



ZIKA
Action Plan
SUMMIT

CDC Atlanta, GA



Centers for Disease Control and Prevention



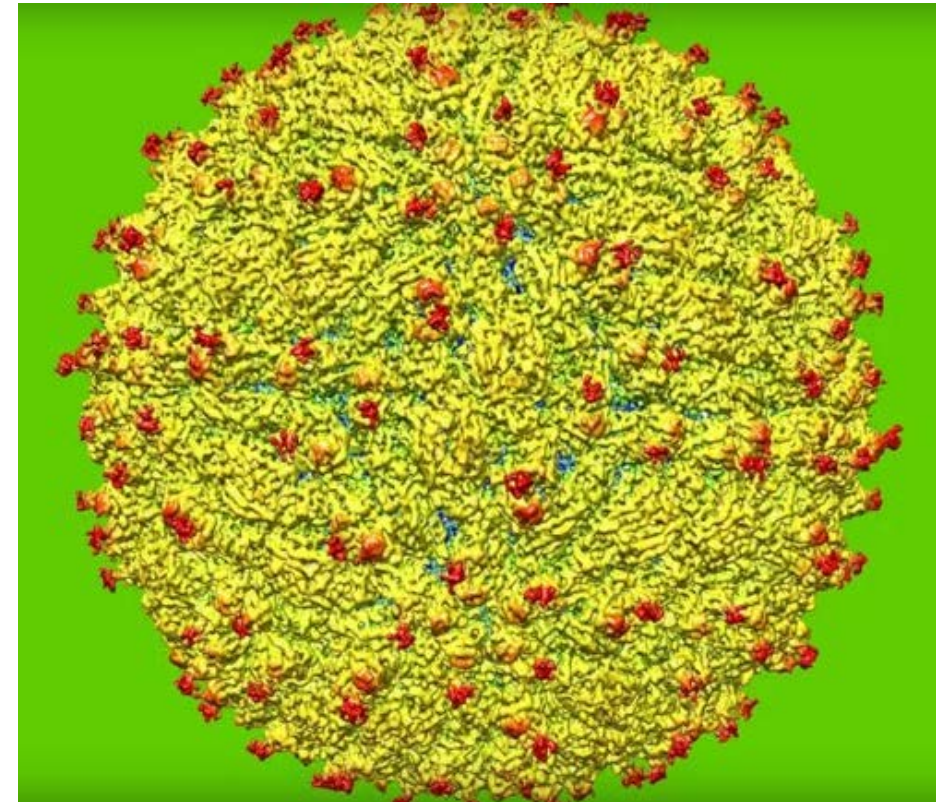
PREPARING AND RESPONDING TO ZIKA VIRUS

Dr. Tom Frieden, MD, MPH

Director, Centers for Disease Control and Prevention

Zika Virus Is a Public Health Emergency that Poses Significant Risks to Pregnant Women

- Zika is the latest in a series of unpredicted & unpredictable health threats
 - We learn more every day
 - Serious problem requiring urgent action
- Most serious risk is to developing fetus
 - For first time in >50 years, a virus has been linked to microcephaly, other serious birth defects, and poor pregnancy outcomes
 - Also associated w/ Guillain-Barré syndrome



Zika Emergency Funding Request

- Administration asked Congress for \$1.9 billion in emergency funding to prepare for, respond to, and protect people from Zika
- CDC is part of a robust response involving many US government agencies and public and private domestic and international partners

