Zika Virus Disease Surveillance

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Division of Infectious Disease Epidemiology
Northeastern Region Lyme Disease and Zika Training
April 29, 2016
Zika surveillance

- Internationally (global epidemic)
  - Microcephaly surveillance
  - GBS surveillance

- In the United States

- In West Virginia
  - Reporting suspected cases
  - Resources

- Latest Surveillance Updates
Zika Virus Disease

- Virus first isolated from a monkey in Uganda in 1947
- Named after Zika Forest in Uganda
- Prior to 2007, human cases sporadically reported from Africa and Southeast Asia
Clinical Signs and Symptoms

- Fever
- Rash
- Joint pain
- Conjunctivitis
- Muscle aches
- Headache

- Symptoms of Zika are mild and similar to many diseases (e.g. influenza, chikungunya, dengue).
- Hospitalization and death are rare.

Low morbidity/mortality...so what’s the big deal? Hold that thought...
Non-bite Modes of Transmission

- **Blood Transfusion**
  - Multiple reports from Brazil; none in the United States to date
  - French Polynesia: 2.8% of blood donors positive for Zika

- **Sexual Contact**
  - Can be spread by a man to his sexual partners
  - Can be transmitted before, during, and after symptom onset
  - Zika virus present in semen longer than in blood

- **From Mother to Fetus/Newborn**
  - Pregnant women can pass Zika to her fetus during pregnancy
  - An infected mother can pass on Zika virus to her newborn around the time of birth
Zika can be spread from a pregnant mother to her fetus during pregnancy.

- No evidence of more severe disease in pregnant women
- No reports of transmission through breastfeeding
- Infection during pregnancy linked to birth defects
  - Microcephaly
  - Intracranial calcification
Microcephaly

- Clinical finding of a small head when compared to infants of same sex and age
- Measured by occipitofrontal circumference (OFC)
- Used to assess intracranial brain volume
- Often leads to cognitive and/or neurologic issues

Source: CDC
Microcephaly

Note scattered intracranial calcifications

Enlarged ventricles and volume loss

Source: CDC
Zika and Microcephaly in Brazil


- January 2016: 3,530 suspected cases of microcephaly

- Congenital anomalies are registered in the Live Birth Information System
  - 95% coverage country-wide

- Definition of microcephaly
  - Head circumference ≥3 standard deviations below the mean
  - 30.3 cm for full-term females (gestational age = 259–293 days)
  - 30.7 cm for full-term males during first week of life

http://www.cdc.gov/mmwr/volumes/65/wr/mm6509e2.htm
Head Circumference - Females

Head circumference-for-age GIRLS
Birth to 2 years (z-scores)

www.who.int/childgrowth/standards/second_set/chts_hcfa_boys_z/en/
Was there increased prevalence of reported microcephaly cases from January 1, 2015 to January 7, 2016 compared to the time period 2000-2014?

- 2000-2014: **157.3 cases/year country-wide**
- January 1, 2015 – January 7, 2016: **574 total cases**
  - 336 (58.5%) females
  - Average head circumference was 29.0 cm (SD=1.4 cm)
<table>
<thead>
<tr>
<th>Region</th>
<th># of states</th>
<th>Average annual # of cases</th>
<th>Total # of cases</th>
<th>Average # of live births</th>
<th>Microcephaly prevalence at birth</th>
<th># of states with confirmed Zika transmission</th>
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<tbody>
<tr>
<td>North</td>
<td>2</td>
<td>14.1</td>
<td>11</td>
<td>310,508</td>
<td>0.4</td>
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<td>376,599</td>
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<td>13.0</td>
<td>31</td>
<td>226,500</td>
<td>1.4</td>
<td>3</td>
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<tr>
<td>Total</td>
<td>19</td>
<td><strong>157.3</strong></td>
<td><strong>574</strong></td>
<td><strong>2,893,285</strong></td>
<td><strong>2.0</strong></td>
<td><strong>15</strong></td>
</tr>
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</table>

www.cdc.gov/mmwr/volumes/65/ww/mm6509e2.htm
Questions About Zika & Microcephaly

- Why is the prevalence of microcephaly so much higher in Northeast Brazil?
  - Greater number of total Zika infections in these states
  - Ecological factors (e.g. a lot of Zika-infected mosquitoes)

