, Marshall</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Islands, Papua New Guinea, Philippines, Samoa, Solomon Islands, Tonga, Vanuatu</td>
</tr>
</tbody>
</table>

Countries, territories and areas with autochthonous Zika virus circulation, 2007–2016

<table>
<thead>
<tr>
<th>Classification</th>
<th>WHO Regional Office</th>
<th>Country/Territory/Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries/territories/areas with outbreaks terminated</td>
<td>AMRO/PAHO (1)</td>
<td>ISLA DE PASCUA - Chile</td>
</tr>
<tr>
<td>(4)</td>
<td>WPRO (3)</td>
<td>Cook Islands, New Caledonia, YAP - Micronesia (Federated States of)</td>
</tr>
<tr>
<td>Locally acquired without vector-borne transmission</td>
<td>AMRO/PAHO (1)</td>
<td>United States of America</td>
</tr>
<tr>
<td>(3)</td>
<td>EURO (2)</td>
<td>France, Italy</td>
</tr>
</tbody>
</table>

Zika Virus Infection and Pregnancy

• No evidence that pregnant women experience more severe disease

• Infection in all trimesters has been associated with fetal abnormalities
  • It should be presumed that the risk for congenital infection exists throughout pregnancy

• Vertical transmission of Zika virus from mother to fetus has been associated with several sequelae
Fetal microcephaly (>2 standard deviations below the mean for gestational age)

**Figure 4.** Infants with Moderate or Severe Microcephaly Associated with Maternal Zika Virus Infection, as Compared with a Typical Newborn.
• CDC issued a travel alert on January 15, 2016, advising pregnant women to consider postponing travel to areas with active transmission of Zika virus

• On January 19, interim guidelines for U.S. health care providers caring for pregnant women with travel to an affected area, updated on February 5th
As of February 17, CDC had received reports of nine pregnant travelers with laboratory-confirmed Zika virus disease; 10 additional reports of Zika virus disease among pregnant women are currently under investigation.

No Zika virus–related hospitalizations or deaths among pregnant women were reported.

Pregnancy outcomes among the nine confirmed cases includes:
- Two early pregnancy losses
- Two elective terminations
- Three live births (two apparently healthy infants and one infant with severe microcephaly)
- Two pregnancies (approximately 18 weeks’ and 34 weeks’ gestation) are continuing without known complications
Potential problem in the US

Endemic mosquitoes' spread

Figure 3. Approximate ranges of *A. aegypti* and *A. albopictus* in the United States (as of March 2016). These mosquitoes may not be present in all areas, and vector density may vary considerably within these ranges.
A global village
So far travel associated infections in US around 390 cases

Approximately half a million pregnant women are estimated to travel to the United States annually from the 40+ Zika-affected countries and U.S. territories with active transmission of Zika virus.
As of April 20, 2016

• Zika virus disease and Zika virus congenital infection are **nationally notifiable conditions**

• ArboNET for January 1, 2015 – April 20, 2016

  • **US States**
    Travel-associated Zika virus disease cases reported: 388
    Locally acquired vector-borne cases reported: 0
    Total: 388
    • Pregnant: 33
    • Sexually transmitted: 8
    • Guillain-Barré syndrome: 1

  • **US Territories**
    Travel-associated cases reported: 3
    Locally acquired cases reported: 500
    Total: 503
    • Pregnant: 48
    • Guillain-Barré syndrome: 4
Current Approach to Possible Zika Virus Cases
8/9/2016 Update

22 locally transmitted cases in Miami
9/10/2016 56 nontravel Zika Cases in Miami vs 9/14 CDC 43
Domestic Travel Ban-1 square mile in Miami
1658 total Zika cases in US: 15 sexually transmitted
US Territories 65 travel relates cases, 17629 nontravel related
41 US military and their families infected while overseas-1 pregnant
Couples who are actively trying to conceive and planning travel or are returning from an area of active Zika virus transmission

- Pregnant women in any trimester should consider postponing travel to any area where there is Zika virus transmission
- Healthcare providers should discuss pregnancy intention and reproductive options with women of reproductive age

- Couples could consider several factors regarding risk:
  - Duration and extent of exposure to infected mosquitoes and the steps taken to prevent mosquito bites
  - Most infections are asymptomatic
  - Sexual transmission is possible
  - Couples can monitor for symptoms
  - The timing from exposure to development of symptoms is thought to be a few days to two weeks
Recommendations for women who traveled to areas with ongoing Zika Virus transmission prior to conception

• Possible exposure to Zika virus should **wait at least eight weeks after exposure** to attempt conception

• Timing from exposure to symptoms (if they occur) is a few days to two weeks
  • Viremia is expected to last approximately one week in clinical illness

• **If positive symptoms of Zika virus infection** after exposure should **wait at least eight weeks after symptom onset** to attempt conception
  • There is no current evidence to suggest that a fetus conceived after maternal viremia has resolved would be at risk for fetal infection
What is the wait period for a woman who plans on becoming pregnant and whose partner traveled to regions with active Zika virus transmission?