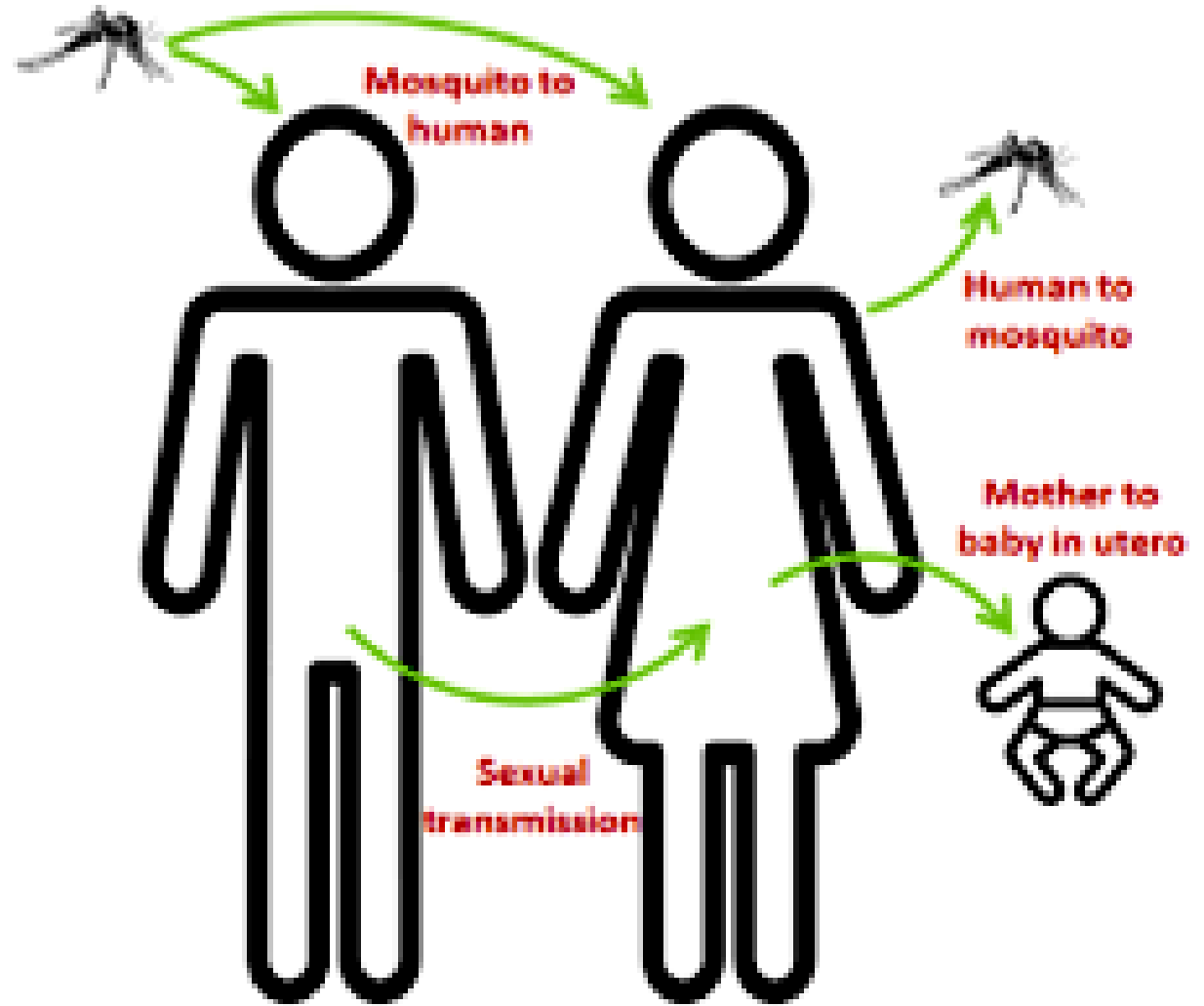
PRESIDENT OBAMA IS CALLING ON CONGRESS TO FIGHT THE ZIKA VIRUS BY PROVIDING \$1.9 BILLION IN EMERGENCY FUNDS TO:

- Rapidly expand mosquito control programs
- Accelerate vaccine research and diagnostic development
- Educate health providers, women, and partners about the disease
- Improve health services and support for low-income pregnant women
- Help Zika-affected countries better control transmission



Zika Virus: Transmission Routes

- Zika virus infection only recently detected in the Americas
 - Same mosquitoes that spread dengue and chikungunya
- Three patterns of spread
 - Direct bites by infected mosquitoes
 - Active transmission
 - Sporadic transmission
 - Trans-placental
 - Sexual



We Have Learned and Done Much but Need to Learn and Do Even More

Some key things we've learned

- Mounting evidence of link w/ Guillain-Barré & microcephaly
 - Neurotropic virus
- Range of adverse pregnancy outcomes
- Sexual transmission more common than expected
- Pregnant women urgently want to take action to protect themselves against Zika
- **There is much more to be learned and done**

A few of the key things we're doing

- Travel and testing guidance
- Guidelines for pregnant women, babies and children w/ possible Zika infection and for couples interested in conceiving
- Clinical guidelines to prevent sexual transmission
- Laboratory tests to states and international partners (MAC-ELISA and Trioplex rRT-PCR)
- Studying how long Zika virus stays in semen, urine & breast-milk
- Vector control, support to pregnant women, and safe blood in Puerto Rico

Key Issues

- Surveillance – human and mosquito including diagnostics
- Travel/sexual transmission advice
- Case response, including vector control around cases
- Risk-based guidance – 4 phases
 - Planning
 - Start of mosquito season
 - First case of local Zika
 - Active transmission



This is an official
CDC HEALTH ADVISORY

ZIKA HEALTH ADVISORY

Pregnant?
Zika is linked to birth defects.
Going to or coming from areas with Zika?

