

AZ Zika Summit

Plenary 2

Follow Up For a Positive Zika Test

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ARIZONA
2016
ZIKA
SUMMIT

Arizona Zika Action Plan Summit

May 24, 2016

From 1st Plenary Session

- PATIENT
- HEALTH CARE PROVIDER
- STATE and LOCAL HEALTH DEPARTMENT
- VECTOR CONTROL

AZ-1

**Positive
Test**





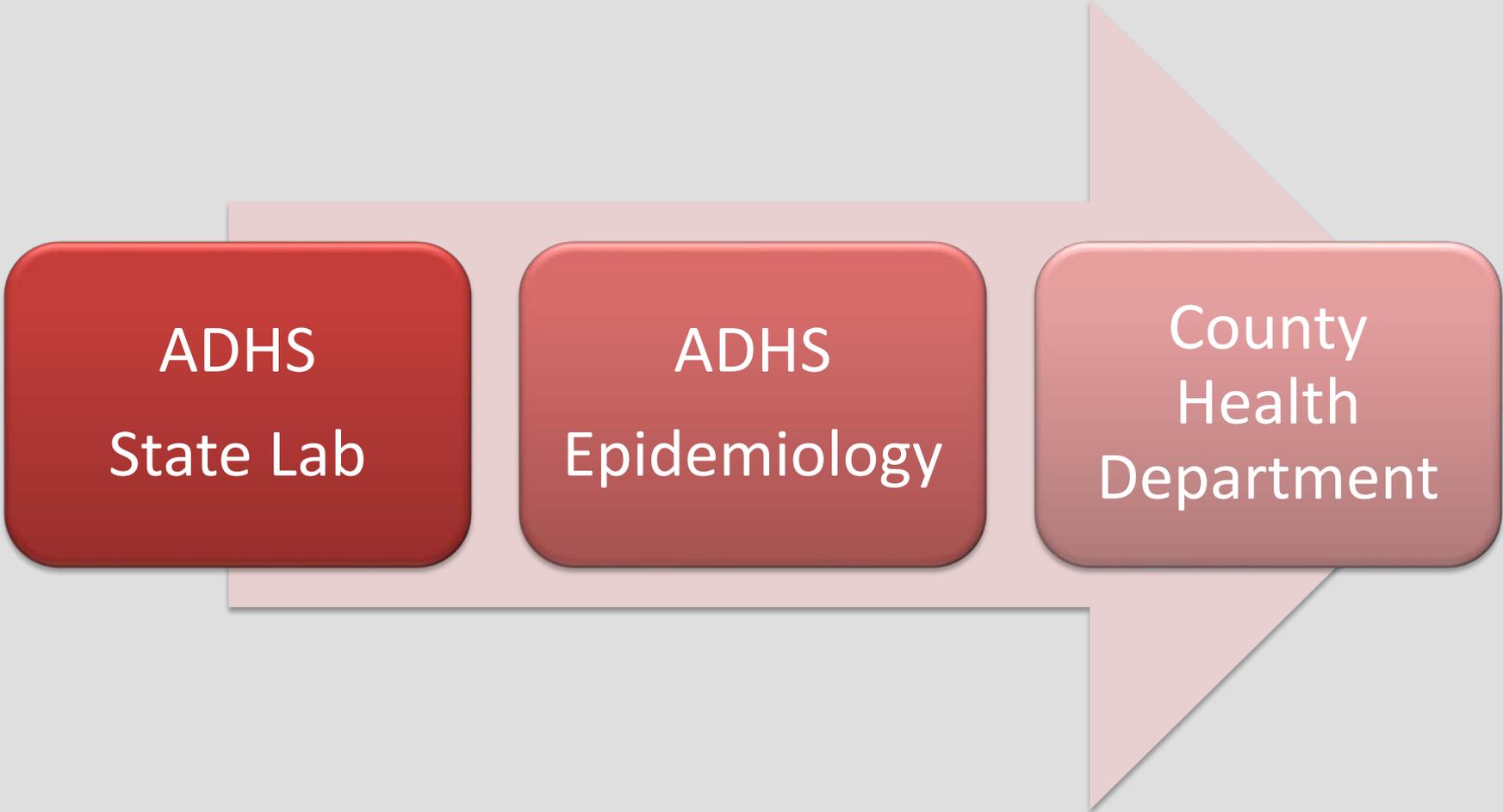
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Positive Test Results

