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MONTHLY COMMUNICABLE DISEASE REPORT

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DENGUE, CHIKUNGUNYA, AND ZIKA VIRUS INFECTIONS

Dengue, chikungunya, and Zika viruses are transmitted by the same *Aedes* mosquitoes and can have similar clinical presentations.

Dengue virus infection has been recognized since the 1950s as a worldwide problem, a leading cause of morbidity and mortality in the tropics and subtropics, causing an estimated 50-100 million cases and 22,000 deaths annually. While infection was initially more prevalent in Asia, since 1981, cases have increased dramatically in Latin America and the Caribbean. Dengue virus is now endemic in more than 100 countries, including northern Mexico along the United States (U.S.) border.

Chikungunya and Zika viruses are more recent arrivals to the Western hemisphere. Chikungunya virus was first transmitted locally in the Americas in late 2013 in the Caribbean. Zika virus was discovered in 1947, but rarely reported prior to 2007, mostly in Africa, Southeast Asia, and the Pacific Islands. It was first identified in the Americas in 2015 with a large outbreak in Brazil and has since spread throughout the Americas.

Although local transmission of all three viruses has been documented in the U.S. (primarily in Florida and south Texas), most cases of dengue, chikungunya, and Zika virus infection among U.S. residents (outside of U.S. territories in the tropics such as Puerto Rico and Guam) are among immigrants and travelers returning from endemic areas. Travel to the same regions of the world are a risk for all three infections, though specific transmission patterns vary from year to year.

Sustained transmission is uncommon in the U.S. because people are less exposed to

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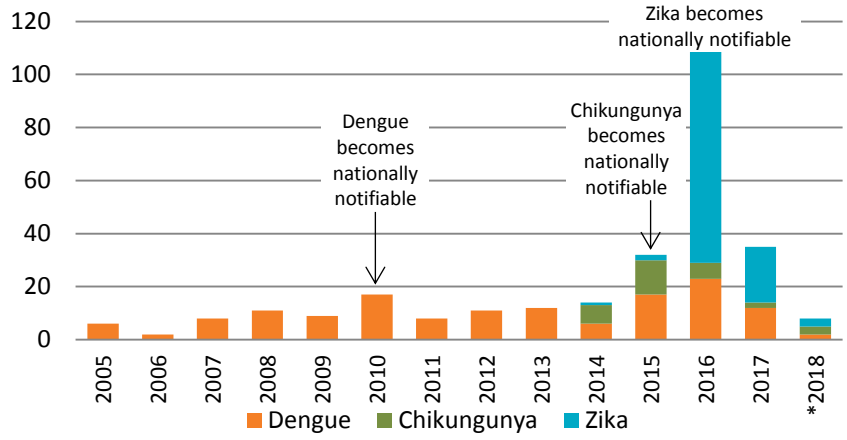
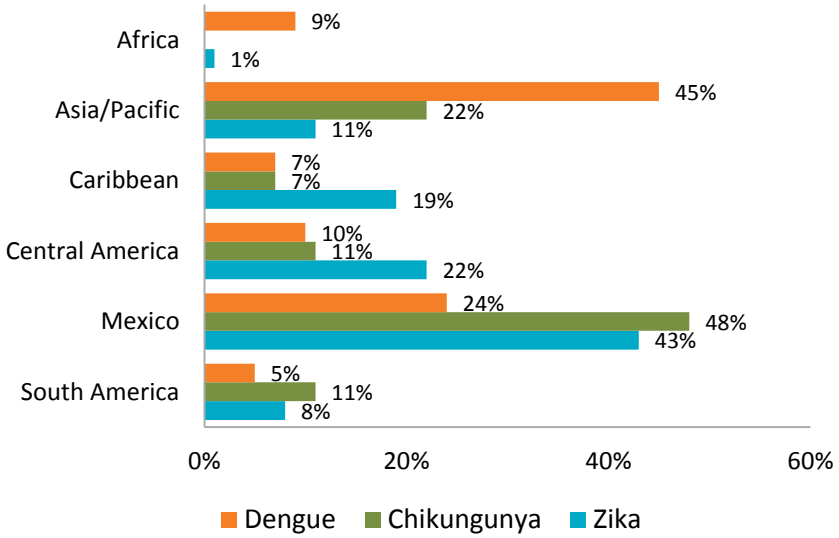
Figure 1. Dengue, Chikungunya, and Zika Virus Infection Cases, San Diego County, 2005-2018*



*2018 data are year-to-date; current as of 7/16/2018. Data are provisional and subject to change as additional information becomes available. Grouped by CDC disease years.