Protect yourself during pregnancy:

- Don't let mosquitoes bite you.
- Talk to your doctor about the risk to your pregnancy.

Where is Zika? Find out at www.cdc.gov/travel.



Considerations for Zika Action Planning

- Key priority – decrease risk to pregnant women and women of reproductive age
- Human-based surveillance for Zika and surveillance of birth defects crucial for response
- Control of *Aedes aegypti* is challenging
- Sustainable mosquito control is key





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WHO IS AT RISK?

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Medical Officer

Division of Reproductive Health

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CASE COUNTS AND OUTCOMES OF ZIKA VIRUS

US States*

- **312** travel-associated cases†
- **0** locally transmitted cases‡

- **27** pregnant women
- **1** case of Guillain-Barre syndrome
- **6** sexually transmitted cases

US Territories

- **3** travel-associated cases†
- **349** locally transmitted cases‡

- **37** pregnant women
- **1** case of Guillain-Barre syndrome
- **0** sexually transmitted cases

*40 states and District of Columbia

†Includes cases in travelers and their contacts with presumed sexual or in utero transmission

‡Presumed local mosquito-borne transmission`

as of March 30, 2016

ZIKA VIRUS INFECTION IN PREGNANT WOMEN

- Pregnant women can be infected
 - Through a mosquito bite
 - Through sex with an infected male 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



ZIKA AND PREGNANCY

- Infection can occur in any trimester
- Limited information about effects of Zika virus infection during pregnancy
- Linked to early pregnancy loss and other health outcomes
- Previous Zika virus infection
 - Unlikely to affect future pregnancies
 - Likely protects against future infection



LINK BETWEEN ZIKA AND MICROCEPHALY

- Mounting evidence supports link
 - Temporal association of microcephaly occurring after widespread Zika
 - High rates of microcephaly in same geographic regions as high rates of Zika