- Is there a link between Zika and microcephaly outside of Brazil?
  - To date, Brazil is the only country/territory…that has officially reported an increase of congenital microcephaly.” -PAHO
  - Next stop: Colombia → 5,000+ Zika-infected pregnant women
  - Venezuela and Panama seeing increasing infection rates

- What should pregnant women do to prevent the risk of Zika infection in a fetus or newborn?
  - Mosquito bite prevention, delaying pregnancy, abstinence, condom use
More Evidence of Poor Birth Outcomes

<table>
<thead>
<tr>
<th>Countries reporting congenital syndrome associated with Zika virus</th>
<th>Number of confirmed cases to date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>1,113</td>
</tr>
<tr>
<td>Colombia</td>
<td>7</td>
</tr>
<tr>
<td>Martinique</td>
<td>3</td>
</tr>
<tr>
<td>Panama</td>
<td>3</td>
</tr>
<tr>
<td>United States</td>
<td>1</td>
</tr>
</tbody>
</table>

98% of congenital syndrome cases are reported from Brazil

Source: PAHO (Accessed 4/17/16)
Guillain-Barré Syndrome (GBS)

- Uncommon sickness of the nervous system in which a person’s own immune system damages nerve cells.
  - Causes muscle weakness, and sometimes, paralysis.

- In some cases, muscles of the face that control eye movement or swallowing may also become weak.

- In serious cases, muscle weakness can affect breathing.

- Symptoms can last a few weeks or several months.
  - Most people fully recover; some people have permanent damage.
  - 1 out of 20 cases die.

Source: CDC
Zika and GBS

- Seven countries have reported increased prevalence of GBS
  - Brazil, Colombia, Dominican Republic, El Salvador, Honduras, Suriname, and Venezuela

- Three countries/territories have identified Zika-associated cases of GBS
  - Martinique, Panama, and Puerto Rico

Source: PAHO (Accessed 4/17/16)
Venezuela

- 252 GBS cases from January 1 to January 31, 2016
  - Spatiotemporal Zika association
  - Zika infection confirmed in three GBS
  - One death with no underlying illness

Colombia

- 86 cases of GBS reported during five week period at the end of 2015 to early 2016
  - Average is 5 cases/week, 19 cases/month, 242 cases/year
  - Three times higher than average expected cases for previous 6 years
  - All cases presented with symptoms associated with Zika

Source: PAHO
578 total GBS cases during time period
First Zika case with GBS confirmed in November 2015

Source: PAHO
277 total GBS cases during time period

Source: PAHO
Because there is currently no vaccine or medication to prevent infection with Zika:

- Mosquito bite prevention is still the best way to prevent infection
  - Mosquito repellent use (e.g. DEET, picaridin)
  - Elimination of mosquito habitats near home (e.g. removal of water-holding containers)

- Infected individuals can limit the spread of disease by taking measures to prevent exposure to mosquitoes during their first week of illness
  - Sleep under bed nets, wear long-sleeved shirts and long pants
Infected men should abstain from sexual activity or use condoms during sex.

- Couples who include a man who has been diagnosed with Zika or had symptoms of Zika should consider using condoms or not having sex for **at least six months** after symptoms begin. This includes men who live in and men who traveled to areas with Zika.

- Couples who include a man who traveled to an area with Zika, but did not develop symptoms of Zika should consider using condoms or not having sex for **at least eight weeks** after their return.

- Couples who include a man who lives in an area with Zika, but has not developed symptoms of Zika should consider using condoms or not having sex **while there is Zika in the area.**
What should pregnant women do to prevent the risk of Zika infection in a fetus or newborn?

- Pregnant women in any trimester should consider postponing travel to an area where Zika virus transmission is ongoing.

