



Georgia Department of Public Health

Zika Virus: Epidemiology Update

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We Protect Lives.

The Zika response is constantly evolving and recommendations in this presentation may change over time

Please call your district epidemiologist or a state epidemiologist on the Zika team for current guidance

404-657-2588

8-5 pm M-F

Overview

- Zika Global Epidemiology
- Zika National Epidemiology
- Georgia Epidemiology + Surveillance



Zika Virus

why are we talking about it now?

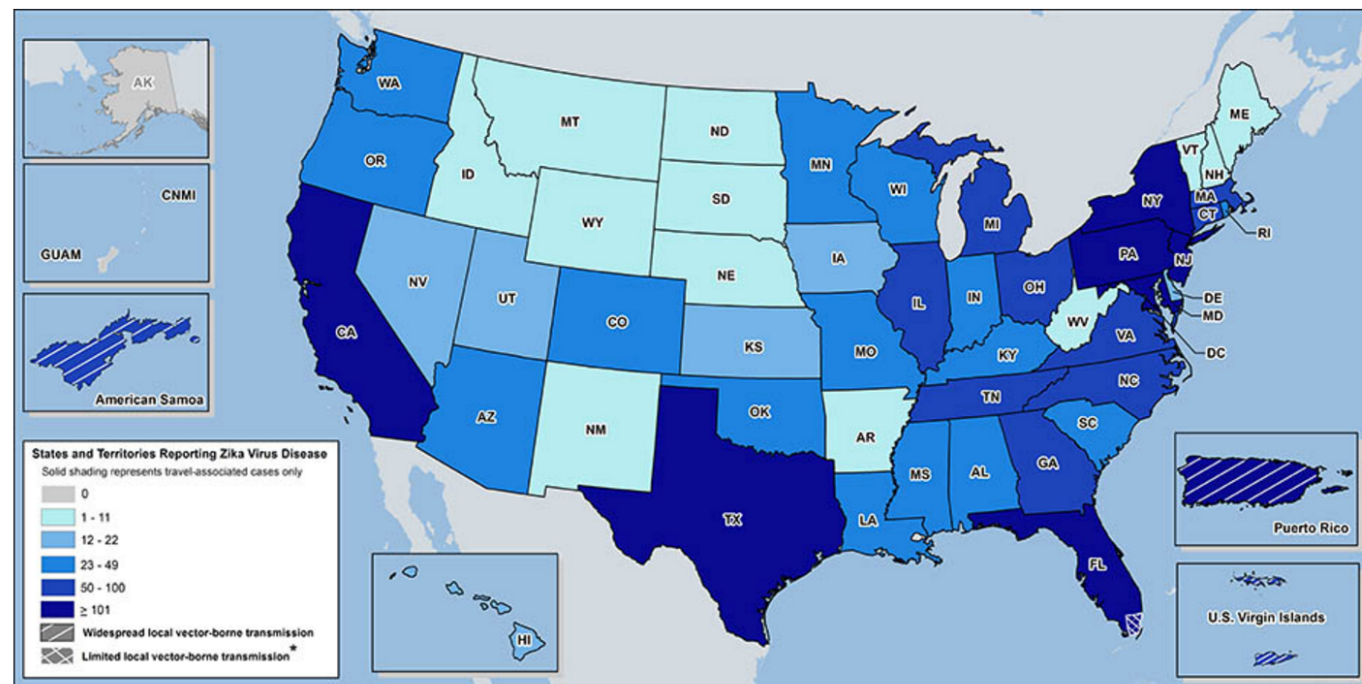
Large outbreak with active transmission was identified in Brazil in May 2015
(potential link to microcephaly – since confirmed)

- Mexico in November 2015
- Puerto Rico in December 2015
- Since May 2015, vectorborne transmission has been confirmed in over 50 new countries/territories in the Americas
- New outbreaks including a large outbreak in Singapore (~400 infections since August 2016)

