EPIDEMIOLOGY AND IMMUNIZATION SERVICES BRANCH

MONTHLY COMMUNICABLE DISEASE REPORT

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MENINGOCOCCAL DISEASE

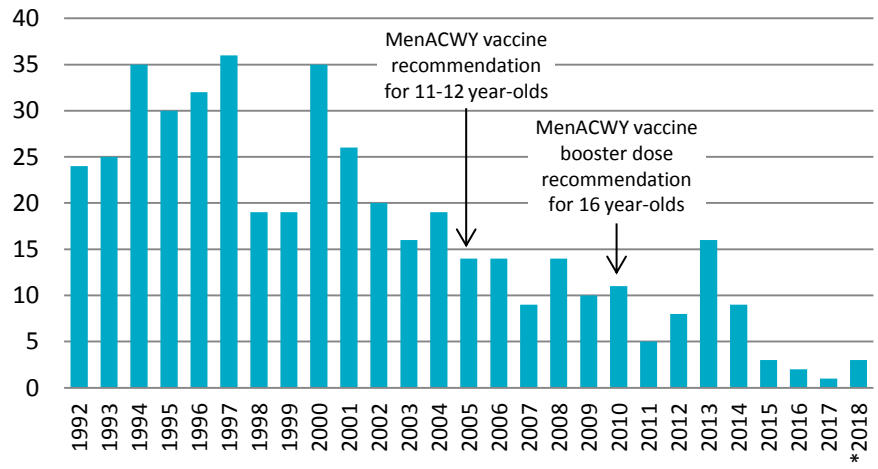
Invasive meningococcal disease (IMD) is a severe and frequently deadly, but vaccine-preventable, illness caused by *Neisseria meningitidis* bacteria. The most common clinical syndromes are meningitis, when the bacteria infect the lining of the brain and spinal cord, and meningococcemia (septicemia), when the bacteria infect the bloodstream.

Sudden onset of fever and vomiting are common symptoms of both meningitis and meningococcemia. Other symptoms of meningitis include headache, stiff neck, photophobia, and altered mental status. Signs of meningococcemia include fatigue, cold hands and feet, muscle or joint pain, and a dark purple rash (purpura).

Incidence of IMD has been declining steadily in the United States (U.S.) since the late 1990s. In 1995, there were 3,243 cases nationally, a rate of 1.2 per 100,000 population. By 2016, the number of U.S. cases had decreased to 375, a rate of 0.12 per 100,000. In California, 82 cases of IMD (0.21 per 100,000) were reported in 2016. San Diego County case counts declined from 35 in 2000 (1.2 per 100,000) to two in 2016 and one in 2017 (<0.1 per 100,000).

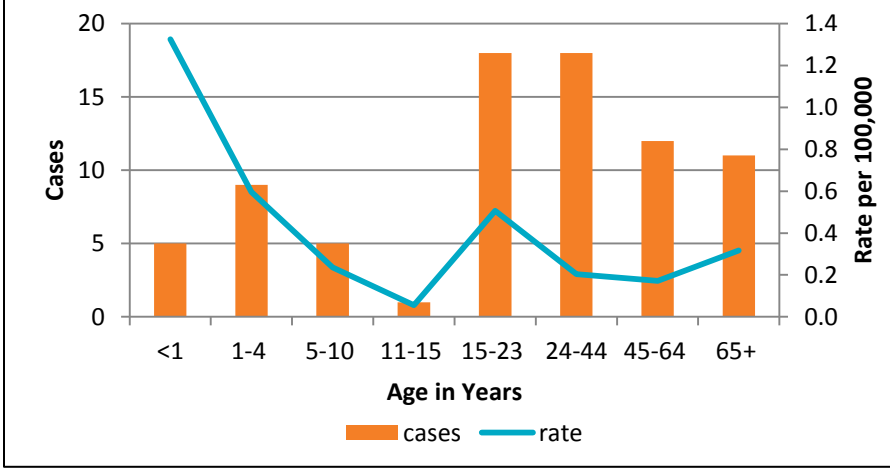
Rates of IMD are highest among children under five years of age, particularly infants less than one year old, and adolescents and young adults between the ages of 15 and 23 years. Others at increased risk of disease include household and close contacts of case patients; first year college students living in residence halls, military recruits, and others living in close quarters; smokers; persons with certain medical conditions, such as HIV infection, functional or anatomic asplenia, and complement component deficiency; and persons receiving eculizumab therapy.

Figure 1. Meningococcal Disease Cases, San Diego County, 1992-2018*



*2018 data are year-to-date; current as of 4/16/2018. Data are provisional and subject to change as additional information becomes available. Grouped by CDC disease years.