- Given the potential risks of maternal Zika virus infection, pregnant women whose male partners have or are at risk for Zika virus infection should consider using condoms or abstaining from sexual intercourse for the duration of pregnancy.

- Consult with healthcare providers about mosquito bite prevention and preconception care. Discussion should include potential risk of Zika virus infection in pregnancy, the signs and symptoms associated with Zika virus disease, and when to seek care.

Source: CDC
What About the Monkeys?

Ecuador, March 9, 2016

- Zika virus detected in heart and spleen of a dead red howler monkey.
- Sample was collected as part of an epizootic investigation (39 monkey deaths) that occurred between February 1-10.
- Samples were (-) for influenza, dengue, leptospirosis, and yellow fever virus.
- First report of Zika virus infection in non-human primates in the Americas.

Red Howler (*Alouatta seniculus*)
What’s All the Zika Excitement About?

- One of many emerging zoonotic diseases of concern
  - 2014: Chikungunya
  - 2015: Ebola

- Competent mosquito vectors in the United States

- First sexually-transmitted arboviral disease

- Pregnant women at risk of poor birth outcomes

- Potential link to GBS

- Let’s not forget about the monkeys!
Zika-Affected Countries

As of April 14, 2016

Source: CDC
States with Reported Zika Cases*

*Cases were reported to CDC ArboNet
**Characteristic of US Cases**

**US STATES**

Travel-associated Zika virus disease cases reported: 358  
Locally acquired vector-borne cases reported: 0  
Total: 358  
Pregnant: 31  
Sexually transmitted: 7  
Guillain-Barré syndrome: 1

**US TERRITORIES**

Travel-associated cases reported: 4  
Locally acquired cases reported: 471  
Total: 475  
Pregnant: 58  
Guillain-Barré syndrome: 1
West Virginia’s First Zika Case

- Traveled to Haiti in January 2016

- Returned and developed Zika-associated symptoms
  - Rash
  - Conjunctivitis
  - Headache
  - Myalgia
  - Arthralgia

- “Travel-Associated Febrile Illness Screening Form” was used to determine if a serum specimen should be sent to CDC for testing
West Virginia’s First Zika Case (Con’t)

Demographic information

Exposure information

Clinical information

Laboratory information
Three weeks later...

<table>
<thead>
<tr>
<th>Antigen</th>
<th>IgM Capture</th>
<th>Endpoint</th>
<th>IgG ELISA</th>
<th>Endpoint</th>
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<tbody>
<tr>
<td>DEN1-4</td>
<td>Pos</td>
<td></td>
<td>nd</td>
<td></td>
</tr>
<tr>
<td>CHIK</td>
<td>Pos</td>
<td></td>
<td>nd</td>
<td></td>
</tr>
<tr>
<td>ZIKA</td>
<td>Pos</td>
<td></td>
<td>nd</td>
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<table>
<thead>
<tr>
<th>Antigen</th>
<th>PRNT</th>
<th>POS Control</th>
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<tbody>
<tr>
<td>DEN</td>
<td>&lt;10</td>
<td>&gt;320</td>
</tr>
<tr>
<td>CHIK</td>
<td>&lt;10</td>
<td>&gt;320</td>
</tr>
<tr>
<td>ZIKA</td>
<td>5120</td>
<td>&gt;320</td>
</tr>
</tbody>
</table>
West Virginia’s First Zika Case

- Patient met the “confirmed case” criteria

- Clinical evidence of Zika infection
  - Rash, headache, conjunctivitis, myalgia, arthralgia

- Laboratory evidence of Zika infection
  - IgM ELISA positive with confirmatory Zika PRNT

- Exposure
  - Travel to a country/region with known Zika transmission
### New Zika Case Definition-Criteria

#### Zika Virus Disease
(Mosquito-borne or sexually transmitted)

- One or more of the following:
  - Acute onset of fever
  - Arthralgia
  - Maculopapular rash
  - Conjunctivitis
  - Pregnancy complications
  - GBS not associated with other etiology

#### Zika Virus Congenital Infection
(Present from birth)

- Live birth with microcephaly or intracranial calcifications or central nervous system abnormalities

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**Clinical**

**Laboratory**

- Detection of Zika or Zika specific nucleic acids in specimens of serum, CSF, urine, saliva, amniotic fluid, placenta, umbilical cord, or fetal tissue;
- Detection of Zika antigen by immunohistochemical staining of maternal or fetal tissue;
- Detection of Zika specific IgM antibody in serum, CSF, or amniotic fluid; AND
- Zika neutralizing antibody titers (PRNT) $\geq$ 4-fold higher than neutralizing antibody titers against dengue virus or other flaviviruses endemic to region of exposure.