CDC <http://www.cdc.gov/zika/geo/> - map from October 2016



Travel-linked and locally acquired Zika Virus in the US as of October 5, 2016



US States

Locally acquired mosquito-borne cases reported: 105

Travel-associated cases reported: 3,712

Laboratory acquired cases reported: 1

Total: 3,818

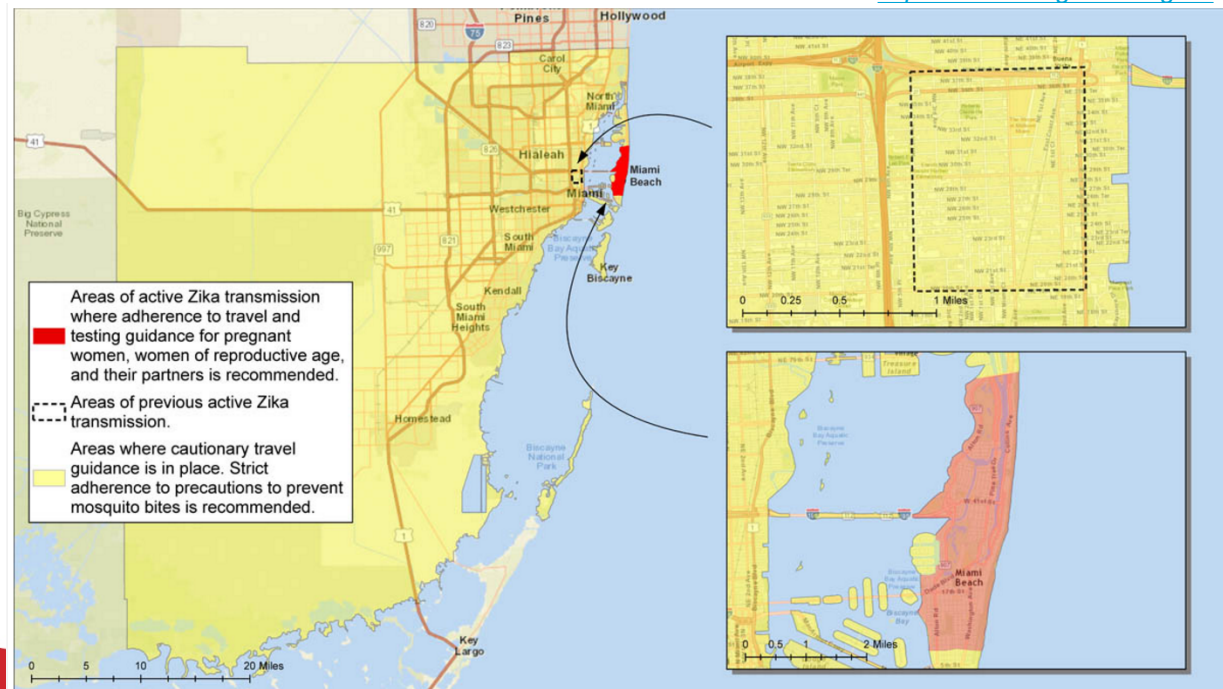
Sexually transmitted: 30

Guillain-Barré syndrome: 13

Zika Transmission in Florida

- It is estimated that local transmission began in mid-June 2016 in the Wynwood area of Miami
- Local transmission was later identified in Miami Beach
- Wynwood was moved from “red” to “yellow” in September
- Miami Beach “red” zone has been expanded to 4.5 square miles from 1.5 square miles
- Florida has reported 153 locally acquired Zika infections related to outbreak (including 19 people from other states who were infected during travel to FL)
- Note difference in national numbers – lag in reporting

CDC <http://www.cdc.gov/zika/geo/> - map from October 2016



U.S. Zika Pregnancy Registry

- 837 pregnant women in the continental U.S. have lab evidence of Zika infection and are being followed in the **CDC U.S. Zika Pregnancy Registry**, which tracks any adverse pregnancy outcomes and the infants up to 12 months after delivery.
- So far in continental U.S., CDC has documented 22 live-born infants with Zika-related birth defects and 5 pregnancy losses involving Zika-related birth defects.

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.