Figure 2. Travel Locations Reported by Dengue, Chikungunya, and Zika Virus Infection Case-Patients, San Diego County, 2014-2017



Current as of 7/16/2018. Data are provisional and subject to change as additional information becomes available. Grouped by CDC disease years. Percentages may not equal 100% because some case-patients traveled to more than one area during their exposure period.

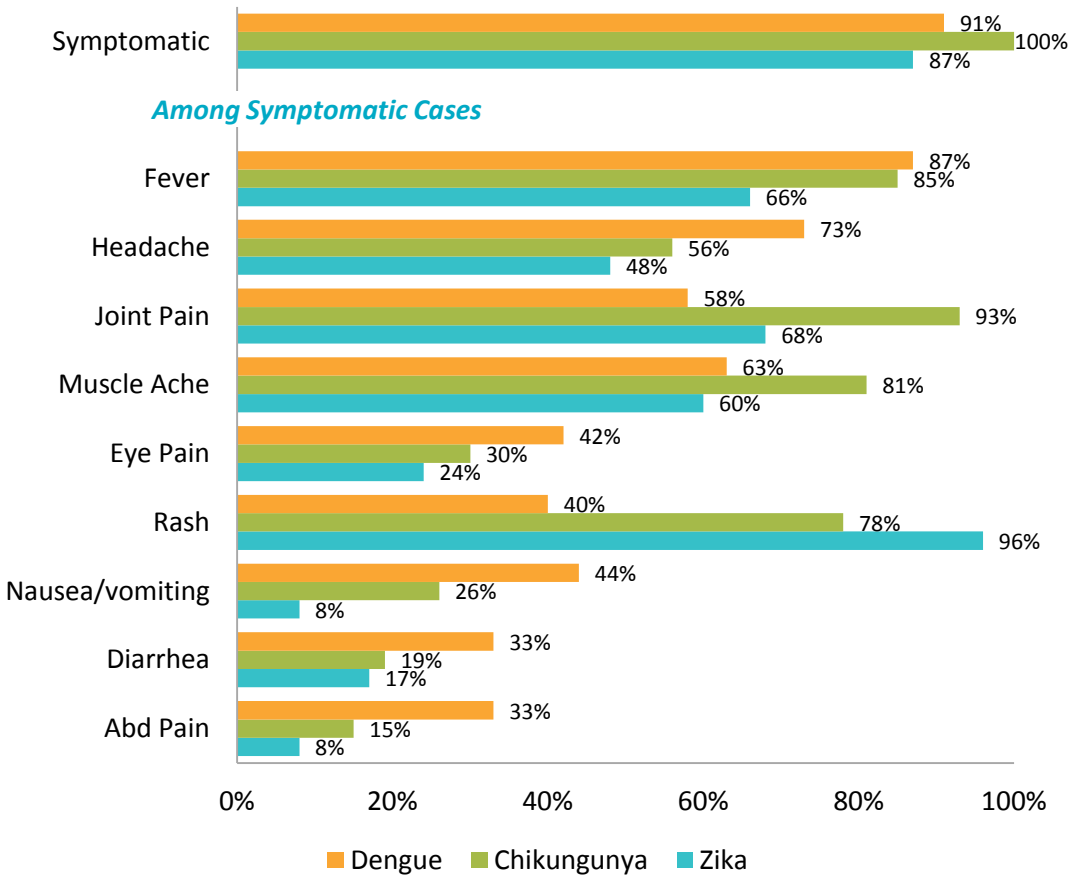
The Monthly Communicable Disease Surveillance Report is a publication of the County of San Diego Public Health Services Epidemiology and Immunization Services Branch (EISB). EISB works to identify, investigate, register, and evaluate communicable, reportable, and emerging diseases and conditions to protect the health of the community. The purpose of this report is to present trends in communicable disease in San Diego County. To subscribe to this report, send an email to EpiDiv.HHSA@sdcounty.ca.gov.

DENGUE, CHIKUNGUNYA, AND ZIKA VIRUS INFECTIONS, Cont'd

Aedes mosquitoes, largely due to use of window screens and air conditioning. However, *Aedes aegypti* and *Aedes albopictus* mosquitoes, the main vectors for these infections, are becoming increasingly widespread in the U.S. so there is potential for local transmission. These invasive, aggressive, day-biting mosquitoes have been detected for the first time in San Diego County in recent years.

In San Diego County, 2016 was a peak year for Zika virus infections, with 83 reported cases; there were also 23 cases of dengue virus infection, and six cases of chikungunya virus infection. None of these cases were locally transmitted. Because local transmission is possible if an *Aedes* mosquito bites a case-patient who is viremic (usually during the first few days after symptoms begin) while in San Diego County, the County's Vector Control Program is informed of potentially viremic cases so they can assess *Aedes* activity and take preventive actions.