• Asymptomatic men traveling to an active Zika virus area → **wait at least eight weeks** after last exposure to attempt conception

• If confirmed or clinical syndrome Zika virus infection → **should wait at least six months after symptom onset** to attempt conception
  • Testing for the purpose of assessing the risk of sexual transmission is not recommended
  • Duration of shedding in the male genitourinary tract is limited
  • Unknown whether infected men who never develop symptoms can transmit Zika virus to their sex partners
  • Sexual transmission of Zika virus from infected women to their sex partners has not been reported/ WRONG!
What are the special considerations for couples undergoing fertility treatment?

- Fertility treatment for sexually intimate couples using their own gametes and embryos should **follow the timing recommendations for persons attempting conception**.
What are the guidelines for a pregnant woman whose partner has traveled to or resides in an area with active Zika virus transmission?

• Correctly and consistently use condoms or abstain from sex for the duration of the pregnancy

• If a pregnant woman has sex without a condom with a male partner with possible Zika virus exposure
  • Should be tested if she develops at least one symptom compatible with infection or if the partner is diagnosed with Zika virus infection
If a pregnant woman traveled to a country declared as having active Zika virus transmission immediately after her return

• There is no standard in terms of exposure risk relative to the timing of when a country is declared as having Zika transmission activity
• ? 30 day window after return (based on expert opinion)
Testing a pregnant woman who became pregnant after she was exposed to Zika virus?

• Asymptomatic pregnant women who were exposed to Zika virus within 8 weeks prior to conception (6 weeks prior to last menstrual period) follow the same testing recommendations as women exposed during pregnancy
If a pregnant women develops clinical illness consistent with Zika virus disease during or within 2 weeks of travel to areas with ongoing Zika virus transmission:

• Testing is recommended for pregnant women with clinical illness consistent with Zika virus disease
  • Includes one or more of the following signs or symptoms: acute onset of fever, maculopapular rash, arthralgia, or conjunctivitis, during or within 2 weeks of travel
• Report any suspected cases to their local health department in the county where the suspected patient resides

• **Zika Clinical Questionnaire Form**

• Following approval by MDHHS
  • Fill out Microbiology/Virology Test Form DCH-0583 and complete the CDC Test Request Form
What if the IFA IgM is reported positive?

- This is a **preliminary report**
- **Must be confirmed** by plaque reduction neutralization test (PRNT)
  - May take 1-4 weeks
  - This is due to a lack of standard test and possible false positive test
  - May cross react with viruses in the flavivirus family

- At the same time:
  - Referral to a Maternal Fetal Medicine specialist for evaluation
  - Risk assessment
  - Patient communication for clinical decision-making
What if the IFA IgM is reported positive?

• Important questions to ask:
  • History of other virus infection or vaccination
  • Symptoms of acute infection and timing related to exposure
  • Confirmed Zika infection in a sexual partner
  • Other evidence of congenital Zika infection or complication, such as fetal microcephaly or intracranial calcifications
Simultaneous outbreaks of dengue, chikungunya and Zika virus infections: diagnosis challenge in a returning traveler with nonspecific febrile illness

**FIG. 1.** Diagnostic algorithm for travelers with nonspecific febrile illness returning from regions experiencing simultaneous outbreaks of dengue, chikungunya and Zika virus infections. RDT, rapid diagnostic test.
Possible final results of the confirmatory PRNT after a preliminary positive report for Zika virus serology (IgM)?

A. Evidence of a recent infection with Zika virus
B. Evidence of a recent infection with another virus (such as dengue)
C. No Evidence of infection with a flavivirus of undetermined type (positive for more than one virus)
D. No evidence of infection (preliminary IgM test is false positive)

- If evidence of recent Zika infection (positive IgM & PRNT confirmation)
  - CDC recommends serial fetal ultrasounds and consider testing amniotic fluid
  - All tests should be reported to the local health department
Possible final results of the confirmatory PRNT after a preliminary positive report for Zika virus serology (IgM)?

