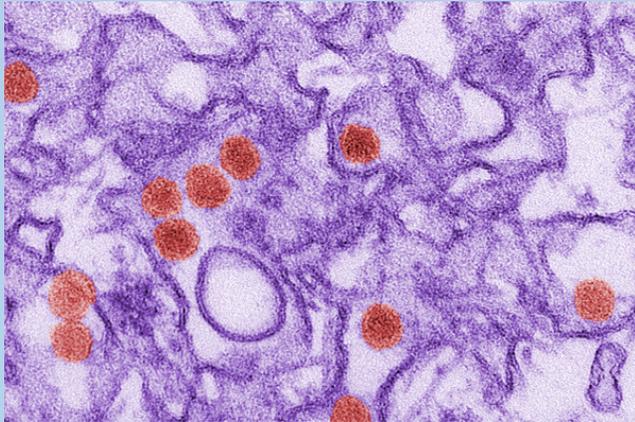


# Zika Update: Windows of Opportunity



S. Todd Stolp MD  
CDPH Zika Consultant  
CCLHO Fall Semi-annual Meeting Late Breaker  
October 5, 2016

# Zika Reported from Brazil

- In May of 2015, an outbreak of Zika was discovered in several northeastern states of Brazil; by December 2015 Zika had spread to 18 states
- A retrospective analysis of positive dengue test samples found Zika positive results evident as early as February 2015
- The virus may have been introduced into Brazil in 2014 by persons attending the World Soccer Cup or by members of a Polynesian team attending an international canoe race
- In November 2015, Brazil declared a public health emergency and in February 2016, WHO declared a Public Health Emergency of International Concern (PHEIC)

# Spread of Zika in the Americas

February 2015 (?) - September 23, 2016  
 Local transmission currently detected in  
 49 countries and territories



Reported active Zika virus transmission  
 No reported active Zika virus transmission

Data as of 23 September 2016

US Territories  
*September 28, 2016*

- Locally acquired cases reported: 21,988
- Travel-associated cases reported: 81
- Total: 22,069\*
- Guillain-Barré syndrome: 39



**The Pacific Islands:**

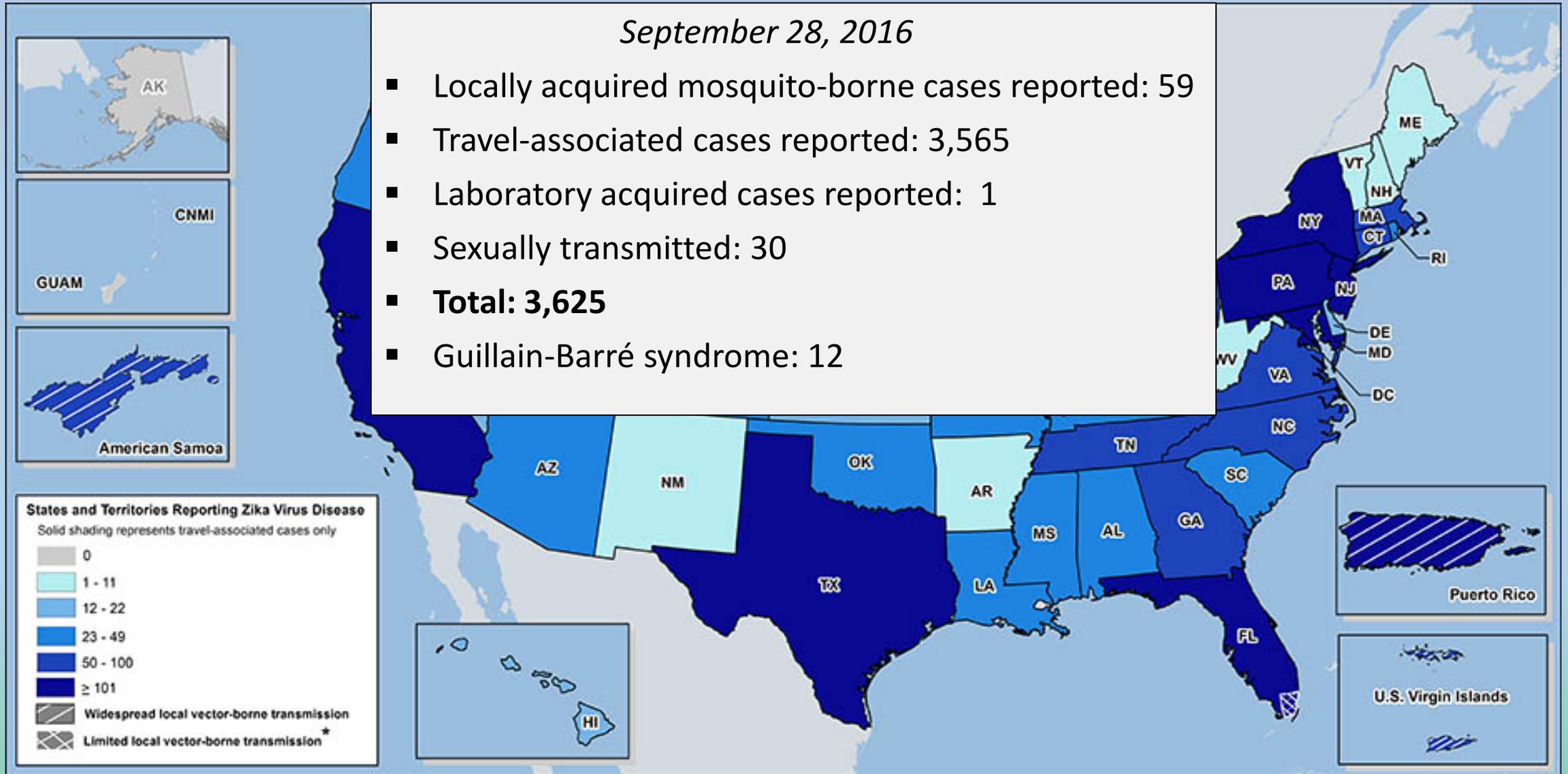
- Kosrae,
- Federated States of Micronesia
- American Samoa
- Fiji
- Marshall Islands
- New Caledonia
- Papua New Guinea
- Samoa
- Tonga



