



## Zika Update for Planning Summit

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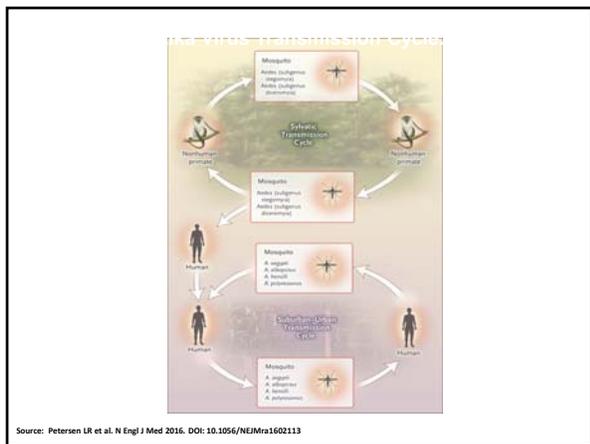
### Acknowledgements and Disclaimer

- Many of these slides are from the CDC, the California Department of Health or the published literature; citations are provided
- This is a rapidly changing area and the data provided are only updated through August 2016



### Zika Virus

- Single-stranded RNA virus isolated from a monkey in 1947
- Flavivirus (related to other *Flaviridae* viruses: dengue, WNV, Japanese B encephalitis, and yellow fever)
- Transmitted by *Aedes* spp. mosquitoes

### Zika Vectors

- *Aedes aegypti* is the primary vector
- *Aedes albopictus* may also be a vector
- Eggs are laid in water containers around households
- Peak feeding during daytime, but also bites at night

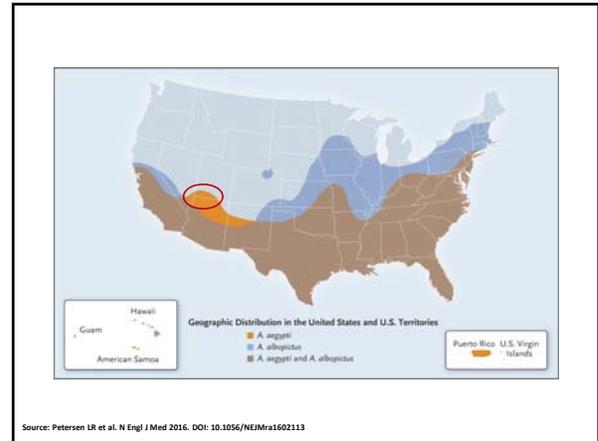
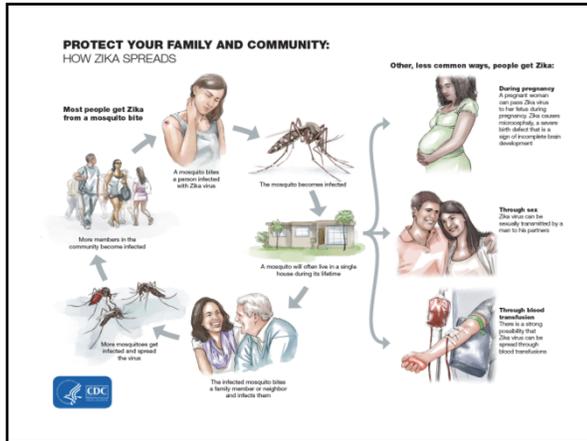


*Aedes aegypti*



*Aedes albopictus*





### Signs and Symptoms

- Maculopapular rash, often described as itchy
- Fever
- Arthralgias and myalgias
- Headache
- Conjunctivitis

**Only about 1 in 5 infected persons report symptoms**

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### Clinical Features of Zika Virus Infection in Pregnant Women.

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Brasil P et al. N Engl J Med 2016. DOI: 10.1056/NEJMoa1602412

### Yap Island Zika Outbreak, 2007

Investigators of the Yap Island outbreak observed and recorded Zika symptoms in 31 symptomatic patients with laboratory confirmed infections; an estimated 73% of the total population was infected.

Number of Patients (%)	Illness Sign or Symptom
28 (90 %)	Macular or papular rash
20 (65 %)	Fever
20 (65 %)	Arthritis or arthralgia
19 (55 %)	Conjunctivitis (red eyes)
15 (48 %)	Myalgia (body aches)
14 (45 %)	Headache
12 (39 %)	Pain behind eyes
6 (19 %)	Swelling of limbs
3 (10 %)	Vomiting

Source: Duffy MR et al. N Engl J Med 2009;360:2536

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### Sequelae of Zika Infection

- Disease is mild and self-limited for most people with complete recovery.
- Guillain-Barré syndrome may follow infection, but the incidence is unknown.
- Adverse pregnancy outcomes, e.g., microcephaly or still birth, may occur in pregnant women. The incidence is unknown, but has been estimated at 1-10% for women infected during the first trimester.

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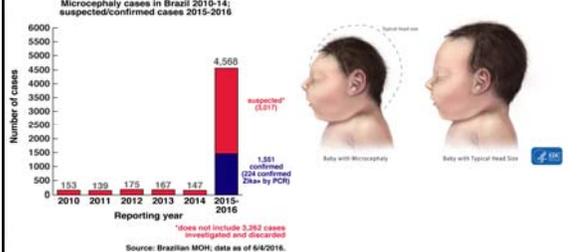
### Treatment

- No antivirals
- Supportive only
- Use of aspirin and NSAIDs should be avoided until dengue is ruled out
- Differential diagnosis: other *Flavivirus* infections, tickborne diseases, other viral infections that present with rash, malaria



### Brazil Zika Outbreak

- May 2015: First infection in Brazil
- October 2015: increase in microcephaly



Microcephaly cases in Brazil 2010-14: suspected/confirmed cases 2015-2016

Source: Brazilian MOH; data as of 6/8/2016.

