EPIDEMIOLOGY AND IMMUNIZATION SERVICES BRANCH

MONTHLY COMMUNICABLE DISEASE REPORT

MAY 2022

Volume 6, Issue 5: June 24, 2022

HANTAVIRUS

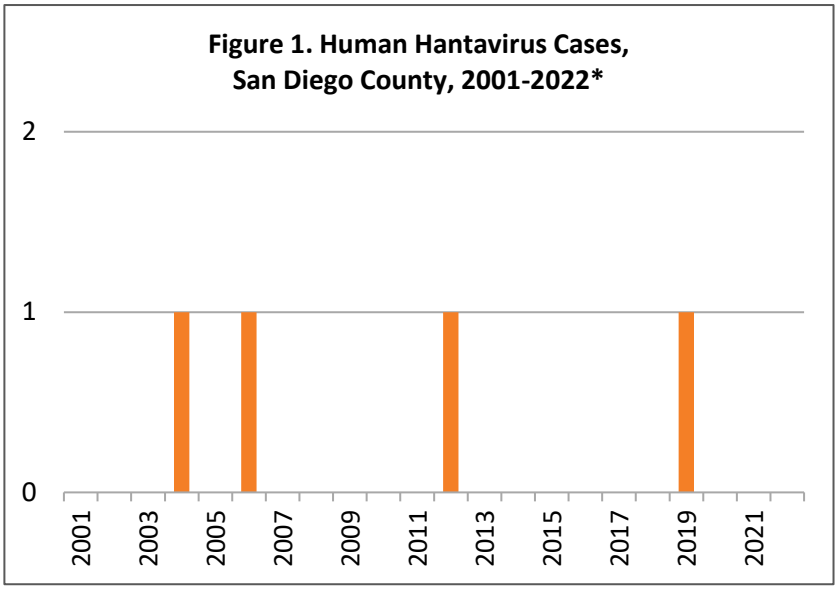
Hantaviruses are a family of viruses that result in different syndromes depending on location. In North and South America, hantaviruses are referred to as “New World” and can manifest as hantavirus pulmonary syndrome (HPS). In Europe and Asia, infection with hantavirus may lead to hemorrhagic fever with renal syndrome (HFRS) and is termed “Old World.”

HPS is an acute cardiopulmonary syndrome that was described during a 1993 outbreak in the Four Corners region of the United States. Experts estimate that mortality rates of HPS are between 30% and 50%. HPS usually happens in isolated or sporadic incidents, although an outbreak was investigated in Yosemite National Park in 2012.

Since surveillance began in 1993 through the end of 2020, there have been 833 cases of hantavirus infection reported in the United States. During the same period, there have been 89 cases reported in California. Since 2004, San Diego County has detected 4 cases; only the first case was locally acquired.

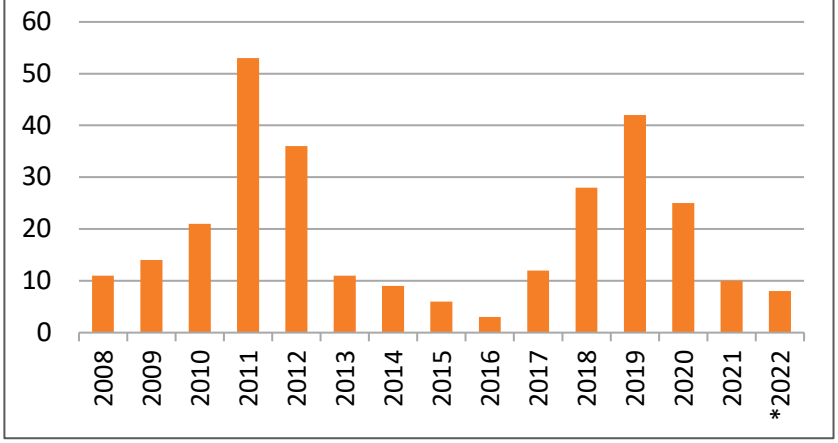
Various rodents in the United States serve as vectors for hantavirus, including the cotton rat, rice rat, deer mouse, and white-footed mouse. Each specific rodent host harbors its own hantavirus serotype. Virus is shed in the urine, feces, and saliva of the rodent; spread to humans occurs through inhalation from aerosolized virus following the disruption of nesting materials or rodent feces. Less commonly, hantavirus can be spread by animal bites.