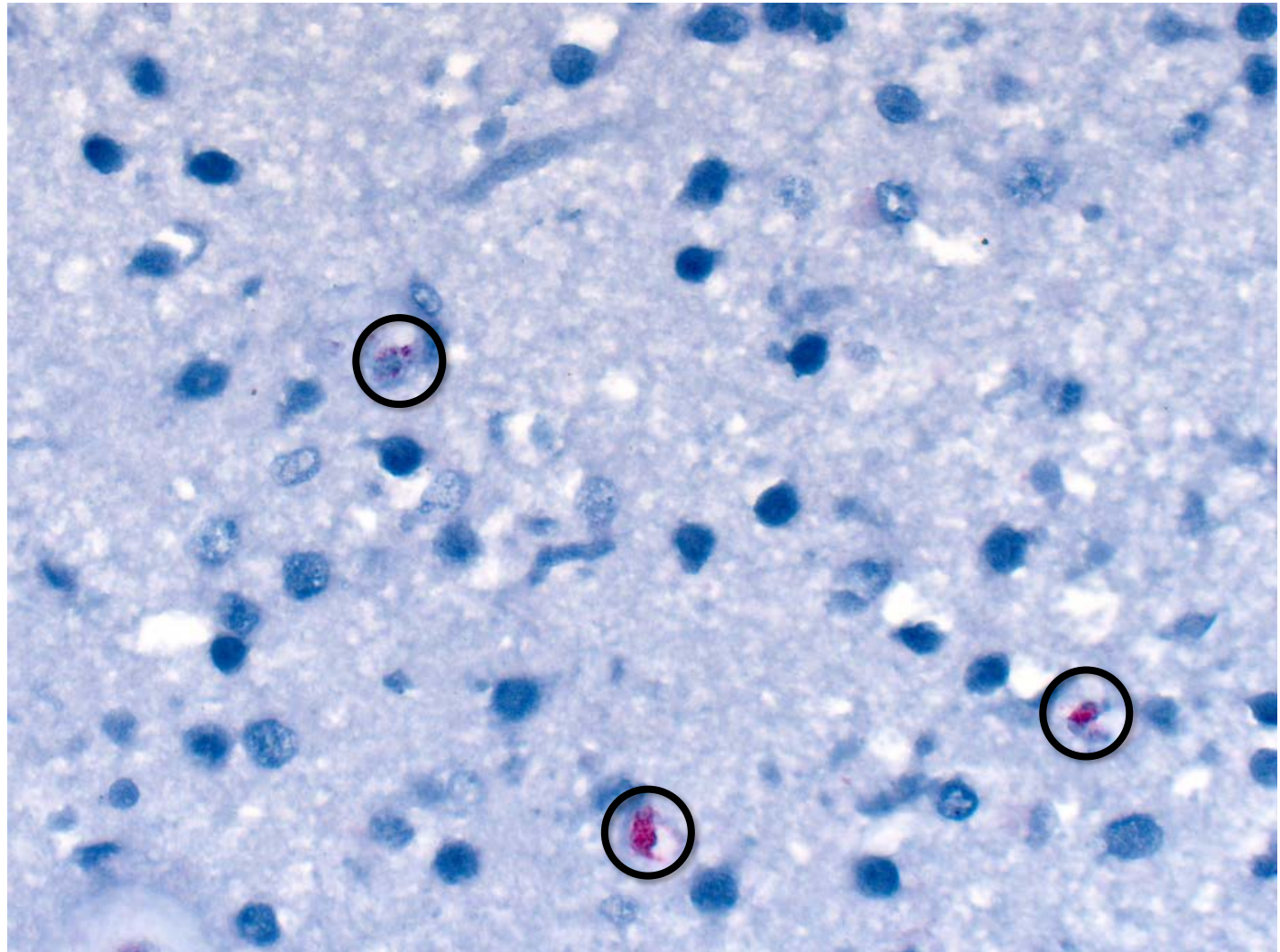


Brazil Ministry of Health. *Protocol for surveillance and response to the occurrence of microcephaly related to Zika virus infection*. 2015 [cited 2016 Feb 2]; Available from:

<http://portalsaude.saude.gov.br/images/pdf/2015/dezembro/09/Microcefalia---Protocolo-de-vigil--ncia-e-resposta---vers--o-1----09dez2015-8h.pdf>

CDC LAB CONFIRMS ZIKA IN FETAL TISSUES

- Zika virus RNA and/or antigen has been identified in:
 - Amniotic fluid
 - Placenta
 - Brain
 - Products of conception



MANY QUESTIONS REMAIN

- How often are fetuses infected by Zika virus?
- What proportion of fetuses with Zika virus have birth defects?
- What is the full range of poor outcomes associated with Zika?

WHAT PREGNANT WOMEN CAN DO

- Follow CDC's travel guidance
- Do not travel to areas with Zika



WHAT PREGNANT WOMEN CAN DO



Prevent mosquito bites



Use insect repellent

It's safe and it works! Read the label and follow the directions.



Cover your skin

Wear long-sleeved shirts and long pants. For extra protection, treat clothing with permethrin.

Mosquito-proof your home

Use screens on windows and doors.
Use air conditioning when available.
Eliminate standing water.



Prevent sexual transmission

Use a condom

Use a condom the right way every time you have vaginal, anal, or oral sex during your pregnancy.



OR

Don't have sex

Don't have sex with your male partner during your pregnancy.



WHAT CDC IS DOING TO LEARN MORE

- Established U.S. Zika Pregnancy Registry
- Established Zika Active Pregnancy Surveillance System (Puerto Rico)
- Collaborating with Colombia to monitor pregnancy outcomes in women with Zika virus disease
- Collaborating with Brazil to study the link with microcephaly
- Studying how long the virus stays in semen, urine, and breastmilk



WHAT CDC IS DOING TO KEEP YOU INFORMED

- Providing updated clinical guidelines
- Sharing up-to-date information
- Responding to your inquiries (24/7 hotline)



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MMWR

Morbidity and Mortality Weekly Report

Early Release / Vol. 65

February 19, 2016

Update: Interim Guidelines for Health Care Providers Caring for Infants and Children with Possible Zika Virus Infection — United States, February 2016

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How CDC IS SUPPORTING YOUR JURISDICTION

- Building state capacity to identify babies with birth defects
- Working with partners to ensure that families are linked with services



WHAT YOUR ORGANIZATION CAN DO

- Ensure healthcare providers are aware of resources and updated clinical guidance
- Facilitate coordination among your state programs
- Practice effective risk communication principles
- Ensure access to contraception to prevent unintended pregnancy
- Review resources to ensure capacity for children with special healthcare needs
- Support the US Zika Pregnancy Registry



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HOW TO IDENTIFY AND DIAGNOSE CASES