- If the result is negative for Zika infection
  - Consider fetal ultrasound to detect abnormalities consistent with Zika virus disease
    - If consistent with Zika virus disease → retest the pregnant woman for Zika virus infection
    - If not consistent with Zika virus disease → routine prenatal care
- Fetal ultrasounds might not detect microcephaly or intracranial calcifications until the late second or early third trimester of pregnancy
Fetal abnormalities consistent with Zika virus disease

- Microcephaly
- Intracranial calcifications
- Brain and eye abnormalities

The anatomic survey should also look for:

- Irregularly shaped ventricular margins
- Increased periventricular echogenicity
- Cystic lesions
- Intraventricular adhesions
- Callosal or vermian dysgenesis
- Small transcerebellar diameter
- Enlarged cisterna magna
- Increased amount of cerebrospinal fluid around the brain
What are the recommendations for amniocentesis for Zika virus testing?

- Should be individualized → similar to evaluation of other congenital infections
- The sensitivity and specificity of RT-PCR testing of amniotic fluid is unknown

- **Consider testing if**--
  - Fetal microcephaly
  - Intracranial calcifications and/or ventriculomegaly
    - This is regardless of maternal laboratory test results for Zika virus infection
  - Positive or inconclusive maternal laboratory test results for Zika virus infection

- *Recommended sample to be submitted in a CSF collection tube*
CDC's Response to Zika
Updated Interim Guidance:
Testing Algorithm for a Pregnant Woman with Possible Exposure to Zika Virus\(^1,2\), Not Residing in an Area with Active Zika Virus Transmission\(^3\)

1. Possible exposure to Zika virus includes travel to an area with active transmission of Zika virus [http://www.cdc.gov/travel/notices/], or sex with a man who traveled to, or resided in, an area with ongoing transmission of Zika virus.

2. Testing is not currently recommended for pregnant women with possible sexual exposure to Zika virus if both partners are asymptomatic.


4. Fetal abnormalities consistent with Zika virus disease include microcephaly, intracranial calcifications, and brain and eye abnormalities. Fetal ultrasounds might not detect abnormalities until late second or early third trimester of pregnancy.

---


www.cdc.gov/zika

CDC's Response to Zika
Updated Interim Guidance:
Testing Algorithm for a Pregnant Woman Residing in an Area with Active Zika Virus Transmission\(^1\), with or without Clinical Illness\(^2\) Consistent with Zika Virus Disease\(^3\)

1. Local health officials determine when to implement testing of asymptomatic pregnant women based on information about levels of Zika virus transmission and laboratory capacity.

2. Clinical illness is consistent with Zika virus disease if one or more signs/symptoms (acute onset of fever, rash, arthralgia, or conjunctivitis) are present:


4. Fetal abnormalities consist with Zika virus disease include microcephaly, intracranial calcifications, and brain and eye abnormalities. Fetal ultrasounds might not detect abnormalities until late second or early third trimester of pregnancy.

Updated Interim Guidelines and other resources for healthcare providers available at

www.cdc.gov/zika
Interim guidelines for the evaluation and testing of infants whose mothers traveled to or resided in an area with ongoing Zika virus transmission during pregnancy\(^\dagger\)\(^\text{§}\)

1. Infant whose mother traveled to or resided in an area with Zika virus transmission during pregnancy.
   - Microcephaly or intracranial calcifications detected prenatally or at birth
     - Conduct thorough physical examination and perform Zika virus testing in infant
       - Positive or inconclusive test for Zika virus infection in infant
         - Perform additional clinical evaluation, report case, and assess for possible long-term sequelae
       - Negative tests for Zika virus infection in infant
         - Evaluate and treat for other possible etiologies
   - No microcephaly or intracranial calcifications detected prenatally or at birth
     - Conduct thorough physical examination and perform Zika virus testing in infant
       - Positive or inconclusive test for Zika virus infection in mother
         - Routine care of infant, including appropriate follow-up on any clinical findings
       - Negative or no Zika virus testing performed on mother
         - Routine care of infant, including appropriate follow-up on any clinical findings

\(^\dagger\)Areas with Zika virus transmission are listed on CDC's website at [http://www.cdc.gov/travel/notices](http://www.cdc.gov/travel/notices).

\(^\text{§}\)Microcephaly defined as occipitofrontal circumference less than the third percentile for gestational age and sex based on standard growth curves, not explained by other etiologies.

\(^\text{§§}\)Laboratory evidence of Zika virus infection includes 1) detectable Zika virus, Zika virus RNA, or Zika virus antigen in any clinical specimens; or 2) positive Zika virus Immunoglobulin M (IgM) with confirmatory neutralizing antibody titers that are 3-4 fold higher than dengue virus neutralizing antibody titers in serum or cerebrospinal fluid. Testing is considered inconclusive if Zika virus neutralizing antibody titers are < 4-fold higher than dengue virus neutralizing antibody titers.