ADHS
State Lab

ADHS
Epidemiology

County
Health
Department



AZ-1 Positive Test Results
AZ-2 Test Interpretation

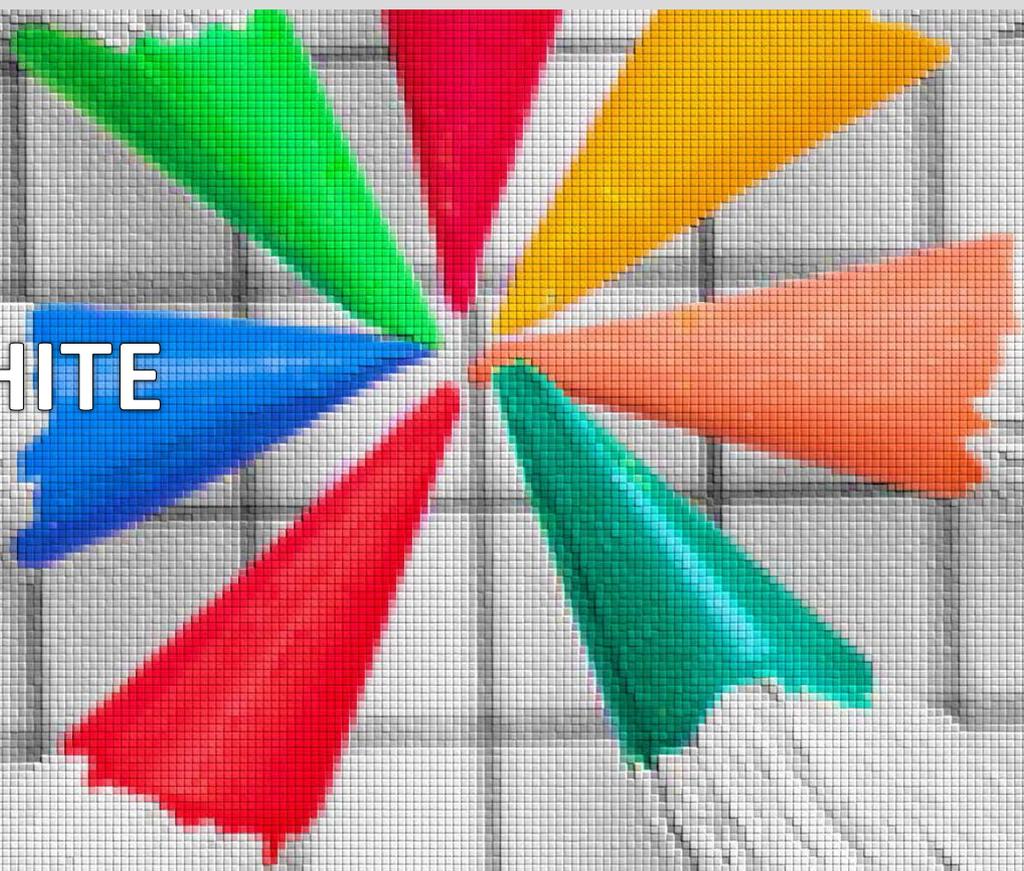


AZ-2



What does it mean if the specimen tests positive for recent Zika virus infection?

**NOT
BLACK & WHITE**



What does it mean if the specimen tests positive for recent Zika virus infection?

- False **positive** results may occur in:
 - **patients with recent, closely-related flavivirus infections, such as dengue.**
 - **patients who have received yellow fever or Japanese encephalitis vaccination**
- A **negative** result does not rule out Zika virus infection, particularly if :
 - **IgM testing is conducted less than 4 days after onset of symptoms** (before IgM levels are expected to become detectable) or
 - **more than 12 weeks after the infection** is thought to have occurred (as IgM levels are expected to drop)

What does it mean if the specimen tests positive for recent Zika virus infection?

Laboratory test results should always be considered in **the context of clinical observations and epidemiologic information** in making a final diagnosis and any patient management decisions

The identification of possible Zika virus infection in a pregnant woman **does not** provide any definitive information about the state of **health of the fetus**

AZ-1 Positive Test Result
AZ-2 Test Interpretation
**AZ-3 County Health
Department**



Local Health Departments

- Notifies the health care provider of the results
- Consults with provider on test interpretation and counseling
- Coordinates vector surveillance and control
- Collects additional clinical information from the provider and patient
- May assist with linking patient to appropriate care

AZ-1 Positive Test Result
AZ-2 Test Interpretation
AZ-3 County Health Department
AZ-4 Health Care Provider





Health Care Providers

- Informs patient of **diagnosis** and provides **care**
- Patient **counseling/education**

Health Care Provider

- Informs patient of **diagnosis** and provides **care**
 - Symptom management, if necessary
 - Referral to specialty care
- Patient **counseling/education**
 - Preconception counseling
 - Pregnant women
 - Prevention
 - ✓ Mosquito bites
 - ✓ Sexual transmission

Zika Infection

- Symptoms are generally mild
- Test results often arrive after symptoms are gone
- Education and counseling are key priorities

Zika and Sexual Transmission

What we know

- Zika virus may be transmitted during sex by an infected man to his partners
- Transmission may occur when a man is symptomatic, before symptoms develop, and after symptoms end
- Zika virus may remain in semen longer than in blood

What we do not know

- How long virus remains in semen
- Whether sexual transmission is possible with absent symptoms or in the presence of subclinical infection
- Whether female to male transmission occurs



Couples in which a woman is pregnant should use condoms consistently and correctly or abstain from sex for the **DURATION** of the pregnancy.



Couples in which a man had confirmed Zika virus infection or clinical illness consistent with Zika virus disease should use condoms or abstaining from sex for at least **6 MONTHS** after onset of illness.



Couples in which a man traveled to an area with active Zika virus transmission consider using condoms or abstaining from sex for at least **8 WEEKS** after departure from the area.

Counseling on Prevention of Sexual Transmission

Preconception Counseling





Women with Zika virus disease should wait until at least **8 weeks** after symptom onset before attempting conception.



Men who have had a diagnosis of Zika virus disease should wait at least **6 months** after symptom onset before attempting conception.



Men who have possible Zika virus exposure without clinical illness consistent with Zika virus disease should wait at least **8 weeks** after possible exposure before attempting conception.

Preconception Counseling



Photo by Tatiana Vdb (CC BY 2.0)

Pregnant Women

What we know

- **Pregnant women can be infected with Zika virus**
 - ✓ Primarily through the bite of an infected mosquito
 - ✓ Secondarily through sexual transmission
- **Pregnant women can pass Zika virus to her fetus**
 - ✓ Around the time of conception
 - ✓ Throughout during pregnancy
 - ✓ And at delivery

Pregnant Women

We do not know the full impact of Zika virus infection on pregnancy and the fetus:

- ✓ Likelihood of developing disease given exposure?
- ✓ Likelihood of vertical transmission?
- ✓ Risk and range of birth defects/fetal impacts of vertical transmission?
- ✓ Differential impact of timing/gestational age on the development of fetal disease?
- ✓ Differential impact of mosquito-borne and sexual transmission?

Next Steps for Pregnant Women after Zika Testing is Completed

Positive or inconclusive test result for Zika virus infection

Discuss with the local public health department. The risk for microcephaly or other birth defects is unknown.

- Consider serial fetal ultrasounds.