# Zika Cases Reported in the U.S

*September 28, 2016*

- Locally acquired mosquito-borne cases reported: 59
- Travel-associated cases reported: 3,565
- Laboratory acquired cases reported: 1
- Sexually transmitted: 30
- **Total: 3,625**
- Guillain-Barré syndrome: 12



Laboratory-confirmed Zika virus disease cases reported to ArboNET by state or territory (September 28, 2016)

# Continental U.S. Pregnancy Outcomes

Liveborn infants with birth defects\*

**21**

Includes aggregated data reported to the [US Zika Pregnancy Registry](#) as of September 22, 2016

Pregnancy losses with birth defects\*\*

**5**

Includes aggregated data reported to the [US Zika Pregnancy Registry](#) as of September 22, 2016



# Zika Cases in California, 2015-2016

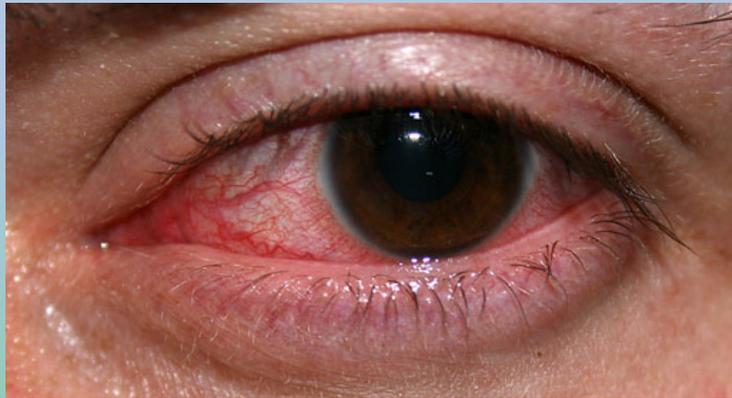
- 305 travel-associated Zika cases reported\*
  - No local transmission
- 2 sexually-transmitted cases\*
- 38 cases pregnant at the time of diagnosis\*
- 2 liveborn infants with birth defects\*
- 197 of the cases residents of counties with *Aedes aegypti* and/or *Aedes albopictus*\*\*
- 222 case-patients potentially viremic while in California\*\*
  - Could serve as a source of infection to local *Aedes*

\*As of September 30

\*\*As of September 23

# Signs and Symptoms

- Similar to other arboviruses
- Only about 20% estimated to experience any symptoms
- Onset 3-12 days after exposure
- Usually last up to one week