CDC recommendations for:

All infants with possible congenital Zika virus infection:

- Comprehensive physical examination, measurement of the occipitofrontal circumference, length, weight, and assessment of gestational age
- Full body photographs and any rash, skin lesions, or dysmorphic features should be documented
- Cranial ultrasound, unless prenatal ultrasound results from third trimester demonstrated no abnormalities of the brain
- Evaluation of hearing by evoked otoacoustic emissions testing or auditory brainstem response testing
  - If abnormal → refer to an audiologist for further evaluation
- Ophthalmologic evaluation
- Other evaluations specific to the infant's clinical presentation
CDC recommendations for:

Infants with microcephaly or intracranial calcifications, additional evaluation includes the following:

• Consultation with a clinical geneticist or dysmorphologist
• Consultation with a pediatric neurologist for additional evaluation
• Testing for other congenital infections
  • Syphilis, toxoplasmosis, rubella, CMV, LCMV, and HSV infections
• Consider consulting a pediatric infectious disease specialist
• CBC and CMP
• Consideration of genetic and other teratogenic causes based on additional congenital anomalies that are identified through clinical examination and imaging studies
<table>
<thead>
<tr>
<th>Before travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommend personal protective measures to prevent mosquito bites</td>
</tr>
<tr>
<td>Consider referral to a travel medicine professional</td>
</tr>
<tr>
<td>Counsel on ways to avoid unintended pregnancy during travel</td>
</tr>
<tr>
<td>Recommend against travel if pregnant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>After travel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remind travelers to report symptoms compatible with Zika virus infection that occur within 3 weeks of return</td>
</tr>
<tr>
<td>Recommend that travelers avoid donating blood for 28 days after return</td>
</tr>
<tr>
<td>Recommend that men avoid unprotected sex with a pregnant partner for the duration of pregnancy</td>
</tr>
<tr>
<td>Recommend that pregnant women report travel that has occurred during pregnancy to their antenatal care professional so that appropriate monitoring can occur</td>
</tr>
</tbody>
</table>
Mosquito Bite Prevention for Travelers

Mosquitoes spread many types of viruses and parasites that can cause diseases like chikungunya, dengue, Zika, and malaria. If you are traveling to an area where malaria is found, talk to your healthcare provider about malaria prevention medication that may be available.

Protect yourself and your family from mosquito bites. Here’s how:

Keep mosquitoes out of your hotel room or lodging

- Choose a hotel or lodging with air conditioning or screens on windows and doors.
- Sleep under a mosquito bed net if you are outside or in a room that is not well screened. Mosquitoes can live indoors and will bite at any time, day or night.
  - Buy a bed net at your local outdoor store or online before traveling overseas.
  - Choose a WHOPES-approved bed net (like Pramax®): compact, white, rectangular, with 156 holes per square inch, and long enough to tuck under the mattress.
  - Permethrin-treated bed nets provide more protection than untreated nets.
    - Permethrin is an insecticide that kills mosquitoes and other insects.
    - Do not wash bed nets or expose them to sunlight. This will break down the insecticide more quickly.
Cover up!

- Wear long-sleeved shirts and long pants.
- Mosquitoes may bite through thin clothing. Treat clothes with permethrin or another Environmental Protection Agency (EPA)-registered insecticide for extra protection.

Use only an EPA-registered insect repellent

- When used as directed, EPA-registered insect repellents are proven safe and effective, even for pregnant and breastfeeding women.
- Consider bringing insect repellent with you.
- Always follow the product label instructions.
- Reapply insect repellent as directed.
  » Do not spray repellent on the skin under clothing.
  » If you are also using sunscreen, apply sunscreen first and insect repellent second.
- The effectiveness of non-EPA registered insect repellents, including some natural repellents, is not known.
- To protect yourself against diseases like chikungunya, dengue, and Zika, CDC and EPA recommend using an EPA-registered insect repellent.
- For more information: [www2.epa.gov/insect-repellents](http://www2.epa.gov/insect-repellents)
Use an insect repellent with one of the following active ingredients:

<table>
<thead>
<tr>
<th>Active ingredient</th>
<th>Some brand name examples*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher percentages of active ingredient provide longer protection</td>
<td></td>
</tr>
<tr>
<td>DEET</td>
<td>Off, Cutter, Sawyer, Ultrathon</td>
</tr>
<tr>
<td>Picaridin, also known as KBR 3023, Bayrepel, and icaridin</td>
<td>Skin So Soft Bug Guard Plus, Autan (outside the United States)</td>
</tr>
<tr>
<td>Oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD)</td>
<td>Repel</td>
</tr>
<tr>
<td>IR3535</td>
<td>Skin So Soft Bug Guard Plus Expedition, SkinSmart</td>
</tr>
</tbody>
</table>
If you are travelling with a baby or child:

- Always follow instructions when applying insect repellent to children.
- Do not use insect repellent on babies younger than 2 months of age.
- Instead, dress infants or small children in clothing that covers arms and legs, or cover the crib, stroller, and baby carrier with mosquito netting.
  