Infant specimens can be tested at birth:

- **Serum** from the umbilical cord or directly from the infant within 2 days of birth: 1 ml (minimum) **CSF**, if obtained for other studies: 1 ml
- **Frozen and fixed placenta and umbilical cord**

Negative test result for Zika virus infection

Perform a routine fetal ultrasound at 18-20 weeks to assess fetal anatomy

Microcephaly, intracranial calcifications, brain and eye abnormalities present

Notify and discuss with the local public health department

- Consider retesting woman for Zika virus infection

Microcephaly, intracranial calcifications, brain and eye abnormalities **NOT** present

Routine prenatal care

Next Steps for Pregnant Women after Positive or Inconclusive Zika Test



Next Steps for Pregnant Women after Positive or Inconclusive Zika Test

- Engage the **local public health** department
- Consider:
 - Refer for perinatal risk assessment/high-risk OB provider
 - **Serial fetal ultrasounds**
 - Amniocentesis
 - ✓ For the evaluation of other congenital infections, and
 - ✓ Other etiologies for congenital disease

*There is a connection between Zika virus and adverse pregnancy outcomes, however the actual **risk for microcephaly or other birth defects is not well defined.***

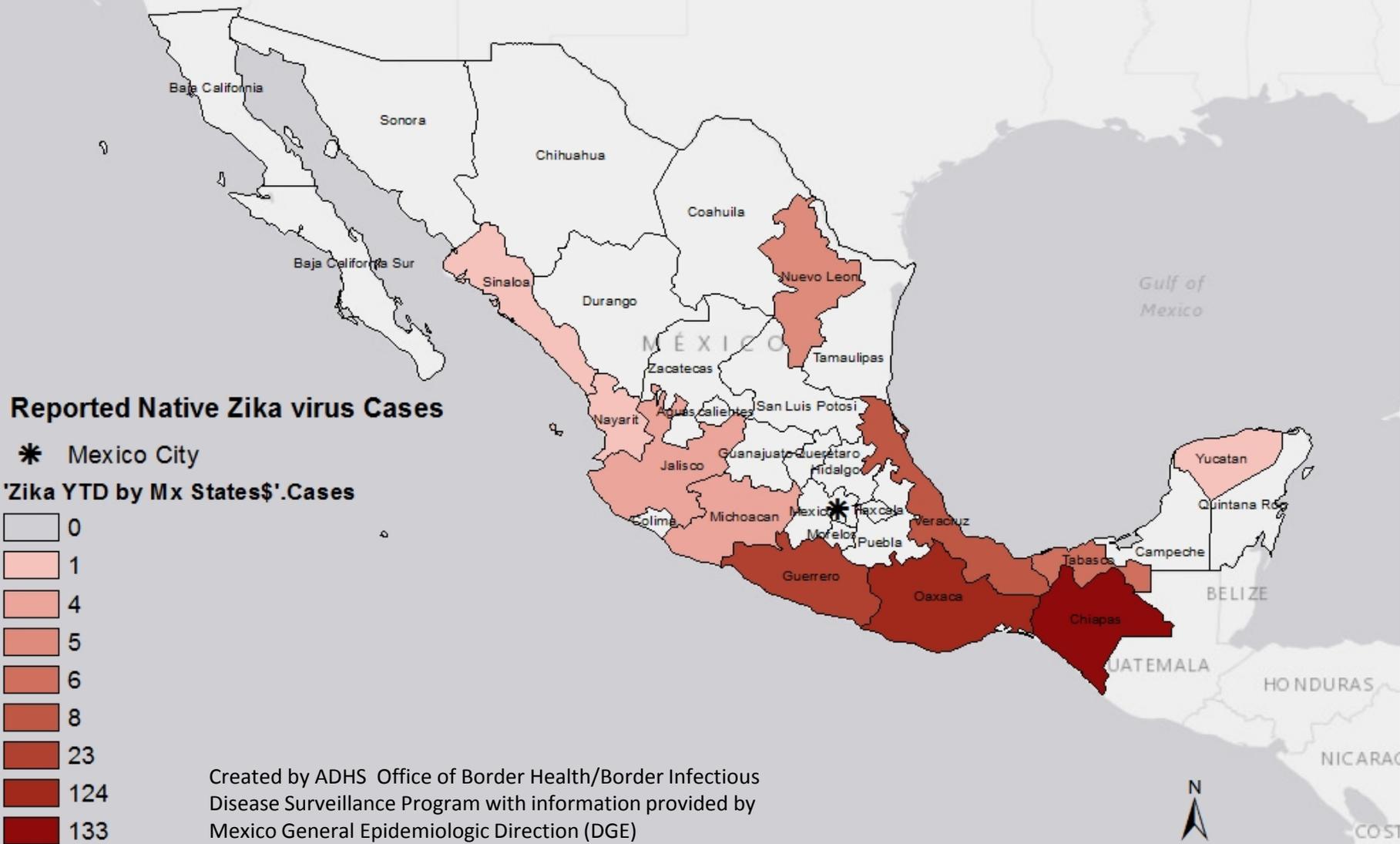
Pregnant Women Living Near the U.S.-Mexico Border

- There are no reports of local transmission of Zika virus along the U.S.-Mexico border
- Healthcare providers who care for pregnant women who live along the U.S.-Mexico border **should assess their patients' travel history**, including travel to areas of endemic transmission
- For women who travel across the border regularly (e.g., daily, weekly) to areas of endemic transmission, healthcare providers should follow CDC's guidelines for pregnant women residing in areas with ongoing Zika virus transmission

CDC's Guidelines for Pregnant Women Residing in Areas with Ongoing Zika Virus Transmission

- If symptomatic, test for Zika and evaluate for possible dengue or chikungunya virus infection
- If asymptomatic, test for Zika upon initiation of prenatal care and in mid-second trimester
- Consider serial fetal ultrasound if test results are positive for Zika

An Overview of the Location of Confirmed Locally Acquired Zika Virus Cases Reported in Mexico



Created by ADHS BIDS
Date: 5/23/2016

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community. Sources: Esri, USGS, NOAA, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

AZ-1 Positive Test Result
AZ-2 Test Interpretation
AZ-3 County Health Department
AZ-4 Health Care Provider
**AZ-5 ADHS and U.S. Zika
Pregnancy Registry**

A graphic of a winding road with yellow double lines and white borders, curving from the bottom left towards the top right. A white signpost with a jagged top edge is positioned on the right side of the road, pointing to the text 'AZ-5'.