Figure 1. Human Hantavirus Cases, San Diego County, 2001-2022*



Data for 2022 is year to date; current as of 6/15/2022. Data are provisional and subject to change.

Figure 2. Hantavirus Detections in Mice, San Diego County, 2008-2022*



Data for 2022 is year to date; current as of 3/23/2022. Data are provisional and subject to change.
Source: County of San Diego Department of Environmental Health and Quality Vector Control Program

In San Diego County, deer mice are the main vector for hantavirus. The County of San Diego Vector Control Program conducts routine surveillance for hantavirus in mice. The number of mice testing positive for hantavirus has ranged from 3 to 42 over the past 10 years. The variation can be due to changes in the mouse population (e.g., increased population after rainy years), and changes in testing frequency. Detections happen year-round, and while most positive mice are found in rural areas, some detections may occur along canyons or other areas where people interface with undeveloped areas.

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.

HANTAVIRUS, continued

Because hantavirus is rare, its incubation time remains uncertain. Nevertheless, most recorded cases present 1 to 8 weeks post-rodent exposure. Initially hantavirus appears to have a clinical presentation similar to influenza, including fever, chills, and muscle aches. The individual may feel better for a short time, but after 1 or 2 days, breathing becomes labored. At this point, the infected individual quickly decompensates, with dry cough, malaise, nausea/vomiting, headache, and shortness of breath all evident. Hantavirus infections are tied to vascular leakage that could be immune mediated. A lack of animal models makes pathophysiology difficult to determine.

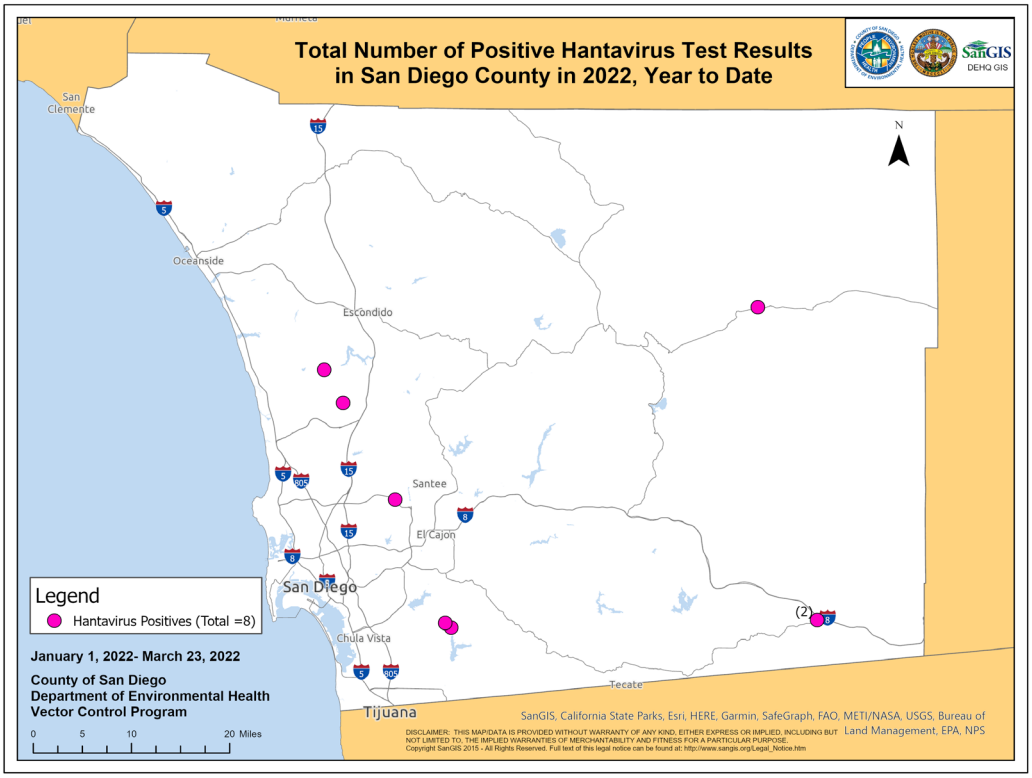
HPS is characterized by bilateral interstitial pulmonary infiltrates and respiratory compromise, whereas non-HPS hantavirus is a febrile illness with nonspecific viral symptoms such as fever, chills, headache, and GI. No cardiopulmonary symptoms are evident with non-HPS hantavirus.