Figure 2. Meningococcal Disease Cases and Rates by Age, San Diego County, 2008-2017 (N=79)



Current as of 4/16/2018. Data are provisional and subject to change as additional information becomes available. Grouped by CDC disease years. Rates calculated based on low case counts should be interpreted with caution.

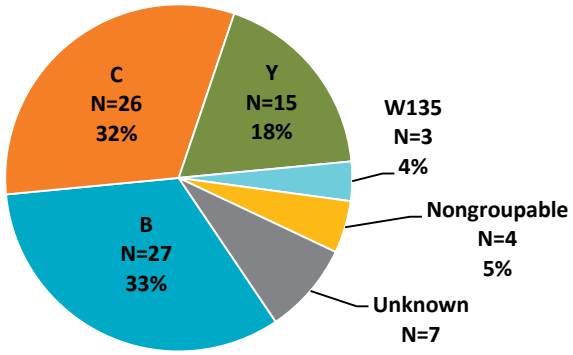
Continued on next page

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.

MENINGOCOCCAL DISEASE, continued

The decline in IMD incidence in the U.S. preceded the 2005 Advisory Committee on Immunization Practices (ACIP) recommendation that all 11-12 year-olds be vaccinated with a meningococcal conjugate vaccine. This vaccine protects against serogroups A, C, W, and Y. A booster dose is recommended for 16 year-olds. In addition, serogroup B vaccine has been licensed for use in the U.S. since 2014 and may also be given to those at risk.

Figure 3. Meningococcal Disease Cases by Serogroup, San Diego County, 2008-2018* (N=82)



*2018 data are year-to-date; current as of 4/16/2018. Data are provisional and subject to change as additional information becomes available. Grouped by CDC disease years.

Serogroups B, C, and Y are responsible for most IMD in the U.S., whereas serogroup A has historically been associated with disease in the "meningitis belt" of sub-Saharan Africa. In San Diego County over the past 10 years, serogroups B and C have each been responsible for about a third of cases, with nearly 20% caused by serogroup Y.

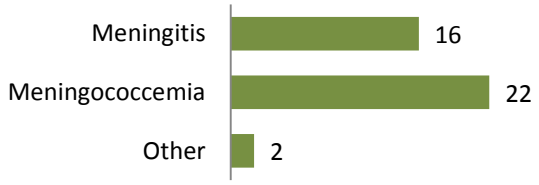
Although outbreaks of IMD are relatively rare in the U.S., there have been a number of serogroup B outbreaks at colleges in recent years. Since last fall, there have been outbreaks at University of Massachusetts-Amherst and Oregon State University. Serogroup C outbreaks in New York City, Los Angeles, Chicago and Europe between 2012 and 2015 affected men who have sex with men (MSM). A regional outbreak among MSM in southern California was first reported in 2016 and is ongoing. Cases have been reported in Los Angeles and Orange Counties; there have been no associated cases in San Diego County.

IMD outcomes are often severe, even with prompt antibiotic treatment. The case fatality ratio is 10-15%, and up to 40% in cases of meningococcemia. Those who survive may have serious sequelae; 11-19% of survivors suffer long-term disabilities such as loss of limbs, hearing loss, or brain damage. Five of 34 San Diego County cases (nearly 15%) since 2013 have been fatal; three of those had meningococcemia. In the same time period, 22 of 34 cases had evidence of blood stream infection and 16 were diagnosed with meningitis.

Meningococcal bacteria are transmitted person to person via respiratory and throat secretions shared during close contact. About one in ten people carry the bacteria in their nasal passages with no symptoms of disease. In a small percentage of people, the bacteria invade a normally sterile site (e.g., blood, cerebral spinal fluid) and cause illness. A preceding upper respiratory infection may be a contributing factor.

Although IMD is not as infectious as other respiratory infections, close contacts of persons with IMD are at increased risk and should receive post-exposure prophylaxis (PEP). Sometimes, especially in college or military settings, there may be large numbers of contacts to a single case. In San Diego County, among 33 cases with available information since 2013, PEP was recommended to over 2000 people, a median of 13 contacts per case (range 1-700+).

Figure 4. Clinical Presentation of Meningococcal Disease Cases, San Diego County, 2013-2018* (N=34)



*2018 data are year-to-date; current as of 4/16/2018. Cases may have evidence of both meningitis and meningococcemia. Other includes pneumonia (lung tissue) and arthritis (synovial fluid). Data are provisional and subject to change as additional information becomes available.

