Zika Virus Update

West Virginia Action Plan

Joel Massey, MD
Epidemic Intelligence Service Officer
Sherri A. Young, DO, FAAFP
State Immunization Officer
Local Health Officer Summit
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History of Zika Virus

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1947: Zika virus (ZIKV) was isolated from a febrile monkey in Uganda

1951–1981: ZIKV reported sporadically in humans in central Africa, India, Indonesia, Malaysia, Philippines, Thailand, and Vietnam

2007: ZIKV outbreak reported on Yap Island, Federated States of Micronesia; attack rate 73%

No increased incidence of fetal abnormalities reported in Yap

ZIKV Comes to America

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2007–2015: Several pacific islands reported ZIKV outbreaks and sporadic disease activity

May 2015: Pan American Health Organization (PAHO) issued an alert that cases of ZIKV were confirmed in Brazil

February 8, 2016: Centers for Disease Control and Prevention (CDC) elevated ZIKV response efforts to a Level 1 activation due to active transmission reported in 36 countries

March 30, 2016: There were 315 travel-associated cases in the US and its territories

Areas of Active ZIKV Transmission

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ZIKV in West Virginia

March 10, 2016: West Virginia reported first lab-confirmed travel-associated ZIKV case

Another emerging infectious disease

- 2013: Chikungunya
- 2014: Ebola
- 2015: Zika

Travel-associated ZIKV cases pose an infection risk for residents of West Virginia

Epidemiology of ZIKV

Arbovirus in the flavivirus family

- Flavivirus family includes Dengue, West Nile, Yellow Fever

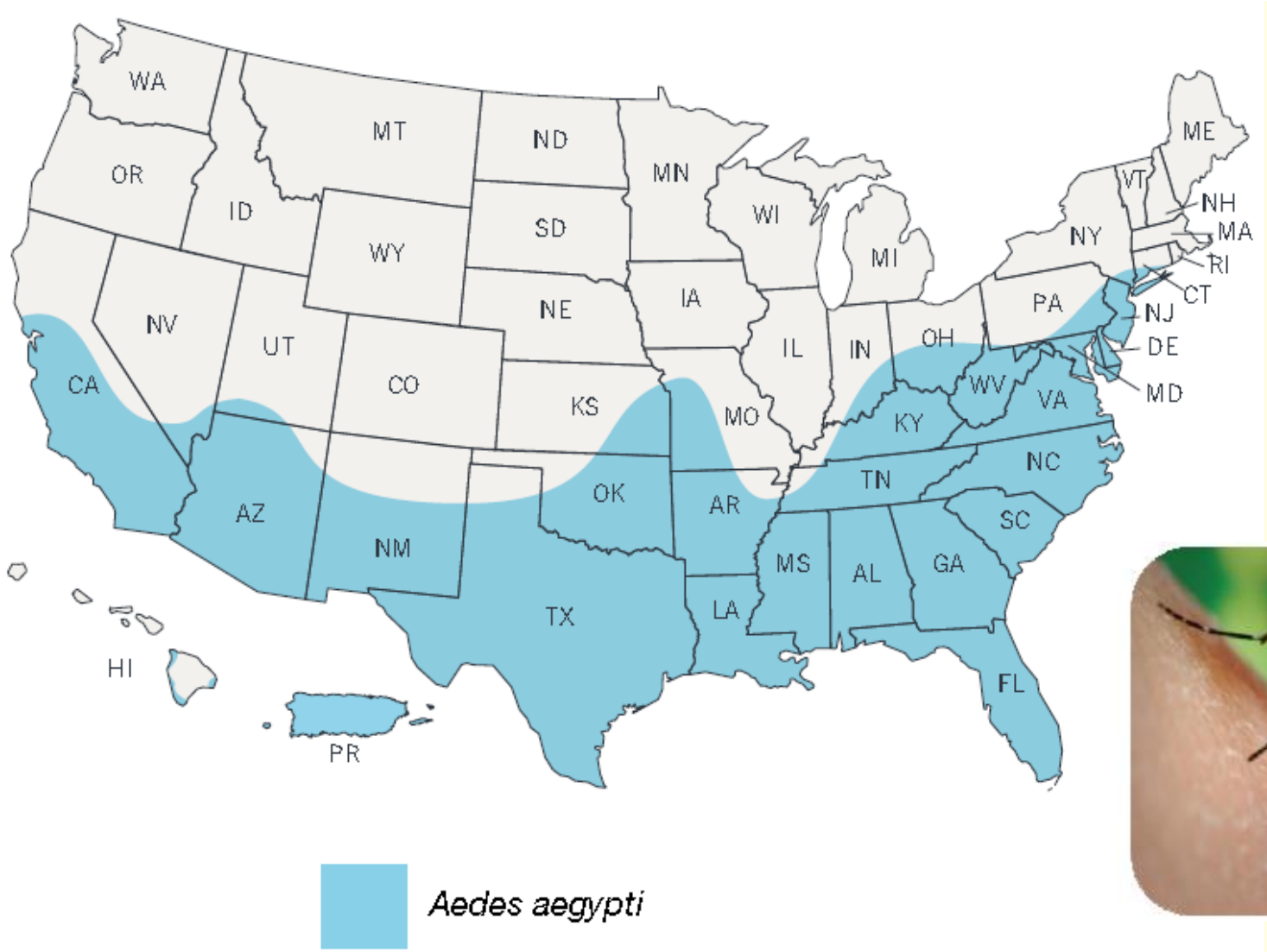
Transmitted primarily by the bite of *Aedes* mosquitoes

