Zika virus disease epidemiology in the Americas, 2015–2016

Zika Response Epidemiology and Surveillance Task Force

October 20, 2016
Zika virus

- RNA flavivirus related to dengue, yellow fever, Japanese encephalitis, and West Nile viruses
- Transmitted to humans primarily by Aedes (Stegomyia) species mosquitoes
- Typically causes asymptomatic infection or mild dengue-like illness
- Recent outbreaks identified new modes of transmission and clinical manifestations
Zika virus epidemiology

- First isolated from a monkey in Uganda in 1947
- Before 2007, only sporadic human disease cases reported from Africa and southeast Asia
- In 2007, first outbreak reported on Yap Island, Federated States of Micronesia
- In 2013–2015, >30,000 suspected cases reported from French Polynesia and other Pacific islands
- Local transmission first identified in the Americas in May 2015
Locally transmitted Zika virus disease cases reported to PAHO by country in the Americas, 2015–2016 (as of Oct 13)

<table>
<thead>
<tr>
<th>Country/Territory</th>
<th>(N=47)</th>
<th>(N=661,183)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>298,827</td>
<td>(45%)</td>
</tr>
<tr>
<td>Colombia</td>
<td>104,465</td>
<td>(16%)</td>
</tr>
<tr>
<td>Venezuela</td>
<td>60,176</td>
<td>(9%)</td>
</tr>
<tr>
<td>Martinique</td>
<td>36,467</td>
<td>(6%)</td>
</tr>
<tr>
<td>Honduras</td>
<td>31,799</td>
<td>(5%)</td>
</tr>
<tr>
<td>Guadeloupe</td>
<td>30,969</td>
<td>(5%)</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>26,701</td>
<td>(4%)</td>
</tr>
<tr>
<td>El Salvador</td>
<td>11,285</td>
<td>(2%)</td>
</tr>
<tr>
<td>Other</td>
<td>60,494</td>
<td>(9%)</td>
</tr>
</tbody>
</table>

*23% of cases are lab-confirmed

Suspected and confirmed locally transmitted Zika virus disease cases reported to PAHO by region in the Americas, 2015–2016

N=661,183 suspected and confirmed cases
Suspected Zika virus disease cases reported to PAHO from Brazil, Jan–Oct 3, 2016

Suspected and confirmed Zika virus disease cases reported to PAHO from Colombia, Jul 2015–Oct 3, 2016

Confirmed Zika virus disease cases reported to PAHO from Mexico, Sep 2015–Oct 3, 2016

Laboratory-confirmed Zika virus disease cases reported to ArboNET by states or territories — United States, 2015-2016 (as of Oct 12, 2016)

<table>
<thead>
<tr>
<th></th>
<th>Travel-associated cases* (N=3,892)</th>
<th>Locally acquired cases† (N=25,999)</th>
</tr>
</thead>
<tbody>
<tr>
<td>States</td>
<td>3,808 (98%)</td>
<td>128 (&lt;1%)</td>
</tr>
<tr>
<td>Territories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>75 (2%)</td>
<td>25,355 (98%)</td>
</tr>
<tr>
<td>U.S. Virgin Islands</td>
<td>2 (&lt;1%)</td>
<td>469 (2%)</td>
</tr>
<tr>
<td>American Samoa</td>
<td>7 (&lt;1%)</td>
<td>47 (&lt;1%)</td>
</tr>
</tbody>
</table>

*Includes cases in travelers and their contacts with presumed sexual or in utero transmission, one case with unknown route of person-to-person transmission, and one lab acquired case
†Presumed local mosquito-borne transmission

## State of residence for reported Zika virus disease cases — U.S. states 2015-2016 (as of Oct 12, 2016)

<table>
<thead>
<tr>
<th>State</th>
<th>(N=3,936)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NY</td>
<td>858 (22%)</td>
</tr>
<tr>
<td>FL</td>
<td>836 (21%)</td>
</tr>
<tr>
<td>CA</td>
<td>296 (8%)</td>
</tr>
<tr>
<td>TX</td>
<td>228 (6%)</td>
</tr>
<tr>
<td>PA</td>
<td>135 (3%)</td>
</tr>
<tr>
<td>NJ</td>
<td>134 (3%)</td>
</tr>
</tbody>
</table>
Month of illness onset for reported Zika virus disease cases — U.S. states, Jan-Oct 2016

Number of cases

Month of illness onset

Travel-associated (n=3,775)*
Locally-acquired (n=137)

*Travelers or their sexual contacts returning from affected areas
Age group for reported Zika virus disease cases — U.S. states, Jan-Oct 2016 (N=3,912*)

*Age unknown for 4 cases
Region where reported U.S. travel-associated Zika virus disease cases were acquired, Jan–Sept 2016

- Caribbean (62%)
- Central America (20%)
- South America (7%)
- North America (7%)
- Other (4%)
Confirmed Zika, dengue, and chikungunya virus disease cases reported from Puerto Rico by week of illness onset, 2016*

*as of Sept 29, 2016

http://www.salud.gov.pr/Estadisticas-Registros-y-Publicaciones/Pages/Informe-Arboviral.aspx
Confirmed Zika virus disease cases reported from Puerto Rico by municipality, week 39, 2015–2016 (n=28,878)

http://www.salud.gov.pr/Estadisticas-Registros-y-Publicaciones/Pages/Informe-Arboviral.aspx
Mosquito-borne transmission in Florida

As of Oct 17, 2016
Mosquito-borne transmission in Florida

- Sporadic locally acquired cases identified in multiple counties in south Florida
- Multiperson transmission identified in three areas of Miami-Dade County
  - Resulted in recommendations for pregnant women to avoid travel to those areas
- No evidence of ongoing active local transmission in one of the three areas after aerial spraying and other mosquito control efforts
- As of Oct 17th there were 160 locally acquired cases reported by Florida DOH
- Florida DOH continues to report active investigations in several counties in south Florida
- Pregnant women and their sex partners who are concerned about potential exposure to Zika may consider postponing nonessential travel to all parts of Miami-Dade County

Likos A, et al. MMWR 2016;65:1032-1038. DOI: http://dx.doi.org/10.15585/mmwr.mm6538e1
Zika virus vaccine development and clinical trials

- U.S. government interagency working group objectives
  - Evaluate promising candidate vaccines for safety, immunogenicity, and efficacy
  - Have one or more candidate vaccines available in 2018 for emergency use in U.S. populations at high risk of exposure or disease
  - Work with partners to commercialize vaccines for broad distribution by 2020

- Current status
  - Many vaccine candidates in preclinical development
  - Four vaccines in phase 1 clinical trials by end of 2016
  - Phase 2 studies scheduled to begin in 2017