

RICKETTSIAL DISEASE

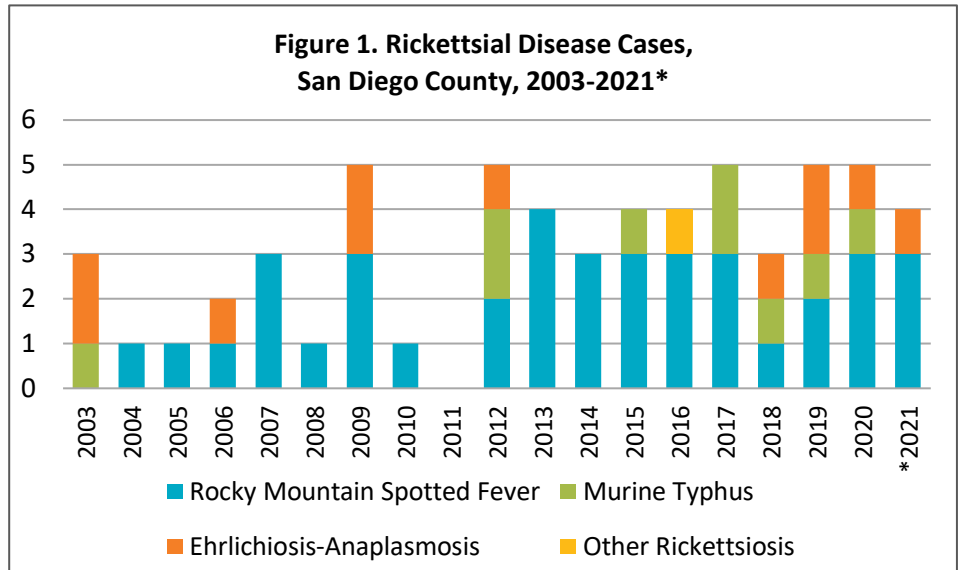
The rickettsioses are a group of infections caused by obligate intracellular bacteria in the order *Rickettsiales* with a worldwide and varied distribution. These include tick-borne spotted fevers (including Rocky Mountain Spotted Fever), murine (flea-borne) typhus, epidemic louse-borne typhus, mite-borne scrub typhus, and tick-borne ehrlichiosis and anaplasmosis.

Rocky Mountain Spotted Fever (RMSF), caused by *R. rickettsia*, is the most familiar and severe of the spotted fever rickettsioses. In the United States, the principal arthropod vector varies by region, with the American dog tick in the eastern and central United States, the Rocky Mountain wood tick in the northern and central United States, and the brown dog tick in the southwestern United States and Mexico.

Nationally, disease rates have increased steadily since spotted fever rickettsiosis became reportable in the 1920s, peaking in 2017 with a [national incidence](#) of 6,248. Locally, in San Diego County, incidence has remained steady from one to four cases per year across the last decade. However, mounting case reports have caused concern for a virulent strain of bacteria, carried by the Mexican brown dog tick, causing [outbreaks in Mexicali](#) and other areas of Baja California and Mexico, and crossing the US-Mexico border in [several fatal cases](#).

The incubation period of RMSF is 2-14 days after inoculation. Common symptoms include abrupt onset of fever and headache followed by, in 90% of cases, a characteristic petechial rash in a distribution that may include the palms and soles two to four days after initial symptoms. As with other rickettsial diseases, lab findings include thrombocytopenia, leukopenia, and hyponatremia. If not promptly recognized and treated, RMSF can quickly progress to multiorgan disease which may include hepatitis with coagulopathy, gastrointestinal bleeding, digital necrosis, encephalitis, pulmonary edema, arrhythmia, and other serious complications. Given the potential severity of disease and high mortality rate (3-5% with early recognition and treatment, 20-80% when untreated), most if not all cases require hospitalization.

Diagnosis of RMSF occurs via polymerase chain reaction or serological studies. Careful history taking, including travel and exposure history, and physical exam are essential for the diagnosis of RMSF, especially in the setting of prolonged fever and rash. Of note, in upwards of 45% of cases, there is no known tick bite in the history, thus tick exposure should not be mandatory for [consideration of RMSF](#).



*2021 data are year-to-date; current as of 12/1/2021. Data are provisional and subject to change as additional information becomes available. Grouped by CDC disease years.

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 identifies, investigates, registers, and evaluates 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, visit the [Data and Reports](#) page on the Epidemiology Program website (www.sdepi.org) and click on the subscribe link.