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**Exposure**

- Travel to a country or region with known Zika transmission;
- Sexual contact with a laboratory confirmed case of Zika infection;
- Receipt of blood or blood products within 30 days of symptom onset;
- Organ transplant recipient within 30 days of symptom onset;
- Association in time and place with a confirmed or probable case.
- For congenital syndrome, a pregnancy with maternal epidemiologic linkage.
The current “Arboviral Diseases” case definition on the CDC website does not reflect the most updated Council of State and Territorial Epidemiologists cases definitions for Zika.

The Arboviral Infection Surveillance Protocol has been updated to include both the Zika Virus Disease and Zika Congenital Infection case definitions.
Who Should be Tested for Zika?

I. Pregnant women (with or without symptoms of Zika) who:
- Traveled to Zika-affected area† within the past 12 weeks
- Have a sexual partner who traveled to a Zika-affected area and had symptoms of Zika during or within two weeks of travel
- Have a pregnant sexual partner
- Have symptoms of Zika in the first two weeks of life or are diagnosed with microcephaly or intracranial calcifications (including by fetal ultrasound)
- Was born to a mother who had a positive or inconclusive test result for Zika
- Had exposure to Zika (via travel to Zika-affected area or via epidemiological link to person with recent Zika infection)

II. Men or women who did not travel to a Zika-affected area, but have symptoms of Zika and who:
- Have a sexual partner who has symptoms of Zika
- Have symptoms of Zika in the first two weeks of life or are diagnosed with microcephaly or intracranial calcifications (including by fetal ultrasound)
- Was born to a mother who had a positive or inconclusive test result for Zika
- Had exposure to Zika (via travel to Zika-affected area or via epidemiological link to person with recent Zika infection)

III. Men who traveled to Zika-affected area and have symptoms of Zika during or within 2 weeks of travel and who:
- Have a sexual partner who has symptoms of Zika
- Have symptoms of Zika in the first two weeks of life or are diagnosed with microcephaly or intracranial calcifications (including by fetal ultrasound)
- Was born to a mother who had a positive or inconclusive test result for Zika
- Had exposure to Zika (via travel to Zika-affected area or via epidemiological link to person with recent Zika infection)

IV. Infants whose mother traveled to a Zika-affected area during pregnancy and who:
- Have symptoms of Zika in the first two weeks of life or are diagnosed with microcephaly or intracranial calcifications (including by fetal ultrasound)
- Was born to a mother who had a positive or inconclusive test result for Zika
- Had exposure to Zika (via travel to Zika-affected area or via epidemiological link to person with recent Zika infection)

V. A person diagnosed with Guillain-Barré Syndrome not known to be associated with another etiology who:
- Had exposure to Zika (via travel to Zika-affected area or via epidemiological link to person with recent Zika infection)

- Pregnant women who do not reside in areas with active Zika virus transmission but have had possible Zika virus exposure (through travel or sex) during 8 weeks before conception (six weeks before the last menstrual period) can be offered serologic testing within 2-12 after exposure.
- Symptoms of Zika include fever, rash, arthralgia or conjunctivitis; or pregnancy complications (e.g. fetal loss, microcephaly, intracranial calcifications). Visit [http://www.cdc.gov/zika/geo/index.html](http://www.cdc.gov/zika/geo/index.html) for the most updated list of Zika affected countries.
- The type of test that will be performed is dependent on presence/lack of symptoms, length of time after symptom onset.
- Sexual partner refers to individuals who had sex (oral, anal, vaginal) without using barrier protection.
Meets clinical criteria AND:
- Resides in or has recently traveled to an area with ongoing Zika transmission;
- Has direct epidemiologic linkage to a person with laboratory evidence of recent Zika infection (e.g. sexual contact, in utero or perinatal transmission, blood transfusion, organ transplantation); or
- Association in time and place with a confirmed or probable case.