Conjunctivitis



Rash



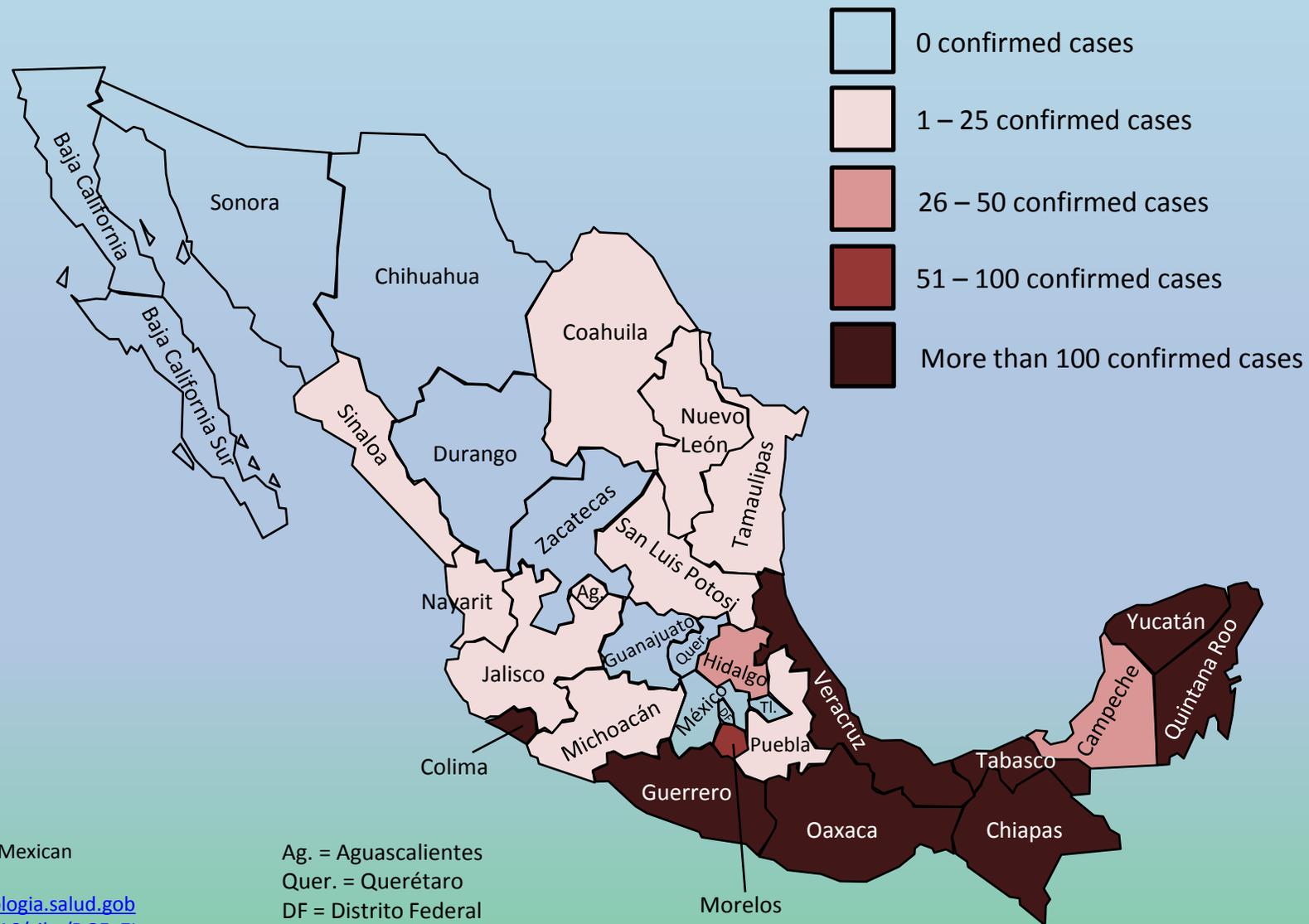
Arthralgia



Pyrexia



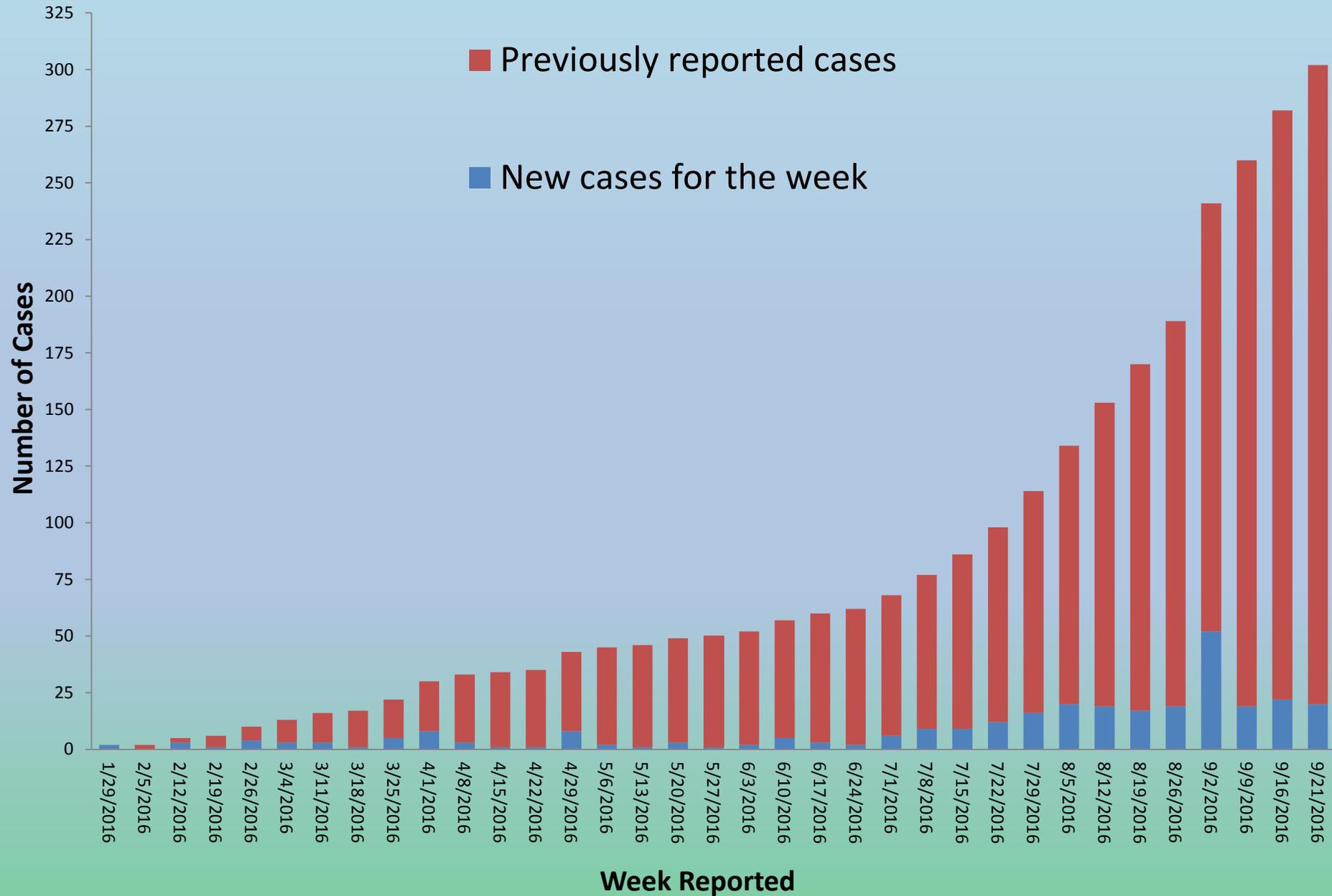
# Confirmed Zika Cases in Mexico by State January 1, 2016 – September 19, 2016



Data provided by the Mexican  
Ministry of Health  
[http://www.epidemiologia.salud.gob.mx/doctos/avisos/2016/zika/DGE\\_ZI\\_KA\\_CASOS\\_SEM36\\_2016.pdf](http://www.epidemiologia.salud.gob.mx/doctos/avisos/2016/zika/DGE_ZI_KA_CASOS_SEM36_2016.pdf)

Ag. = Aguascalientes  
Quer. = Querétaro  
DF = Distrito Federal  
TL. = Tlaxcala

# Number of Travel-Associated Cases of Zika in California by Week Reported 2015-2016





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Home > Health Information > Diseases & Conditions > Zika

## Zika

Zika virus is transmitted by [Aedes aegypti mosquitoes \(also known as yellow fever mosquitoes\)](#) and [Aedes albopictus mosquitoes \(also known as Asian tiger mosquitoes\)](#). These mosquitoes are not native to California. However, since 2011 they have been detected in [several California counties](#). An *Aedes* mosquito can only transmit Zika virus after it bites a person who has this virus in their blood. Thus far in California, Zika virus infections have been documented only in people who were infected while traveling outside the United States or through sexual contact with an infected traveler. To date there has been no local mosquito-borne transmission of Zika virus in California.

Zika virus is not spread through casual contact, but can be spread by infected persons to their sexual partners. Zika virus infection in pregnant women can cause [fetal microcephaly](#) (abnormally small head and brain) and other poor pregnancy outcomes. Additionally, there is an association between Zika and [Guillain-Barré Syndrome \(GBS\)](#), a disease affecting the nervous system.

