

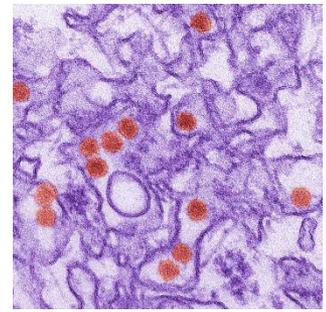


# Zika

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# Zika Virus

- Family *Flaviviridae*, genus *Flavivirus*
- Vectors: *Aedes aegypti* and *Aedes albopictus*
- Maintained in a human-mosquito-human cycle
- Transmission
  - **Vector**
  - Mother-to-child
  - Sexual contact
  - Transfusion



Zika virus  
Credit: CDC/ Cynthia Goldsmith



*Aedes aegypti*  
Credit: CDC/ Prof. Frank Hadley Collins, Dir., Cntr. for Global Health and Infectious Diseases, Univ. of Notre Dame



*Aedes albopictus*  
Credit: CDC/ James Gathany

# Symptoms & Treatment

- Symptoms: fever, rash, arthralgia, or conjunctivitis (red eyes), myalgia and headache
- Possible association with Guillain-Barre Syndrome (GBS) & microcephaly?
- Incubation is unknown, but thought to be between 2-14 days
- Zika virus may remain in blood for up to 28 days
- Infection rarely associated with hospitalization or death
- No vaccine to prevent or specific medicine available to treat Zika infection
  - Avoidance of non-steroidal anti-inflammatory drugs is advised until dengue infection can be ruled out

# Countries and territories where Zika cases have been reported\* (*as of February 4, 2016*)



\*Does not include countries or territories where only imported cases have been documented. Source: <http://www.cdc.gov/zika/geo/active-countries.html>



# Reported Cases of Zika in Texas\*

- 2014: 1 human case reported with travel to Bora Bora
- 2015: 6 human cases reported; travel to El Salvador, Colombia and Honduras
- 2016: 7 human cases reported; 6 imported cases with travel to Colombia, El Salvador, Puerto Rico, Honduras, Haiti, Venezuela and 1 case with no travel (considered sexually transmitted).

# Diagnosis

- Clinical signs and symptoms
  - Two or more of the following: fever, rash, arthralgia, conjunctivitis, headache, myalgia, nausea/vomiting; **AND** absence of a more likely clinical explanation
- Confirmatory tests
  - Zika-specific IgM antibodies & PRNT assay demonstrating neutralizing antibody to Zika (at least 4x greater than neutralizing antibody to viruses such as Dengue)
  - RT-PCR detection of Zika virus RNA

# Testing Criteria

- Symptomatic patient
  - Zika-compatible symptoms while in or **< 2 weeks** after returning from an area with ongoing Zika transmission\*
  - RT-PCR or serology (IgM/PRNT)
- Asymptomatic pregnant women
  - Zika IgM screening recommended on serum samples collected **2-12 weeks after** returning from an area with ongoing Zika transmission\*

# Testing Availability

- CDC
  - RT-PCR, Serology and PRNT
- DSHS
  - RT-PCR & Serology (coming soon)
- LRNs
  - RT-PCR
    - Dallas (available)
    - Houston (coming soon)
    - Tarrant (available)
- **Submitters should notify and consult with their local health/regional health department prior to sending samples**
- **Samples should be accompanied by the appropriate lab submission and supplemental information forms**

# Special Considerations

- Symptomatic patients with no travel
- Microcephalic infants born to women with travel to an area with ongoing Zika activity
- GBS and travel to an area with ongoing Zika activity
- Sexual transmission

→ *Discuss these unique situations on a case-by-case basis*

# Specimen Types

- Serum aliquot
  - 2-3 mLs
- Do not ship whole blood!
- Contact DSHS viral isolation and/or serology team regarding the testing of other specimens
  - CSF
  - Amniotic fluid
  - Tissue (cord or placenta)
  - Urine

# Test Request

- Specimens collected  $\geq 7$  days after symptom onset: *request Serology testing (G-2A)*
- Specimens collected  $< 4$  days after symptom onset: *request PCR testing (G-2V)*
- Specimens collected 4-6 days after symptom onset, request *both PCR and Serology (G2V and G2A)* required; collect two serum tubes, at least 1 mL each)

## **G-2A** Specimen Submission Form (SEP 2015)

CAP# 3024401

CLIA #45D0660644

Laboratory Services Section, MC-1947

P. O. Box 149347, Austin, Texas 78714-9347

Courier: 1100 W. 49<sup>th</sup> Street, Austin, Texas 78756

(888) 963-7111 x7318 or (512) 776-7318

<http://www.dshs.state.tx.us/lab>

## **G-2V** Virology Specimen Submission Form (SEP 2015)

CAP# 3024401

CLIA #45D0660644

Laboratory Services Section, MC-1947

P. O. Box 149347, Austin, Texas 78714-9347

Courier: 1100 W. 49<sup>th</sup> Street, Austin, Texas 78756

(888) 963-7111 x7318 or (512) 776-7318

<http://www.dshs.state.tx.us/lab>

# Specimen Collection & Handling

- Collect specimen as soon as possible after symptom onset
  - Collect 5 mL blood in blood collection tube
  - Centrifuge within 2 hrs from time of collection
- Transfer serum to serum transport tube for shipment
- Place specimens in a biohazard bag and stored at 4°C or -20°C
  - Specimens shipped the same day of collection and will arrive at DSHS within 48 hrs of collection can be stored at 4°C and should be shipped with cold packs
  - Specimens set to arrive > 48 hrs after collection should be stored at -20°C and shipped on dry ice