Figure 3. Symptoms Reported by Dengue, Chikungunya, and Zika Virus Infection Case-Patients, San Diego County, 2014-2017



Current as of 7/16/2018. Data are provisional and subject to change as additional information becomes available. Grouped by CDC disease years. Symptomatic cases are more likely to be diagnosed and reported; percent symptomatic here likely over-represents true number of symptomatic cases.

The three viruses cause similar symptoms, including fever, headache, joint or muscle pain, and rash. Although certain symptoms may be more prevalent for one type of infection (e.g., joint pain in chikungunya patients or rash in Zika patients), all three viruses should be in the differential if a patient presents with these symptoms and a compatible travel history.

There is no vaccine (avoiding mosquito bites is the only prevention) and no specific treatment for any of these infections. However, appropriate supportive care can prevent dengue virus infections from becoming severe or fatal. Zika and chikungunya virus infections are rarely fatal.

Resources

- Centers for Disease Control and Prevention (CDC) Dengue website
- CDC Chikungunya Virus website
- CDC Zika Virus website
- California Department of Public Health (CDPH) Aedes Aegypti and Aedes Albopictus Mosquitoes website
- CDPH Mosquitoes and Mosquito-Borne Diseases website
- County of San Diego (COSD) Health and Human Services Agency Zika Virus website
- COSD Department of Environmental Health Invasive Aedes Mosquitoes website

Table 1. Select Reportable Diseases		2018			Prior Years		
Disease and Case Inclusion Criteria (C,P,S)		Current Month	Prior Month	Year-to-Date (YTD)	2017 YTD	Avg YTD, Prior 3 Years	2017 Total
Amebiasis	C	1	1	6	4	7.0	10
Botulism (Foodborne, Infant, Wound, Other)	C,P	0	0	9	3	2.7	8
Brucellosis	C,P	0	0	1	3	1.7	5
Campylobacteriosis	C,P	95	76	360	481	375.0	883
Chickenpox, Hospitalization or Death	C,P	0	0	0	1	1.0	3
Chikungunya	C,P	1	2	3	2	1.0	2
Coccidioidomycosis	C	10	20	139	99	81.3	313
Cryptosporidiosis	C,P	8	7	31	19	11.7	54
Dengue Virus Infection	C,P	0	0	2	8	6.0	12
Encephalitis, All	C	1	2	22	25	34.0	43
Giardiasis	C,P	11	16	121	182	151.0	317
Hepatitis A, Acute	C	2	2	23	243	87.3	576
Hepatitis B, Acute	C	1	0	6	9	6.3	13
Hepatitis B, Chronic	C,P	75	72	435	448	432.0	868
Hepatitis C, Acute	C,P	0	0	2	4	1.7	4
Hepatitis C, Chronic	C,P	381	319	2,093	1,253	1,405.7	3,113
Legionellosis	C	0	9	25	37	28.0	66
Listeriosis	C	2	1	5	7	7.3	15
Lyme Disease	C,P	0	3	6	7	4.7	21
Malaria	C	0	1	4	3	3.3	8
Measles (Rubeola)	C	0	0	0	2	3.3	2
Meningitis, Aseptic/Viral	C,P,S	9	11	48	62	65.7	187
Meningitis, Bacterial	C,P,S	1	2	25	17	19.3	39
Meningitis, Other/Unknown	C	0	4	8	19	17.0	34
Meningococcal Disease	C,P	2	0	5	0	0.7	1
Mumps	C,P	2	0	5	8	7.0	15
Pertussis	C,P,S	45	57	410	568	454.3	1,161
Rabies, Animal	C	0	0	4	10	5.7	16
Rocky Mountain Spotted Fever	C,P	0	0	0	1	0.7	3
Salmonellosis (Non-Typhoid/Non-Paratyphoid)	C,P	80	44	290	209	212.3	576
Shiga toxin-Producing *E. coli* (including O157)	C,P	14	11	56	16	18.7	288
Shigellosis	C,P	14	25	112	106	78.7	334
Typhoid Fever	C,P	0	0	0	2	2.3	2
Vibriosis	C,P	0	3	7	17	15.3	50
West Nile Virus Infection	C,P	0	0	0	0	0.0	2
Yersiniosis	C,P	1	3	12	29	14.0	54
Zika Virus	C,P	0	1	3	9	9.7	21

Case counts are provisional and subject to change as additional information becomes available. Cases are grouped into calendar months and calendar years on the basis of the earliest of the following dates: onset, lab specimen collection, diagnosis, death, and report received. Counts may differ from previously or subsequently reported counts due to differences in inclusion or grouping criteria, late reporting, or updated case information. Inclusion criteria (C,P,S = Confirmed, Probable, Suspect) based on Council of State and Territorial Epidemiologists/Centers for Disease Control and Prevention (CSTE/CDC) surveillance case criteria.

