



Centers for Disease Control and Prevention



Update on the current status of the Zika virus epidemic

Marc Fischer
Arboviral Diseases Branch
Division of Vector-Borne Diseases

March 20, 2019

Zika virus transmission and clinical manifestations

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



Aedes aegypti

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
- From 2013–2015, >30,000 suspected cases reported from French Polynesia and other Pacific islands

Zika virus in the Americas

- In 2015, the first locally acquired cases in the Americas were reported in Brazil
- By end of 2017, local mosquito-borne transmission had been reported in 48 countries or territories in the Americas
- Only countries in Americas without reported local transmission are Bermuda, Canada, Chile, and Uruguay

Zika virus in the United States

- From 2007–2014, 14 Zika virus disease cases identified in US travelers
- Following introduction and spread in the Americas, cases among US travelers increased substantially
- In 2016, large outbreaks in three US territories (Puerto Rico, US Virgin Islands, and American Samoa)
- In 2016, limited local mosquito-borne transmission identified in two states (Florida and Texas)

Zika virus surveillance in the United States

- Zika virus disease and Zika virus infection without disease became nationally notifiable conditions in 2016
- Cases and infections reported to CDC's ArboNET system by all state and territorial health departments
- Use standardized case definitions with clinical, epidemiologic, and laboratory criteria
- Congenital and non-congenital infections reported separately
- Confirmed and probable cases included in surveillance reports, MMWR tables, and CDC webpages

Zika virus (ZIKV) disease case definitions

Confirmed case

- Clinically compatible illness with laboratory evidence of:
 - ZIKV by culture, viral antigen or viral RNA; OR
 - ZIKV IgM antibody with positive ZIKV neutralizing antibodies and negative neutralizing antibodies against dengue or other flaviviruses endemic to the region where exposure occurred.

Probable case

- Clinically compatible illness with laboratory evidence of:
 - ZIKV IgM antibody with positive ZIKV and dengue virus neutralizing antibodies; OR
 - ZIKV IgM antibody with negative dengue virus IgM antibody and no neutralizing antibody testing performed

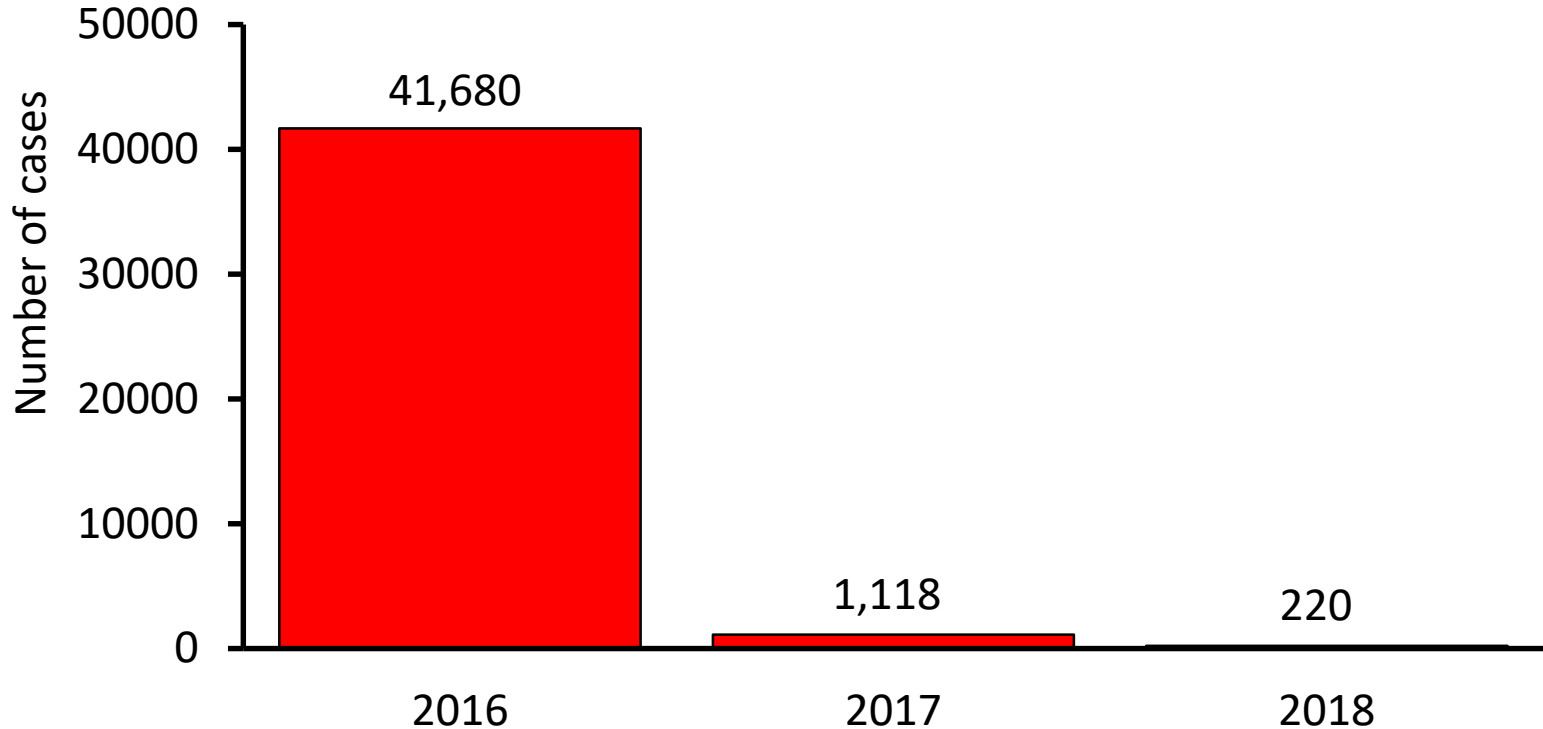
ArboNET reporting criteria for viremic blood donors