  » Adults: Spray insect repellent onto your hands and then apply to a child’s face. Do not apply insect repellent to a child’s hands, mouth, cut or irritated skin.

- Do not use products containing oil of lemon eucalyptus (OLE) or para-menthane-diol (PMD) on children under 3 years of age.

Treat clothing and gear

- Use permethrin to treat clothing and gear (such as boots, pants, socks, tents) or purchase permethrin-treated clothing and gear. Read product information to find out how long the protection will last.
- If treating items yourself, always follow the product instructions.
- Do not use permethrin products directly on skin.
Useful references for patients

The New York Times

Short Answers to Hard Questions About Zika Virus

By DONALD G. McNEIL JR., CATHERINE SAINT LOUIS and NICHOLAS ST. FLEUR  UPDATED March 18, 2016  RELATED ARTICLE


CDC
Centers for Disease Control and Prevention

ZIKA QUESTIONS


oabreu2@hfhs.org
Pregnancy Planning and Access to Contraception

- Primary strategy to reduce Zika-related pregnancy complications is to support women who want to delay or avoid pregnancy.

- Healthcare providers should:
  - Discuss prevention of unintended pregnancy with women and couples who live in areas with Zika and who want to delay or avoid becoming pregnant.
  - Provide information about birth control methods that best meet their needs (including long-acting reversible contraceptives).
<table>
<thead>
<tr>
<th></th>
<th>WOMEN</th>
<th>MEN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recent travel to an area with Zika or sex without a condom with an infected male</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zika virus disease</td>
<td>Wait at least 8 weeks after symptom onset</td>
<td>Wait at least 6 months after symptom onset</td>
</tr>
<tr>
<td>No Zika virus disease</td>
<td>Wait at least 8 weeks after exposure</td>
<td>Wait at least 8 weeks after exposure</td>
</tr>
<tr>
<td><strong>Residence in an area with Zika</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zika virus disease</td>
<td>Wait at least 8 weeks after symptom onset</td>
<td>Wait at least 6 months after symptom onset</td>
</tr>
<tr>
<td>No Zika virus disease</td>
<td>Talk with health care provider</td>
<td>Talk with healthcare provider</td>
</tr>
</tbody>
</table>
Considerations for Couples Interested in Conceiving
Living in an Area With Active Zika Virus Transmission

- Reproductive life plan
- Environmental risk of exposure
- Personal measures to prevent mosquito bites
- Personal measures to prevent sexual transmission
- Education about Zika virus infection during pregnancy
- Risks and benefits of pregnancy at this time
Tools for Healthcare Providers and Couples Who Want to Conceive

PRECONCEPTION COUNSELING
For Women and Men Living in Areas with Ongoing Spread of Zika Virus Who Are Interested in Conceiving

This guide describes recommendations for counseling women and men living in areas with Zika who want to become pregnant and have not yet experienced clinical illness consistent with Zika virus disease. This material includes recommendations from CDC's updated guidance*, key questions to ask patients, and sample scripts for discussing recommendations and preconception issues. Because a lot of content is outlined for discussion, questions are included throughout the script to make sure patients understand what they are being told.

www.cdc.gov/Zika

*Free online materials available in English and Spanish
Recommendations for Couples Interested in Conceiving
Living in an Area With Active Zika Virus Transmission

- If couples decide to attempt conception:
  - Prevent mosquito bites through
    - Use of EPA-registered insect repellent during pregnancy
    - Wearing long-sleeves/pants
    - Removing standing water,
    - Staying in rooms with screens on windows/doors
    - Staying and sleeping in air-conditioned rooms or under bed nets
  - After successful conception, prevent sexual transmission through correct and consistent use of condoms or abstaining from sex for duration of pregnancy
Recommendations for Couples Interested in Conceiving
Living in an Area With Active Zika Transmission & Waiting to Conceive

- If couples decide to wait to conceive, healthcare providers should discuss
  - Strategies to prevent unintended pregnancy
  - Use of the most effective contraceptive methods that can be used correctly and consistently
  - Role of correct and consistent use of condoms in reducing the risk for sexually transmitted infections, including Zika
**Most Effective Family Planning Methods**