- *Aedes aegypti* and *Aedes albopictus* are present in the US

Does not require development or amplification in the vector

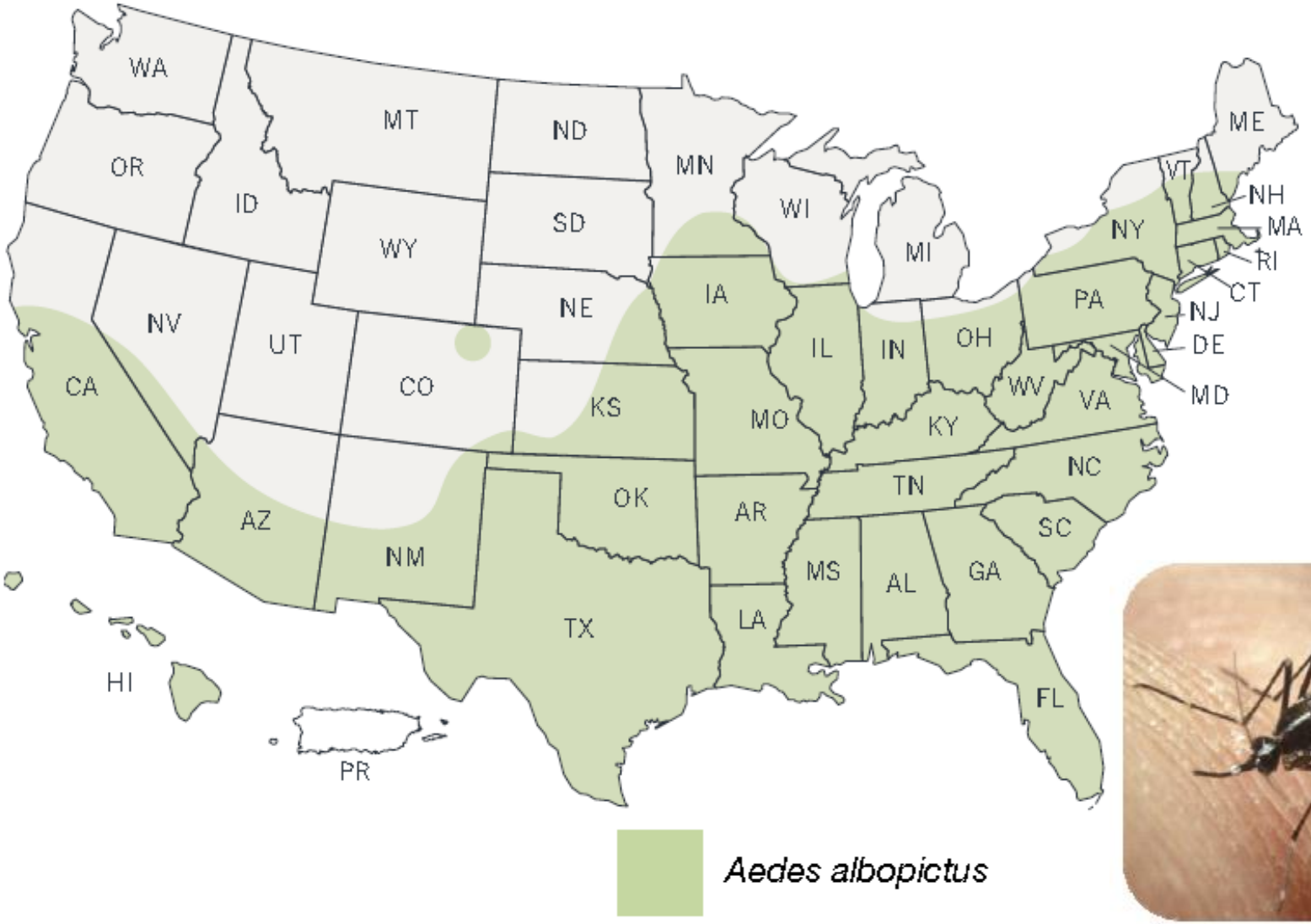
- Rapid autochthonous transmission in densely populated areas

