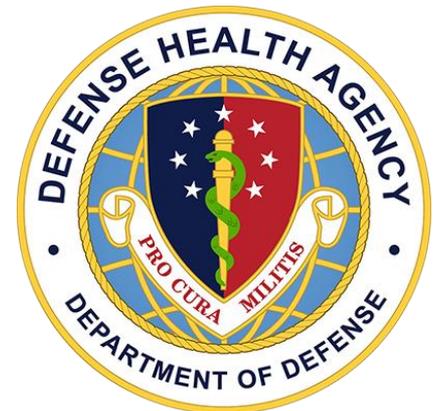


Department of Defense
Armed Forces Health Surveillance Branch
Global Zika Virus Surveillance Summary
(14 DEC 2016)



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DEPARTMENT OF DEFENSE (AFHSB)

Global Zika Virus Surveillance Summary #48

14 DEC 2016 (next report 21 DEC 2016)



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 14 DEC, there have been 158 (+1) confirmed Zika virus (ZIKV) disease cases (see table) since the first case was reported during the third week of 2016. There are four cases in pregnant Service members and one case in a pregnant dependent.

On 7 DEC, 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 OCT, 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 9 DEC, a total of five (+4) cases of suspected locally transmitted ZIKV disease have been identified in Cameron County, TX, since the state announced its first ZIKV disease case likely transmitted by a mosquito in TX on 28 NOV. The four additional cases were detected as part of a follow up investigation of the first case. Cameron County is in southeast TX and borders the Mexican state of Tamaulipas, which has reported 69 ZIKV cases in 2016.

As of 13 DEC, FL health officials reported 251 (+7) locally acquired ZIKV infections. As of 7 DEC, 184 met the CDC definition of a Zika case. On DEC 9, FL announced the end of transmission in South Miami Beach, the last area of

Demographics for all confirmed Zika cases in Military Health System Beneficiaries as of 1300, 14 DEC 2016 (N = 158 confirmed cases)			
Demographic		N	%
Service <small>*includes MHS beneficiaries from USPHS, NOAA, etc.</small>	Army	70 (+1)	44.3%
	Air Force	24	15.2%
	Navy	20	12.7%
	Marine Corps	12	7.6%
	Coast Guard	30	19.0%
	Other*	2	1.3%
Status <small>**includes Reserve Component</small>	Service Member**	111	70.3%
	Dependent	36 (+1)	22.8%
	Retiree	11	7.0%
Age	0-20	11	7.0%
	21-35	76 (+1)	48.1%
	36-50	46	29.1%
	51+	18 (+1)	11.4%
	Not Reported	7 (-1)	4.4%
Gender	Female	63 (+1)	39.9%
	Male	95	60.1%

active transmission in Miami-Dade County.

Updated advice for people living in or traveling to South Florida is available from [CDC](#). FL DOH continues to investigate additional areas in Miami-Dade County.

[FL DOH and CDC](#) said aggressive mosquito control, including aerial spraying that targeted adult and larval mosquitoes, most likely contributed to stopping ZIKV transmission in the Wynwood neighborhood.

CDC has issued Alert Level 2, Practice Enhanced Precautions, travel notices for 60 [countries and territories](#); 49 are in the Western Hemisphere, 10 are in PACOM, and one is 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 (39 cases), Thailand (>680 cases), Timor-Leste (East Timor), and Vietnam (103 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	4,575 (+79)	35,136 (+311)	841 (+21)	57 (+3)
Travel-Associated***	4,389 (+79)	-	-	-
Local Vector Transmission	185	-	-	-
Laboratory Exposure	1	-	-	-
Guillain Barré Syndrome (GBS)	13	67 (+1)†	-	-

U.S. Zika Pregnancy Registry Data, as of 30 NOV		
Pregnant Zika Cases	1,172 (+58)	2,639 (+78)
Infants Born with Birth Defects	32 (+4)	1††
Pregnancy Losses with Birth Defects	5	1††

*Zika cases reported to ArboNET as of 7 DEC (U.S. States and Am. Samoa). Zika cases reported by USVI as of 13 DEC; USVI also reported 103 (+2) Zika cases in pregnant women.
 **From the Puerto Rico DOH as of 24 NOV; PR DOH is tracking 2,797 (+86) ZIKV cases in pregnant women.
 ***Includes 38 (+2) sexually transmitted cases.
 † Of the 67 (+1) 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 (7 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 457 (+1) cases and one identified cluster as of 14 DEC. 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 1 DEC, 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 the Iquitos region of Peru. The current trend of the outbreak in Saint Martin and Saint Barthelemy is unclear.

