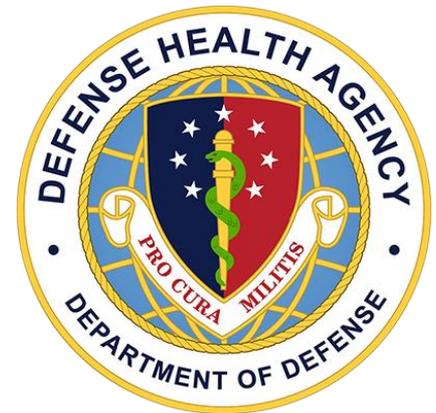


Department of Defense
Armed Forces Health Surveillance Branch
Global Zika Virus Surveillance Summary
(4 JAN 2017)



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DoD SURVEILLANCE: Weekly incidence among Military Health System (MHS) beneficiaries has decreased significantly since its peak during the week ending 30 JUL 2016. As of 1300 on 4 JAN 2017, there have been 161 confirmed Zika virus (ZIKV) disease cases (see table) since the first case was reported during the third week of 2016. One confirmed case is linked to the outbreak in Miami-Dade County, FL. There are four cases in pregnant Service members and one case in a pregnant dependent.

On 7 DEC 2016, AFHSB issued [updated detection and reporting guidance](#) that includes delineation of ZIKV virus infection versus ZIKV disease case definitions with reporting information for each. Cases should be reported in DRSi as “Any Other Unusual Condition Not Listed,” with “Zika” entered in the comment field along with additional pertinent information such as travel history and pregnancy status.

IgM ELISA and rRT-PCR assays are available under an [Emergency Use Authorization \(EUA\)](#) at DoD laboratories (see map on [Slide 4](#)). Confirmatory PRNT testing is available at the NIDDL.

As of 31 DEC 2016, no vector mosquitoes collected on DoD installations had tested positive for ZIKV.

CASE REPORT: Overall weekly incidence for travel-associated cases in the U.S. States and locally-acquired cases in Puerto Rico are trending downwards.

As of 3 JAN 2017, TX has reported six cases of suspected locally transmitted ZIKV disease in Cameron County since it announced its first ZIKV case likely transmitted by a mosquito on 28 NOV 2016. The sixth case is not associated with the first five cases. Cameron County is in southeast TX and borders the Mexican state of Tamaulipas, which reported 96 (+27) ZIKV cases in 2016.

Demographics for all confirmed Zika cases in Military Health System Beneficiaries as of 1300, 4 JAN 2017 (N = 161 confirmed cases)

Demographic		N	%
Service <small>*includes MHS beneficiaries from USPHS, NOAA, etc.</small>	Army	70	43.5%
	Air Force	27	16.8%
	Navy	20	12.4%
	Marine Corps	12	7.5%
	Coast Guard	30	18.6%
	Other*	2	1.2%
Status <small>**includes Reserve Component</small>	Service Member**	113	70.2%
	Dependent	37	23.0%
	Retiree	11	6.8%
Age	0-20	11	6.8%
	21-35	76	47.2%
	36-50	48	29.8%
	51+	19	11.8%
	Not Reported	7	4.3%
Gender	Female	64	39.8%
	Male	97	60.2%

As of 3 JAN 2017, FL health officials have reported 256 locally acquired ZIKV infections. On DEC 9 2016, FL announced the end of sustained active transmission in Miami-Dade County, but sporadic cases may continue to occur. FL DOH continues to investigate additional areas in Miami-Dade County.

Updated advice for people living in or traveling to Miami-Dade County, FL, and Cameron County, TX, is available from [CDC](#). CDC has issued Alert Level 2, Practice Enhanced Precautions, travel notices for 60 [countries and territories](#); 49 in the Western Hemisphere, 10 in PACOM, and one in AFRICOM. [CDC has posted travel information](#) for 11 countries in Southeast Asia. The countries are: Brunei, Burma (Myanmar), Cambodia, Indonesia, Laos, Malaysia, Maldives, Philippines (52 cases), Thailand (>680 cases), Timor-Leste (East Timor), and Vietnam (155 cases).