AND meets the following laboratory criteria:
- Positive Zika-specific IgM antibodies in serum or CSF; and
- Negative dengue virus-specific IgM antibodies; and
- No neutralizing antibody testing performed; or
  - Less than four-fold difference in neutralizing antibody titers between Zika and dengue or other flaviviruses endemic to the region where exposure occurred.
Meets clinical criteria AND

- Has laboratory evidence of recent Zika infection by:
  - Detection of Zika by culture, viral antigen or viral RNA in serum, CSF, tissue, or other specimen (e.g. amniotic fluid, urine, semen, saliva); or
  - Zika IgM antibodies in serum or CSF with Zika neutralizing antibody titers 4-fold or greater than neutralizing antibody titers against dengue or other flaviviruses endemic to the region where exposure occurred.
An infant meets the clinical criteria and:

- The Mother lived in or traveled to a country or area with ongoing Zika transmission during the pregnancy; or
- The Mother has laboratory evidence of Zika or unspecified flavivirus infection during pregnancy.

AND the infant meets the following laboratory criteria:

- Zika IgM antibodies detected in serum or CSF; and
- Tests negative for dengue or other endemic flavivirus-specific IgM antibodies; and
  - No neutralizing antibody testing performed; or
  - Less than four-fold difference in neutralizing antibody titers between Zika and dengue or other flaviviruses endemic to the region where exposure occurred.
An infant meets the clinical criteria AND meets one of the following laboratory criteria:

- Zika detection by culture, antigen test, or polymerase chain reaction (PCR) in serum, CSF, amniotic fluid, urine, placenta, umbilical cord, or fetal tissue; or
- Zika IgM antibodies present in serum or CSF with Zika neutralizing antibody titers 4-fold or greater than neutralizing antibodies against dengue or other flaviviruses endemic to the region where exposure occurred.
Zika Surveillance in West Virginia

Zika webpage on the Division of Infectious Disease Epidemiology (DIDE) website:
www.dhhr.wv.gov/oeps/disease/Zoonosis/Mosquito/Pages/zika.aspx

<table>
<thead>
<tr>
<th>Zika Virus Reporting Resources for Local Health</th>
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<tbody>
<tr>
<td><strong>Arboviral Disease Protocol (NEW)</strong></td>
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<tr>
<td><strong>Instructions for Local Health Departments Regarding Suspected Zika Virus Cases (NEW)</strong></td>
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<tr>
<td><strong>Travel Associated Febrile Illness (NEW)</strong></td>
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<tr>
<td><strong>Case Report Form (NEW)</strong></td>
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<td><strong>WVEDSS</strong></td>
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Zika webpage on the DIDE website:
www.dhhr.wv.gov/oeps/disease/Zoonosis/Mosquito/Pages/zika.aspx
Zika Surveillance in West Virginia (Con’t)

Arboviral Infection Protocol Updated

- Separate Zika section (coming soon)

- Includes new CSTE Zika case definition

- Will be updated accordingly as CDC/CSTE guidance changes
**Zika Case Report Form Updated**

**Infection Timeline**
- **Exposure period**
- **Onset date**

**Epidemiologic Exposures**
- **Travel Destination**
- **Arrival Date**
- **Departure Date**
- **Reason for travel**

**Public Health Issues**
- **Public Health Actions**

**Notes**
- **Laboratory** (please submit result of all tests, including EIA screening associated with the disease in IREX)
Zika Surveillance in West Virginia (Con’t)

Zika added as a condition in WVEDSS under “Arboviral Infection”
Three Zika-related “Health Alerts” released since January 2016

Zika Surveillance in West Virginia (Con’t)