- Initial reactive individual (ID) NAT or minipool (MP) NAT result with:
 - Repeat Zika virus RNA by the same or alternate NAT assay on the same or a follow-up sample; OR
 - Zika virus IgM antibody test with Zika virus neutralizing antibodies in the same or a follow-up sample; OR
 - Zika virus or viral antigen in any specimen

**Zika virus disease cases reported to ArboNET —
United States, 2016–2018**



Confirmed and probable Zika virus disease cases, by year — U.S. states and territories, 2016–2018



Zika virus disease cases, by place of residence and year — U.S. states and territories, 2016–2018 (as of Mar 6, 2019)*

	2016 (N=41,680)	2017 (N=1,118)	2018 (N=220)
Territories	36,512 (88%)	666 (60%)	148 (67%)
States	5,168 (12%)	452 (40%)	72 (33%)

*Includes confirmed and probable travel-associated and locally acquired cases.
Excludes congenital disease cases.

Zika virus disease cases, by type of exposure and year — U.S. territories, 2016–2018 (as of Mar 6, 2019)

Territories	2016 (N=36,512)	2017 (N=666)	2018 (N=148)
Locally acquired*	36,367 (99%)	665 (99%)	147 (99%)
Travelers	145 (<1%)	1 (<1%)	1 (1%)

*Presumed local mosquito-borne transmission in Puerto Rico (N=36,014; 97%), US Virgin Islands (N=1,034; 3%), and American Samoa (N=131; <1%).

Zika virus disease cases, by type of exposure and year — U.S. states, 2016–2018 (as of Mar 6, 2019)

States	(N=5,168)	(N=452)	(N=72)
Locally acquired*	224 (4%)	7 (1%)	0 (0%)
Travelers	4,897 (95%)	437 (97%)	72 (100%)
Other routes†	47 (1%)	8 (2%)	0 (0%)

*Presumed local mosquito-borne transmission in Florida (N=220; 95%) and Texas (N=11; 5%).

†Includes sexual transmission (N=52), laboratory transmission (N=2), and unknown route (N=1).