Resources

- Centers for Disease Control and Prevention (CDC) Meningococcal Disease website
- Epidemiology and Prevention of Vaccine-Preventable Diseases (the Pink Book)
- California Department of Public Health (CDPH) Meningococcal Disease website
- County of San Diego Meningococcal Disease fact sheet

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	0	1	3	2	4.3	10
Botulism (Foodborne, Infant, Wound, Other)	C,P	2	0	4	1	0.7	8
Brucellosis	C,P	0	0	0	3	1.3	5
Campylobacteriosis	C,P	50	49	142	187	153.0	885
Chickenpox, Hospitalization or Death	C,P	0	0	0	0	0.0	3
Chikungunya	C,P	0	0	0	1	0.3	2
Coccidioidomycosis	C	24	26	84	43	41.7	311
Cryptosporidiosis	C,P	3	5	12	6	4.7	54
Dengue Virus Infection	C,P	0	1	2	3	3.7	12
Encephalitis, All	C	6	4	13	14	17.0	42
Giardiasis	C,P	22	16	68	79	64.0	319
Hepatitis A, Acute	C	5	7	17	42	17.0	576
Hepatitis B, Acute	C	3	0	4	5	3.0	13
Hepatitis B, Chronic	C,P	73	61	219	220	210.7	883
Hepatitis C, Acute	C,P	0	1	1	0	0.3	4
Hepatitis C, Chronic	C,P	312	335	939	568	666.0	3,122
Legionellosis	C	3	2	11	18	12.3	66
Listeriosis	C	1	0	2	4	3.3	15
Lyme Disease	C,P	0	1	1	2	0.7	21
Malaria	C	0	0	0	1	1.3	8
Measles (Rubeola)	C	0	0	0	2	3.3	2
Meningitis, Aseptic/Viral	C,P,S	5	5	13	20	26.3	184
Meningitis, Bacterial	C,P,S	3	6	13	9	12.7	39
Meningitis, Other/Unknown	C	1	0	1	7	7.7	32
Meningococcal Disease	C,P	0	0	3	0	0.7	1
Mumps	C,P	0	0	3	6	6.0	15
Pertussis	C,P,S	70	60	223	210	219.0	1,164
Rabies, Animal	C	0	2	2	3	1.7	16
Rocky Mountain Spotted Fever	C,P	0	0	0	1	0.7	3
Salmonellosis (Non-Typhoid/Non-Paratyphoid)	C,P	47	30	121	99	90.0	576
Shiga toxin-Producing E. coli (including O157)	C,P	6	4	12	7	7.3	288
Shigellosis	C,P	19	17	57	61	40.0	335
Typhoid Fever	C,P	0	0	0	1	1.0	2
Vibriosis	C,P	1	1	2	7	6.7	50
West Nile Virus Infection	C,P	0	0	0	0	0.0	2
Yersiniosis	C,P	5	3	11	9	5.0	62
Zika Virus	C,P	0	0	1	3	4.3	20

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 5. Select Enteric Infections by Month
April 2017 – March 2018