Beth Bell, MD, MPH

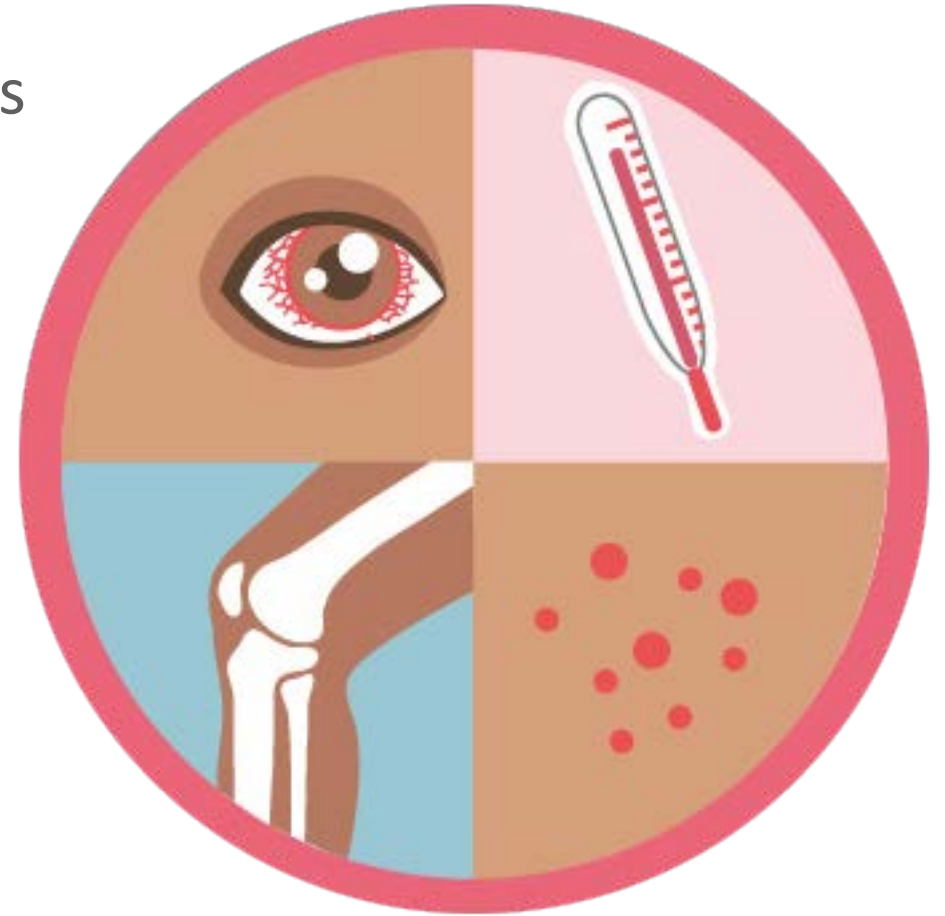
Director

National Center for Emerging and Zoonotic Infectious Diseases

Centers for Disease Control and Prevention

IDENTIFYING PEOPLE WITH ZIKA VIRUS INFECTION IS CHALLENGING

- Most people with Zika do not have symptoms or have mild clinical illness that does not require medical care
- Signs and symptoms of Zika virus infection are non-specific
 - Rash
 - Fever
 - Joint pain
 - Headache
 - Reddish eyes