Aedes aegypti Range



www.cdc.gov/zika/vector/range.html

Aedes albopictus Range



www.cdc.gov/zika/vector/range.html

Possible ZIKV Vector in West Virginia

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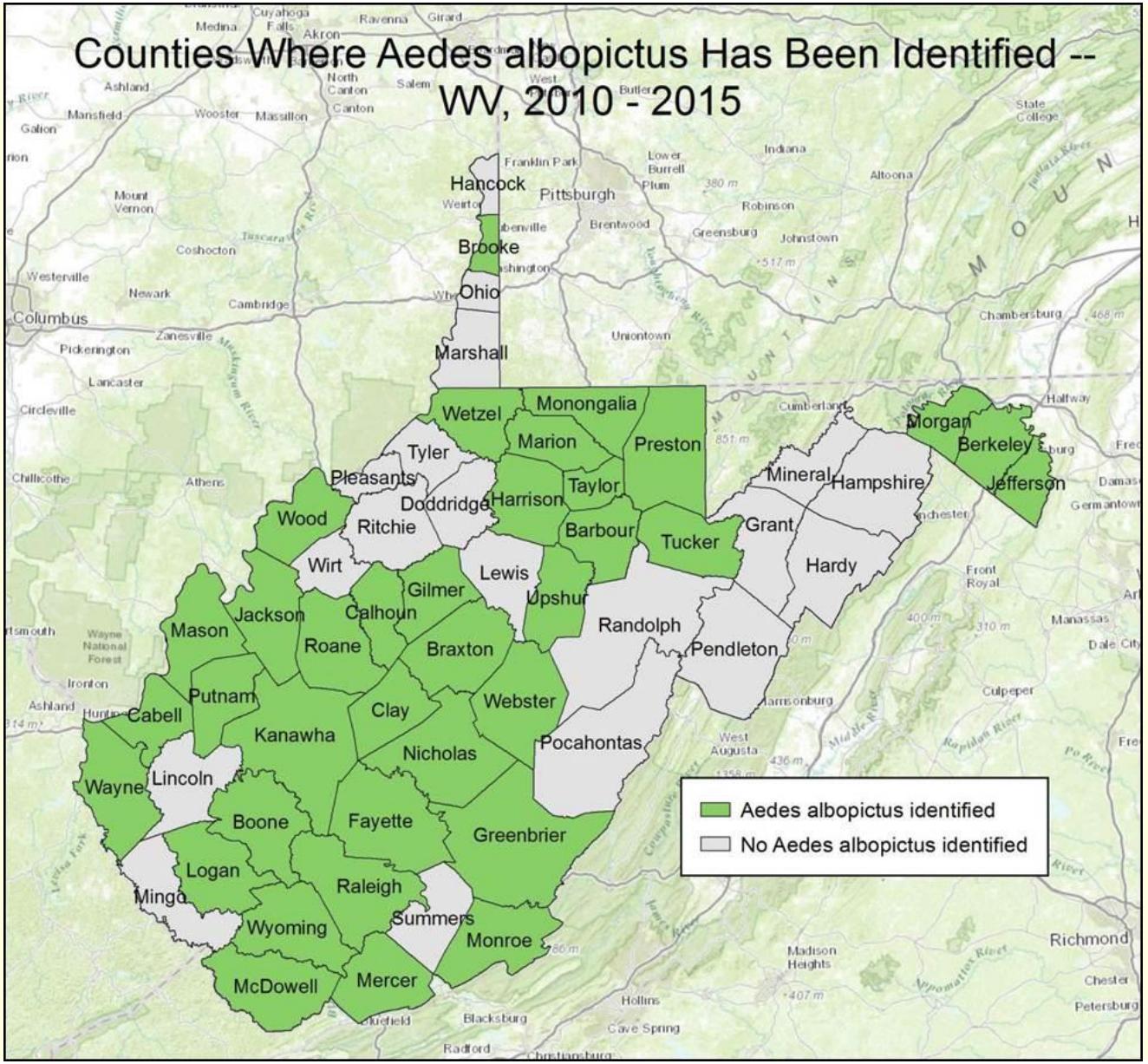
Aedes albopictus

- Aggressive daytime feeder
- Multiple bites before resting
- Container breeder
- Competent vector for:
  - Chikungunya
  - Dengue
  - La Crosse Encephalitis
  - Zika

West Virginia Counties with *Ae. albopitcus*



Alternate Modes of Transmission

Vertical transmission (maternal-child) across the placenta or during delivery

- No documented cases from breastfeeding

Sexual transmission (through semen)

- Unknown how long ZIKV remains alive in semen
- Semen testing not recommended by CDC

Blood transfusion

Tissue donation

Transmission is Possible in West Virginia

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What this means for patients

Clinical disease

Public health implications

ZIKV Infection

Symptoms

- Fever
- Rash (macules & papules)
- Arthralgia
- Conjunctivitis
- Myalgia
- Headache