AZ-5

ADHS



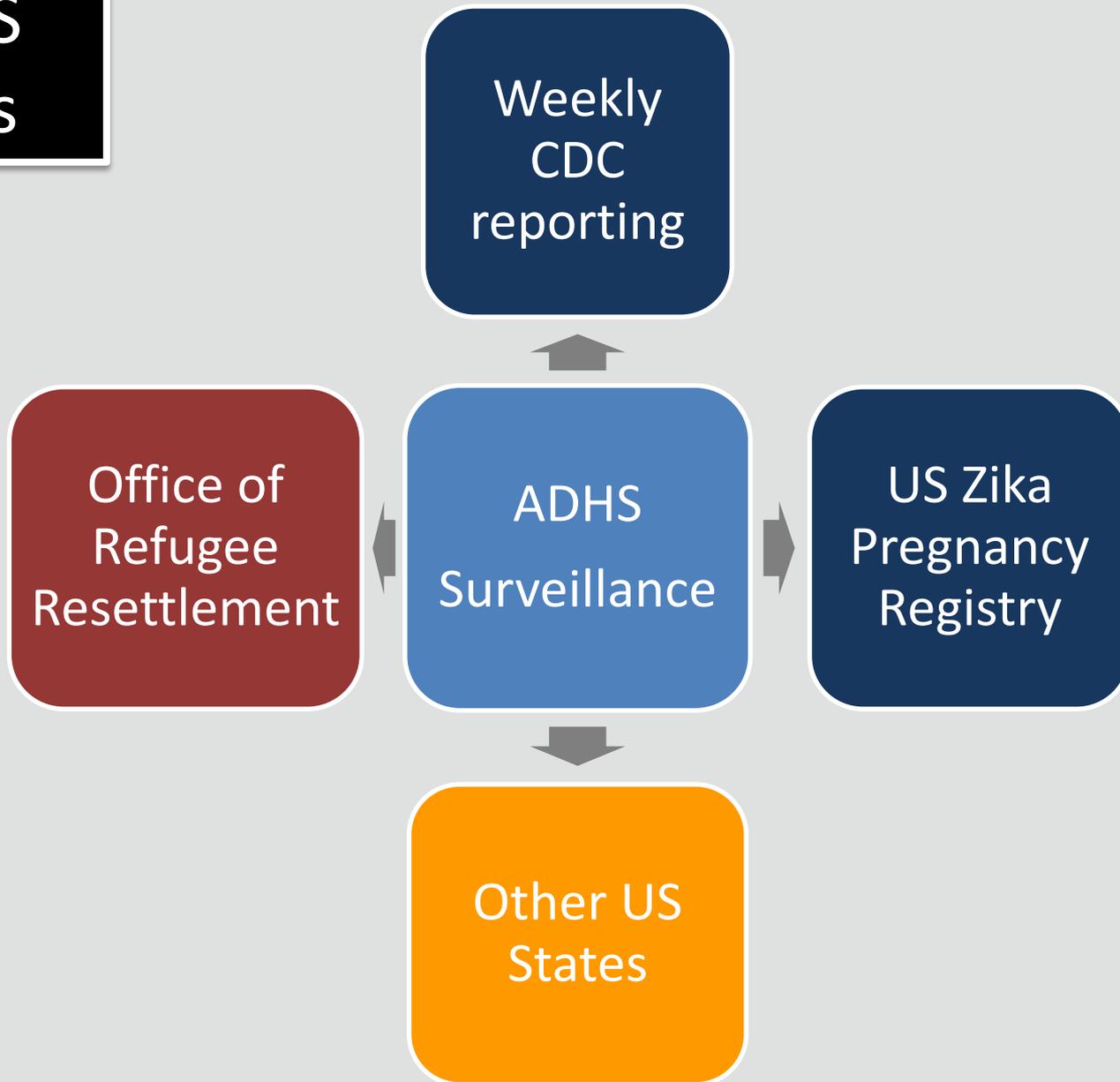
FIRE LANE
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ADHS
Arizona Department of Health Services

ADHS Roles



ADHS Surveillance

- Infectious Diseases
 - Arboviral Infections-ArboNET
- Birth Defects
- Zika Specific
 - CDC's Pregnancy Registry
 - CDC/NBDPN Zika related microcephaly/birth defects



U.S. Zika Pregnancy Registry



Purpose

- ✓ To **monitor** the frequency and types of **pregnancy and infant outcomes** following Zika virus infection during pregnancy,
- ✓ To **inform** ongoing response efforts for this Zika virus disease outbreak on:
 - **recommendations** for clinical care
 - **planning for services** for pregnant women and infants affected
 - improved **prevention** of Zika virus infections during pregnancy

U.S. Zika Pregnancy Registry



Who is included?

- ✓ **Pregnant women with laboratory evidence of Zika virus infection** and their infants and
- ✓ **Infants with laboratory evidence of congenital Zika virus infection** and their mothers

Symptomatic or asymptomatic

U.S. Zika Pregnancy Registry



Data Collected

Information about Zika infection-related tests and procedures conducted as part of the **mother's** and **infant's routine clinical care**, and in line with existing recommendations.

Mother's information

- demographics
- travel
- symptom
- pregnancy information at each trimester

Infant's information

- at delivery
- routine checkups at 2, 6, and 12 months

- CDC will not include information in reports that may identify cases or patients.
- Data will be aggregated to summarize the clinical information for individuals to understand resource needs and to assist in the public health response

U.S. Zika Pregnancy Registry



Reporting Numbers

- ✓ CDC has transitioned to **weekly aggregate reporting** for all pregnant women with laboratory evidence of possible Zika virus infection from the **U.S. Zika Pregnancy Registry** (rather than from standard arboviral reporting)

As of May 12, 2016, there were:

- ✓ **157** (as per the U.S. Zika Pregnancy Registry) residing in U.S. states
- ✓ **122** pregnant women with laboratory evidence of possible Zika virus infection residing U.S. territories

Numbers are higher than previously reported by CDC due to different inclusion criteria (symptomatic and asymptomatic)

At A Glance - Zika in the US (May 18, 2016)

US States

- Travel-associated cases reported: 544
- Locally acquired vector-borne cases reported: 0
- Total: 544
 - Sexually transmitted: 10
 - Guillain-Barré syndrome: 1

US Territories

- Travel-associated cases reported: 4
- Locally acquired cases reported: 832
- Total: 836
 - Guillain-Barré syndrome: 5

Pregnant Women (as of May 12)

- US states: 157
- US territories: 122

[Information on Zika and pregnant women in the US and territories](#)

More >

US Zika Pregnancy Registry

Obstetric Healthcare Providers: How to Contribute



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 following Zika virus infection during pregnancy. 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 cases of 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 [eligible cases](#) to the health department in accordance with applicable state, tribal, local and territorial laws. Cases of Zika virus infection among pregnant women in the United States with laboratory evidence of Zika virus infection (positive or inconclusive test results, regardless of whether they have symptoms) and prenatally or perinatally exposed infants born to these women, including infants with congenital Zika virus infection are eligible for inclusion in the registry.