Travel location for Zika virus disease cases — U.S. states and territories, 2018 (as of Mar 6, 2019)

Region	(N=73)	
Americas		
Caribbean	27	(37%)
North America	15	(20%)
Central America	7	(10%)
South America	4	(6%)
Asia/Western Pacific	12	(16%)
Unknown	8	(11%)

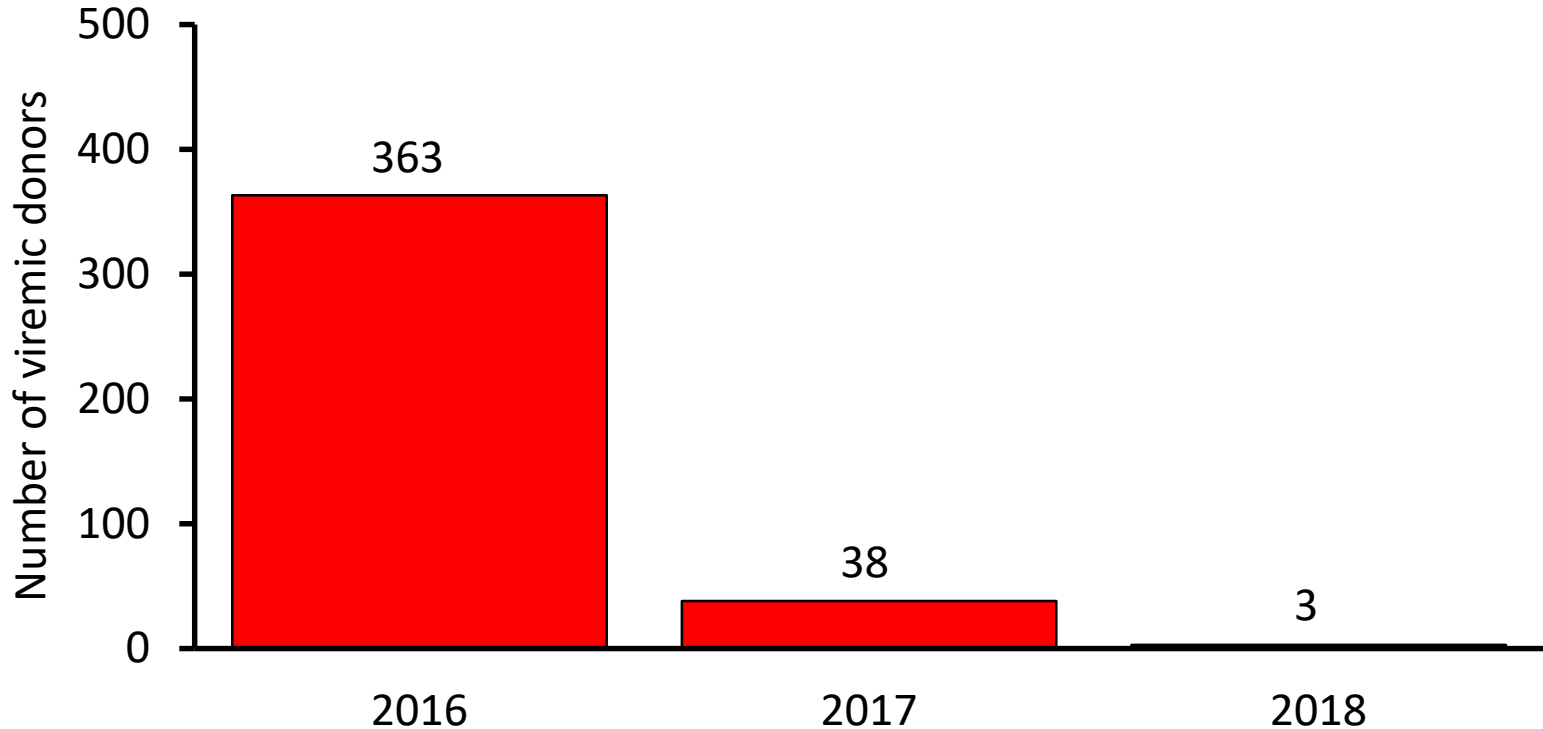
Zika virus disease cases, by state or territory of residence — U.S. states and territories, 2016–2018 (as of Mar 6, 2019)

	2016 (N=41,680)	2017 (N=1,118)	2018 (N=220)	Population [millions]
Puerto Rico	35,395 (85%)	620 (56%)	146 (66%)	3.66
Florida	1,107 (3%)	110 (10%)	13 (6%)	18.80
New York	1,002 (2%)	64 (6%)	8 (4%)	19.54
US Virgin Islands	986 (2%)	46 (4%)	2 (1%)	0.10
California	421 (1%)	49 (4%)	26 (12%)	39.56
Texas	312 (1%)	54 (5%)	3 (1%)	28.70
New Jersey	180 (<1%)	12 (1%)	4 (2%)	9.03
Totals	39,403 (95%)	955 (85%)	202 (92%)	119.40