Zika Cases in the U.S. States and Territories	U.S. States*	U.S. Territories		
		Puerto Rico**	U.S. Virgin Islands*	American Samoa*
Total Zika Cases	4,756 (+52)	36,326 (+456)	916 (+39)	114
Travel-Associated***	4,592 (+51)	-	-	-
Local Vector Transmission	216 (+1)	-	-	-
Laboratory Exposure	1	-	-	-
Guillain Barré Syndrome (GBS)	13	66†	-	-

U.S. Zika Pregnancy Registry Data, as of 13 DEC		
Pregnant Zika Cases	1,246	2,701
Infants Born with Birth Defects	34	1††
Pregnancy Losses with Birth Defects	5	1††

*Zika cases reported to ArboNET as of 28 DEC (U.S. States and Am. Samoa). Zika cases reported by USVI as of 3 JAN; USVI also reported 120 (+14) Zika cases in pregnant women.

**From the Puerto Rico DOH as of 15 DEC; PR DOH is tracking 2,921 (+41) ZIKV cases in pregnant women.

***Includes 38 sexually transmitted cases.

† Of the 66 GBS cases, 16 are classified as evidence of flavivirus infection, but specific virus undetermined.

†† CDC last reported these cases on 29 SEP.

(+xx) represent the change in number from the previous AFHSB summary (28 DEC 2016).

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CASE REPORT (cont'd): These countries have either reported low level local ZIKV transmission or are adjacent to countries with known ZIKV transmission. Singapore continues to report low-level ZIKV transmission with 458 cases and no identified clusters as of 4 JAN 2017. Past evidence of local transmission has been reported from other areas of [Africa, Asia, and the Pacific Islands](#), where sporadic transmission may continue to occur. According to [CDC](#), increased case reporting from PACOM countries, some of which are endemic for ZIKV, may be the result of increased testing and surveillance or a change in the intensity of virus transmission.

According to [PAHO](#) on 29 DEC 2016, over the previous four weeks nearly all Caribbean and North, Central, and South American OCONUS countries and territories reported a decreasing trend in Zika cases except for Panama, Anguilla, and the Iquitos region of Peru. Bolivia reported an outbreak in Santa Cruz Department.

MICROCEPHALY and GUILLAIN-BARRÉ SYNDROME: According to [WHO](#), as of 28 DEC, 29 countries have reported cases of microcephaly and other fetal malformations potentially associated with ZIKV infection or suggestive of a congenital infection, including four with travel-related microcephaly cases. As of 28 DEC, 21 (+1, Saint Martin) countries and territories in the Western Hemisphere as well as French Polynesia have reported Guillain-Barré syndrome (GBS) cases that may be associated with of ZIKV infection. The Western Hemisphere countries reporting microcephaly or GBS are listed in the table on [slide 7](#). Countries in PACOM and AFRICOM reporting microcephaly are Cape Verde, French Polynesia, the Marshall Islands, Thailand, and Vietnam.

USG RESPONSE: On 22 DEC, [FDA issued a warning](#) to providers making them aware of higher than expected false positive results on IgM tests, especially the Zika Detect IgM Capture ELISA, and advising them to wait for confirmatory testing before making patient management decisions. [CDC announced](#) on 22 DEC that it was awarding nearly \$184 million of the \$350 million it received in the Zika Response and Preparedness Appropriations Act of 2016 to states, territories, local jurisdictions, and universities to support the response to ZIKV infection and its associated adverse health outcomes. On 16 NOV, CDC released [Updated: Guidance for US Laboratories Testing for Zika Virus Infection](#). CDC issued [ZIKV infection control guidance](#) on 25 OCT. Also on 30 SEP, CDC published an updated [ZIKV response plan for CONUS and Hawaii](#).