### Updates

- [CDPH Weekly Update on Number of Zika Cases in California \(PDF, New Window\)](#)  
Updated September 30, 2016
- [Aedes aegypti and Aedes albopictus Mosquitoes in CA, 2011-2016 \(PDF, New Window\)](#)  
Updated weekly on Fridays as new infestations are detected. Updated September 30, 2016
- [Interactive Map of Invasive Aedes Mosquito Detections in California !Updated](#)  
As of September 21, 2016

### News

- [Health Officials Urge Californians to Remove Standing Water !New](#)  
September 28, 2016
- [CDC Zika Travel Notices](#)

**Information for Health Professionals and Blood Centers**

- [Zika Information for Health Professionals](#)  
This webpage contains Zika information for health care providers, public health professionals, and blood centers.

### Zika Communication and Resources Toolkits for Healthcare Professionals

- [Zika and Pregnancy Outreach Toolkit](#)
- [Zika and Sexual Transmission Toolkit](#)
- [Zika Travel Outreach Toolkit](#)
- [Zika Toolkits Outreach Posters Order Form \(Word, New Window\)](#)

### Organization

→ [Vector-Borne Disease Section](#)



en Español

Su salud en su idioma

Most Popular Links

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Quick Links

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- Newsroom
- Public Availability of Documents

Related Links

- California Health and Human Services Agency
- Department of Health Care Services (includes Medi-Cal)
- State Agencies Directory

Home > Health Information > Diseases & Conditions > Zika Information for Health Professionals

## Zika Information for Health Professionals

### News, Updates, and Hot Topics

- Recording of The Evolving Buzz on Zika and Pregnancy: An Update for Clinicians Webinar Current as of Friday August 19, 2016
- Frequently Asked Questions on Infection Control Practices in Health Care Settings When Caring for Patients with Zika Virus Infection (PDF, New Window) August 5, 2016
- HEALTH ADVISORY - Zika Information for California Healthcare Providers (PDF, New Window) February 8, 2016

### Information for Healthcare Professionals

- CDPH Zika Virus FAQs for Healthcare Providers (PDF, New Window) Updated September 12, 2016
- Identification of Local Transmission – Zika Testing Criteria for Persons without Travel-Related Exposure (PDF, New Window) June 2016
- Evaluation and Follow-Up Procedures for Suspected Congenital Zika Virus Infection – Fetus, Newborn and Infant (PDF, New Window) May 2016
- CDPH endorses CDC recommendations for Preventing Transmission of Zika Virus in Labor and Delivery Settings Through Implementation of Standard Precautions – United States, 2016 (PDF, New Window)

### Information for Blood Centers

- Communications Regarding Zika Virus Positive Blood Donors (PDF, New Window) Updated September 2, 2016
- Guidance for Reporting and Follow-up of Zika Virus Infected Blood Donors and Potential Local Transmission Local Transmission of Zika Virus in California (PDF, New Window) Updated September 2, 2016

### Zika Virus Testing

- Zika Virus Laboratory Testing Information CDPH Laboratory Information
- CDPH Zika Virus Testing FAQs for Healthcare Providers Updated August 19, 2016

### U.S. Zika Pregnancy Registry

- Reporting Zika Pregnancy & Infant Outcomes in California This webpage provides information on the Registry and resources for Healthcare Providers

### Zika Communication and Resources Toolkits for Healthcare Professionals

- Zika and Pregnancy Outreach Toolkit This toolkit contains posters, talking points for those who provide information to women who are pregnant or planning pregnancy, Facebook posts and Tweets, and the accompanying graphics that can be shared on social media sites.
- Zika and Sexual Transmission Toolkit This toolkit contains posters, talking points for sexual health educators, Facebook posts and Tweets, and the accompanying graphics that can be shared on social media sites.
- Zika Travel Outreach Toolkit This toolkit contains posters, travel talking points for healthcare providers, Facebook posts and Tweets, and the accompanying graphics that can be shared on social media sites.
- Zika Toolkits Outreach Posters Order Form (Word, New Window)

### Zika MMWRs

- Contraceptive Use Among Nonpregnant and Postpartum Women at Risk for Unintended Pregnancy, and Female High School Students, in the Context of Zika Preparedness – U.S., 2011–2013 and 2015 Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report (MMWR). August 5, 2016.
- Update: Interim Guidance for Health Care Providers Caring for Pregnant Women with Possible Zika Virus Exposure – United States, July 2016 Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report (MMWR). July 29, 2016.
- Update: Interim Guidance for Prevention of Sexual Transmission of Zika Virus – United States, July 2016 Centers for Disease Control and Prevention. Morbidity and Mortality Weekly Report (MMWR). July 29, 2016
- MMWR Zika Reports U.S. Center for Disease Control and Prevention

### Organization

- Center for Family Health
- Healthcare Associated Infections Program
- Vector-Borne Disease Section
- Viral and Rickettsial Disease Laboratory Branch