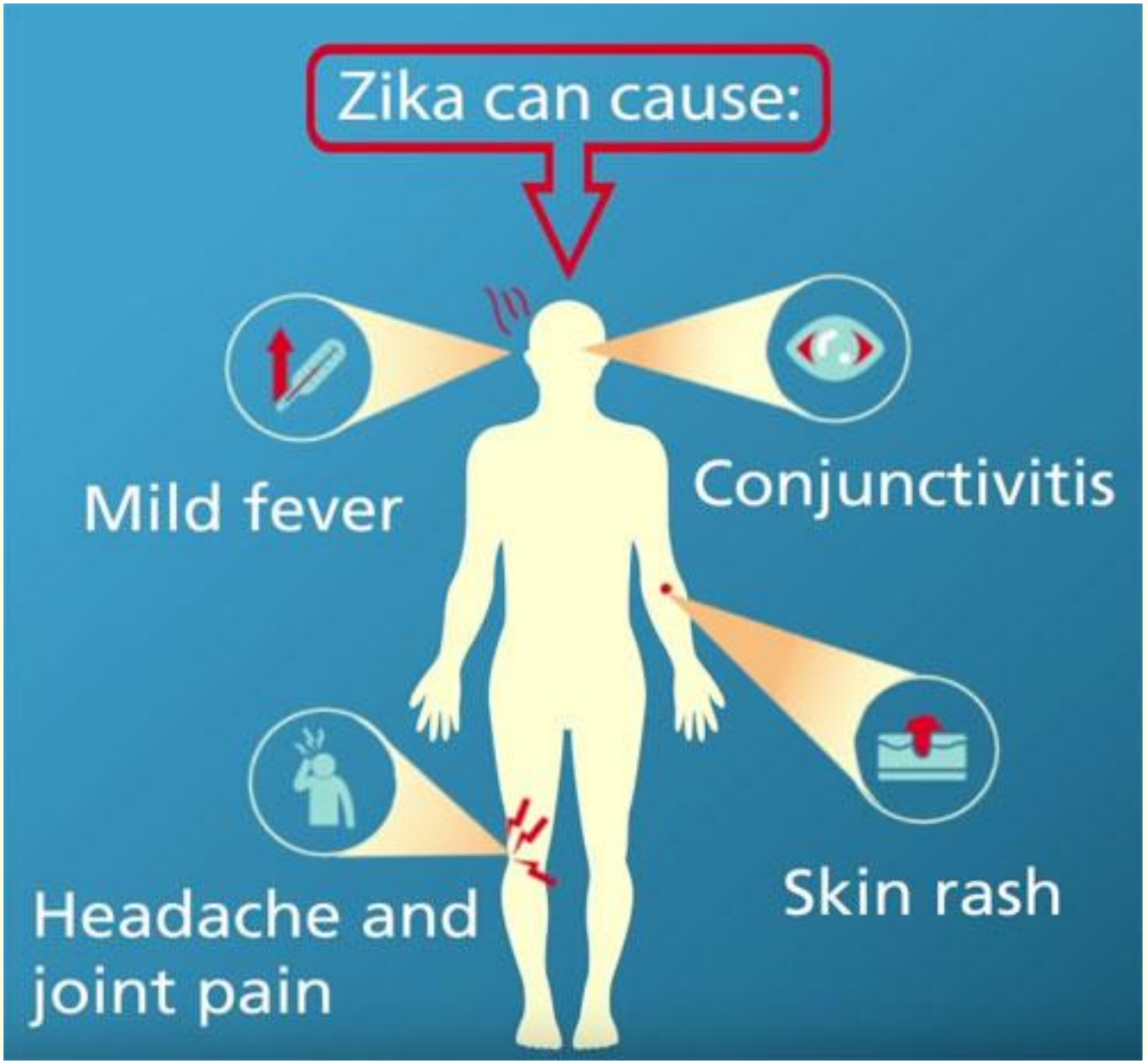
Illness lasts 2–7 days

Treatment

- Rest
- Oral hydration
- Acetaminophen for fever, pain
- Avoid NSAIDs

80% are asymptomatic

ZIKV Symptoms



ZIKV Lab Confirmation

Virus detection: within 7 days of illness onset

- RT-PCR (real time polymerase chain reaction) at CDC

Serology: 2-12 weeks after exposure

- IgM ELISA (enzyme-linked immunosorbent assay)
- Cross-reacts with Dengue, Yellow Fever, JEV (false positives)

Immunohistochemical staining: after delivery or evacuation

- Tissues from placenta and umbilical cord

www.cdc.gov/zika/hc-providers/diagnostic.html

Complications of ZIKV

Microcephaly and cerebral microcalcifications associated with the 2015 Brazilian outbreak

- More than 4,000 microcephaly cases reported in 2015
- Study released March 2016 revised case number to 574
- Prior case rate of 157 cases per year