Healthcare providers practicing in Puerto Rico should report eligible cases 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)



US Zika Pregnancy Registry

What Pregnant Women Need to Know



What is the purpose of the registry?

CDC developed the US Zika Pregnancy Registry to:

- Learn more about the effects of Zika virus infection (Zika) during pregnancy.
- Learn more about the growth and development of babies whose mothers had Zika while pregnant.

CDC will collect health information about Zika among pregnant women and babies across the United States for the registry. CDC and health departments will use the information from this registry to help pregnant women and families affected by Zika. The knowledge gained from this registry will help doctors and other healthcare providers care for pregnant women and their babies.

Who is being included in the registry?

Women living in the United States who have been infected with Zika during pregnancy and their babies can be included in the registry.*

What will be done with the information collected?

The identity of people in the registry will be kept private and secured. The information your doctor or other healthcare provider shares will be added to the registry with information about other pregnant patients with Zika, and the babies born to these mothers, to help CDC and state health departments develop a clearer picture of how Zika affects pregnant women and their babies.

What do I have to do to be in the registry?

You will not need to do extra paperwork, go to extra appointments, or have extra tests to be part of the registry. If your healthcare provider is participating in this Registry, she/he will share information about your health with your health department and the CDC, the Federal public health authority that is trying to understand, prevent, and control disease. Your health department and CDC will work with your doctor and other healthcare providers to collect all of the information needed. For this registry, your health department and CDC will:

- Collect information about your pregnancy,
- Collect information about you and your baby around the time the baby is born, and
- Contact the baby's doctor or other healthcare provider to collect information about the baby's growth and development up to his or her first birthday.

If you change doctors or healthcare providers, please request that your new provider contact registry staff through the email address below.

As established in the HIPAA Privacy Rule (45 CFR 164.522, 164.524, 164.526, and 164.528), you have the right to request from your healthcare provider restrictions to, access to, amendments to, and accounting of the disclosure of your protected health information at any time.

How much does this cost?

Being in the registry will not cost you any money.

What if I have questions about being in the registry?

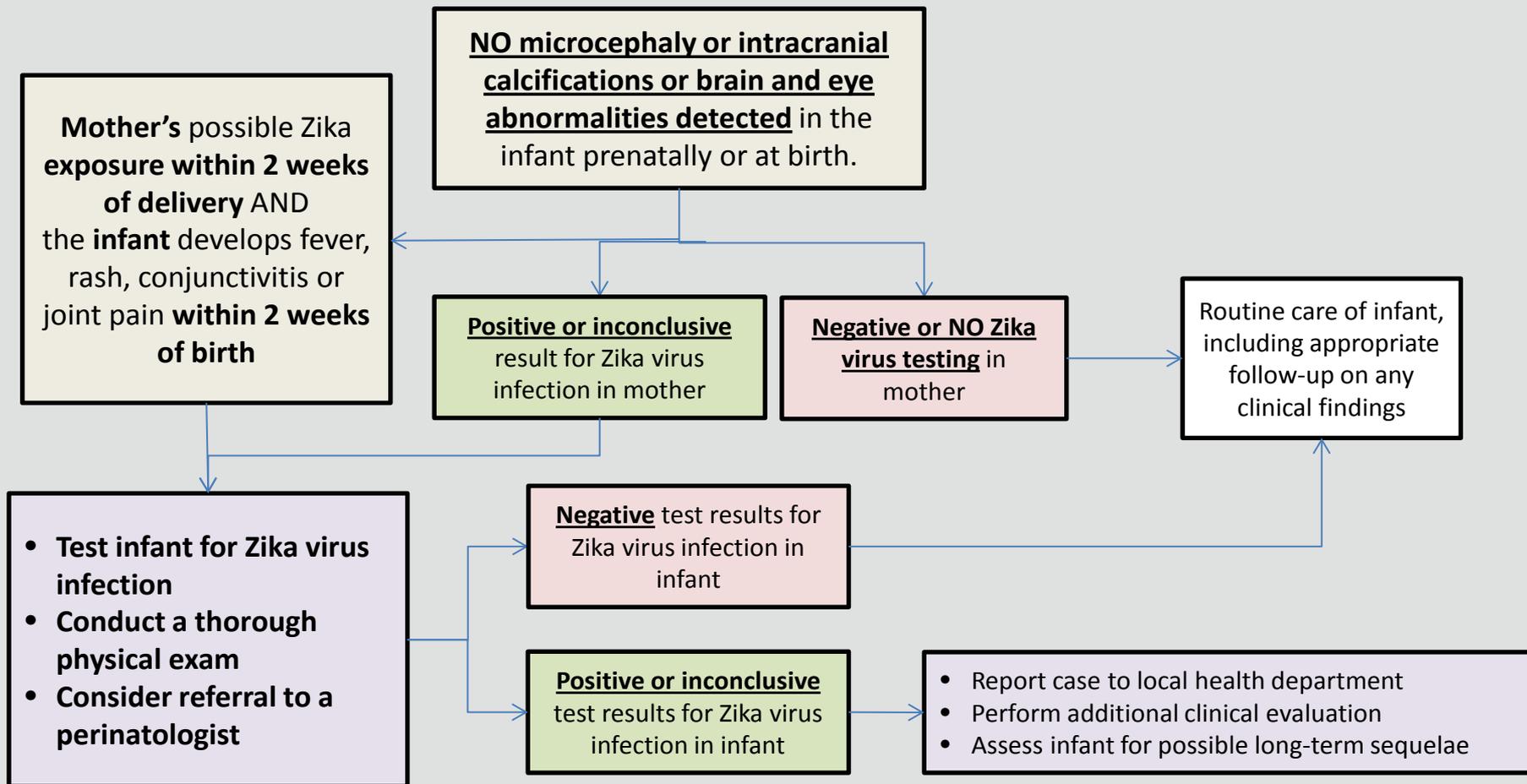
For more information, call 770-488-7100, visit CDC's or send questions to ZIKApregnancy@cdc.gov.