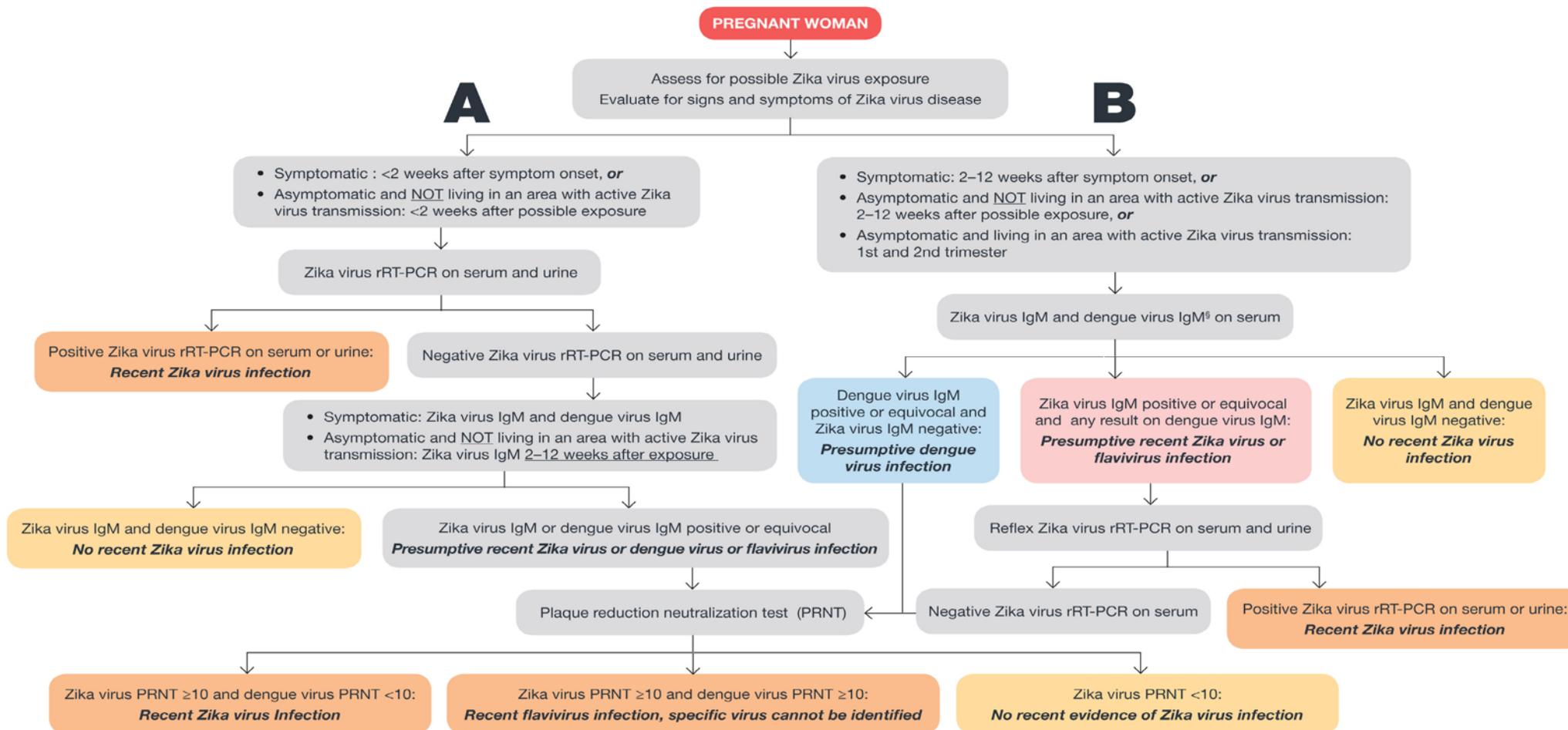
### Resources

- Updated Interim Guidance for the Evaluation and Management of Infants with Possible Congenital Zika Virus Infection Flow Diagram to illustrate testing for infants with possible exposure to Zika Virus. Centers for Disease Control and Prevention.
- Initial Evaluation and Outpatient Management During the First 12 Months of Life for Infants with Possible Congenital Zika Virus Infection Flow Diagram to illustrate Initial Evaluation and Outpatient Management for infants with possible exposure to Zika Virus. Centers for Disease Control and Prevention.
- Updated Interim Pregnancy Guidance: Tests for a pregnant woman possibly exposed to Zika virus

# UPDATED INTERIM PREGNANCY GUIDANCE:



Testing and interpretation recommendations<sup>\*,†,§,¶</sup> for a pregnant woman with possible exposure to Zika virus<sup>\*\*</sup> — United States (including U.S. territories)



**Abbreviations:** IgM = immunoglobulin M; PRNT = plaque reduction neutralization test; rRT-PCR = real-time reverse transcription-polymerase chain reaction.

\* A pregnant woman is considered symptomatic if one or more signs or symptoms (fever, rash, arthralgia, or conjunctivitis) consistent with Zika virus disease is reported whereas a pregnant woman is considered asymptomatic if symptoms are NOT reported.

† Testing includes Zika virus rRT-PCR on serum and urine samples, Zika virus and dengue virus Immunoglobulin M (IgM), and plaque reduction neutralization test (PRNT) on serum samples. PRNT results that indicate recent flavivirus infection should be interpreted in the context of the currently circulating flaviviruses. Refer to the laboratory guidance for updated testing recommendations (<http://www.cdc.gov/zika/laboratories/lab-guidance.html>). Because of the overlap of symptoms in areas where other viral illness are endemic, evaluate for possible dengue or chikungunya virus infection.

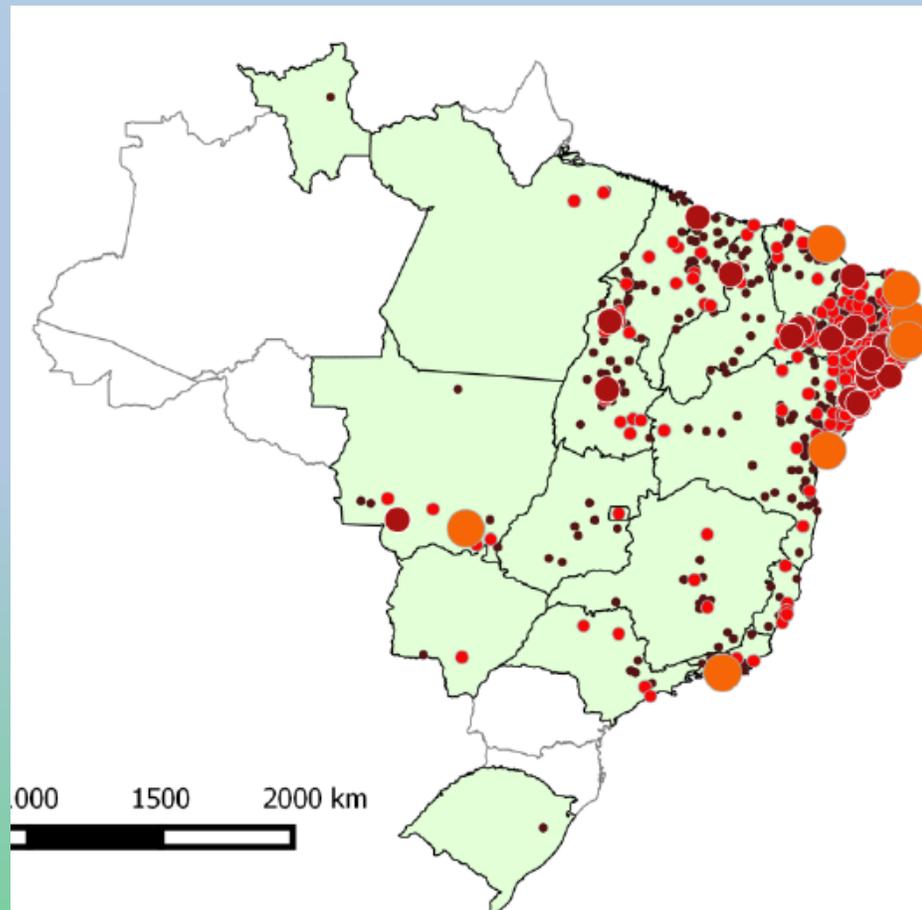
§ Dengue IgM antibody testing is recommended only for symptomatic pregnant women.