**Zika viremic blood donors reported to ArboNET —
United States, 2016–2018**



Zika viremic blood donors, by year — U.S. states and territories, 2016–2018



Zika viremic blood donors, by place of residence and year — U.S. states and territories, 2016–2018 (as of Mar 6, 2019)

	2016 (N=363)	2017 (N=38)	2018 (N=3)
Territories	325 (90%)	6 (16%)	0 (0%)
States	38 (10%)	32 (84%)	3 (100%)

Travel location for Zika viremic blood donors — U.S. states and territories, 2018 (as of Mar 6, 2019)

<u>Region</u>	<u>(N=3)</u>	
Americas		
Caribbean	1	(33%)
North America	2	(67%)
Central America	0	(10%)
South America	0	(6%)
<u>Asia/Western Pacific</u>	0	(16%)

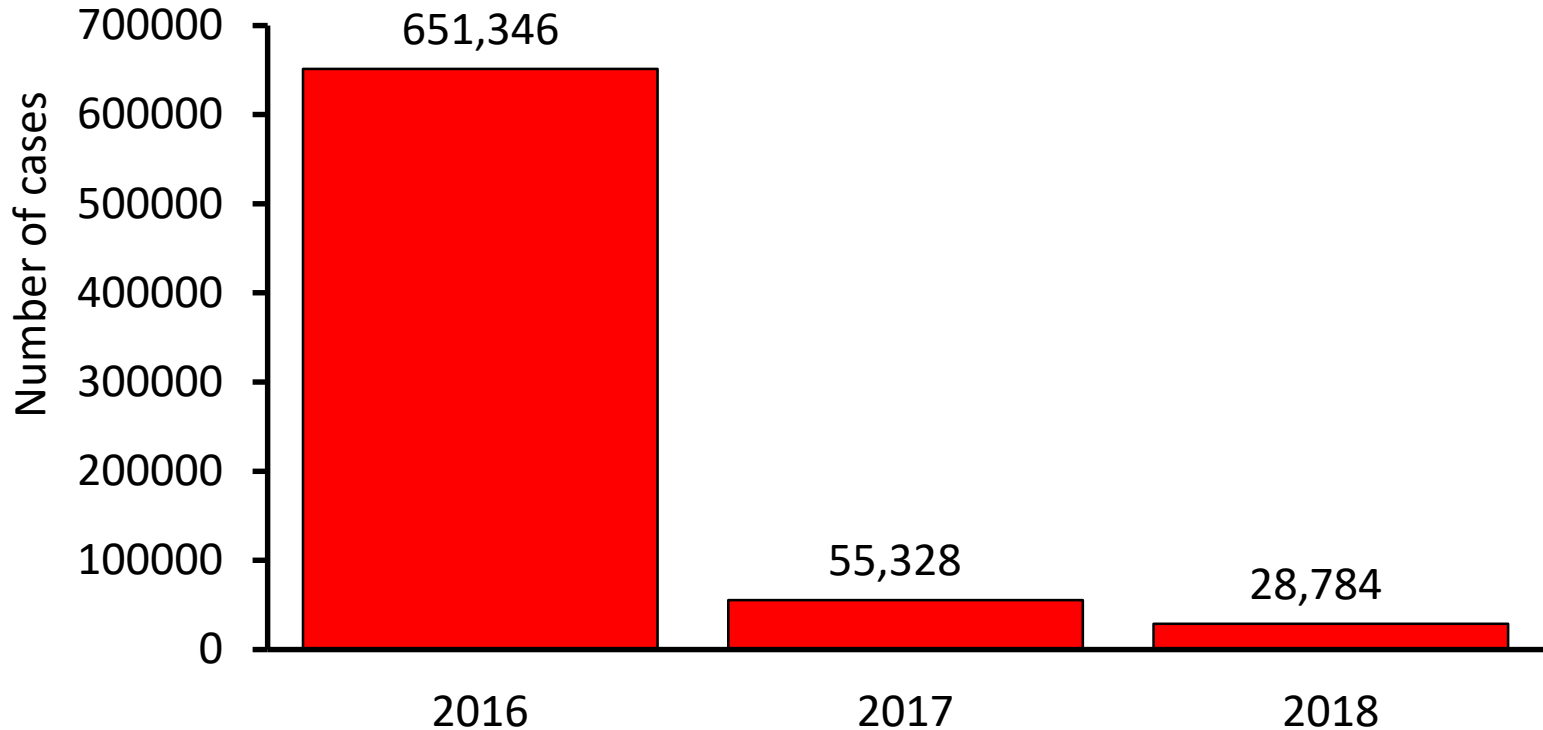
Zika viremic blood donors, by state or territory of residence — U.S. states and territories, 2016–2018 (as of Mar 6, 2019)