Guillain-Barré syndrome

- French Polynesia
- Central and South America
- Caribbean

www.cdc.gov/mmwr/volumes/65/wr/mm6509e2.htm?s_cid=mm6509e2_w

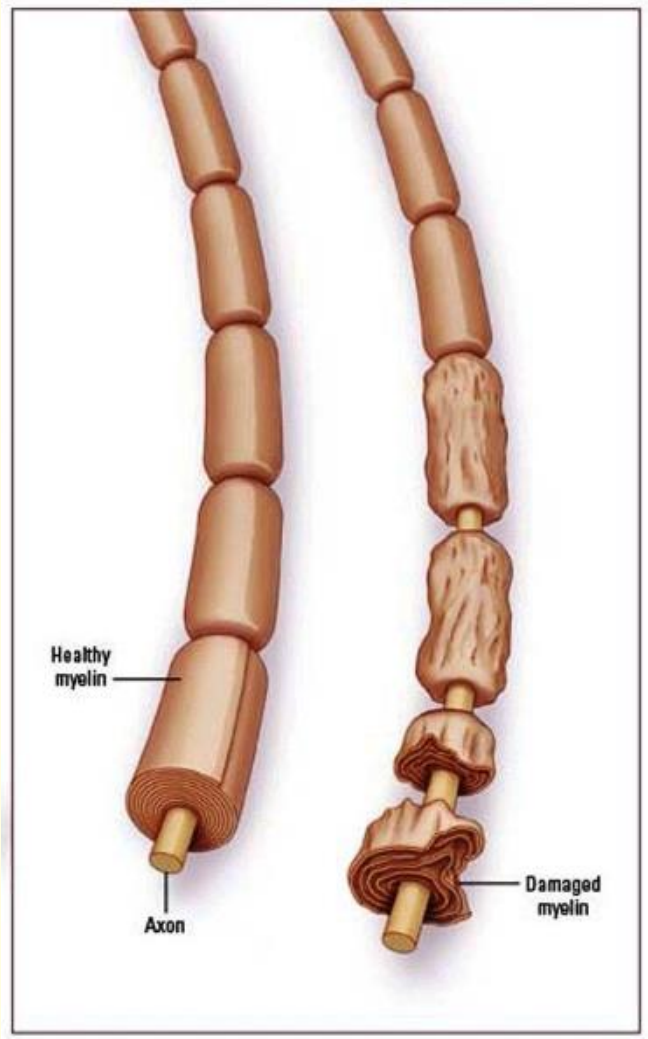
Guillain-Barré Syndrome

Disease affecting peripheral nerves

Autoimmune process post-infection

Symptoms include

- Symmetric ascending weakness
- Sensory component common
- Affects adults > children
- Recovery may be protracted
- Mortality up to 20%



ZIKV Immunity

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No antiviral treatment or vaccine

No documented cases of ZIKV re-infection

Unknown duration of natural immunity

There is still a great deal to learn

What We Have Learned About ZIKV

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Rapid spread in tropical and subtropical regions

Microcephaly rate increased when introduced into an immune naïve area

Potential for spread in West Virginia

First arbovirus with confirmed sexual transmission

Often asymptomatic, silent threat to fetal development

Advice to Travelers

CDC has issued an Alert Level 2 for 39 countries

- wwwnc.cdc.gov/travel/page/zika-information

Mosquito avoidance and repellant recommendations

- Stay above 2,000 meters elevation
- Full-coverage clothing treated with permethrin
- Applied to skin: DEET (30% is recommended; safe in >6 months old), or picaridin
- Area control: Metofluthrin (personal space repellant fans), oil of lemon-eucalyptus
- www.mosquito.org/repellents

Condoms or abstinence for male partners of pregnant women

www.cdc.gov/zika/prevention/index.html

Returning Travelers

West Virginia Department of Health and Human Resources, Bureau for Public Health, Division of Infectious Disease Epidemiology (DIDE) resources:

- www.dhhr.wv.gov/oeps/disease/zoonosis/mosquito/pages/zika.aspx

- www.dhhr.wv.gov/oeps/disease/Zoonosis/Mosquito/Documents/zika/Traveler-illness-form.pdf