¶ If Zika virus rRT-PCR testing is requested from laboratories without IgM antibody testing capacity or a process to forward specimens to another testing laboratory, storing of additional serum samples is recommended for IgM antibody testing in the event of a rRT-PCR negative result.

\*\* Possible exposure to Zika virus includes travel to or residence in an area with active Zika virus transmission (<http://wwwnc.cdc.gov/travel/notices/>), or sex (vaginal sex (penis-to-vagina sex), anal sex (penis-to-anus sex), oral sex (mouth-to-penis sex or mouth-to-vagina sex), and the sharing of sex toys) without a barrier method to prevent infection (male or female condoms for vaginal or anal sex, male condoms for oral sex (mouth-to-penis), and male condoms cut to create a flat barrier or dental dams for oral sex (mouth-to-vagina) with a partner who traveled to, or lives in an area with active Zika virus transmission.

# Microcephaly and Zika

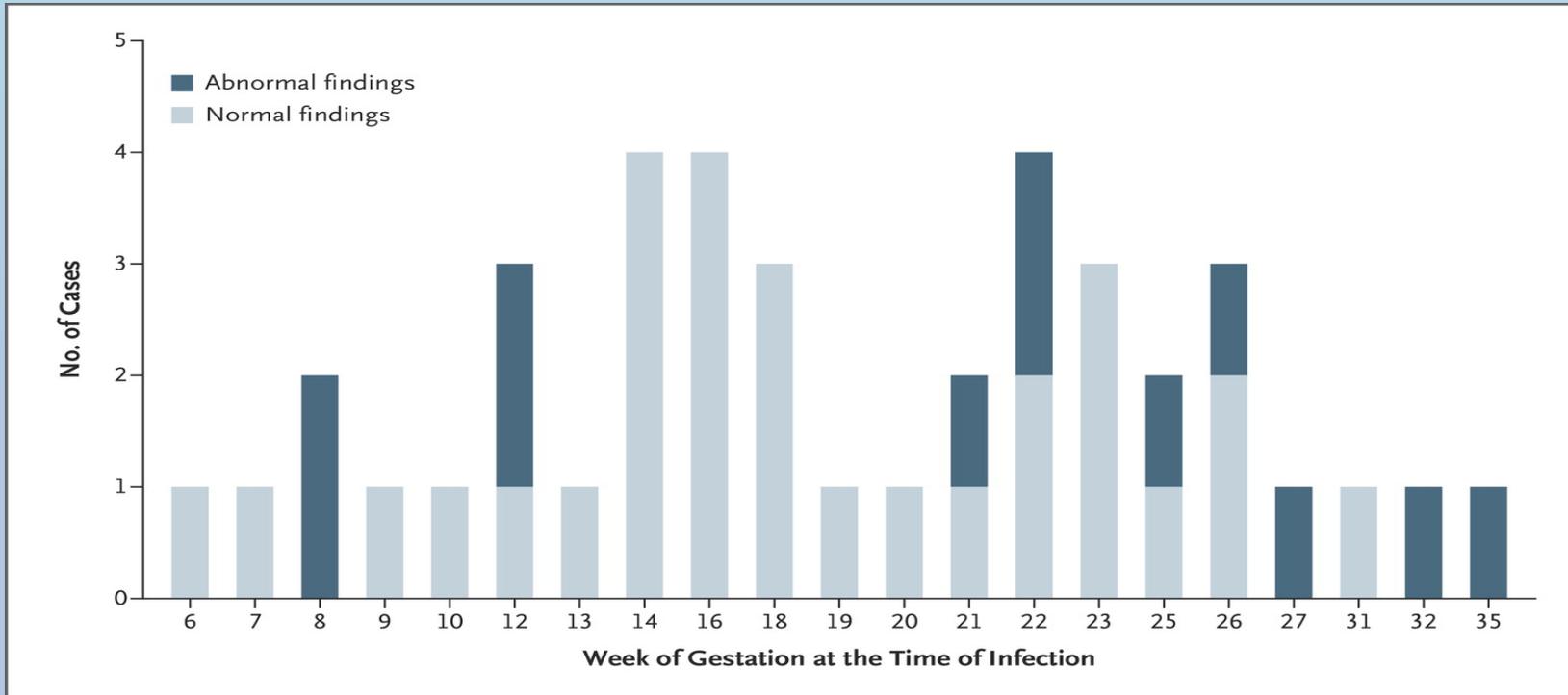
Location of  
Microcephaly Cases



States with Local  
Zika Cases



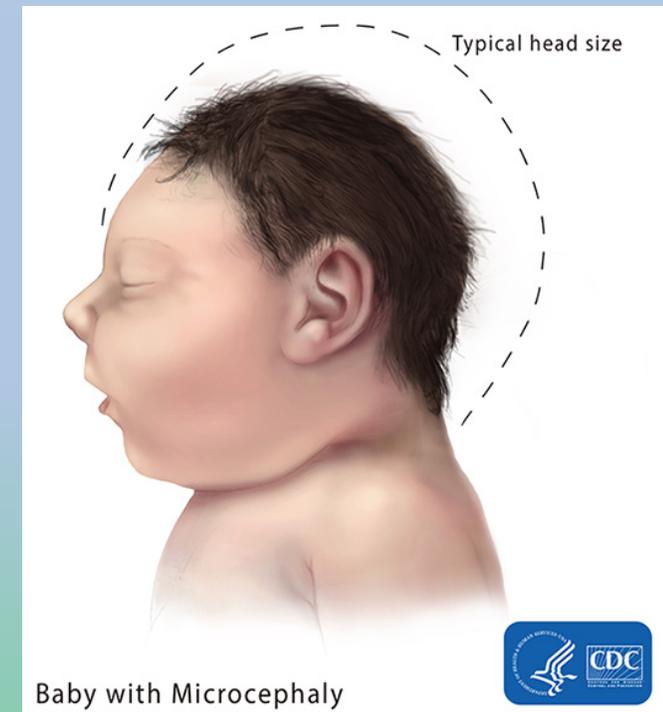
# Week of Gestation at the Time of ZIKV Infection and Abnormal Ultrasonographic and Doppler Findings.



- 88 pregnant women with rash enrolled 9/15-2/16.
  - 72 (82%) positive for ZIKV in blood, urine, or both.
  - 12(29%) of 42 with Zika had US abnormality vs 0% women without Zika

# Zika and Microcephaly: Summary

- Significant association between Zika virus infection in pregnancy and fetal abnormalities
- Epidemiology supported by murine and *in vitro* models and case control studies
- Attack rate and interacting factors unknown
- Infection any time during pregnancy may be risky
- Range of effects may include:
  - Oligohydramnios
  - Intra-uterine growth restriction
  - Microcephaly
  - Other neurologic abnormalities
  - Fetal loss



## Laboratory testing indications: serum and urine

- 1) Exposed pregnant women (or up to 8 weeks prior to pregnancy) or newborns regardless of symptoms**
  - a) Within 2 weeks from symptom onset or exposure – RT-PCR, then IgM if PCR negative
  - b) 2 – 12 weeks from symptom onset or exposure – IgM, then PCR if IgM positive or equivocal
- 2) Exposed symptomatic non-pregnant persons or newborns**