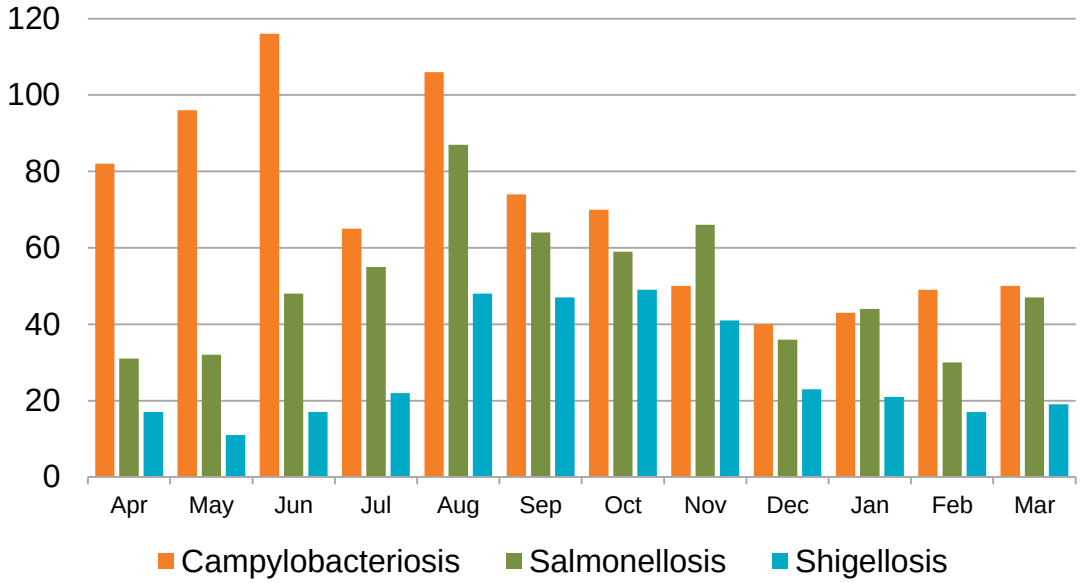


Figure 6. Select Vaccine-Preventable Infections by Month
April 2017 – March 2018

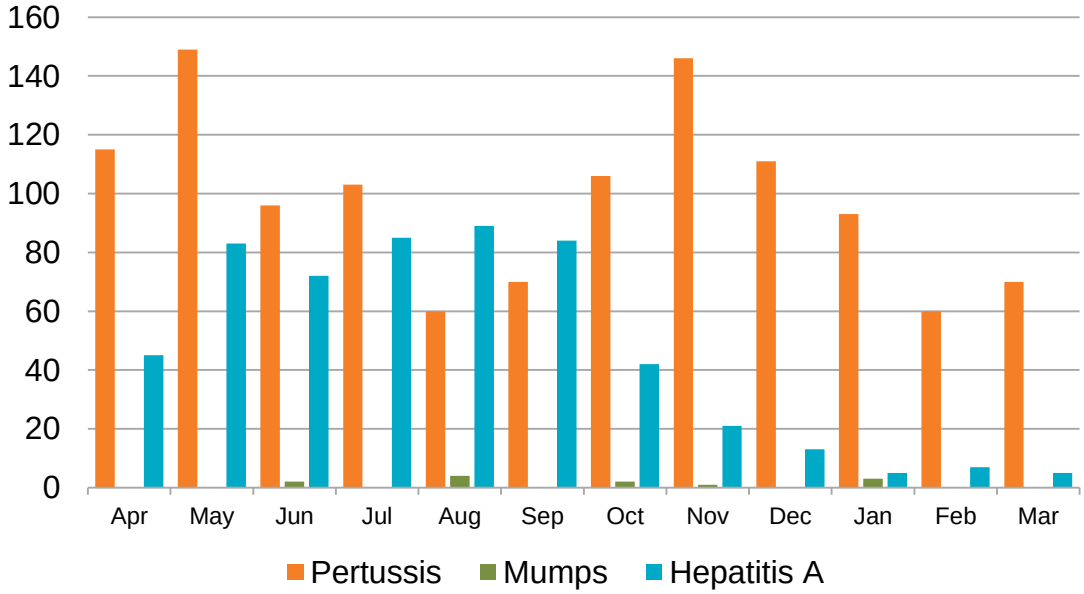


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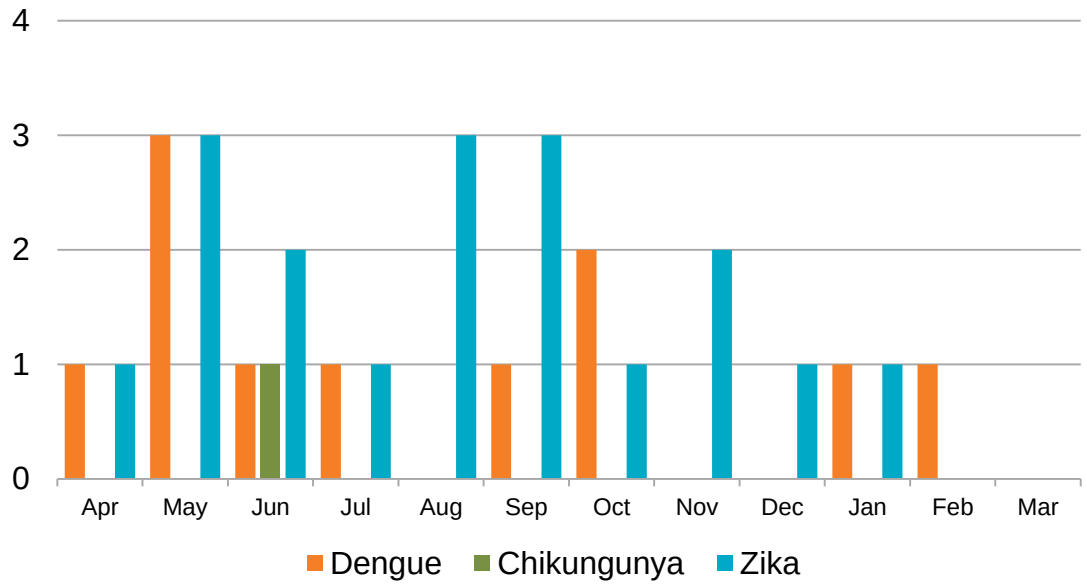
Figure 7. Select Vector-Borne Infections by Month
April 2017 – March 2018



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.