- DIDE on-call epidemiologist: (304) 558-5358 x1; after hours call (304) 423-1271

Local Health Responsibility

Prevention and monitoring

- Identify state, regional and local action plans
- Educate medical providers and community leaders
- Volunteer vector surveillance
- Vector control (example: educate communities to eliminate objects that collect water, tire cleanups, community cleanups and general awareness)

Local Health Responsibility (Continued)

If confirmed local transmission by mosquitoes occurs

- Local health departments (LHDs) will reduce mosquito breeding habitats around the human case site
- Encourage human patients to have minimal mosquito exposure
- LHDs conduct environmental assessment and mosquito habitat control near case sites

Who Should be Tested

All exposed pregnant patients

Symptomatic returned travelers if they have pregnant partners or symptomatic sexual contacts

Newborns (to an exposed mother) that have microcephaly, cerebral microcalcifications, symptoms of ZIKV, or with a mother confirmed positive for ZIKV

When in doubt, call DIDE (reporting is required within 24 hrs)

www.cdc.gov/zika/hc-providers/tools.html

Preconception Planning

Women symptomatic from ZIKV should wait 8 weeks before attempting pregnancy

Men symptomatic from ZIKV should wait 6 months before attempting conception

Men and women with possible ZIKV exposure should wait 8 weeks before attempting conception

Residents of areas where active transmission occurs should consult a physician before attempting conception

www.cdc.gov/mmwr/volumes/65/wr/mm6512e2.htm?s_cid=mm6512e2_w

What to Tell Pregnant Patients

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Postpone travel

Avoid mosquito bites

Avoid contact with infected semen or blood

Seek testing if exposed

www.cdc.gov/zika/hc-providers/index.html

Prenatal Care for ZIKV Exposed Patients

Negative serology

- Routine care; consider additional fetal anatomy survey early 3rd trimester

Positive PCR or serology

- False positives are less likely in travelers
- Serial fetal ultrasound every 3-4 weeks for microcalcifications or microcephaly
- Referral to Maternal Fetal Medicine
- Arrange for ZIKV testing at delivery of cord serum and placenta
- If fetal loss: RT-PCR and immunohistochemical staining of fetal tissues, cord, placenta