US Zika Pregnancy Registry

To understand more about Zika virus infection, CDC established the US Zika Pregnancy Registry and is collaborating with state, tribal, local, and territorial health departments to collect information about pregnancy and infant outcomes among pregnant women with laboratory evidence of Zika virus infection and their infants. The data collected through this registry will provide additional, more comprehensive information to complement notifiable disease case reporting and will be used to update recommendations for clinical care, to plan for services for pregnant women and families affected by Zika virus, and to improve prevention of Zika virus infection during pregnancy.

How to Participate

CDC and state, tribal, local, and territorial health departments request that healthcare providers participate in the US Zika Pregnancy Registry by:

1. Reporting information about pregnant women with laboratory evidence of Zika virus to their state, tribal, local, or territorial health department.
2. Collecting pertinent clinical information about pregnant women and their infants on the Pregnancy and Zika Virus Disease Surveillance forms.
3. Providing the information to state, tribal, local or territorial health departments or directly to CDC Registry staff if asked to do so by local health officials.
4. Notifying state, tribal, local, or territorial health department staff or CDC registry staff of adverse events (e.g., spontaneous abortion, termination of pregnancy).

Who to Report to the Registry

Healthcare providers should report the requested information to the health department in accordance with applicable state, tribal, local and territorial laws. Those eligible for the registry include: 1) Pregnant women in the United States with laboratory evidence of Zika virus infection (positive or equivocal test results, regardless of whether they have symptoms) and 2) periconceptionally, prenatally, or perinatally exposed infants born to these women, including infants with congenital Zika virus infection.

Healthcare providers practicing in Puerto Rico should report information to the Puerto Rico Zika Active Pregnancy Surveillance System (ZAPSS) rather than to the US Pregnancy Registry.*

*Puerto Rico is establishing a separate Zika Active Pregnancy Surveillance System (ZAPSS)

www.cdc.gov/zika

CS040804-A May 20, 2016



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention



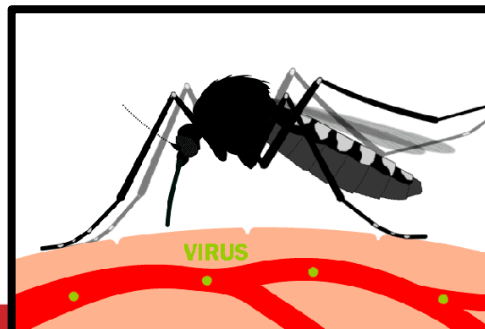
Aedes aegypti

How is Zika Virus Transmitted?



Aedes albopictus

- Transmitted to humans primarily by bite of infected *Aedes* species mosquitoes
- *Aedes aegypti* primary (most efficient) vector; *Aedes albopictus* competent vector, both found in Georgia – Dr. Kelly is the expert here!
- Mosquitoes become infected when they feed on a person already infected with Zika virus, then can spread the virus to other people through bites. Bite must occur during viremic period, within 7-10 days of illness onset.



Zika Virus: Other Routes of Transmission

- Intrauterine, resulting in congenital infection
- Sexual transmission
 - 30 documented cases in the US tied to the current outbreak (one in Georgia).
 - Most are male-to-female, there has been male-to-male and female-to-male documented. Condoms should be used during vaginal, oral, and anal sex as well as with sex toys.
- Laboratory exposure (documented)
- Blood transfusion (suspected, but not confirmed)
- Possibly via breast milk or organ donation, but never documented



What Happens After Transmission?

Zika Virus Disease: Clinical Picture

- The incubation period likely ranges from 3 days to 2 weeks
- About 1 in 5 people infected with Zika virus become ill
- Clinical illness usually mild; symptoms last several days to a week.
- The most common symptoms are fever, maculopapular rash, joint pain, and conjunctivitis.
- Treatment supportive (rest, fluids, analgesics, antipyretics); no specific antiviral therapy.
- Hospitalizations uncommon; fatalities rare.
- Zika virus remains in blood for a week; unknown how long in other body fluids – has been documented to persist in semen for months.
- Greatest concern is pregnant women and their unborn child

Zika Virus Disease: Complications/Severe Outcomes

1. Guillain-Barré Syndrome (GBS)/Other Neuropathies

- 13 cases of GBS in the US associated with Zika (out of 3,818 cases – only .34% of cases have GBS)
- In the 2013 French Polynesia outbreak, about 40 cases of GBS were reported among Zika case-patients.
- Link looks strong but not definitive.
 - Virus may be **neurotropic**– case report in March 3 Lancet of a 15 yo with acute myelitis due to Zika infection.