UPDATE ON ZIKA VIRUS

TO: West Virginia Healthcare Providers, Hospitals and other Healthcare Facilities
FROM: Rahul Gupta, MD, MPH, FACR, WVDOH, Bureau for Public Health Commissioner and State Health Officer
DATE: 01-28-2016

LOCAL HEALTH DEPARTMENTS: PLEASE DISTRIBUTE TO COMMUNITY HEALTH PROVIDERS, HOSPITAL-BASED PHYSICIANS, INFECTION CONTROL PREVENTIONISTS, LABORATORY DIRECTORS, AND OTHER APPLICABLE PARTNERS.

OTHER RECEPIENTS: PLEASE DISTRIBUTE TO ASSOCIATION MEMBERS, STAFF, etc.

This is an update on the Zika virus, a reportable disease. Nineteen states have now reported cases of the disease. West Virginia has had 11 cases to date. Pregnant women should consider avoiding travel to areas where Zika virus transmission is ongoing due to possible association between infection and other pregnancy outcomes (e.g., microcephaly and other birth defects).

The West Virginia Bureau for Public Health would like to bring the following key points to your attention:

- Differential diagnosis for Zika virus infection should be based on travel history and exposure.
- Providers should report suspected cases of Zika virus to the local health department within 24 hours for a discussion of management strategies and to assist with testing and notification of contacts.
- Testing for the Zika virus must be arranged by the local health department in conjunction with the office of state laboratory services (OLS). OLS will coordinate sample shipment to CDC for testing.
- Dengue, chikungunya, and Zika virus are all transmitted by the same mosquitoes and have similar clinical presentations. It is important to note that in order to properly manage these diseases, an accurate diagnosis is essential.

Zika virus cases are encouraged to avoid mosquito bites during the first week of illness as the risk of transmitting the virus to a mosquito is highest during this time period. Insecticidal mosquito control can reduce the risk of other people, including non-susceptible sick individuals, becoming infected. Mosquito control is essential for reducing the risk of transmission.

There is no vaccine available for the Zika virus and cases are advised to get pants of red, keep hydrated, and use insect repellent with non-irritating antimosquito repellents.

For further information, contact your local health department or the Division of Infectious Disease Epidemiology (DIDE) at (1) 800-314-1675, ext 1 for (1) 304-558-5590, ext 1 or visit the DIDE website at www.doh.wv.gov/epidemiology.

ZIKAVIRUS UPDATE (2)

Zika Virus, Update (3)

TO: West Virginia Healthcare Providers, Hospitals and other Healthcare Facilities
FROM: Rahul Gupta, MD, MPH, FACR, WVDOH, Bureau for Public Health Commissioner and State Health Officer
DATE: 02-11-2016

LOCAL HEALTH DEPARTMENTS: PLEASE DISTRIBUTE TO COMMUNITY HEALTH PROVIDERS, HOSPITAL-BASED PHYSICIANS, INFECTION CONTROL PREVENTIONISTS, LABORATORY DIRECTORS, AND OTHER APPLICABLE PARTNERS.

OTHER RECEPIENTS: PLEASE DISTRIBUTE TO PROVIDERS OF OBSTETRICAL CARE

For the Center for Disease Control and Prevention (CDC), the diagnosis of Zika virus infection can be made by Polymerase Chain Reaction (PCR) testing. The testing can be arranged through the local health department.

The first case in West Virginia was confirmed in January 2016. The individual was a male who traveled to a Zika-affected area during the outbreak. The individual received a diagnosis of Zika virus infection on January 26, 2016. This case has been reported to the CDC.

The Division of Infectious Disease Epidemiology (DIDE) has been monitoring cases related to Zika virus disease through our 24/7/365 on-call service. Since 01-01-2016, the DIDE has received 12 calls for which there were concerns about Zika infection. Fifteen (66.6%) specimens have been collected and sent for testing to the Centers for Disease Control and Prevention (CDC). Results have been received, and this is the first positive test. To date, 6 pregnant women have had specimens sent for testing (results still pending).