RICKETTSIAL DISEASE, continued

The antibiotic of choice for treatment of RMSF is doxycycline. When suspected, initiation of empiric doxycycline should not be delayed while awaiting laboratory or microbiological confirmation. Despite historical concerns for the adverse effects of tetracyclines (specifically, discoloration of teeth in children), [doxycycline](#) has been deemed by notable authorities, including the American Academy of Pediatrics, as safe to use in children for under 28 days, and is an essential first-line agent in the treatment of RMSF.

Murine typhus is another notifiable rickettsial disease endemic to Southern California, spread by infected fleas that transmit *R. typhi* from their rat reservoir to humans. Early symptoms are, again, non-specific (fever, chills, headache, body aches, abdominal pain, nausea, vomiting, and cough) and usually occur one to two weeks post-inoculation. Rash may also occur. Unlike with RMSF, illness is rarely severe and may even be self-limited. However, treatment with doxycycline should not be delayed while awaiting serological testing as multi-organ disease has been reported.

Ehrlichiosis and anaplasmosis are another group of spring and summer-time tick-borne illnesses. Although found more frequently in the southeastern and northeastern region of the United States, cases have been reported in Mexico, throughout Latin America, and sporadically in San Diego County. While anaplasmosis is rarely reported in children, Ehrlichiosis can be a severe disease presenting with fever, headache, myalgia, rash (maculopapular or petechial), gastrointestinal symptoms, altered mental status, and lymphadenopathy that may require intensive care. Empiric treatment with doxycycline is justified in the appropriate setting while awaiting serological diagnosis.

The Centers for Disease Control and Prevention has many [communication](#) and healthcare [provider](#) resources available.

Resources

United States

- [Centers for Disease Control and Prevention \(CDC\) Ticks website](#)
- [CDC RMSF website](#)
- [CDC Murine \(Flea-borne\) Typhus Fever website](#)
- [Diagnosis and Management of Tickborne Rickettsial Diseases](#)
- [Tickborne Diseases of the United States: A Reference Manual for Healthcare Providers](#)
- [Rocky Mountain Spotted Fever \(and other tickborne diseases\) Toolkit for Healthcare Providers](#)

California

- [California Department of Public Health \(CDPH\) Tickborne Diseases website](#)
- [CDPH Flea-borne Typhus website](#)
- [California Endemic Tickborne Diseases At-a-Glance](#)

San Diego County

- [San Diego County Vector Control Program website](#)

Rocky Mountain Spotted Fever (RMSF) Can Be Deadly

RMSF is spread by the bite of an infected tick.

RMSF symptoms include a fever with

- Headache
- Upset stomach
- Rash (may occur later in illness)

See your healthcare provider immediately if you develop a fever

- after being bitten by a tick
- after spending time in areas with ticks

Remember, you may not know you have been bitten by a tick.

Doxycycline saves lives!

- Best treatment for suspected RMSF in children and adults
- Treatment needed early when RMSF is suspected
- Does NOT cause tooth staining in children when used to treat RMSF

Prevent tick bites

- Check for ticks on people and pets daily
- Wear insect repellent
- Treat pets for ticks

For more information about RMSF and doxycycline, visit our website: www.cdc.gov/rmsf

Adapted from a prior County of San Diego Monthly Communicable Disease Report, [October 2019](#).

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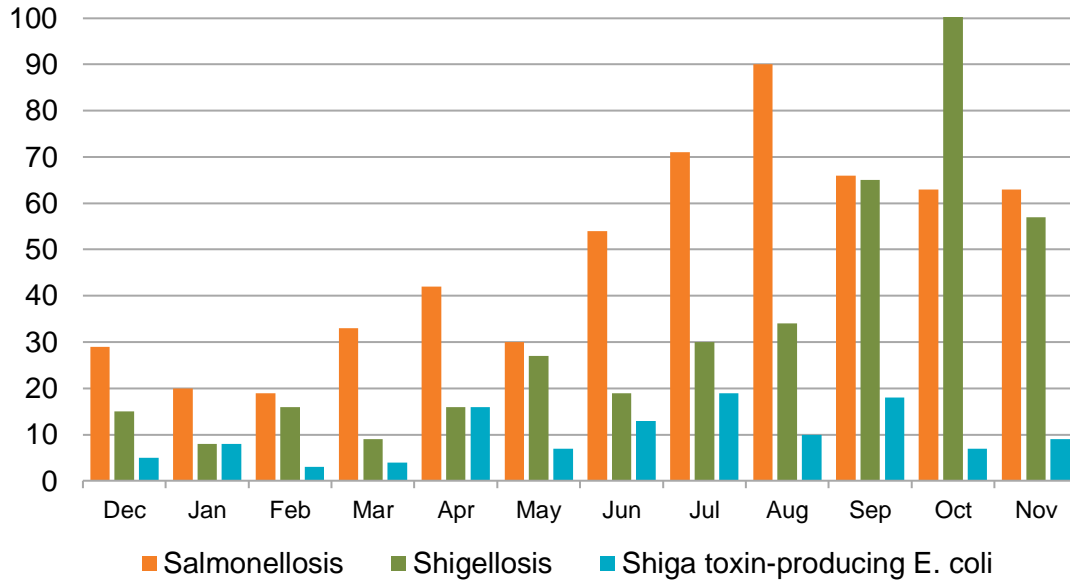