### Spectrum of Zika-Associated Pregnancy Outcomes

- Fetal loss/miscarriage, stillbirth
- Fetal growth abnormalities
- Fetal brain anomalies
  - Microcephaly
  - Ventriculomegaly
  - Intracranial calcifications
- Eye abnormalities
- Neurologic
  - Hypertonia
  - Arthrogryposis
  - Seizures
  - Neurobehavioral anomalies




Miranda-Filho et al. *ALPH* April 2016, Vol 106, No. 4. Slide courtesy of NICHD.



### Prospective Study in Brazil

- 88 pregnant women with rash in previous 5 days enrolled
  - 72 (82%) tested positive for Zika
  - Timing of infection was 6 to 38 weeks of gestation
- 42 of the Zika-positive women agreed to have ultrasound; of these, 12 (29%) had fetal abnormalities. Findings:
  - 5 with *in utero* growth retardation including microcephaly
  - 7 with ventricular calcifications or other CNS lesions
  - 7 with abnormal amniotic fluid volume or cerebral or umbilical artery flow
- Outcomes to date:
  - 2 fetal deaths at 36 and 38 weeks gestation
  - 8 who have delivered have confirmed the ultrasound abnormalities

Source: Brasil P et al. *N Engl J Med* March 4, 2016



### Hope for a Vaccine

- Rhesus macaque model demonstrating that once infected, re-challenges with Zika virus results in no detectable virus replication.
  - Source: Dudley D, et al. *Nature* June 28, 2016
- Three different candidate vaccines induced Zika-specific neutralizing antibodies that protect rhesus monkeys from re-infection.
  - Source: Abbinck P, et al. *Science* August 4, 2016



### Zika Cases in the United States

- As of August 17: 2,260 cases in US states and 8,035 in US territories reported to CDC.
  - Pregnant women infected with Zika: 529 in US states and 691 in US territories.
  - Regular updates: <http://www.cdc.gov/zika/>
- So far 16 live-born infants in US states have been documented with birth defects.
- There have been 2 stillbirths.
- Long term adverse outcomes may occur in babies that appear normal at birth.



### Zika in Florida

- The Florida Department of Health has identified cases of local Zika transmission in two areas in Miami-Dade County since July 14 and has just identified another such case near Tampa.




### Utah Zika Situation

As of August 29, 2016:

- 406 persons have been tested for Zika; of these, 247 (61%) were pregnant women.
- 12 persons have tested positive for Zika; of these, 5 are pregnant women. The delivery status of these women:
  - 3 have delivered apparently normal infants and are being followed.
  - 2 are still pregnant and being followed.
- One individual ("Index Case") has died, probably due to Zika as indicated by high levels of Zika viremia. A close contact (Patient A) to this individual developed Zika. The contact had no travel history or other risk exposures for Zika. An investigation of this transmission event was conducted with CDC assistance.



### Utah Zika Investigation

- Objective:** to identify the most likely cause of transmission to Patient A who had no history of travel to an area with active Zika transmission
- Studies conducted:**
  - Family and close contact study
  - Healthcare worker serosurvey
  - Community serosurvey
- To date, the only risk identified is close contact with the Index Case without using personal protective equipment or other standard precautions





[www.ready.gov/September](http://www.ready.gov/September)      #NatlPrep



### Surveillance, Investigation and Outbreak Response

- Investigations conducted by LHDs
- Coordination of reporting to CDC
- Response to events, e.g., unusual transmission event



### Need for More Effective Implementation of Prevention Messages

- Focus on pregnant women and women who could become pregnant
- Be aware of resources
  - CDC travel website: <http://www.cdc.gov/zika/geo/index.html>
- Strategize on how to get the message out
  - Work with travel clinics
  - Work with providers
  - Media coverage
  - Take advantage of events where people gather
  - Provide Zika prevention kits




### Laboratory Testing for Zika



[http://health.utah.gov/epi/diseases/zika/Zika\\_Virus\\_Testing\\_Guidance.pdf](http://health.utah.gov/epi/diseases/zika/Zika_Virus_Testing_Guidance.pdf)

### Follow-Up of Zika-Infected Pregnant Women and Infants

- Prenatal follow-up:
  - Repeat PCR testing on serum and urine
  - Serial ultrasounds
- Labor and delivery:
  - Arrange with OB providers to collect specimens and evaluate infant; collect birth data for CDC
- Post-natal follow-up for one year:
  - Arrange with pediatric providers to conduct regular follow-up exams and collect data for CDC



### Vector Control Programs

- Working with mosquito-abatement programs to:
  - Conduct vector surveillance
  - Interventions to reduce mosquito vectors in the environment



### Utah Preparedness Planning

- As per other infectious disease emergencies, Zika response will be managed according to the IDER plan:  
[http://health.utah.gov/preparedness/downloads/ider\\_3-2016.pdf](http://health.utah.gov/preparedness/downloads/ider_3-2016.pdf)
- Zika-specific information will be regularly updated on the Bureau of Epidemiology website:  
<http://health.utah.gov/epi/diseases/zika/>



### Questions