  - a) Within 2 weeks from symptom onset – RT-PCR, then IgM if PCR negative
  - b) 2 – 12 weeks from symptom onset – IgM, then PCR if IgM positive or equivocal
- 3) Non-exposed symptomatic (maculopapular rash plus a second symptom) persons living in an area with *Aedes* vector mosquitoes (to monitor for possible local transmission events)**
  - a) Infants with microcephaly or Intracranial calcifications – consider placental tissue testing
  - b) Additional consideration in high risk scenarios on a case-by-case basis

\* Symptoms of acute Zika virus infection are defined as fever, maculopapular rash, arthralgia, conjunctivitis or Guillain-Barre Syndrome

## Criteria for “exposure” to Zika

**Potential exposure for pregnant women or newborns regardless of symptoms and for symptomatic non-pregnant persons consists of:**

- 1) travel to an area with active Zika transmission, OR
- 2) unprotected sexual contact with an infected partner or a partner who has traveled to an area with active Zika transmission and infants of mothers testing positive for Zika
- 3) Additional considerations include:
  - a) a laboratory worker working with infectious specimens OR
  - b) recent transfusion or tissue transplant recipients (although this risk is diminished considerably now that blood and tissue is being screened) OR
  - c) direct close contact involving the bodily fluids of a confirmed Zika case OR
  - d) for newborns with potential congenital Zika findings, a mother who resided in a county with Aedes vector mosquitoes

CDC's Response to **Zika**

## **US Zika Pregnancy Registry**

### Obstetric Healthcare Providers: How to Participate



Zika virus infection during pregnancy has been linked to adverse outcomes including pregnancy loss and microcephaly, absent or poorly developed brain structures, defects of the eye and impaired growth in fetuses and infants. Despite these observations, very little is known about the risks of Zika virus infection during pregnancy. Information about the timing, absolute risk, and spectrum of outcomes associated with Zika virus infection during pregnancy is needed to direct public health action related to Zika virus and guide testing, evaluation, and management.

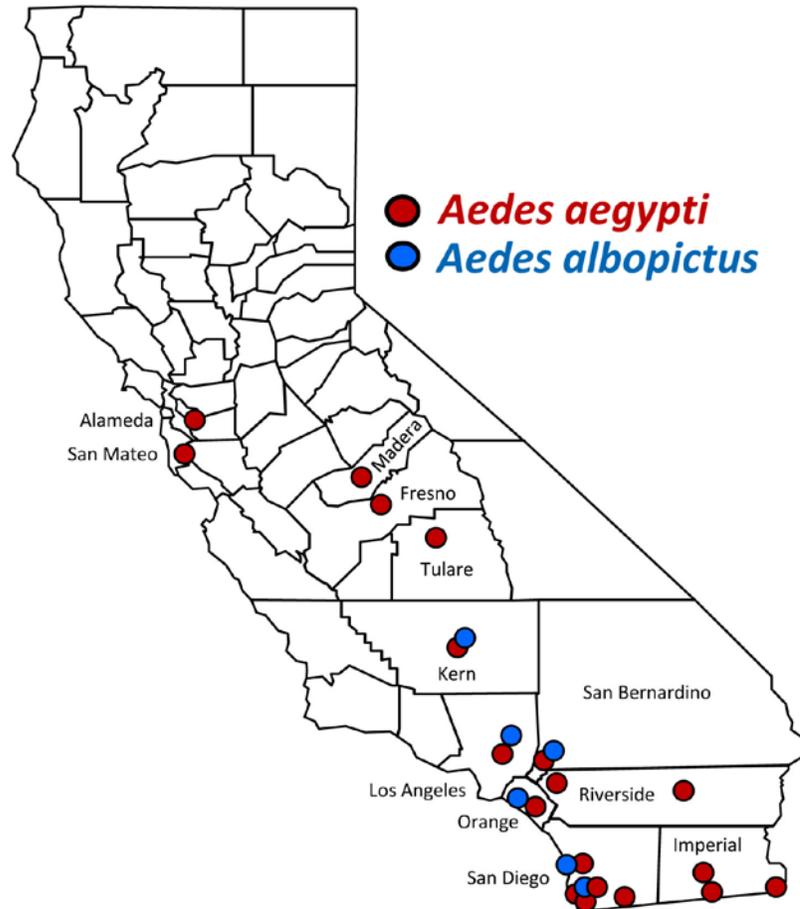
<http://www.cdc.gov/zika/hc-providers/registry.html>