[http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(16\)00644-9/fulltext?rss=yes](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(16)00644-9/fulltext?rss=yes)

Zika Virus Disease: Complications/Severe Outcomes



- 2. Microcephaly:** The Brazil Ministry of Health reported a substantial increase in number of babies born with microcephaly in 2015; true baseline unknown.
- A link between Zika virus infection during pregnancy and adverse outcomes, including microcephaly, was confirmed by CDC and researchers. Findings were reported through a NEJM article released on April 13, 2016.
 - <http://www.nejm.org/doi/full/10.1056/NEJMs1604338>
 - Questions remain about the spectrum of defects caused by Zika as well as definitive risk associated with trimester of infection

Zika Virus Disease: Complications/Severe Outcomes

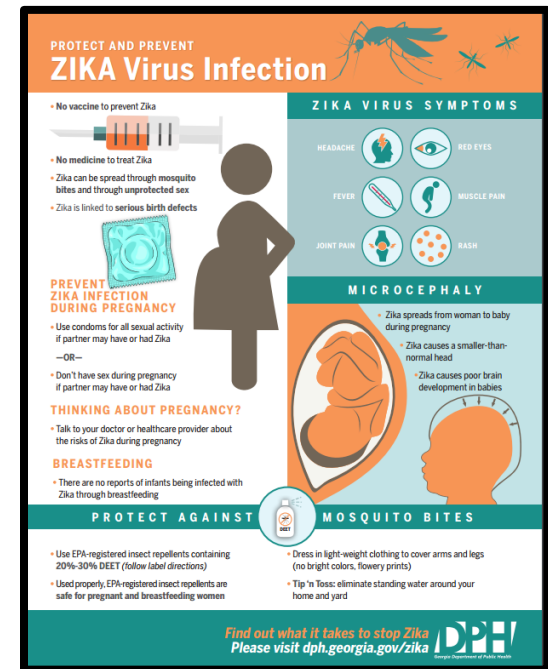
3. Other Severe Pregnancy Outcomes:

<http://www.nejm.org/doi/full/10.1056/NEJMoa1602412>

- Fetal death, placental insufficiency, intrauterine growth restriction, CNS injury, eye problems
- Similar to rubella
- Severe outcomes noted among women infected in all trimesters, not just the first
- Recommend that pregnant women with Zika infection be handled as high-risk pregnancy

Zika: DPH Surveillance Goals

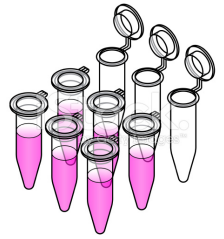
- Priority Surveillance Goals
 - Document travel-associated spread to new areas (so local transmission to mosquitoes can be mitigated).
 - **Most important population at risk: identify, test, and evaluate pregnant women who traveled to areas with Zika virus transmission (or whose sexual partners traveled).**
 - Rapid ascertainment of cases of microcephaly and other birth defects potentially associated with Zika virus infection in pregnancy and referral to services.



DPH Epidemiology Roles

- All human disease related activity including
 - Facilitate Laboratory Testing, interpretation of results
 - Surveillance of cases and suspect cases
 - Case follow up and investigation
 - Inform Environmental Health of cases and investigations of interest
 - Inform Prevention and Control Strategies

Zika Virus: Laboratory Testing



- Testing may be performed at GPHL or commercial labs
- Most complete testing options are only available through GPHL and DPH Epidemiology triage
- Methods:
 - Reverse transcriptase-polymerase chain reaction (RT-PCR) in serum and urine collected ≤ 14 days after illness onset
 - Serology for IgM and neutralizing antibodies in serum collected ≥ 4 days after illness onset
 - Plaque Reduction Neutralization Test (PRNT) done when IgM is positive, equivocal, or inconclusive
- Healthcare providers must contact DPH to facilitate testing at GPHL/CDC.
- Note: Surveillance testing versus patient diagnosis