Figure 4. Select Enteric Infections by Month
July 2017 – June 2018

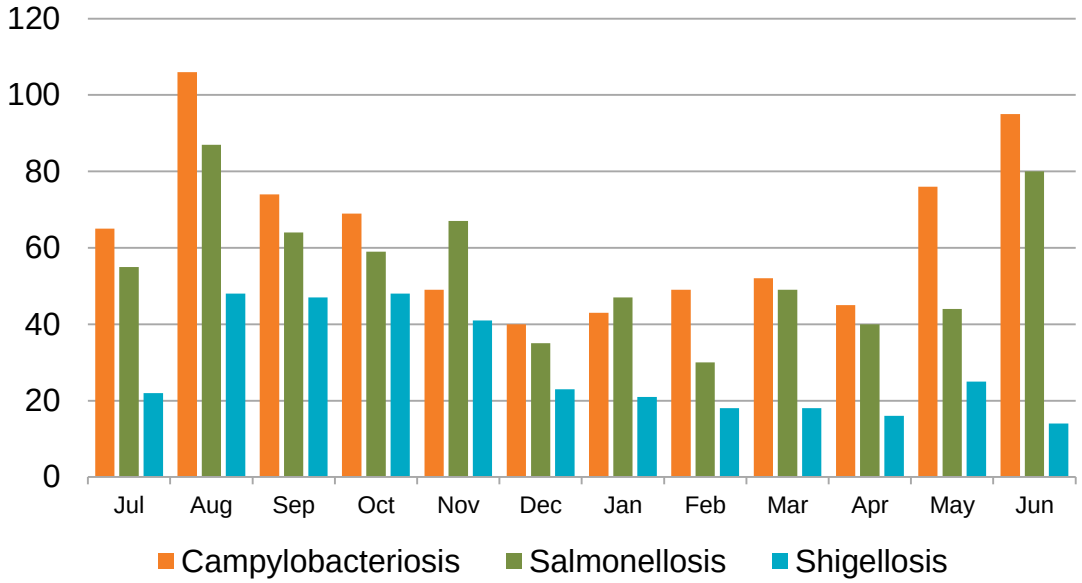
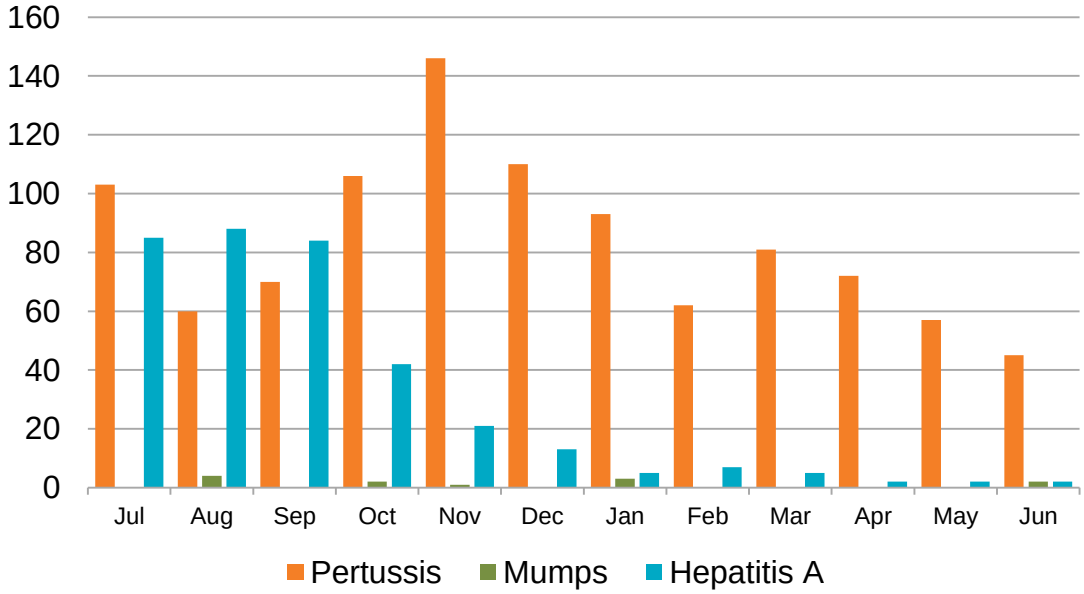
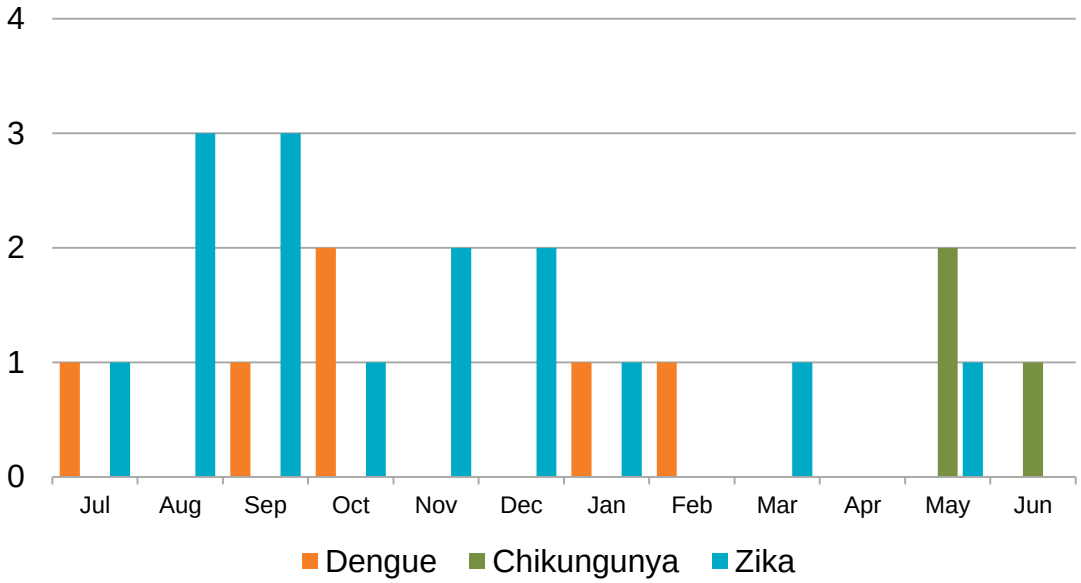