<table>
<thead>
<tr>
<th>Method</th>
<th>Success Rate</th>
<th>How to Use</th>
<th>Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implant</td>
<td>0.05%</td>
<td>Once in place, little or nothing to do or remember.</td>
<td>Reversible</td>
</tr>
<tr>
<td>Intratuterine Device (IUD)</td>
<td>0.2% LNG, 0.8% Copper T</td>
<td>Take a pill each day.</td>
<td>Reversible</td>
</tr>
<tr>
<td>Permanent Sterilization (Abdominal, Laparoscopic, and Hysteroscopic)</td>
<td>0.5%</td>
<td>Keep in place, change on time.</td>
<td>Least Effective</td>
</tr>
<tr>
<td>Male (Vasectomy)</td>
<td>0.15%</td>
<td>Use correctly every time you have sex.</td>
<td>Least Effective</td>
</tr>
<tr>
<td>Injectable</td>
<td>6%</td>
<td>Get repeat injections on time.</td>
<td>Reversible</td>
</tr>
<tr>
<td>Pill</td>
<td>9%</td>
<td></td>
<td>Least Effective</td>
</tr>
<tr>
<td>Patch</td>
<td>9%</td>
<td></td>
<td>Least Effective</td>
</tr>
<tr>
<td>Ring</td>
<td>9%</td>
<td></td>
<td>Least Effective</td>
</tr>
<tr>
<td>Diaphragm</td>
<td>12%</td>
<td></td>
<td>Least Effective</td>
</tr>
<tr>
<td>Male Condom</td>
<td>18%</td>
<td>Use correctly every time you have sex.</td>
<td>Least Effective</td>
</tr>
<tr>
<td>Female Condom</td>
<td>21%</td>
<td></td>
<td>Least Effective</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>22%</td>
<td>Condoms should always be used to reduce the risk of sexually transmitted infections.</td>
<td>Least Effective</td>
</tr>
<tr>
<td>Fertility Awareness-Based Methods</td>
<td>24%</td>
<td>Abstain or use condoms on fertile days.</td>
<td>Least Effective</td>
</tr>
<tr>
<td>Sponge</td>
<td>12% Nulliparous Women 24% Parous Women</td>
<td></td>
<td>Least Effective</td>
</tr>
<tr>
<td>Spermicide</td>
<td>28%</td>
<td></td>
<td>Least Effective</td>
</tr>
</tbody>
</table>

Other Methods of Contraception: (1) Lactational Amenorrhea Method (LAM) is a highly effective, temporary method of contraception; and (2) Emergency Contraception: emergency contraceptive pills or a copper IUD after unprotected intercourse substantially reduce the risk of pregnancy.

Unintended Pregnancy in the US

Contraceptive Access in the United States

- 61 million women in the US between 15-44 years\(^1\)
  - 43 million are at risk for unintended pregnancy\(^2\)
    - ~62% currently use a contraceptive method
      - 10.5% are currently using a LARC (IUD or implant)
    - 10% of women at risk of unintended pregnancy not currently using any contraceptive method

---


Contraceptive Method Choice Among US Women, 2011-2013

- Most common contraceptive methods used were
  - Pill (25.9%)
  - Female sterilization (25.1%)
  - Male condoms (15.3%)
  - Long-acting reversible contraceptives (10.3%)
  - Male sterilization (8.2%)
Unmet Contraceptive Need in the US

- 20.1 million women at risk for unintended pregnancy were in need of publicly funded contraceptive services
  - Either had an income <250% of Federal poverty level OR
  - Were <20 years of age
- Of these, 5.6 million (28%) did not have health insurance
- Publicly funded providers met approximately 42% of the need

Many US women at risk for unintended pregnancy

Frost JJ et.al, Contraceptive Needs and Services, 2013 Update, New York: Guttmacher Institute, 2015,
Use of LARC Women of Reproductive Age (15-44 years)

- Long-Acting Reversible Contraception (LARC)
  - Intrauterine devices (IUD) & Implant
- Most effective type of reversible birth control
  - <1% of LARC users become pregnant
- Safe, no effort after insertion, and can prevent pregnancy for 3-10 years
- Nationally, use of LARC is low
- Barriers to LARC use
  - Patient: awareness, access, and cost
  - Provider: reimbursement, training, acquisition & stocking costs, and awareness about the safety of LARC

Economic Impacts of Increasing Access to Family Planning Services

- $7 saved for every $1 spent on family planning services to prevent unintended pregnancies

- Improved use of LARC generates health-care cost savings by reducing inconsistent contraceptive use
  - $288 million per year saved in total health-sector costs if 10% of women (20–29 years) switched from OCP to LARC
  - Immediate post-partum LARC provision is cost-saving: $6.50 saved for every $1 spent on an adolescent immediate postpartum implant program

- Preventing unintended pregnancies reduces birth defects and associated costs
  - Up to $10 million in savings per averted case of microcephaly
What Title X Providers and Staff Can Do
Prior to Local Transmission

1. **Educate** healthcare providers about the importance of discussing safer sex and contraception with women and couples who live in areas with local Zika transmission and who want to delay or avoid becoming pregnant.