Table 2. Select Reportable Diseases		2021			Prior Years		
		Current Month	Prior Month	Year-to-Date (YTD)	2020 YTD	Avg YTD, Prior 3 Years	2020 Total
Disease and Case Inclusion Criteria (C,P,S)							
Botulism (Foodborne, Infant, Wound, Other)	C,P	0	0	2	2	4.7	2
Brucellosis	C,P	0	1	3	0	1.0	0
Campylobacteriosis	C,P	72	74	823	618	779.7	646
Chickenpox, Hospitalization or Death	C,P	0	0	3	0	2.0	0
Chikungunya	C,P	0	1	1	1	3.3	1
Coccidioidomycosis	C	6	18	397	488	381.0	540
Cryptosporidiosis	C,P	5	5	48	29	69.7	29
Dengue Virus Infection	C,P	1	1	3	5	14.3	5
Encephalitis, All	C	2	0	24	35	43.3	35
Giardiasis	C,P	9	18	139	137	189.0	146
Hepatitis A, Acute	C	0	0	9	15	20.3	15
Hepatitis B, Acute	C	0	0	14	7	7.3	8
Hepatitis B, Chronic	C,P	69	85	750	592	748.7	656
Hepatitis C, Acute	C,P	1	1	54	25	34.0	25
Hepatitis C, Chronic	C,P	201	292	3,222	3,525	3,797.3	3,826
Legionellosis	C	8	4	54	43	49.0	49
Listeriosis	C	0	1	6	18	14.3	21
Lyme Disease	C,P	0	0	3	6	8.0	6
Malaria	C	0	3	8	6	7.0	7
Measles (Rubeola)	C	0	0	0	0	0.7	0
Meningitis, Aseptic/Viral	C,P,S	2	4	39	69	128.3	73
Meningitis, Bacterial	C,P,S	0	2	17	20	29.0	20
Meningitis, Other/Unknown	C	0	1	20	28	23.7	28
Meningococcal Disease	C,P	0	0	1	4	7.3	4
Mumps	C,P	0	0	1	16	28.7	16
Pertussis	C,P,S	4	7	54	218	518.3	220
Rabies, Animal	C	0	0	4	8	7.3	8
Rocky Mountain Spotted Fever	C,P	0	1	3	3	2.0	3
Salmonellosis (Non-Typhoid/Non-Paratyphoid)	C,P	63	63	551	460	612.0	489
Shiga toxin-Producing <i>E. coli</i> (including O157)	C,P	9	7	114	103	169.3	108
Shigellosis	C,P	57	106	387	225	330.0	240
Typhoid Fever	C,P	0	0	9	4	4.0	4
Vibriosis	C,P	2	2	50	37	49.3	39
West Nile Virus Infection	C,P	0	0	3	1	2.0	1
Yersiniosis	C,P	1	1	18	29	33.0	29
Zika Virus	C,P	0	0	0	0	5.3	0