Zika: Georgia Epi Definition

“Symptomatic” is defined by having at least 1 of the 3 major symptoms: joint pain, conjunctivitis, or maculopapular rash

Zika: Testing Snapshot

- **Priority: Pregnant women with potential Zika exposure and infants/fetuses of Zika-infected pregnant women**
- Symptomatic and asymptomatic pregnant women with travel history or a sex partner who has traveled to affected areas should be offered Zika testing.
- Pregnant women should use condoms consistently and correctly with partners that may have been exposed to Zika for the duration of pregnancy
- Symptomatic suspected Zika virus infections in anyone (pregnant or not) should also be evaluated for possible **dengue or chikungunya** virus infections (commercial tests available)

Zika: Testing Snapshot

- **Symptomatic travelers (not pregnant)**
- Symptomatic, non-pregnant travelers should be offered testing (“symptomatic” is defined as having at least 1 of the three major, Zika-specific symptoms)
- Symptomatic suspected Zika virus infections in anyone (pregnant or not) should also be evaluated for possible **dengue or chikungunya** virus infections (commercial tests available)

Zika: Testing Snapshot

- **Sexual transmission suspects**
- Symptomatic, non-traveler sexual partners (male, female, or female/pregnant) of persons who traveled **and were symptomatic** should be offered testing. The traveler should also be tested.
- Asymptomatic, non-traveler pregnant sexual partners of males who traveled should be offered testing.
- These non-travelers being considered for sexual transmission should also be given mosquito avoidance education.

Zika: Testing Snapshot

- **Local vectorborne transmission suspects**
- We consider these on a case-by-case basis for testing
- DPH Epi contacts Dr. Chris Kumnick/Dr. Ros Kelly immediately so they can assess the need for vector surveillance and response
- Person would need to fit normal case definitions (at least one of maculopapular rash, conjunctivitis, and joint pain) and have absence of a more likely diagnosis.
- Travel and residence information as well as sexual history and vaccination history is important

Zika Epidemiology/Response in Georgia

- In Georgia, since January, DPH Epidemiology has triaged about 1,700 Zika clinical inquiries and almost 4,000 general inquiries (averaging about 40-70 calls per day currently).
- Facilitated Zika testing at our Georgia Public Health Laboratory for over 1100 persons (~65% among pregnant women), including those with travel to affected areas of Miami, Florida.
- No local Zika transmission in Georgia. To date, we have documented **90** travel-related Zika infections; about 65% in metro Atlanta.
- We counsel suspect and confirmed cases to strictly avoid mosquito bites here in Georgia (for 3 weeks after travel), to prevent sexual transmission of Zika, and to practice Tip-N-Toss around their properties.

- All suspect patients must be triaged through epidemiology (either district or state office)
- State epidemiology is tracking all patients through the State Electronic Notifiable Disease Surveillance System (SendSS) Zika Active Monitoring System (ZAMS)

ect Lives.

Zika Community Campaign

WHAT ARE THE FACTS? Zika Virus Infection



HOW IS ZIKA TRANSMITTED?

- Primarily transmitted by infected mosquitoes
- Aedes aegypti* (yellow fever mosquito) and *Aedes albopictus* (Asian tiger mosquito)
- Mosquitoes go from egg to adult in a week to 10 days
- Same mosquitoes transmit dengue, chikungunya, Zika viruses
- Zika is passed from an infected person to a mosquito through a bite, mosquito then bites someone else
- Sexual transmission of Zika cases have been documented



PREGNANCY?

- Pregnant women should not travel to these countries
- Male sex partners who have traveled to these countries should use condoms during sex



WHAT ARE THE SYMPTOMS?

- fever and headache
- conjunctivitis
- rash
- joint pain
- muscle pain

80% of Zika infected don't know they are sick.