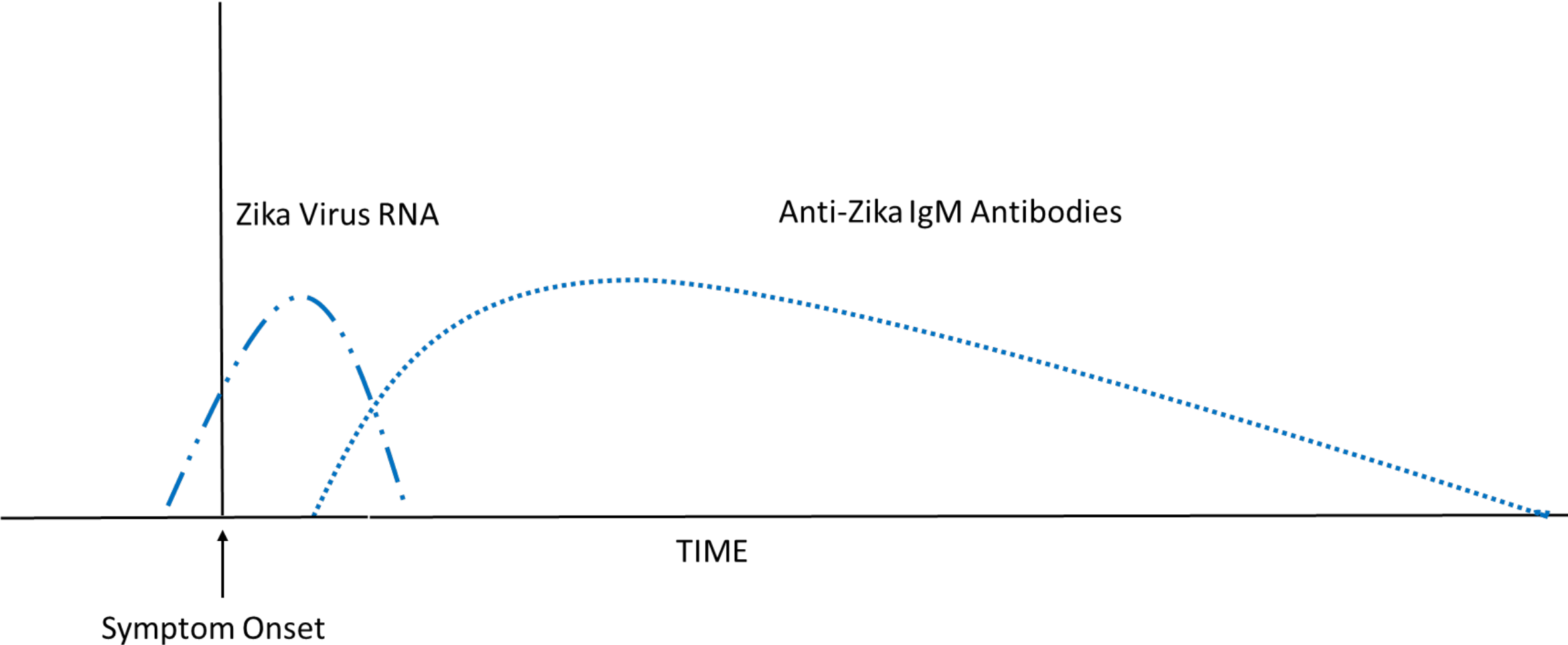
COMPLICATIONS OF ZIKA VIRUS INFECTION

- There is increasing evidence of a link between Zika virus infection in pregnant women and adverse outcomes such as microcephaly
- Emerging information of an association between Zika virus infection and Guillain-Barré Syndrome, a rare neurological problem that can occur after an infection

DEFINING ZIKA VIRUS DISEASE

- **Clinical Symptoms:** One or more symptoms of acute onset fever, rash, joint pain, or conjunctivitis **OR** Guillain-Barré Syndrome
- **A potential Zika virus exposure:**
 - An individual who resided or traveled to an area with ongoing Zika virus transmission within two weeks of symptom onset
 - Or a link to a person with laboratory evidence of recent Zika virus infection (for example, sexual partner or baby born to an infected mother) or an association in time and place with a confirmed case
- **Laboratory evidence of Zika virus infection**

DETECTING ZIKA VIRUS RNA AND ANTIBODIES



LABORATORY TESTING FOR ZIKA VIRUS IS ALSO CHALLENGING

- State, local, and territorial laboratories are critical for confirmation of Zika virus infection
- Clinicians should be educated to collect, store and transport the correct specimens for the available tests
- Laboratories should be supported to enhance surge capacity
 - Plan for how to prioritize pregnant women for testing
 - Supplies, equipment, staff, information technology support
 - Laboratorian cross-training
 - Communication planning

Testing for Zika infection is a balance



Missing cases in pregnant women

Missing local transmission



False positives



Lab capacity



IDENTIFYING AND DIAGNOSING ZIKA IS IMPORTANT

- For clinical care:
 - To guide management of pregnant women with Zika infection
 - To monitor certain outcomes in people with Zika infection
- For public health action:
 - Reduce opportunities for local transmission in states with known *Aedes aegypti* and *Aedes albopictus* mosquitoes
 - Recommend infected people avoid exposure to the local mosquito populations
 - Detect local transmission early to control spread

Recognizing and Responding to Zika virus infections



SURVEILLANCE

- Jurisdictions most likely to have *Aedes aegypti* and *Aedes albopictus* mosquitoes should plan and implement surveillance activities to identify local transmission early
- Approaches to surveillance may include:
 - Enhance surveillance activities to identify potential additional cases near a travel-associated case
 - Testing people with symptoms of Zika virus in areas with *Aedes aegypti* and *Aedes albopictus* and known travel-associated cases
 - Identifying unusual clusters of rash illness and testing for Zika

WHAT CDC IS DOING

- Providing guidance on who should be tested for Zika virus disease
- Providing guidance for surveillance before and during mosquito season
- Providing guidance on how to prevent transmission of Zika virus and rapidly identify cases
- CDC has developed and is distributing MAC-ELISA testing kits to states
- CDC has developed Trioplex rRT-PCR that detects Zika, dengue, and chikungunya virus RNA