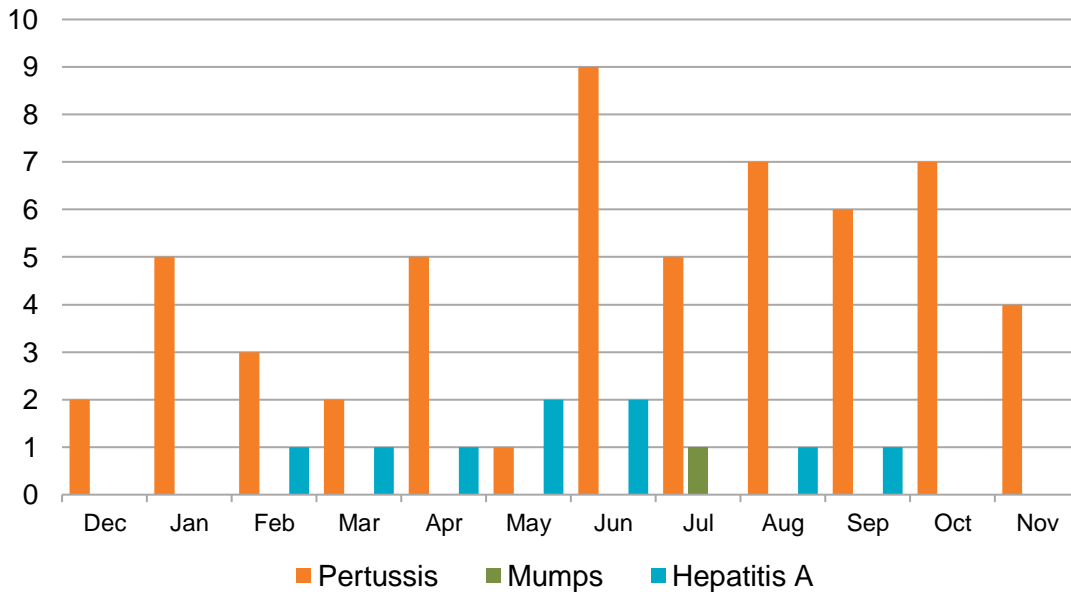
Case counts are provisional and subject to change as additional information becomes available. Cases are grouped into calendar months and calendar years on the basis of the earliest of the following dates: onset, lab specimen collection, diagnosis, death, and report received. Counts may differ from previously 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 2. Select Enteric Infections by Month
December 2020 – November 2021**

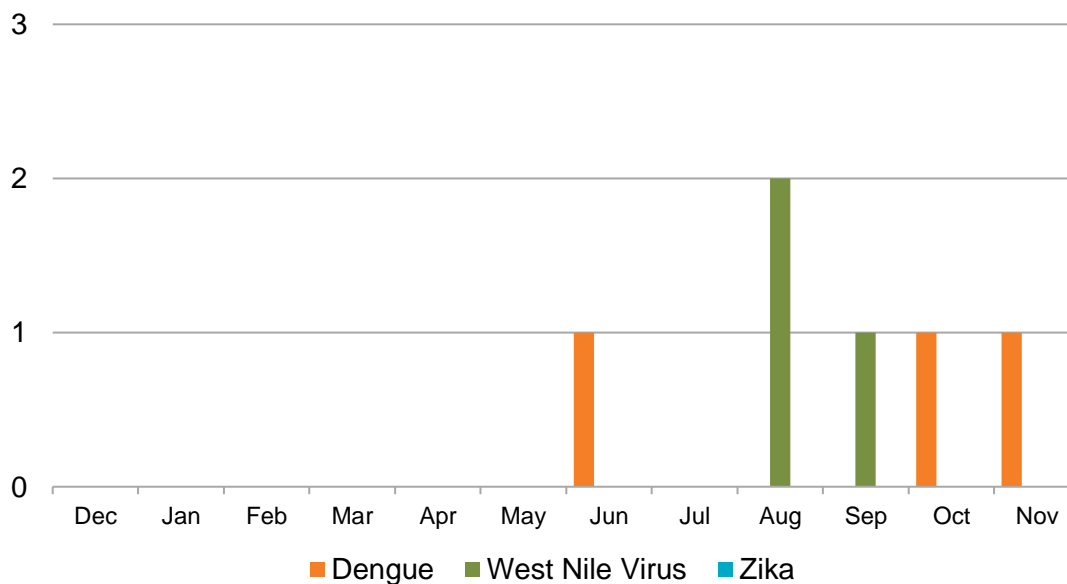


**Figure 3. Select Vaccine-Preventable Infections by Month
December 2020 – November 2021**



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**Figure 4. Select Vector-Borne Infections by Month
December 2020 – November 2021**



All of the dengue and Zika virus cases are travel-associated. For additional information on Zika cases, see the [HHSA Zika Virus webpage](#). For more information on West Nile virus, see the [County West Nile 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 this effort.

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>.