	2016 (N=363)	2017 (N=38)	2018 (N=3)	Population [millions]
Puerto Rico	325 (90%)	6 (16%)	0 (0%)	3.66
Florida	23 (6%)	5 (13%)	2 (67%)	18.80
California	4 (1%)	4 (11%)	0 (0%)	39.56
Texas	4 (1%)	2 (5%)	0 (0%)	28.70
New York	2 (<1%)	1 (3%)	0 (0%)	19.54
New Jersey	0 (0%)	0 (0%)	0 (0%)	9.03
US Virgin Islands	0 (0%)	0 (0%)	0 (0%)	0.10
Totals	358 (99%)	18 (47%)	2 (67%)	119.40

Zika virus disease cases reported to PAHO — Americas, 2016–2018



Suspected and confirmed Zika virus disease cases, by year — Americas, 2016–2018



Zika virus disease cases, by year and case status — Americas, 2016–2018*

Type	2016 (N=651,346)	2017 (N=55,328)	2018 (N=28,784)
Confirmed†	199,331 (31%)	19,784 (36%)	3,569 (12%)
Suspected‡	452,015 (69%)	35,544 (64%)	25,215 (88%)

*Excludes imported cases

†For some countries, “confirmed” includes cases with clinical findings and epidemiologic link

‡Clinically compatible illness with no laboratory testing

Suspected and confirmed Zika virus disease cases, by year and region — Americas, 2016–2018

Region	2016 (N=651,346)	2017 (N=55,328)	2018 (N=28,784)	
Brazil	273,904	31,754	19,020	(66%)
South America*	160,070	12,546	3,992	(14%)
Central America	56,359	6,260	3,855	(13%)
Caribbean	152,281	1,501	1,057	(4%)
North America	8,732	3,267	860	(3%)