2. **Assess** availability of contraceptive access for women of reproductive age in your jurisdiction/network/patient population who wish to avoid or delay pregnancy during a local Zika outbreak.

3. **Identify** geographic areas or vulnerable populations who may not have access to contraceptive services.
Once Local Transmission has Occurred

1. **Inform** healthcare providers about the importance of discussing safer sex and contraception with women and couples who live in areas with local Zika transmission and who want to delay or avoid becoming pregnant.

2. **Recommend** that healthcare providers ensure that couples who want to delay or avoid pregnancy are informed about birth control methods that best meet their needs, including long-acting reversible contraceptives (IUDs, implants).

3. **Develop** plans to provide contraceptive access for underserved populations.
What CDC is doing
Assessing Access to Contraception in the US

- Analyzing data from Pregnancy Risk Assessment Monitoring System (PRAMS)
  - Surveillance project of CDC and state health departments
  - Collects state-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy
  - Covers 78% of all US births
  - Assesses unintended pregnancy and postpartum contraceptive use

- Planning comprehensive assessment of contraceptive access and unintended pregnancy in states and territories
Prevent Unintended Pregnancy

Proposed Payer Interventions

Address Inadequate Reimbursement Rate

1. Reimburse providers for actual cost of providing contraceptive services for women of childbearing age.
   - Screening for pregnancy intention
   - Contraception counseling
   - Insertion, removal, replacement, or reinserter of LARC
   - Follow-up

2. Reimburse providers for the actual cost of LARC or other contraceptive devices to provide the full range of contraceptive methods.

Expand Coverage

3. Reimburse for immediate postpartum insertion of LARC by unbundling payment for LARC from other postpartum services.

Remove Barriers

4. Remove administrative and logistical barriers to LARC.
   - Prior authorization requirements
   - Medical management
   - High acquisition & stocking costs
Improving Access to Contraception in Continental US:
CDC’s Role Within the Larger HHS Context

**CDC’s 6/18 Initiative**
- 4 states funded to implement evidence-based payment strategies to improve health outcomes and reduce costs

**CDC’s ASTHO LARC Learning Community**
- 13 states to identify the opportunities, challenges, and TA needs using a multi-pronged approach to policy implementation of post-partum LARC.

**CMCS’ Maternal and Infant Health Initiative**
- 14 states funded to facilitate data collection/report on contraceptive measure

**CMMI’s Payer-Provider Summit**
- 4 states brought together to identify promising alternative payment strategies

**MCHB’s COIIN focused on reducing infant mortality**
- 29 states are addressing increased access to contraception

**OPA’s Quality Improvement Initiative**
- 15-20 Title X grantees aligned with the state Medicaid programs funded by CMCS

**HRSA’s Bureau of Primary Health Care**
- Strengthening the quality of contraceptive services provided by community health centers

- Centers for Medicaid/CHIP Services (CMCS); Maternal and Infant Health Initiative (MIH); Maternal and Child Health Bureau (MCHB); Collaborative Improvement & Innovation Network (COIIN) to Reduce Infant Mortality (COIIN); Office of Population Affairs (OPA); Health Resources and Service Administration (HRSA)
In Summary

- Zika virus infections was declared a Public Health Emergency of International Concern due to increasing reports of cases of congenital abnormalities.
- Pregnant women should be advised not travel to areas of ongoing Zika virus outbreaks.
- Sexual partners of pregnant women traveling to areas of ongoing Zika virus outbreaks should ensure safe sexual practices or abstain from sex for the duration of their pregnancy.
- Pregnant women who have been exposed to Zika virus should be counselled and followed for birth outcomes based on the best available information.
- Diagnosis of Zika virus infection is evolving and should be coordinated with the local Health Department and laboratory staff.
Increasing Contraceptive Access in Puerto Rico: Private-Public Partnership
Access to Contraception is Limited in Puerto Rico

TABLE. Estimated contraception needs required to supply all women who desire to avoid pregnancy,* by contraceptive method — Puerto Rico, 2016