# Aedes aegypti and Aedes albopictus Mosquitoes Detection Sites in California, 2011-2016

## Aedes aegypti and Aedes albopictus Mosquitoes in California

Updated weekly on Fridays as new infestations are detected

**Aedes aegypti** and **Aedes albopictus** Detection Sites by County/City<sup>§</sup>



### Alameda

Hayward

### Fresno

Clovis

Firebaugh

Fowler

Fresno

Kerman

Mendota

Sanger

Tranquillity\*<sup>§</sup>

### Imperial

Andrade\*

Brawley

Calexico

El Centro

Heber\*

Holtville

Imperial

Seeley\*

### Kern

Arvin

Arvin

### Los Angeles

Alhambra

Avocado Heights\*<sup>§</sup>

Bell<sup>§</sup>

Bellflower

Bell Gardens

Carson<sup>§</sup>

Commerce

Downey

East Los Angeles\*

Florence-Graham\*

Hacienda Heights\*<sup>§</sup>

Huntington Park

La Mirada

Los Angeles

Maywood

Montebello

Monterey Park

Paramount<sup>§</sup>

Pico Rivera

Pomona<sup>§</sup>

Rosemead

South Gate

South Whittier\*

### Los Angeles (continued)

Alhambra

Altadena\*

Arcadia

Avocado Heights\*

Azusa

Baldwin Park

Bradbury

City of Industry

Claremont<sup>§</sup>

Covina

Duarte

El Monte

Glendora

Irwindale

La Cañada Flintridge

La Mirada

La Puente

La Verne

Los Angeles

Monrovia

Monterey Park

Pico Rivera

Rosemead

San Dimas

San Gabriel

Sierra Madre

South El Monte

South Whittier\*

Temple City

Walnut<sup>§</sup>

West Covina

Whittier\*

### Madera

Madera

Madera Ranchos\*

Parkwood\*

### Orange

Anaheim

Costa Mesa

Garden Grove

Orange

Lake Forest

Mission Viejo

Santa Ana

### Orange (continued)

Garden Grove<sup>§</sup>

Huntington Beach

Los Alamitos

Mission Viejo

Newport Beach

Santa Ana

### Riverside

Cathedral City<sup>§</sup>

Coachella

Corona

East Hemet\*

Riverside

San Jacinto

### San Bernardino

Colton

Montclair

Upland

### San Diego

Bonita\*

Chula Vista

Coronado<sup>§</sup>

El Cajon

Escondido

Imperial Beach

Lakeside\*

La Mesa

La Presa\*

Lemon Grove

National City

Oceanside

San Diego

Spring Valley\*

Tecate\*

Vista

Carlsbad

San Diego

### San Mateo

Atherton

Menlo Park

### Tulare

Exeter

<sup>§</sup> New detection location within the previous four weeks

\*Unincorporated Census-Designated Places

**TABLE 1. Results of Zika virus IgM antibody testing of serum specimens and RT-PCR testing of serum and urine specimens for Zika virus RNA, by days after symptom onset for 66 persons with travel-associated Zika virus disease — Florida, 2016**

Days after onset	Serum IgM No. positive/No. tested (%)	Serum RT-PCR No. positive/No. tested (%)	Urine RT-PCR No. positive/No. tested (%)
0	0/1 (0)	0/1 (0)	1/1 (100)
1	2/7 (29)	6/7 (85)	7/7 (100)
2	3/12 (25)	8/12 (67)	11/12 (92)
3	5/10 (50)	4/10 (40)	10/10 (100)
4	3/12 (25)	8/12 (67)	12/12 (100)
5	9/13 (69)	5/13 (38)	11/13 (85)
6	2/2 (100)	0/2 (0)	2/2 (100)
7	4/4 (100)	0/4 (0)	3/4 (75)
9	2/3 (67)	0/3 (0)	3/3 (100)
14	1/1 (100)	0/1 (0)	0/1 (0)
20	1/1 (100)	0/1 (0)	1/1 (100)
<b>Range of days</b>			
0–5	22/55 (40)	31/55 (56)*	52/55 (95)*
6–10	8/9 (89)	0/9 (0)*	8/9 (89)*
11–15	1/1 (100)	0/1 (0)	0/1 (0)
16–20	1/1 (100)	0/1 (0)	1/1 (100)

**Abbreviations:** IgM = immunoglobulin M; RT-PCR = real time reverse-transcription polymerase chain reaction.

\* Statistically significant difference in proportion RT-PCR positive in serum specimens versus urine specimens, by exact McNemar’s test (0–5 days,  $p < 0.001$ ; 6–10 days,  $p < 0.01$ ).

# Mosquito control

- Potential for local transmission in California is low
- Reduce *Aedes* populations and decrease risk of spread
- Individuals should protect themselves from bites:
  - Window screens and air conditioners
  - Permethrin-treated clothing
  - Mosquito repellants



# Prevention of sexual transmission: CDC Update on September 30, 2016

- Men exposed to Zika virus\* **with or without symptoms** should:
  - Abstain or use condoms for **6 months** after exposure with all non-pregnant partners
  - Abstain or use condoms with any pregnant partner for the **remainder of the pregnancy**
- Women exposed to Zika virus\* **with or without symptoms** should:
  - Abstain or use barriers with all partners for **8 weeks** after exposure or symptoms
  - Abstain or use barriers with any pregnant partner for the **remainder of the pregnancy**
- Testing for the purpose of assessing risk for sexual transmission is **not recommended** at this time, although it is under discussion.



# Thank you!