GLOBAL RESPONSE: Following the fifth meeting of the Emergency Committee (EC) on ZIKV, microcephaly, and other neurological disorders on 18 NOV, WHO declared that the [event no longer meets the criteria](#) for a Public Health Emergency of International Concern (PHEIC). The EC said that ZIKV and its associated consequences remain a significant enduring public health challenge requiring intense action, but is no longer a PHEIC as defined under the International Health Regulations. WHO had declared the PHEIC on 1 FEB 2016. On 25 OCT, WHO issued the [first quarterly update](#) to its [JUL 2016 Zika Strategic Response Plan](#). PAHO has created a [searchable database](#) of published primary research and protocols. For additional information, visit the [WHO](#) and [PAHO](#) Zika web pages.

MEDICAL COUNTERMEASURES and RESEARCH: Socio-economic factors such as lifestyle, housing infrastructure, and good sanitation are likely to prevent large-scale transmission of ZIKV in the U.S. despite importation of the virus and a suitable climate for vectors, according to a research article in the Journal of Medical Entomology on 3 JAN 2017. A PLOS Medicine report on 3 JAN 2017 said a systematic review of published and unpublished research found sufficient evidence to say that ZIKV is a cause of congenital abnormalities and is a trigger of GBS. A study published in PLOS One on 20 DEC describing the prevalence of ZIKV antibodies in mothers from Hawaii who gave birth to babies with and without microcephaly between 2009 and 2012 suggests the presence of ZIKV infections and associated microcephaly in the U.S. as early as 2009. On 21 DEC, Inovio Pharmaceuticals announced its DNA-based Zika vaccine (GLS-5700) generated robust antigen-specific antibody responses in its first multi-center phase I trial. [EID posted a case series](#) from Guadeloupe (seven cases) suggesting a causal link between severe thrombocytopenia and ZIKV infection. In an [early release Emerging Infectious Diseases \(EID\) article](#), researchers found that ZIKV can replicate and persist in fetal brain and placental tissue for months after maternal infection. On 14 DEC, researchers published a study in JAMA using preliminary data from the U.S. Pregnancy Registry. This study showed that 6% of fetuses or infants had ZIKV-associated birth defects among pregnant women with evidence of recent ZIKV infection who completed pregnancies; no birth defect cases were attributed to maternal exposure solely in the second or third trimester. On 13 DEC, researchers published a cohort study in NEJM characterizing the spectrum of fetal outcomes among ZIKV infected pregnant women in Brazil; adverse fetal outcomes were evident regardless of the trimester of maternal infection (55% of pregnancies had adverse outcomes after maternal infection during the first trimester, 52% after infection during the second trimester, and 29% after infection during the third trimester). In an [early release MMWR article](#) published on 9 DEC, researchers studying ZIKV disease among pregnant women in Colombia found the risk of ZIKV related birth defects was highest when maternal infection occurred during the first trimester or early second trimester of pregnancy; evidence also suggests ZIKV related birth defects in Colombia may be significantly underreported. The Walter Reed Army Institute of Research (WRAIR) began [Phase 1 clinical testing](#) of a Zika purified inactivated virus (ZPIV) on 7 NOV. In an [early release EID article](#), researchers estimated the incidence of GBS in Puerto Rico following the introduction of ZIKV was 3.2 to 5.1 times above baseline in 2016. A 17 OCT, EID article reported that ZIKV RNA could be isolated in [vaginal secretions, whole blood, and semen](#) up to 14 days, 81 days, and 92 days after symptom onset, respectively. The authors in both reports caution that the detection of ZIKV RNA does not necessarily equate to the detection of infectious virus.

(+xx) represent the change in number from the previous AFHSB summary (28 DEC 2016).