Although early diagnosis can be difficult, fever, fatigue, and history of exposure to rodents may help distinguish hantavirus infection from other viral etiologies on the differential. HPS is diagnosed by a positive serological test, viral antigen demonstrated by immuno- histochemistry, or amplifiable viral RNA sequences in blood or tissue.

The treatment of hantavirus is supportive. Healthcare providers who suspect a patient is infected with hantavirus should provide supplemental oxygen, avoid fluid resuscitation, administer inotropes early for hypotension, conduct a 5-point hantavirus screen, and notify the San Diego County Epidemiology Program for diagnostic testing. Early transfer to a facility with ventilation and ECMO should be considered.

Prevention is key to curbing the chance of being infected with hantavirus. Many people who develop HPS are in routine contact with rodents or droppings in the home or workplace. It is important to keep the home or workplace clean, seal holes and gaps in the home/garage, and place traps to reduce infestation, as well as to avoid leaving food lying around. Wet cleaning methods should be used to clean droppings, urine, and nesting materials. The Vector Control Program provides information about rodent exclusion and safe cleaning practices.

Figure 3. Hantavirus Detections in Mice by County of San Diego Vector Control Program



Source: County of San Diego Department of Environmental Health and Quality Vector Control Program

Resources

- Centers for Disease Control and Prevention (CDC) Hantavirus website
- California Department of Public Health (CDPH) Hantavirus Pulmonary Syndrome website
- County of San Diego Department of Environmental Health and Quality Vector Control Program Hantavirus website

Suggested citation: Saleh F, Nelson JA, Shah S. Hantavirus. County of San Diego Monthly Communicable Disease Report 2022; 6(5):1-2.