# Specimen Shipping

- Transport specimens to lab as soon as possible
- Ship specimens Monday-Thursday by overnight delivery
  - **Do not ship on Fridays or holidays**
- Include a completed G2-V/G2-A form(s) and supplemental form with the specimen
- Ship to the correct physical address
- Record shipping tracking number and notify your local health department that a specimen is being shipped

# Common Reasons for Rejection

- No travel
- No symptoms (non-pregnant person)
- Travel to an area with no Zika transmission
- Symptoms began  $> 2$  weeks after return
- Incompatible symptoms
- Asymptomatic pregnant woman sample collected  $< 2$  weeks after return from an area with Zika transmission

# DSHS Lab Contacts

- Viral Isolation
  - 512-776-7594 OR 512-776-7515
- Serology
  - 512-776-7514 OR 512-776-7760
- Check-In
  - 512-776-2385
- Lab Reporting (Submitter ID requests and forms)
  - 512-776-7578
  - [http://www.dshs.state.tx.us/lab/MRS\\_forms.shtm#microbiological](http://www.dshs.state.tx.us/lab/MRS_forms.shtm#microbiological)

# Zika Case Definition

- **Clinical evidence:** Rash or fever **AND** one or more of the following symptoms (not explained by other medical conditions):
  - Arthralgia
  - Myalgia
  - Conjunctivitis
  - Conjunctival hyperemia
  - Headache
  - Malaise
- **Confirmed:** A clinically compatible case with laboratory confirmation
- **Probable:** A clinically compatible case with virus-specific IgM antibodies in CSF or serum but no other testing **OR** with low levels of neutralizing antibodies for another flavivirus

# Test Result Interpretation

National Center for Infectious Diseases  
Centers for Disease Control and Prevention  
3150 Rampart Road  
Fort Collins, CO 80521  
CLIA ID# 06D0880233

## Arboviral Serology Results

Field # [REDACTED] Collected 1/25/2016 Onset: 1/11/2016 CDC No. 103693a Specimen S1

Antigen	IgM Capture ELISA	Endpoint	IgG ELISA	Endpoint
DEN1-4	Neg			
CHIK	Equiv	nd		
ZIKA	Pos	nd		

Antigen	PRNT	POS Control	MIA
DEN	160	>320	
CHIK	<10	>320	
ZIKA	>20480	320	

# Test Result Interpretation

National Center for Infectious Diseases  
 Centers for Disease Control and Prevention  
 3150 Rampart Road  
 Fort Collins, CO 80521  
 CLIA ID# 06D0880233

## Arboviral Serology Results

Field # [REDACTED] Collected 1/27/2016 Onset: 12/19/2015 CDC No. 103967 Specimen Serum

Antigen	IgM Capture ELISA	Endpoint	IgG ELISA	Endpoint
DEN1-4	Equiv			nd
CHIK	Pos			nd
ZIKA	Pos			nd

Antigen	PRNT	POS Control	MIA
DEN	<10	>320	
CHIK	5120	>320	
ZIKA	<10	>320	

# Reporting Cases of Zika

- Classify cases based on case definition outlined in the 2016 Epi Case Criteria Guide
- Use Arboviral Case Investigation form\* to report Zika cases



## Arboviral Case Investigation

- West Nile
- St. Louis
- Chikungunya
- Other Arbovirus **Zika** \_\_\_\_\_

- Fax, attach to NBS investigation or scan and send via secure email to your regional office
  - HSRs should forward investigation forms to ZC Central office for review and approval
- Enter into NEDSS using “Zika” condition code

\*Note: one page Zika clinical questionnaire cannot replace the DSHS Arboviral Case Investigation Form

# Blood Donation: FDA Recommendations

- *Areas with NO Zika activity*
  - Donors in any of the following risk groups below should be deferred for **four weeks**
    - Symptoms suggestive of Zika virus infection during the past four weeks
    - Sexual contact with a person who has traveled to, or resided in, an area with active Zika virus transmission during the prior three months
    - Traveled to areas with active transmission of Zika virus during the past four weeks
- *Areas with current Zika Activity*
  - FDA recommends that whole blood and blood components for transfusion be outsourced from donors in areas of the U.S. without active transmission
  - Blood establishments in these areas may continue collecting and preparing platelets and plasma if an FDA-approved pathogen-reduction device is used

# Prevention

- Avoid travel to Zika-affected countries
  - CDC recommends this especially for pregnant women
- Mosquito bite avoidance – specific to *Aedes* (aggressive daytime biters)
  - **4 Ds**: DEET, Dress (long sleeves), Drain (standing water around homes), Day (time to avoid bites)
- The current season is the best time for **mosquito source reduction** in Texas
  - Prevent *Aedes* population growth in summer months
- Defer blood donation as outlined in FDA recommendations
- Abstain or engage in protected sex with individuals who travel to areas with ongoing Zika transmission

# Commonly Asked Questions

- When is it safe to get pregnant/IVF?
- How much serum is needed to test?
- How much do the tests cost?
- Who is the payor?
- How soon will results be available?

# Summary

- Zika is generally a mild illness, but may be associated with GBS and microcephaly
- Local transmission is possible in Texas
  - Vectors: *Aedes aegypti* and *Aedes albopictus*
  - Large naïve population
  - Many travelers to areas with ongoing transmission
- Reducing mosquito breeding habitats reduces risk of many arboviruses, including West Nile and Zika

# Resources

- CDC: <http://www.cdc.gov/zika/index.html>
- PAHO: <http://www.paho.org/hq/>
- DSHS: <http://www.texaszika.org/>

# Questions?