WHAT YOUR ORGANIZATION CAN DO

- Surveillance provides data needed for action to prevent and control the spread of Zika virus
- Activities key to detecting transmission of Zika virus include
 - Educate healthcare providers on how to identify cases of possible Zika virus infection and when to test
 - Coordinate and support state and local laboratory testing
 - Support local health departments to do surveillance and communicate to the public about how to reduce the risk of Zika transmission



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PREVENTING AND RESPONDING TO MOSQUITO-BORNE ILLNESS

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Director

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ESTIMATED RANGE OF *Aedes aegypti* AND *Aedes albopictus* MOSQUITOES IN THE UNITED STATES

Aedes aegypti



Aedes albopictus



*Maps have been updated from a variety of sources. These maps represent CDC's best estimate of the potential range of *Aedes aegypti* and *Aedes albopictus* in the United States. Map is not meant to represent risk for spread of disease.

KNOW YOUR MOSQUITO

Aedes aegypti/Ae. albopictus

- Mostly bite during the day, but can also bite at night
- *Ae. aegypti* prefers to feed on people
- *Ae. albopictus* will feed on people and animals
- Prefers to lay eggs in man made containers that may dry out completely
- BG Sentinel traps and ovicups for surveillance

Culex pipiens/Cx. quinquefasciatus

- Night biter
- Prefers birds
- Lays eggs in standing water with a lot of organic material (lakes, ditches, gutters, neglected pools)
- CDC gravid and light traps for surveillance