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Emergency Use Authorization Zika Testing at DoD Laboratories



- BAMC**
Brooke Army Medical Center
- BAACH**
Brian Allgood Army Community Hospital
- CRDAMC**
Carl R. Darnall Army Medical Center
- EAMC**
Eisenhower Army Medical Center
- LRMC**
Landstuhl Regional Medical Center
- MAMC**
Madigan Army Medical Center
- NAMRU-3**
U.S. Naval Medical Research Unit No. 3
- NAMRU-6**
U.S. Naval Medical Research Unit No. 6
- NHRC**
Naval Health Research Center
- NIDDL**
Naval Infectious Diseases
Diagnostic Laboratory
- TAMC**
Tripler Army Medical Center
- USAFSAM**
U.S. Air Force School of
Aerospace Medicine
- USAMRIID**
United States Army Medical
Research Institute of
Infectious Diseases
- WAMC**
Womack Army Medical Center
- WBAMC**
William Beaumont Army
Medical Center
- WRNMMC**
Walter Reed National Military
Medical Center

*Plaque-reduction neutralization test (PRNT)

As of 4 JAN 2017

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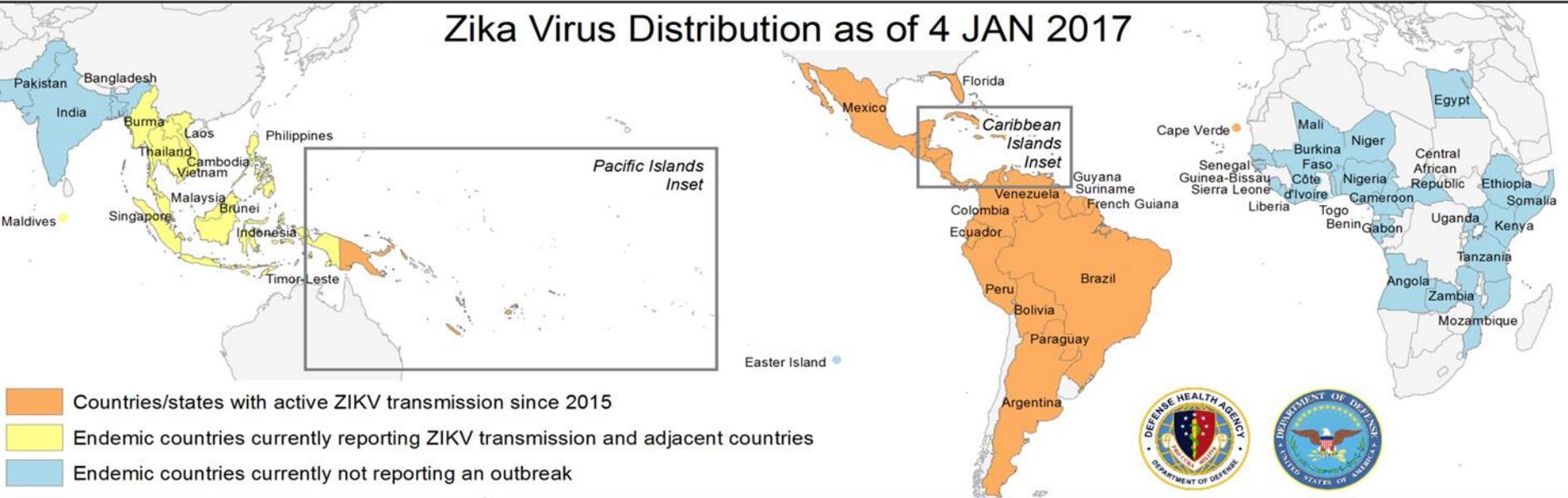
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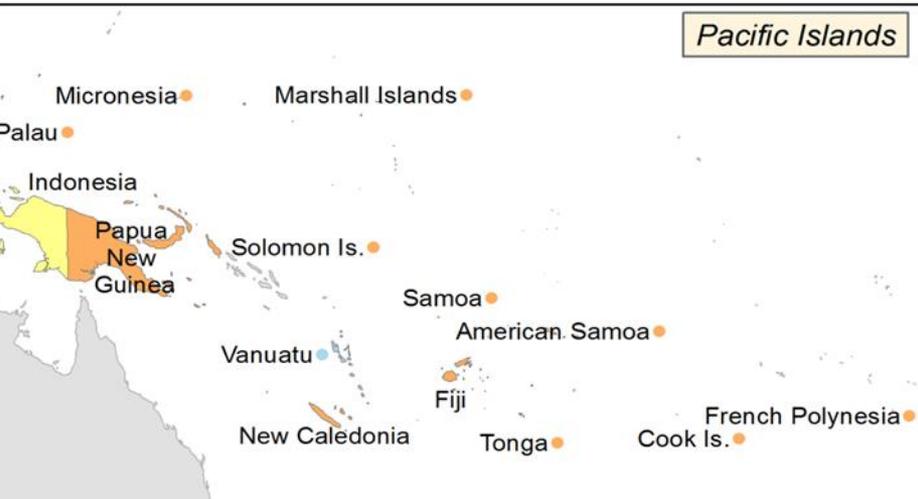
4 JAN 2017