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

Zika Testing for Infants



Zika Testing for Infants **Without Microcephaly, Intracranial Calcifications or Brain and Eye Abnormalities** whose Mothers Traveled to or Resided in an Area with Zika Virus Transmission During Pregnancy or within 2 Weeks of Delivery



Zika Testing for Infants

For Infants Without Microcephaly or Other Abnormalities:

- If infant develops symptoms within 2 weeks of birth AND mother was exposed to Zika (travel/sexually), **test the infant** within 2 weeks of delivery **and test the mother** (if not already done)
- If mother has positive or inconclusive test, then **test the infant** (regardless of infant's symptoms)
- If infant positive or inconclusive then report the case and perform additional clinical evaluation

Specifications for testing an infant:

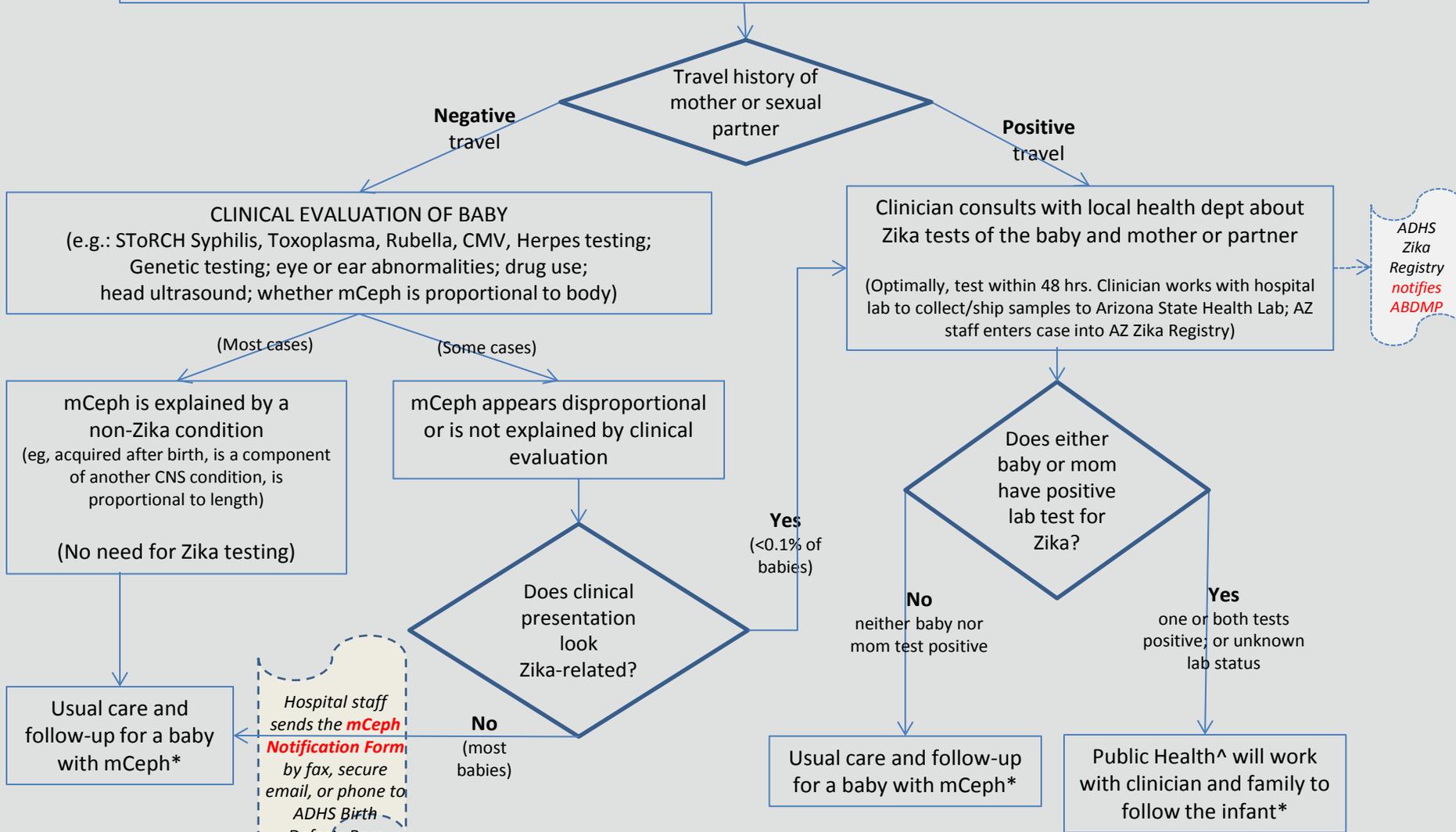
- Infant specimens can be tested at birth:
 - **Serum** from the umbilical cord or directly from the infant **within 2 days** of birth: 1 ml (minimum)
 - **CSF**, if obtained for other studies: 1 ml
 - **Cord blood**
 - **Amniotic fluid**
 - **Frozen and fixed placenta/umbilical cord/fetal tissue**

Zika Testing for Infants with Microcephaly

- Newborn with microcephaly
 - Review travel history
 - Consider other causes of abnormalities
 - Standard tests/screenings
 - Disproportionate/Clinically significant
- Consider testing
- Patient management and referrals
- Report to Birth Defects Registry

Newborn with Congenital Microcephaly (mCeph) or Intracranial Calcification

(~ 2500 AZ newborn babies have mCeph(<3%ile) as defined by Head Circumference measurement)



ABDMP staff reviews hospital medical chart and uses the **CDC Microcephaly Abstraction Form** to register the mCeph case