Table 1. Select Reportable Diseases		2022			Prior Years		
Disease and Case Inclusion Criteria (C,P,S)		Current Month	Prior Month	Year-to-Date (YTD)	2021 YTD	Avg YTD, 2019-2021	2021 Total
Botulism (Foodborne, Infant, Wound, Other)	C,P	0	0	0	2	0.7	3
Brucellosis	C,P	0	0	2	1	0.7	3
Campylobacteriosis	C,P	106	78	326	321	313.0	904
Chickenpox, Hospitalization or Death	C,P	0	0	0	3	1.3	3
Chikungunya	C,P	0	0	1	0	0.0	2
Coccidioidomycosis	C	23	29	161	216	201.0	510
Cryptosporidiosis	C,P	6	7	21	14	17.3	53
Dengue Virus Infection	C,P	1	0	2	0	2.0	2
Encephalitis, All	C	2	1	7	19	19.3	36
Giardiasis	C,P	16	9	63	55	75.0	167
Hepatitis A, Acute	C	1	11	13	5	9.3	10
Hepatitis B, Acute	C	0	2	8	10	5.7	16
Hepatitis B, Chronic	C,P	68	78	391	297	320.3	810
Hepatitis C, Acute	C,P	3	4	32	45	32.0	74
Hepatitis C, Chronic	C,P	265	253	1,354	1,624	1,664.7	3,581
Legionellosis	C	3	0	25	25	23.7	63
Listeriosis	C	2	2	4	0	2.3	8
Lyme Disease	C,P	0	0	1	3	2.3	14
Malaria	C	1	1	4	3	3.7	8
Measles (Rubeola)	C	0	0	0	0	0.0	0
Meningitis, Aseptic/Viral	C,P,S	4	7	24	27	37.7	48
Meningitis, Bacterial	C,P,S	2	3	13	11	12.7	22
Meningitis, Other/Unknown	C	1	0	3	11	13.3	34
Meningococcal Disease	C,P	0	0	0	1	3.7	1
Mumps	C,P	1	0	2	0	9.0	2
Pertussis	C,P,S	5	6	26	16	160.7	69
Rabies, Animal	C	0	0	1	1	1.0	4
Rocky Mountain Spotted Fever	C,P	0	0	0	1	0.7	2
Salmonellosis (Non-Typhoid/Non-Paratyphoid)	C,P	47	40	177	144	170.3	583
Shiga toxin-Producing *E. coli* (including O157)	C,P	10	17	64	40	57.7	138
Shigellosis	C,P	26	25	125	76	99.7	432
Typhoid Fever	C,P	0	2	10	6	4.7	10
Vibriosis	C,P	0	0	3	5	9.3	51
West Nile Virus Infection	C,P	0	0	0	0	0.0	3
Yersiniosis	C,P	6	4	16	11	16.3	22
Zika Virus	C,P	0	0	0	0	1.0	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 4. Select Enteric Infections by Month
June 2021 – May 2022