Zika Virus Distribution as of 4 JAN 2017



- Countries/states with active ZIKV transmission since 2015
- Endemic countries currently reporting ZIKV transmission and adjacent countries
- Endemic countries currently not reporting an outbreak



* Countries with a small footprint are given a marker by their label to denote current or previous Zika presence. Source: CDC.

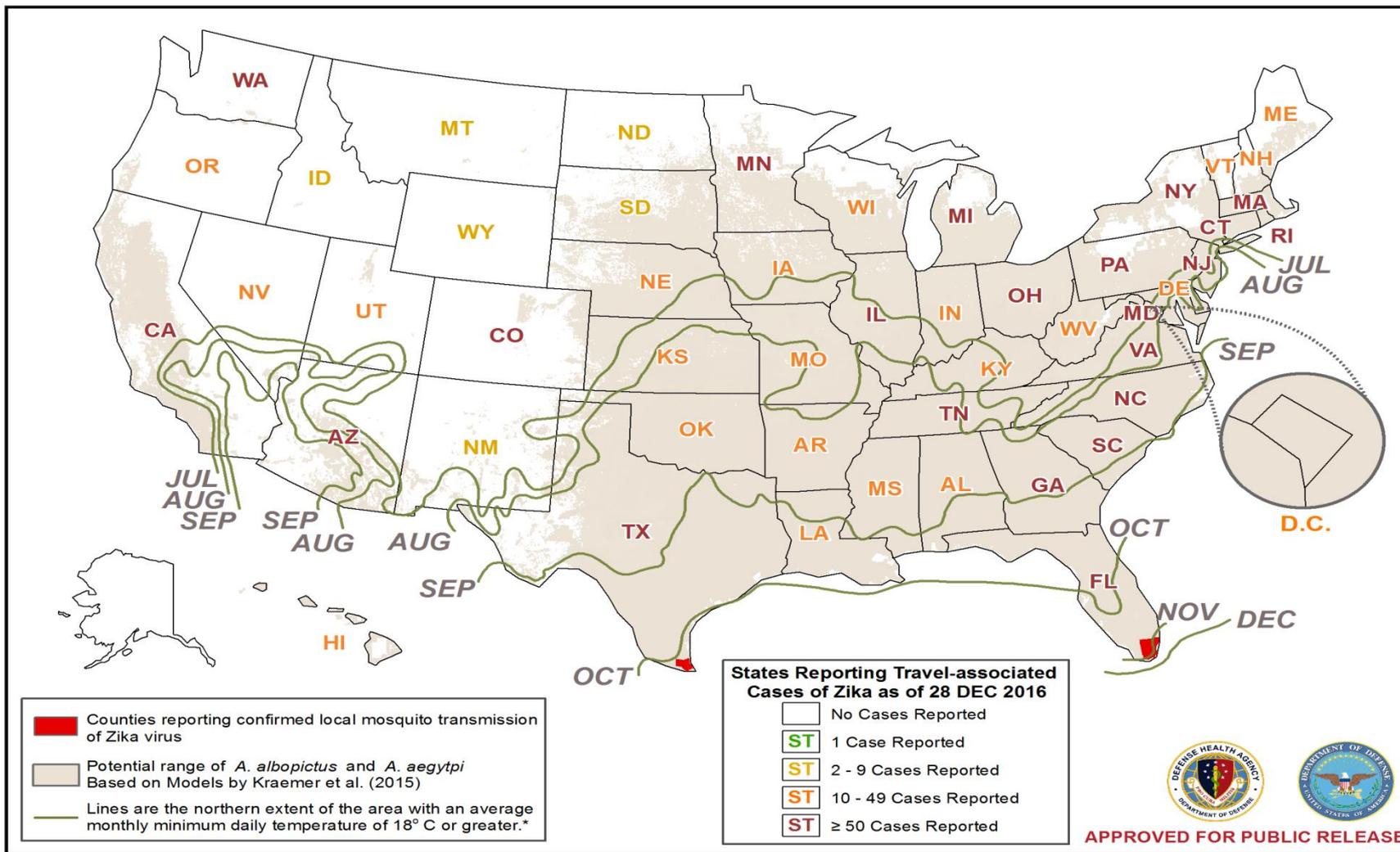
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Overlap of States Reporting Imported Zika Cases with the Estimated Range of Mosquito Vectors and Transmission Suitability