These countries have had outbreaks of Zika virus: Americas, Caribbean, Mexico, Pacific Islands

NO VACCINE TO PREVENT • NO MEDICINE TO TREAT

HOW DO YOU PROTECT AND PREVENT?



Use EPA registered insect repellents containing DEET (during travel and 3 weeks after)



Stay in places with air conditioning or window and door screens



Wear protective clothing (light colored, long-sleeved shirts, long pants and socks)



Sleep under a mosquito net

The *Aedes aegypti* mosquito (above) spreads Zika virus, which can cause serious health issues.
PHOTO BY JAMES GATHANY, COURTESY CENTERS FOR DISEASE CONTROL AND PREVENTION

Find out what it takes to stop Zika
Please visit dph.georgia.gov/zika



CONTROL MOSQUITOES TIP 'n TOSS

Mosquitoes breed in standing water. To reduce the mosquito population around your home and property, eliminate all standing water and debris.



1. Pool cover that collects water, neglected swimming pool or child's wading pool



2. Bird bath (change water weekly) and garden pond (stock with fish)



3. Any toy, garden equipment, or container that can hold water



4. Flat roof with standing water



5. Clogged rain gutter (home and street)



6. Trash and old tires. Drill drain holes in bottom of tire swings



7. Tire not hole, hollow stump or rain puddle



8. Repair missing, damaged, or improperly installed screens



9. Uncovered boat or boat cover that collects water



10. Leaky faucet (repair) or pet bowl (change water daily)

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Keep Mosquitoes Away!

SOMETIMES MOSQUITOES MAKE PEOPLE SICK



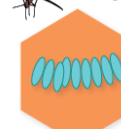
WEAR LONG SLEEVES and PANTS and SOCKS

WEAR BUG SPRAY DEET

These countries are far away but the same kind of mosquitoes live in Georgia.

YOU CAN KEEP MOSQUITOES AWAY FROM YOU

MOSQUITOES GO FROM EGGS TO ADULTS IN ABOUT 10 DAYS



MOSQUITO EGGS



LARVA



PUPA



ADULT MOSQUITO

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We Protect Lives.

Zika Travel Campaign



ZIKA VIRUS

Protect & Prevent

PROTECT yourself from mosquito bites
PREVENT the spread of ZIKA infection

HEADING TO ONE OF THESE COUNTRIES?

- Use EPA registered insect repellents containing **DEET** (available in shops on the concourse).
- Use while you travel and for **three** weeks after returning home.
- Wear protective clothing (long sleeves, long pants and socks).
- Stay in places with air conditioning or window and door screens.
- Sleep under a mosquito net.

The *Aedes aegypti* mosquito spreads Zika virus which can cause serious health issues.

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DPH
Georgia Department of Public Health



DON'T LET THIS BAD BUG BITE YOU

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- 14 domestic and international concourses
- Countries with ongoing Zika transmission
- EPA registered insect repellents with DEET sold on the concourse
- Wear long sleeves, pants
- Air conditioning or screened in locations
- Use a mosquito net

Key is Reducing Risk in Pregnant Women and the Risk of Local Transmission

1. By reducing travel to affected areas
2. By reducing chance of sexual transmission from male partners who traveled
3. By reducing mosquito populations in areas where zika is spreading (hard to do)
4. Through education and rapid reporting of suspect local transmission cases

What Does the Future Hold for Zika Virus?



- Virus will continue to spread in areas with competent vectors
- Many travel-associated cases will occur; may result in some additional local transmission and outbreaks (likely next mosquito season if it will happen.
- We may gain answers to the unknown questions about congenital transmission, more about infection and microcephaly, the role of sexual transmission, how long virus persists in other body fluids (semen, saliva, urine) and the role of other mosquito vectors in temperate areas.
- Stay tuned!

State Epidemiology Resources and Contacts

- GDPH Zika website - <https://dph.georgia.gov/zika> (physician and lab letters, FAQs, etc)
- CDC website - <http://www.cdc.gov/zika/>
- MMWRs for Zika - http://www.cdc.gov/mmwr/zika_reports.html
- DPH Epidemiology – **404-657-2588 (M-F, 8-5)**

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