MICROCEPHALY and GUILLAIN-BARRÉ SYNDROME: As of 7 DEC, 29 (+1, Nicaragua) 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 7 DEC, 20 countries and territories in the Western Hemisphere as well as French Polynesia have reported Guillain-Barré syndrome (GBS) cases that may be associated with 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 16 NOV, CDC released [Updated: Guidance for US Laboratories Testing for Zika Virus Infection](#). CDC issued [ZIKV infection control guidance](#) on 25 OCT. On 19 OCT [CDC released guidance](#) on the assessment and follow-up of infant hearing in children with evidence of congenital ZIKV infection. On 30 SEP, [CDC updated its interim guidance](#) for preconception counseling and for preventing sexual transmission of ZIKV among exposed persons. The primary change was a recommendation that men with possible ZIKV exposure, but no symptoms, wait six months after the last possible ZIKV exposure before attempting conception with their partner; WHO made a [similar recommendation](#) on 6 SEP. 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 the event is no longer a PHEIC as defined under the International Health Regulations. WHO had declared the PHEIC on 1 FEB 2016. On 26 OCT, WHO published its [Zika Virus Research Agenda](#). 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: 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). An editorial by CDC addressing this research was also published in NEJM. 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. Researchers reported in a [22 NOV MMWR article](#) on their follow-up of 13 infants in Brazil with normal head circumference at birth and evidence of a congenital ZIKV infection. The report showed that head growth can slow after birth resulting in a later diagnosis of microcephaly, and that significant neurologic deficits were evident on follow-up. The Walter Reed Army Institute of Research (WRAIR) began [Phase 1 clinical testing](#) of a Zika purified inactivated virus (ZPIV) on 7 NOV. On 3 NOV, JAMA Pediatrics published a review of the distinctive features of congenital Zika syndrome in infants. 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. On 17 OCT, EID posted research showing 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. Moderna submitted an Investigational New Drug (IND) application to the FDA on 14 OCT for their mRNA vaccine. Clinical trials will take place at three U.S. sites: Peoria, IL, San Diego, CA, and Melbourne, FL. On 26 JUL, Inovio Pharmaceuticals began a Phase 1 trial of its Zika DNA vaccine (GLS-5700) and launched a double-blind clinical trial of the vaccine in Puerto Rico on 29 AUG.

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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

Testing Capability

- CDC Zika Triplex rRT-PCR
- CDC Zika Triplex rRT-PCR
IgM ELISA
- CDC Zika Triplex rRT-PCR
IgM ELISA
PRNT*



*Plaque-reduction neutralization test (PRNT)