4 JAN 2017



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This version of the map shows that after JUL the northern extent begins to move southward.

Based on Sang et al, Predicting Unprecedented Dengue Outbreak Using Imported Cases and Climatic Factors in Guangzhou, 2014. PLoS Negl Trop Dis 9(5);e0003808.

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Western Hemisphere Countries[‡] and Territories with Autochthonous Transmission of Zika Virus: 1 JAN 2015 – 29 DEC 2016

	Confirmed	Suspected	Microcephaly Cases*	Reporting GBS [†]
Total	177,892	533,606	2,488	21 Countries/Territories

Country/Territory	Confirmed	Suspected	Microcephaly Cases*	Reporting GBS [†]
Anguilla	18	23		
Antigua & Barbuda	14	465		
Argentina	26	1,821	1	
Aruba	28	676		
Bahamas	22	0		
Barbados	46	699		
Belize	68	756		
Bolivia	156	741	14	Yes
Bonaire, St. Eustatius, Saba	85	0		
Brazil	109,596	211,770	2,289	Yes
British Virgin Islands	52	74		
Cayman Islands	30	211		
Colombia	9,799	96,649	75	Yes
Costa Rica	1,581	3,840	2	Yes
Cuba	3	0		
Curaçao	820	0		
Dominica	79	1,150		
Dominican Republic	331	4,903	22	Yes
Ecuador	853	2,678		Yes
El Salvador	51	11,413	4	Yes
French Guiana	483	9,700	16	Yes
Grenada	111	314	1	Yes
Guadeloupe	379	30,845	6	Yes
Guatemala	788	3,343	15	Yes

Country/Territory	Confirmed	Suspected	Microcephaly Cases*	Reporting GBS [†]
Guyana	37	0		
Haiti	5	2,955	1	Yes
Honduras	298	31,936	2	Yes
Jamaica	186	7,052		Yes
Martinique	12	36,680	18	Yes
Mexico	7,335	0		Yes
Montserrat	5	2		
Nicaragua	2,053	0	2	
Panama	652	2,570	5	Yes
Paraguay	14	555	2	
Peru	382	1,395		
Puerto Rico	36,326	0	10	Yes
Saint Barthelemy	61	975		
Saint Kitts & Nevis	33	549		No
Saint Lucia	50	822		
Saint Martin	200	3,115		Yes
Saint Vincent & the Grenadines	83	508		
Sint Maarten	62	168		
Suriname	723	2,758	2	Yes
Trinidad and Tobago	643	0	1	
Turks & Caicos	17	179		
U.S. Virgin Islands	916	81		
Venezuela	2,380	59,235		Yes

* Number of microcephaly and/or CNS malformation cases suggestive of congenital infections or potentially associated with ZIKV infection

† Reported increase in GBS cases associated with the introduction of ZIKV and/or GBS case(s) linked to ZIKV infection

‡ Excludes the U.S.; this data can be found elsewhere in this report.

All data was obtained from PAHO, Ministries of Health, and Departments of Health unless otherwise noted.

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