*For services, engage state and private programs: Newborn Intensive Care Program (NICP), Children’s Rehabilitative Services (CRS), Office for Children with Special Healthcare Needs (OCSHCN), AZ Early Identification Program (AZEIP), Hearing Pgm, Emily Center, others

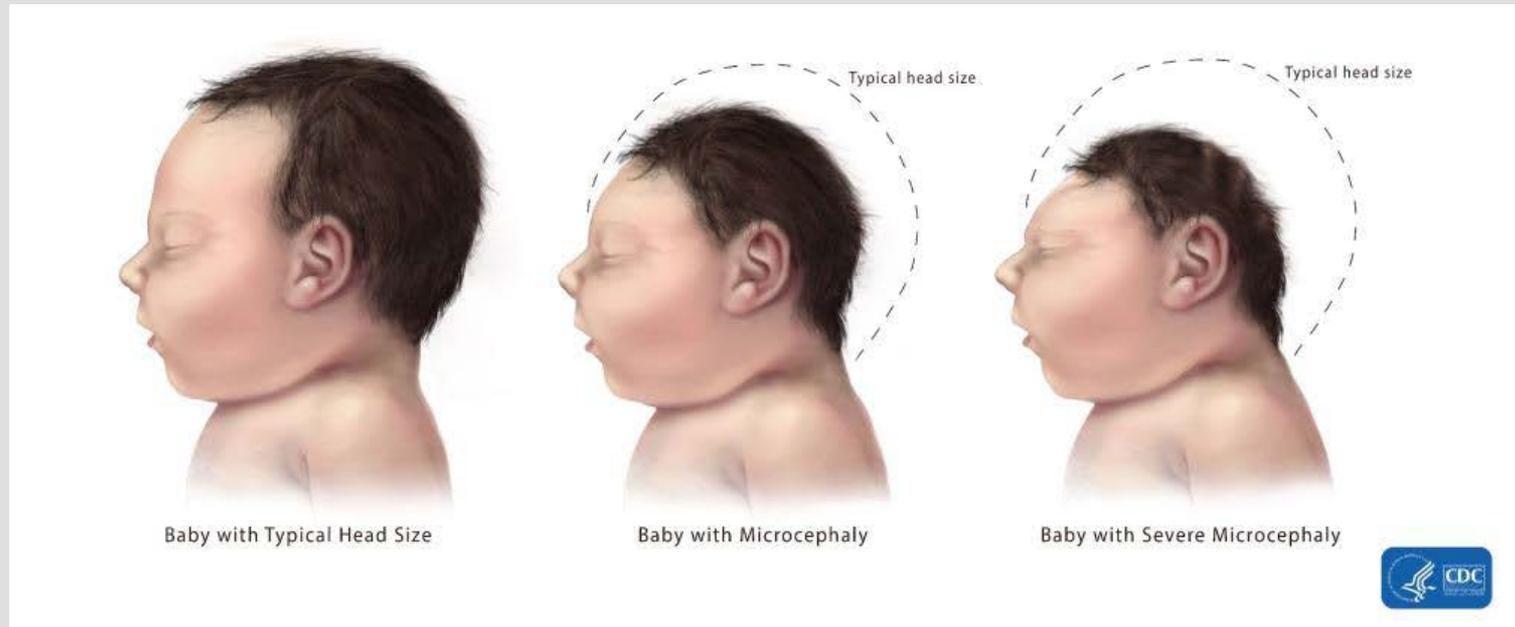
^ADHS programs: OIDS, OCSHCN, ABDMP.

Arizona Birth Defects Monitoring Program

- Conducts statewide birth defects surveillance
- 37 categories of birth defects
 - CNS defects
 - Eye and ear abnormalities
 - Resumed microcephaly reporting in response to Zika concerns

Congenital Microcephaly

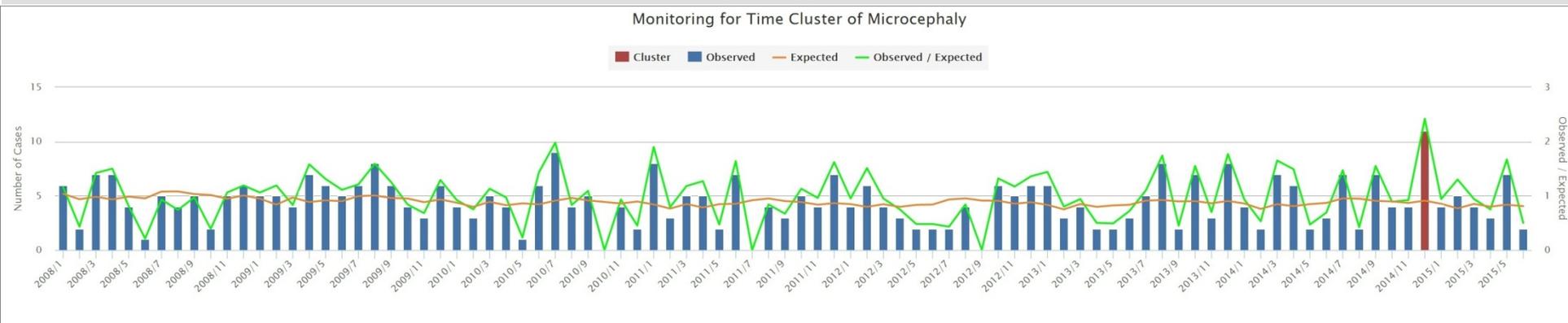
- Determined clinically
- Measurement of head circumference (HC), aka occipitofrontal circumference (OFC)
- <3rd Percentile
- Disproportionate/Clinically Significant



Microcephaly Counts and Trends

Monthly counts of hospitalized infants with microcephaly*, Arizona, January 2008-June 2015

Data Source: Hospital Discharge Data



*Limitations

- Cases were not evaluated to determine the possible cause of the microcephaly (such as another primary birth defect like anencephaly or trisomy).
- The cases with this code (742.1) have not been verified through review of the medical record.