As of 14 DEC 2016

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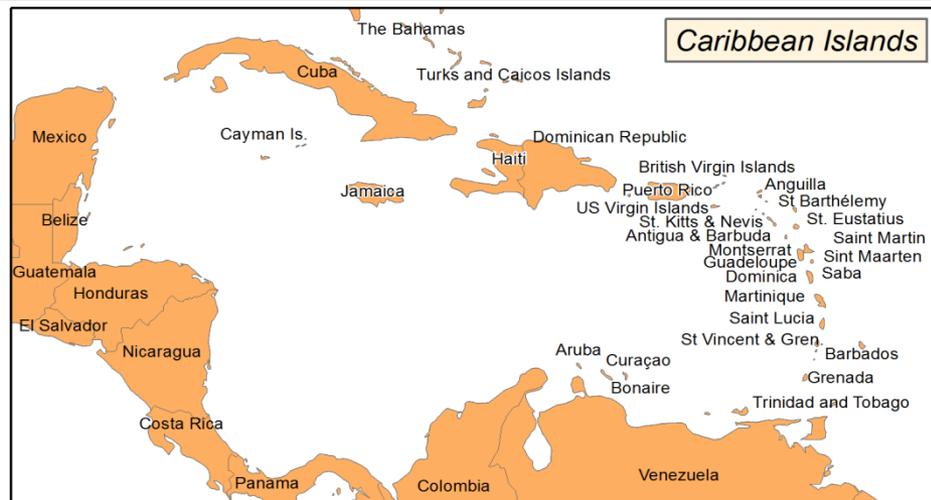
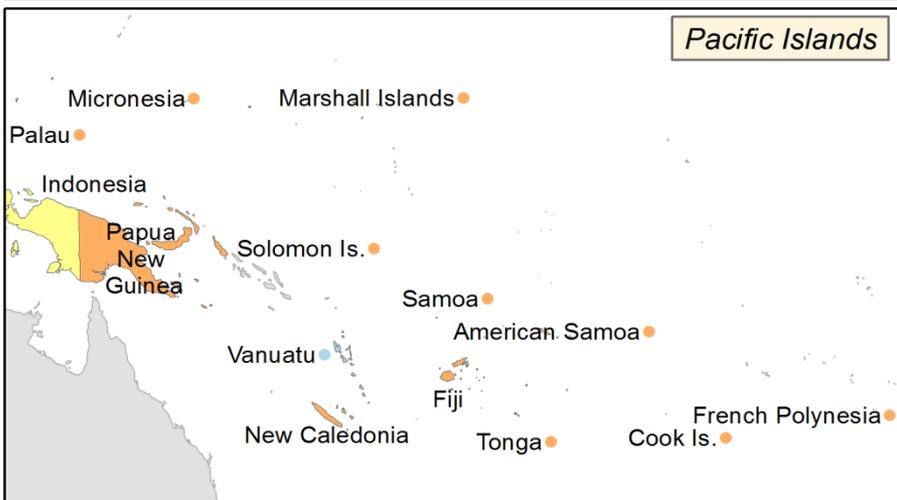
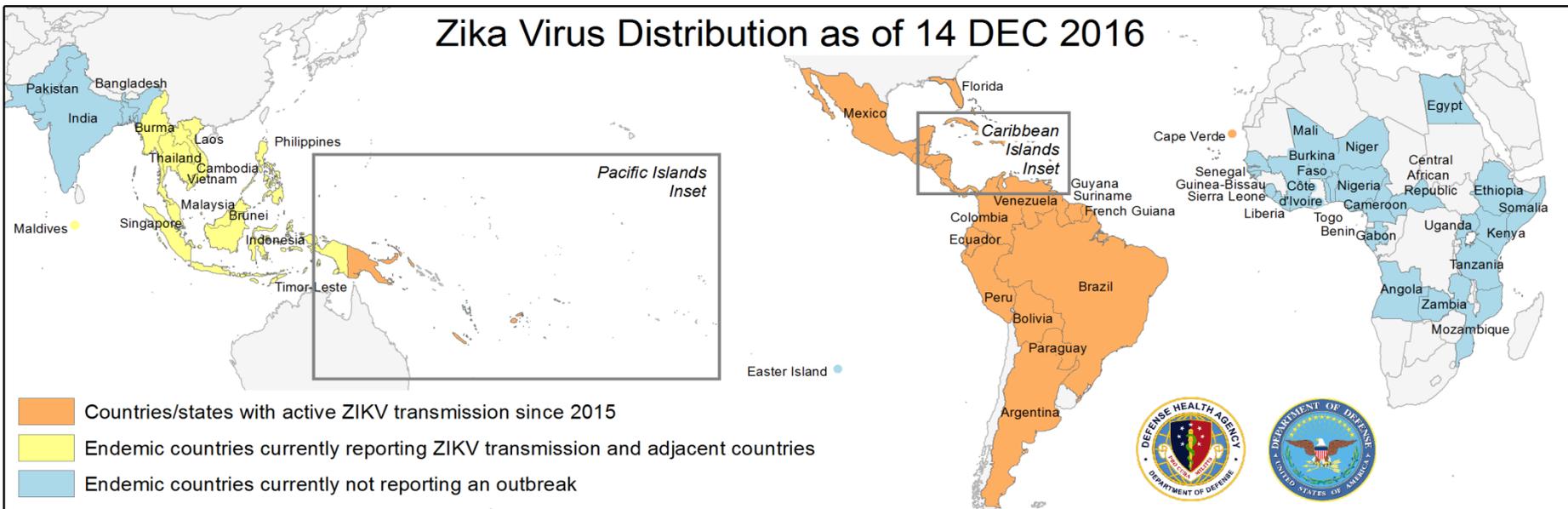
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Zika Virus Distribution as of 14 DEC 2016