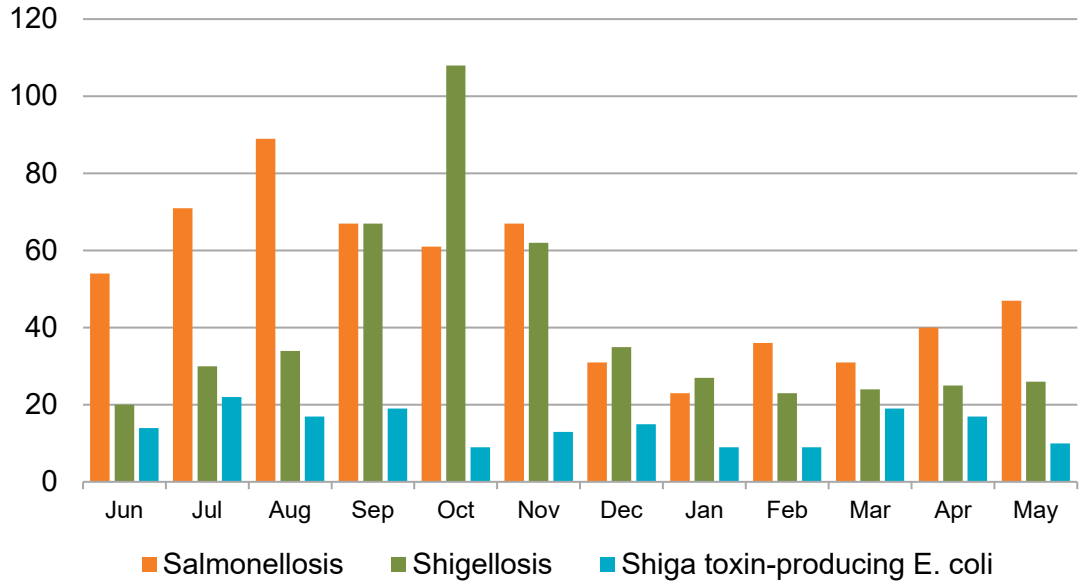
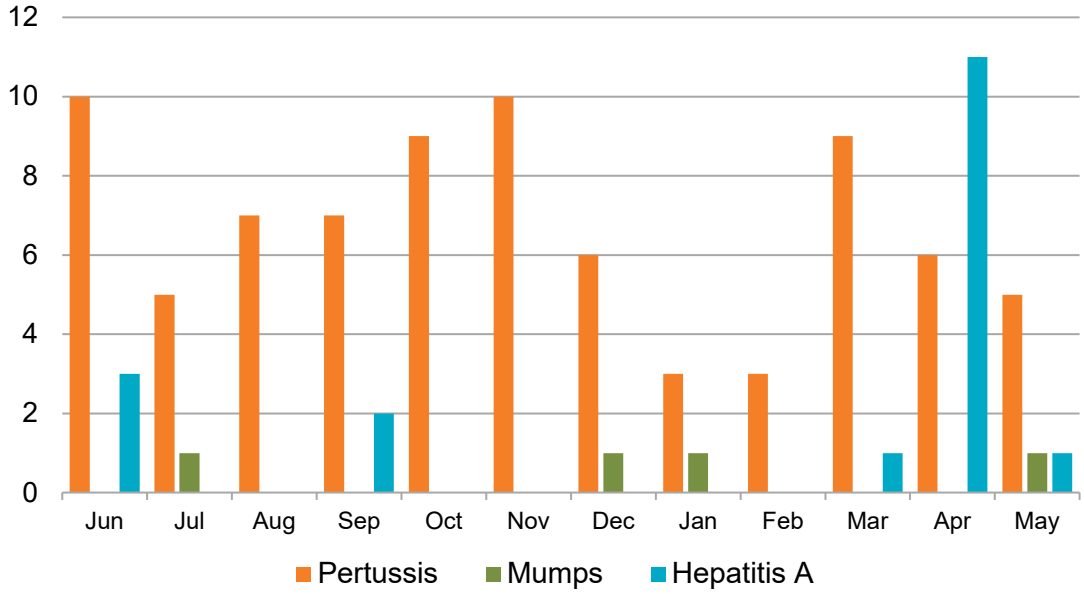
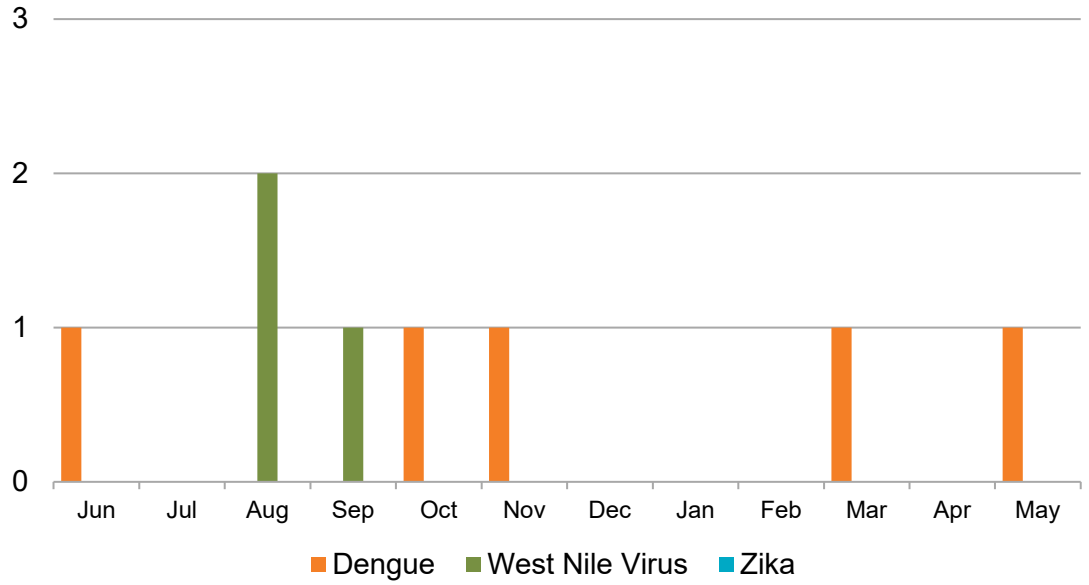


Figure 5. Select Vaccine-Preventable Infections by Month
June 2021 – May 2022



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
June 2021 – May 2022



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.