Identifying Congenital Zika Cases through Birth Defect Surveillance

- Why is it important? What are we doing?
 - ✓ Implementation of rapid reporting/rapid identification of microcephaly in Arizona
 - Supplement the detection of possible Zika-caused cases
 - Compare the count of new microcephaly cases to the count prior to arrival of Zika virus
 - Be capable of detecting an increase in incident microcephaly cases
 - Profile the associated factors (e.g., genetic conditions, maternal drug use) of babies with microcephaly
 - Promote rapid referral to clinical follow-up services
 - Build a pool of cases that can be approached for assessment of etiology
- What do providers need to know?



Infant Follow Up

Infant Care and Follow Up

Acute Zika Infection in infants and children

- Usually mild symptoms
 - The spectrum of illness in neonates who acquire Zika virus perinatally is unknown
 - Perinatal transmission of other flaviviruses (WNV, dengue) has been associated with severe illness
- No known long term effects

To date, we are aware of 2 reports of presumed perinatally acquired Zika virus infection (in French Polynesia - Dec 2013)

- *one infant remained asymptomatic*
- *one developed thrombocytopenia and a transient rash 4 days after birth*

Infant Care and Follow Up

Infant with Zika infected mother

- Variety of possible outcomes:
 - Normal pregnancy with no adverse outcome
 - Pregnancy loss
 - Congenital Zika
- Followed through Zika U.S. Pregnancy Registry
- Postnatal transmission via breast milk or saliva have not been reported

Congenital Zika Virus/Syndrome

Definition

- An infant with microcephaly or intracranial calcifications or central nervous system abnormalities:
 - Whose mother lived in or traveled to an area with ongoing Zika virus transmission during the pregnancy; or
 - Maternal evidence of Zika virus or unspecified flavivirus infection during the pregnancy

List of possible defects

- Microcephaly
- CNS/Brain abnormalities
 - Intracranial calcifications
- Eye abnormalities
- Musculoskeletal defects
 - Clubfoot
 - Multiple joint contractures

Follow up and linkage to care

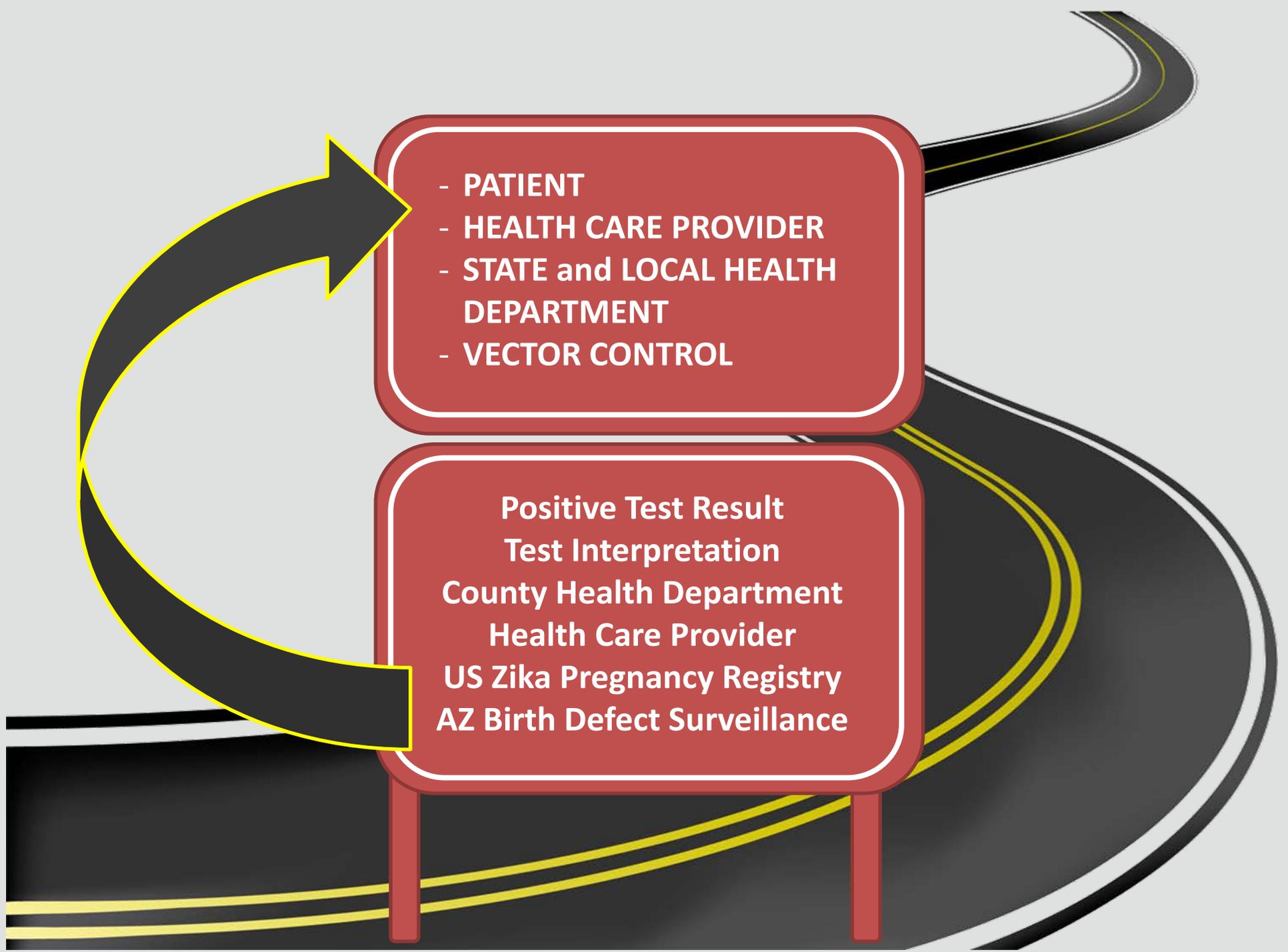
Statewide Partnership

Health Care
Providers

State/Local
Public Health

Public/Private
Partners

National/
International
Partners

- 
- PATIENT
 - HEALTH CARE PROVIDER
 - STATE and LOCAL HEALTH DEPARTMENT
 - VECTOR CONTROL

Positive Test Result
Test Interpretation
County Health Department
Health Care Provider
US Zika Pregnancy Registry
AZ Birth Defect Surveillance



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Thank You

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#ZikaAZ

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