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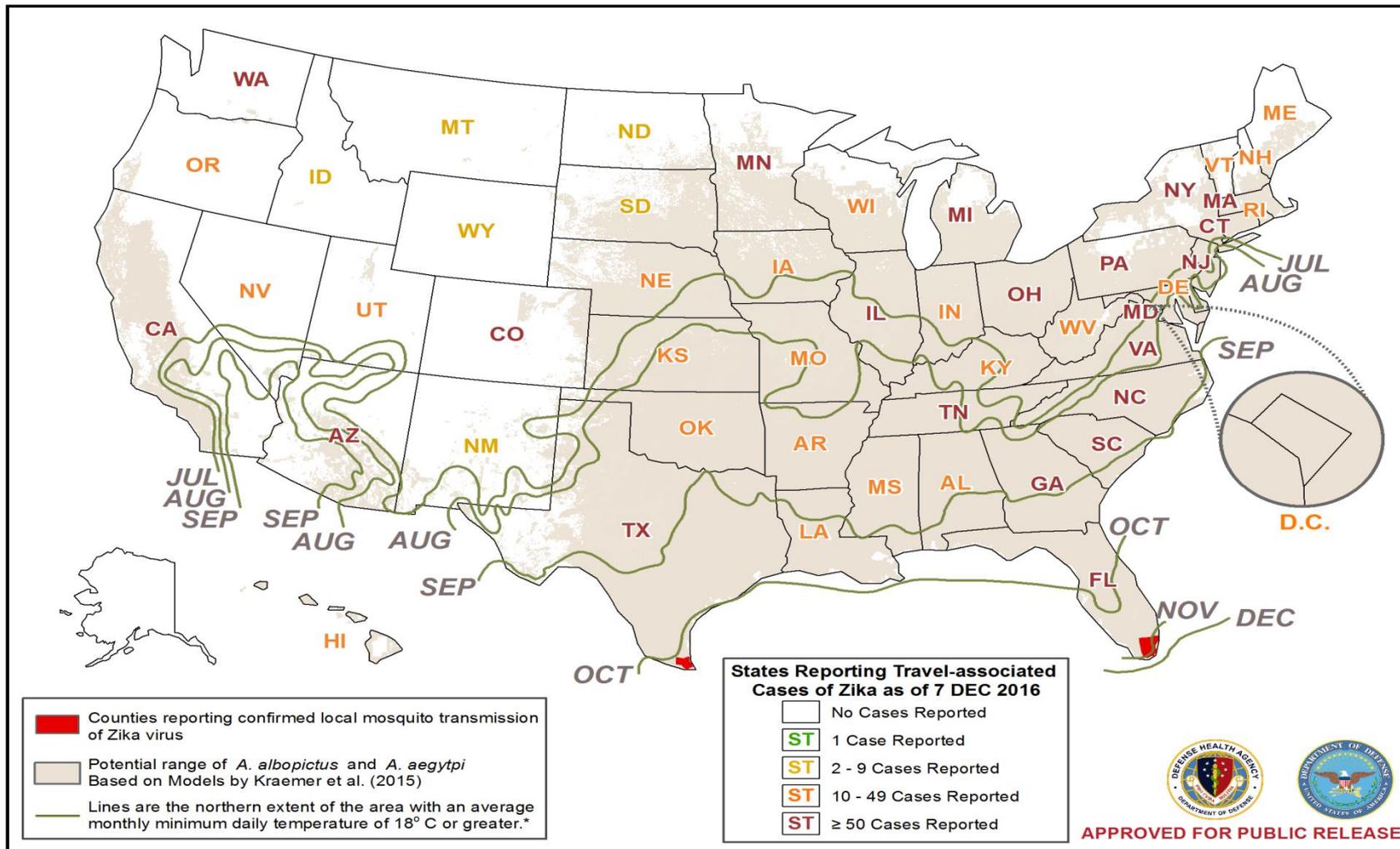
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Overlap of States Reporting Imported Zika Cases and the Estimated Range of Mosquito Vectors and Transmission Suitability

14 DEC 2016



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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 – 8 DEC 2016

	Confirmed	Suspected	Microcephaly Cases*	Reporting GBS [†]
Total	174,360	519,249	2,384	20 Countries/Territories

Country/Territory	Confirmed	Suspected	Microcephaly Cases*	Reporting GBS [†]
Anguilla	8	58		
Antigua & Barbuda	14	465		
Argentina	26	1,821	2	
Aruba	28	614		
Bahamas	22	0		
Barbados	37	653		
Belize	66	715		
Bolivia	140	741	9	Yes
Bonaire, St. Eustatius, Saba	85	0		
Brazil	109,596	200,465	2,211	Yes
British Virgin Islands	38	51		
Cayman Islands	30	211		
Colombia	8,826	96,729	67	Yes
Costa Rica	1,553	2,723	2	Yes
Cuba	3	0		
Curaçao	820	0		
Dominica	79	1,150		
Dominican Republic	327	4,898	22	Yes
Ecuador	839	2,693		Yes
El Salvador	51	11,379	4	Yes
French Guiana	483	9,700	14	Yes
Grenada	111	314	1	Yes
Guadeloupe	379	30,845	1	Yes
Guatemala	466	2,785	15	Yes

Country/Territory	Confirmed	Suspected	Microcephaly Cases*	Reporting GBS [†]
Guyana	6	0		
Haiti	5	2,955	1	Yes
Honduras	298	31,907	2	Yes
Jamaica	186	7,052		Yes
Martinique	12	36,680	14	Yes
Mexico	6,851	0		Yes
Montserrat	2	0		
Nicaragua	2,051	0	2	
Panama	577	2,304	5	Yes
Paraguay	14	589	2	
Peru	154	898		
Puerto Rico	35,136	0	7	Yes
Saint Barthelemy	61	930		
Saint Kitts & Nevis	26	532		No
Saint Lucia	50	822		
Saint Martin	200	2,950		
Saint Vincent & the Grenadines	38	156		
Sint Maarten	62	168		
Suriname	723	2,758	2	Yes
Trinidad and Tobago	643	0	1	
Turks & Caicos	17	179		
U.S. Virgin Islands	841	124		
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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