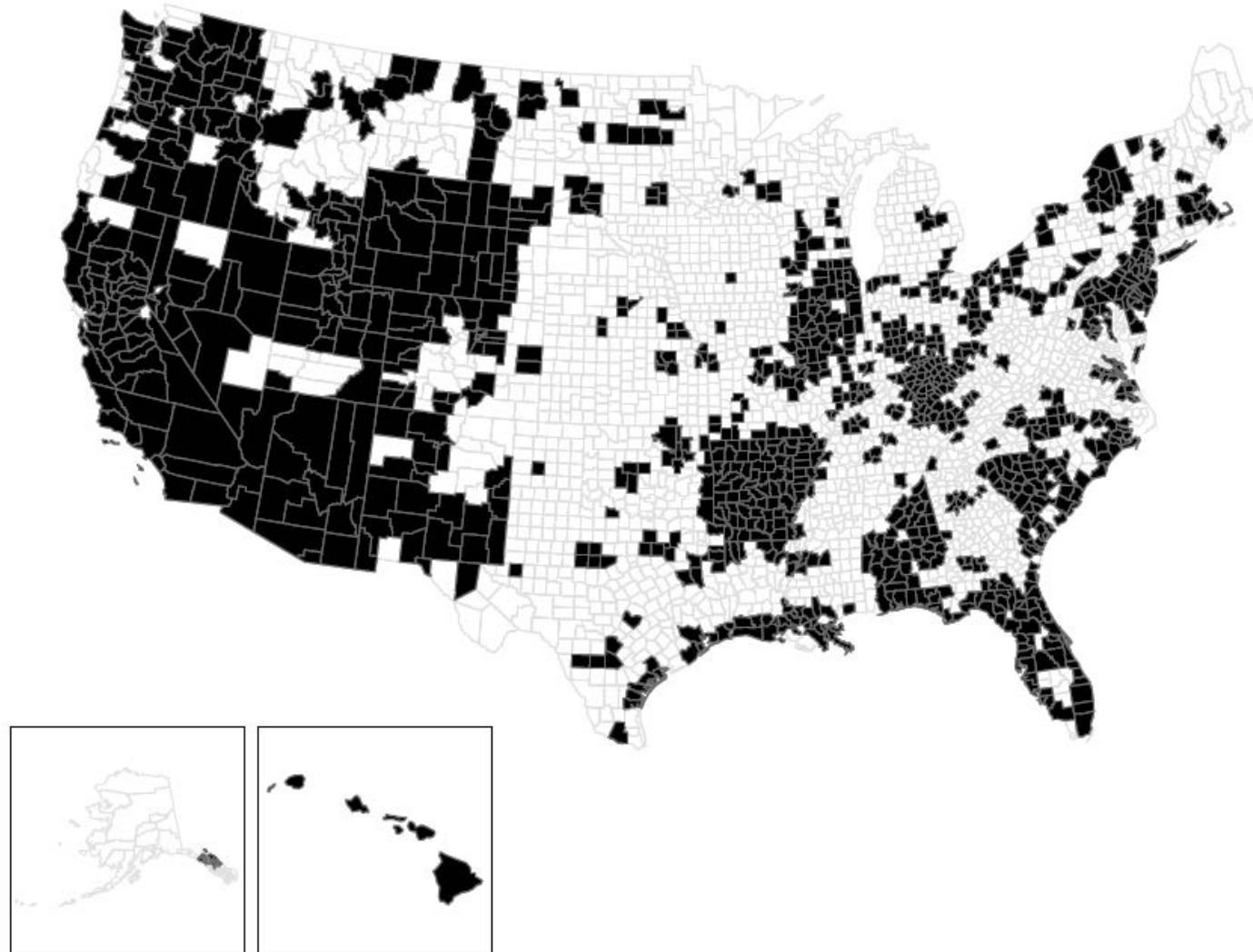
THE PURPOSE OF MOSQUITO CONTROL VARIES



Nuisance biting versus disease vectors

Updated as of March 1, 2016

COUNTIES WITH REPORTED VECTOR CONTROL DISTRICTS



MOSQUITO CONTROL IN THE UNITED STATES

- Coordinated and funded locally in most areas
 - Divided into mosquito control or abatement districts
- Many mosquito control programs are stand-alone divisions of local governments
 - Need to link mosquito control districts with both state and local health departments
- State and local jurisdictions may have different laws and ordinances concerning mosquito control
 - Stand-alone program or connected to health departments
 - Especially relevant concerning property access

WHO IS RESPONSIBLE FOR MOSQUITO CONTROL?

- State boards/commissions/departments
- Tribal nations
- County mosquito boards (independent taxing districts)
- Local departments of health/environment
- Individual cities/townships
- Neighborhood associations
- Pest management professionals

WHO DOES MOSQUITO CONTROL?

- Local government programs – the community that needs abatement does all of the work
- Private contractors – an outside group is hired to perform abatement work
- Combination – a local government program exists, but some functions are contracted out
 - Aerial spraying is an example of a service that is commonly contracted by local governments



Aedes aegypti and ***Aedes albopictus*** Control

Focus at individual property level

- Targeted outdoor residual spraying
- Targeted indoor residual spraying when appropriate
- Larvicide in containers, tires, tree holes
- Sanitation
- Widespread space spraying when required



WEST NILE VIRUS MOSQUITO (*CULEX*) CONTROL

Focus is on community level

- Widespread space spraying
- Larvicide in storm drains and septic ditches/tanks
- Fish or larvicides in abandoned pools
- Larvicide in containers around homes



WHAT YOU CAN DO BEFORE MOSQUITO SEASON

- Gather and review historical data and maps on the presence of vector mosquitoes
 - If outdated, plan new surveys and assessments
- Develop a mosquito control strategy
- Develop a communications network through your jurisdictional incident management structure
- Engage communities about mosquito control plans and policies
- Identify staffing capacity, resource allocation, and technical expertise

WHAT YOU CAN DO DURING MOSQUITO SEASON

- Implement all mosquito control strategies, including:
 - Immature mosquito monitoring
 - Adult mosquito monitoring
 - Remove or dump water sources where larvae can grow
 - Use larvicides in water sources that cannot be removed or dumped
 - Conduct insecticide resistance testing
- Actively engage communities to perform source reduction

WHAT YOU CAN DO IF ZIKA CASES ARE IDENTIFIED

- Mobilize comprehensive mosquito control strategies without delay
- Implement targeted vector control for adult and immature mosquitoes in and within 150 yards around an individual's location
- Intensify larval control and source-reduction efforts
- Consider adding community-based adult mosquito control



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CALL TO ACTION: WHAT CAN STATE AND LOCAL LEADERS DO?

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Considerations for Zika Action Planning

- Appoint an empowered Zika coordinator for your state
- Review preparedness plans
- Coordinate at state and local level
- Implement phased, jurisdictional, risk-based Zika plan
 - Communication
 - Surveillance
 - Laboratory testing
 - Mosquito control
 - Pregnant women outreach
 - Blood safety



Some Challenges of Zika

- Planning and coordinating mosquito control throughout US
- Mosquito control in communities that are hesitant and/or lack abatement districts
- Coordinating mosquito control and services for women between tribal and state jurisdictions
- Aligning state Zika planning with community clinical services for reproductive-age and pregnant women
- Engaging providers and preparing social services for a possible rise in cases of microcephaly and Guillain-Barré
- Addressing blood safety concerns in areas with local transmission

Zika Requires an Urgent and Coordinated Response

- In US – varied risk, varied capacities, & varied response
- To tackle this problem we need to
 - Collaborate across all levels of government and society
 - Build sustainable epidemiologic, lab, and mosquito control capacity
- Our biggest challenges are speed and scale
 - Mosquito populations double in days or weeks
 - Can our response keep pace?