<table>
<thead>
<tr>
<th>Contraceptive method</th>
<th>15–19</th>
<th></th>
<th>20–44</th>
<th></th>
<th>Total no. of contraceptives needed for 1 yr supply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Percent distribution†</td>
<td>Approximate no. of women</td>
<td>Percent distribution§</td>
<td>Approximate no. of women</td>
</tr>
<tr>
<td>Intratuterine devices</td>
<td>37</td>
<td>20,000</td>
<td></td>
<td>58</td>
<td>48,000</td>
</tr>
<tr>
<td>Contraceptive implants</td>
<td>35</td>
<td>19,000</td>
<td></td>
<td>17</td>
<td>14,000</td>
</tr>
<tr>
<td>Depot medroxyprogesterone acetate</td>
<td>9</td>
<td>5,000</td>
<td></td>
<td>7</td>
<td>6,000</td>
</tr>
<tr>
<td>Oral contraceptives</td>
<td>12</td>
<td>7,000</td>
<td></td>
<td>9</td>
<td>7,000</td>
</tr>
<tr>
<td>Contraceptive vaginal ring</td>
<td>5</td>
<td>3,000</td>
<td></td>
<td>7</td>
<td>6,000</td>
</tr>
<tr>
<td>Contraceptive patch</td>
<td>2</td>
<td>1,000</td>
<td></td>
<td>2</td>
<td>2,000</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>55,000</td>
<td></td>
<td>100</td>
<td>83,000</td>
</tr>
</tbody>
</table>

* Includes women who are sexually active, fertile, and not sterilized nor using one of the most effective or moderately effective reversible contraceptive methods.
† Percent of contraceptive methods = distribution observed in CHOICE project for women aged 15–19 years (http://www.nejm.org/doi/pdf/10.1056/NEJMoal400506).
§ Percent of contraceptive methods = distribution observed in CHOICE project for women aged 20–44 years (http://europepmc.org/articles/pmc4216614).

Barriers to Contraception in Puerto Rico

- Limited number of contraceptive methods available to women
- High *de facto* out-of-pocket costs for patients
- Insurance reimbursement/perceptions of reimbursement of providers
- Logistical barriers that limit same-day provision
- Lack of patient education
- Shortage of physicians trained in insertion and removal of long-acting reversible contraceptives (i.e., intrauterine devices (IUDs) and implants)
- Cultural and other factors
"When a woman on Medicaid comes into a community health center and wants contraception, we have to refer her to the Preven clinic. She has to travel, many times up to 1 hour, and still has to pay $150-300 out of pocket costs for an IUD and the insertion. There is no same-day access.” (OB/Gyn Provider, Community Health Center)

“I have many patients who I educate about all methods and who decide on one that she feels is best for her. However, because of the cost she has to pay out-of-pocket, they are unable to get an IUD and have to settle for a method that is cheaper in the short-run but less effective.” (OB/Gyn Private Practice)

“We have 50 women on a wait list waiting for Nexplanon.” (OB/Gyn Private/University Provider)

“I had a patient that came from another clinic. Because she was required to do a Pap smear and STD test [not CDC guidance], she could not get an IUD same-day. 2 months later she returned for her results but the doctor was absent. 1 month later she returned but was not on her period. She was pregnant!” (OB/Gyn, Community Health Center)

“I tried to get a Mirena IUD. I got a prescription from my doctor, I went to the pharmacy, and was told my private plan does not cover any LARC methods. I called my plan and was told the same. I could get pills, the injection or the ring. That’s it.” (OB/Gyn UPR Faculty Physician)
Improving Access to Contraception in Puerto Rico

- A collaboration between the CDC Foundation, with CDC technical assistance, the Puerto Rico Department of Health and other local organizations to improve access to women who desire contraception.

- **Goal:** to reduce Zika-related pregnancy complications and birth defects by providing the full range of contraceptive methods to women living in Puerto Rico who want to delay or avoid pregnancy.

- Increase Awareness
- Increase Supply
- Increase Provider Education
Immediate Action Items

- Improve same-day access to services:
  - Remove testing requirements for initiation of contraceptive methods
  - Remove requiring physicians to refer the woman to a limited number of centralized clinics to obtain the contraceptive method

- Add the Levonorgestrel IUD (sole source) to the Medicaid MCO and Health Plan formulary
  - Provide a hormonal IUD at a price that is sustainable long-term
  - Only copper IUD is on the Medicaid MCO formulary in Puerto Rico and is more expensive

- Scale-up short-acting methods while simultaneously working on introduction and sustainability of LARCs
Long-term sustainability

- Train physicians on contraceptive provision, including LARC insertion and removal
- Increase physician awareness to screen women about their desire to achieve, delay, or avoid pregnancy
- Increase patient demand for the most effective contraception methods by educating women about the safety and efficacy of LARC methods
- Introduce the contraceptive implant to the Puerto Rican Market, Medicaid MCO and Health Plan formulary.
- Initiate discussions about the insufficient provider reimbursement rate and administrative and logistical barriers for LARC methods.
- Work collaboratively on the Medicaid Cap concerns with Congress
Resources

• [www.acog.org/zika](http://www.acog.org/zika)