www.cdc.gov/mmwr/volumes/65/wr/mm6505e2.htm?s_cid=mm6505e2_w

Preventing Transmission to Healthcare Staff

Use standard precautions

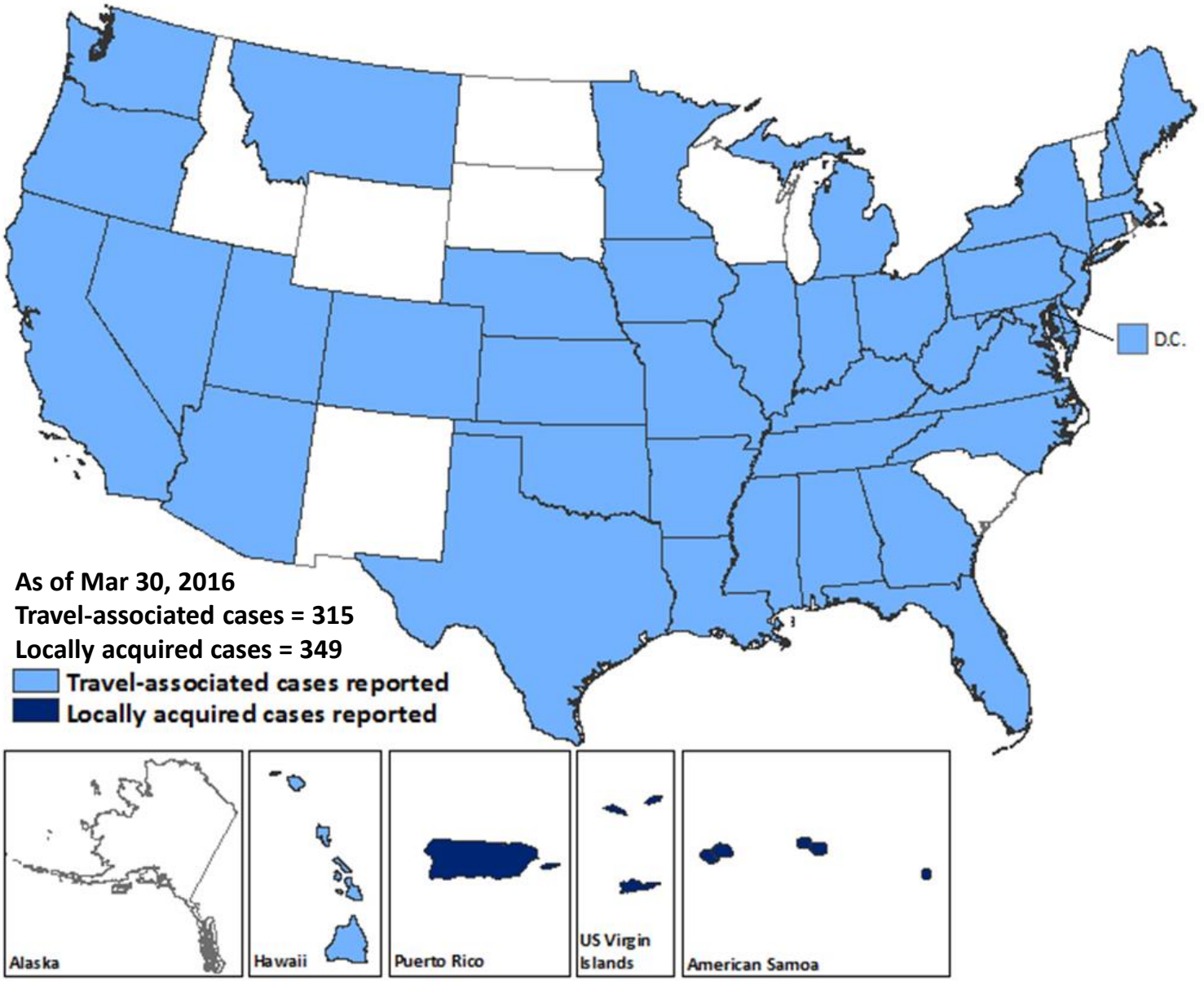
Use personal protective equipment during exposure to body fluids and mucous membranes

Use disposable absorbent material on floor for cleaning around birthing procedures to reduce risk of splash

Use standard cleaning and disinfection procedures

www.cdc.gov/mmwr/volumes/65/wr/mm6511e3.htm?s_cid=mm6511e3_w

ZIKV Cases


D.C.
As of Mar 30, 2016
Travel-associated cases = 315
Locally acquired cases = 349
Travel-associated cases reported
Locally acquired cases reported
Alaska
Hawaii
Puerto Rico
US Virgin Islands
American Samoa

Summary

ZIKV may be a silent, devastating threat to the fetus

Educate patients who plan to travel

Educate the community for local transmission prevention

Report all cases within 24 hours to the health department

ZIKV transmission is possible in West Virginia

Resources

CDC:

- www.cdc.gov/zika

PAHO:

- www.paho.org/hq/index.php?option=com_content&view=article&id=11585&Itemid=41688&lang=en

DIDE:

- www.dhhr.wv.gov/oeps/disease/Zoonosis/Mosquito/Pages/zika.aspx
- Main: (304) 558-5358 ext. 1
- Answering service: (304) 423-1271

Contact Information

Joel Massey, MD

Epidemic Intelligence Service Officer

Division of Infectious Disease Epidemiology

Office of Epidemiology and Prevention Services

Bureau for Public Health

West Virginia Department of Health and Human Resources

350 Capitol Street, Room 125

Charleston, WV 25301-3715

Office: (304) 356-4007

Fax: (304) 558-8736

Email: joel.g.massey@wv.gov