Figure 5. Select Vaccine-Preventable Infections by Month
July 2017 – June 2018



Case counts are provisional and subject to change as additional information becomes available. Cases are grouped into calendar months and calendar years on the basis of the earliest of the following dates: onset, lab specimen collection, diagnosis, death, and report received. Counts may differ from previously or subsequently reported counts due to differences in inclusion or grouping criteria, late reporting, or updated case information. Inclusion criteria (C,P,S = Confirmed, Probable, Suspect) based on Council of State and Territorial Epidemiologists/Centers for Disease Control and Prevention (CSTE/CDC) surveillance case criteria.

Figure 6. Select Vector-Borne Infections by Month
July 2017 – June 2018



All of these dengue, chikungunya, and Zika virus cases are travel-associated. For additional information on Zika cases, see the HHSA Zika Virus webpage. ***Case counts are provisional and subject to change as additional information becomes available.*** Cases are grouped into calendar months and calendar years on the basis of the earliest of the following dates: onset, lab specimen collection, diagnosis, death, and report received. Counts may differ from previously or subsequently reported counts due to differences in inclusion or grouping criteria, late reporting, or updated case information. Inclusion criteria (C,P,S = Confirmed, Probable, Suspect) based on Council of State and Territorial Epidemiologists/Centers for Disease Control and Prevention (CSTE/CDC) surveillance case criteria.

Disease Reporting in San Diego County

San Diego County communicable disease surveillance is a collaborative effort among Public Health Services, hospitals, medical providers, laboratories, and the San Diego Health Connect Health Information Exchange (HIE). The data presented in this report are the result of those efforts.

Reporting is crucial for disease surveillance and detection of disease outbreaks. Under the California Code of Regulations, Title 17 (Sections 2500, 2505, and 2508), public health professionals, medical providers, laboratories, schools, and others are mandated to report more than 80 diseases or conditions to San Diego County Health and Human Services Agency.

To report a communicable disease, contact the Epidemiology Program by phone at (619) 692-8499 or download and print a Confidential Morbidity Report form and fax it to (858) 715-6458. For urgent matters on evenings, weekends or holidays, dial (858) 565-5255 and ask for the Epidemiology Program duty officer. For more information, including a complete list of reportable diseases and conditions in California, visit the Epidemiology Program website, www.sdepi.org.

Tuberculosis, sexually transmitted infections, and HIV disease are covered by other programs within Public Health Services. For information about reporting and data related to these conditions, search for the relevant program on the Public Health Services website, http://www.sandiegocounty.gov/content/sdc/hhsa/programs/phs.html.