*Excludes Brazil

Confirmed Zika virus disease cases, by region — Americas, 2018

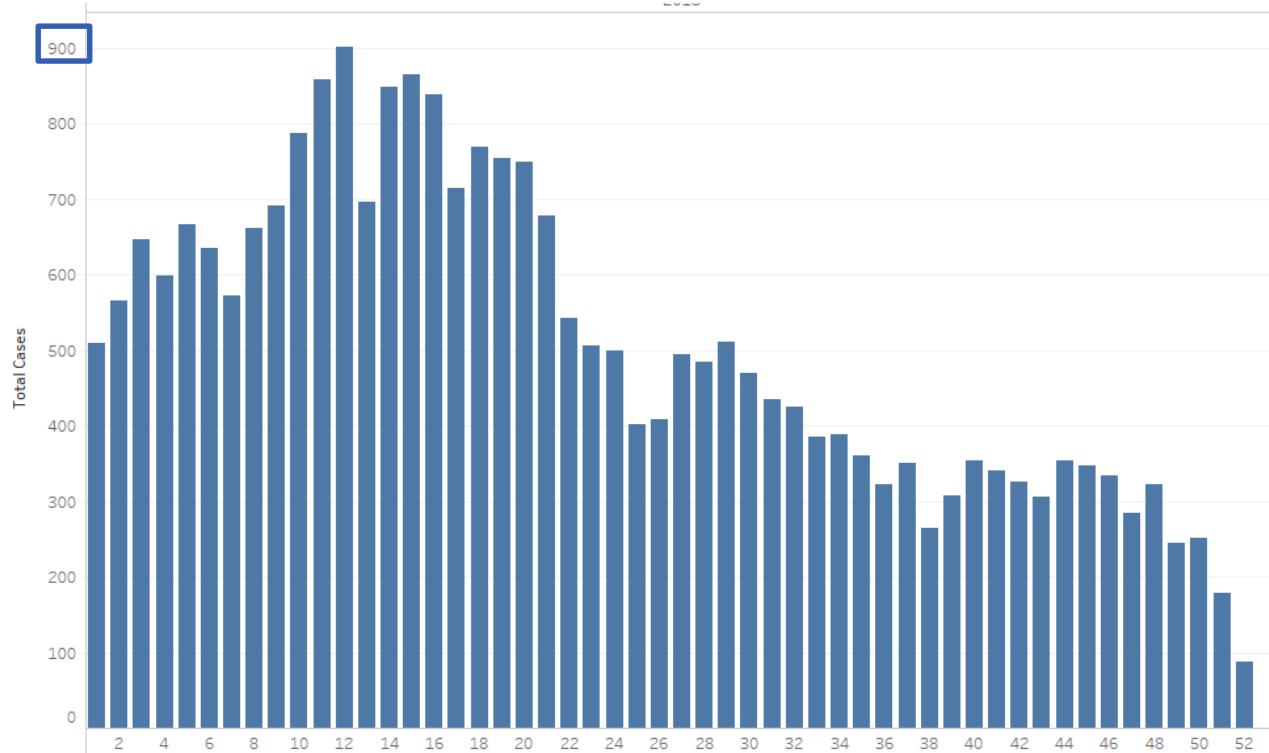
Region	Confirmed	Total	(% confirmed)
Brazil	1,379	19,020	(7%)
South America*	1,138	3,992	(29%)
North America	860	860	(100%)
Central America	189	3,855	(5%)
Caribbean	3	1,057	(<1%)
All	3,582	28,784	(12%)

*Excludes Brazil

Suspected and confirmed Zika virus disease cases reported from PAHO for selected countries — Americas, 2018

Country	Total	Confirmed (%)	Population
Brazil	19,020	1,379 (7%)	210,868,000
Guatemala	2,300	106 (5%)	17,245,000
Bolivia	1,736	486 (28%)	10,890,000
Peru	984	--	32,552,000
Cuba	873	--	11,489,000
Mexico	860	860 (100%)	130,759,000
Colombia	857	607 (71%)	49,465,000
Costa Rica	431	--	4,953,000
El Salvador	388	--	6,345,000
Honduras	350	0	9,417,000
Venezuela	209	--	32,381,000
Nicaragua	177	0	6,285,000

Suspected and confirmed Zika virus disease cases reported by PAHO, by week — Americas, 2018



Confirmed Zika virus disease cases reported from Mexico in 2018 (as of Jan 14, 2019)

State	N=860	
Sonora	349	(40%)
Jalisco	198	(23%)
Sinaloa	125	(14%)
Baja California Sur	60	(7%)
Nayarit	28	(3%)
Yucatan	26	(3%)
Mexico	21	(2%)
Morelos	10	(1%)



Zika virus disease outbreak in India, 2018



Zika virus disease in India

- Small number of cases previously reported by Indian Ministry of Health and Family Welfare (MOHFW)
 - Gujarat state (2016–2018)
 - Tamil Nadu state (2017)
- Retrospective recognition of past case in Rajasthan state
 - Zika virus testing on samples that were negative for Crimean Congo hemorrhagic fever in 2016*

*Yadav et al, 2019. Infection, Genetics and Evolution

Zika virus disease outbreak in Rajasthan and Madhya Pradesh states — India, 2018

- Rajasthan state
 - First case identified with onset in Sept 2018
 - 159 cases reported during Sept–Oct
 - Focus in capital city, Jaipur
- Madhya Pradesh state
 - 130 cases reported mainly during Nov
- MOHFW reports both outbreaks have subsided



Zika virus epidemiology in the Americas

- Large outbreaks in the Americas peaked in 2016 with substantially decreased activity in 2017
- Lower levels of transmission continued in focal areas of some countries in 2018 (e.g., Mexico)
- US territories had markedly decreased incidence in 2017 and 2018 but sporadic infections still reported
- Incidence and disease risk among US travelers has followed epidemiology of outbreaks in the Americas

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