West Virginia is currently experiencing an increase in Zika virus cases. The increase is attributed to a rise in the number of imported cases. The center for Disease Control and Prevention (CDC) has received 12 calls from West Virginia for which there were concerns about Zika infection. Fifteen (66.6%) specimens have been collected and sent for testing to the Centers for Disease Control and Prevention (CDC). Results have been received, and this is the first positive test. To date, 6 pregnant women have had specimens sent for testing (results still pending).

For more information, please visit www.doh.wv.gov or call DIDE at (304) 558-5590, ext 1 or the lining states at (1) 800-314-1675, ext 1 for (1) 304-558-5590, ext 1 or visit the DIDE website at www.doh.wv.gov/epidemiology.
Zika Surveillance in West Virginia (Con’t)

- **38 on-call Zika consultations since January 2016**
  - Travel to eight Zika-affected countries

- **23 serum specimens sent to CDC for testing**
  - 12 from pregnant women

<table>
<thead>
<tr>
<th>Status</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>5 (20%)</td>
</tr>
<tr>
<td>Negative</td>
<td>8 (32%)</td>
</tr>
<tr>
<td>Pending</td>
<td>12 (48%)</td>
</tr>
<tr>
<td>Pregnant Positives</td>
<td>0 (0%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>25 (100%)</strong></td>
</tr>
</tbody>
</table>

Source: Arianna DeBarr, RN (Responder Safety and Health Nurse/ Ebola and EID Coordinator)
Mosquito-borne Disease Surveillance

- Increased surveillance for Zika may indirectly lead to increased surveillance for imported cases of dengue and chikungunya in the state.

- As spring and summer approach, mosquito surveillance activities will pick up in West Virginia:
  - State public health entomologist and six vectorborne disease surveillance interns to conduct mosquito (and tick) surveillance across the state.
  - Mosquito traps are set and collected.
  - Special traps will be used for Zika-transmitting mosquitoes.
  - Mosquitoes are identified and tested for arboviral diseases.
    - (La Crosse encephalitis, West Nile virus, St. Louis encephalitis, and eastern equine encephalitis)

- Some local health departments also participate in mosquito surveillance:
  - Berkeley, Cabell, Kanawha, and Ohio counties.
Zika Action Plan (ZAP) Summit (April 1, 2016)

- Purpose: to “arm state and local leaders with the necessary knowledge and technical support to have a comprehensive Zika Readiness Action Plan for their jurisdiction, including plans for preparedness and response activities”

- Covers Communications, Surveillance, Vector, Pregnant Women, and Blood Safety response activities

- Plan is divided into phases:
  - Vector Presence
  - Mosquito Season
  - Confirmed Local Transmission
  - Widespread Local Transmission
  - Local Transmission by Mosquitos in Multiple Counties
The Latest in Zika Surveillance

United States Zika Pregnancy Registry

- **Purpose:** to learn more about “the effects of Zika virus infection during pregnancy” and “growth and development of babies whose mothers had Zika virus infection while pregnant”
  - Zoonotic Disease Program will work with the Office of Maternal, Child and Family Health to monitor pregnant women, newborns, and infants
  - Will also require working closely with healthcare providers (i.e. OB/GYNs and pediatricians)

- **Persistence of Zika virus in semen study**
  - Zika virus can stay in semen longer than in blood
  - How long? TBD
Zika virus disease infections have spread rapidly throughout the Americas
  • Thanks to travel and competent vectors

Though symptoms of Zika are mild, severe complications are being reported
  • GBS and poor pregnancy outcomes (e.g. microcephaly)

West Virginia will likely report additional Zika cases this year due to increased surveillance (nationally and globally)

• New information is constantly being disseminated as we learn more about Zika virus disease
Zika Web Resources

- World Health Organization (WHO)

- Centers for Disease Control and Prevention (CDC)

- Pan-American Health Organization (PAHO)

- Division of Infectious Disease Epidemiology (DIDE)
  0www.dhhr.wv.gov/oeps/disease/Zoonosis/Mosquito/Pages/zika.aspx