



# PHYSICIANS' BULLETIN

## VECTOR BORNE DISEASES

***Malaria, mosquito-borne encephalitis, plague, tularemia, Lyme Disease, Rocky Mountain Spotted Fever, and Hantavirus have been documented to occur in San Diego County. With seasonal increases in vector populations and human outdoor activities, a number of vector-borne and other zoonotic diseases should be considered when seeing patients with recent history of exposure to arthropods, rodents and other vertebrates of public health significance, particularly patients with history of travel to endemic areas in and outside the United States. Because of recent findings in local rodents, hantavirus is highlighted.***

Human malaria cases are reported to the San Diego County Public Health Services every year. While all cases of malaria reported in this county for nearly two decades have been imported, locally acquired cases of malaria have occurred here during the mid to late 1980's, and very competent anophelene malaria vector mosquitoes are relatively common in this county. Mosquito-borne encephalitis cases are also reported every year. Three mosquito-borne virus agents of encephalitis are routinely or intermittently found locally: Saint Louis encephalitis (SLE), Western Equine Encephalitis (WEE), and West Nile Virus (WNV). Birds are the primary reservoirs for mosquito borne encephalitis, and several mosquito species found in local urban and rural areas are capable of transmitting the viral agents of encephalitis.

Tick borne diseases which occur in San Diego County include Lyme Disease (LD) and Rocky Mountain Spotted Fever (RMSF). In San Diego County, LD spirochetes are transmitted by the Western Black Legged tick, *Ixodes pacificus*, and RMSF rickettsiae are transmitted by the Pacific Coast Tick, *Dermacentor occidentalis* and the American Dog Tick, *D. variabilis*. All three tick species are fairly common in San Diego County. The primary reservoirs for LD in California are small rodents, with deer serving as secondary reservoirs. The reservoirs for RMSF are the vector ticks *D. occidentalis* and *D. variabilis*, which maintain the pathogen through transovarial and transtadial transmission.

Tularemia, commonly known as "rabbit fever" and "deer fly fever", can also be transmitted by hard ticks (*Dermacentor* spp.). However, transmission of the causative agent, *Francisella tularensis*, may involve deer flies as vectors, or inoculation with contaminated water, or blood or tissue while handling infected animal carcasses particularly those of rabbits, squirrels, voles, mice and rats. Tularemia has

also been contracted from ingestion of contaminated water, or by inhalation of dust from contaminated soil, and rarely from animal bites (including dogs, cats, coyotes, squirrels, skunks and hogs whose mouth contains the pathogen, probably acquired from eating an infected animal). Handling of contaminated animal skins (pelts) has also resulted in transmission of the disease.

Plague, which is caused by *Yersinia pestis*, has been found in this county in wild animals, primarily ground squirrels. Because bubonic plague is transmitted by rodent fleas, patients presenting with symptoms compatible with plague should be asked about possible exposures to fleas and/or their wild animal hosts, particularly in rural and mountainous areas. If illness with plague progresses to pneumonia, pneumonic plague may be transmitted directly among animals and humans.

**EPIDEMIOLOGY:** For epidemiologic consultations contact the San Diego County Community Epidemiology Branch at (619) 515-6620 Monday-Friday 8:00 AM to 5:00 PM, or at (858) 565-5255 on evenings and weekends.

**LABORATORY:** The San Diego County Public Health Laboratory (PHL) offers testing for selected vector-borne diseases. For information and specific instructions on collection and submission of appropriate specimens call the PHL at (619) 692-8500.

**VECTOR PREVENTION AND CONTROL:** For information on vector prevention and control, physicians may refer clients to the County Department of Environmental Health, Vector Surveillance and Control Program (VSC). Ticks may be saved and sent to the VSC for identification. Call for instructions at (858) 694-2888.

**COUNTY VETERINARIAN'S OFFICE:** Information on zoonotic diseases may also be obtained from the Animal Diseases Diagnostic Laboratory (County Veterinarian's Office) at (858) 694-2838.

# HANTAVIRUS

Wild rodents are the primary reservoirs for hantavirus. Infected rodents shed virus in their saliva, urine and feces. Infection primarily occurs when dried or fresh materials contaminated by rodent saliva or excreta are disturbed and inhaled as aerosols or are directly introduced into broken skin. Infection has also occurred through the bite of an infected rodent. Initial symptoms are similar to less severe viral infections, with most cases experiencing fever, myalgia and chills. Other symptoms include dyspnea, nonproductive cough, headache, nausea, vomiting, diarrhea and malaise. The illness progresses rapidly to severe respiratory failure and shock. The mortality rate is approximately 40%-50%. Testing for antibody to the viral agent that causes hantavirus pulmonary syndrome (HPS) can be done by the State Viral and Rickettsial Disease Laboratory (VRDL). An acute blood (5-10 ml in a red/gray top tube) and a case report questionnaire should be submitted to the Public Health Laboratory, which will forward the specimen to the State. A convalescent serum should be collected 10 to 14 days after onset as well.

Physicians should advise individuals whose activities may result in exposure to hantavirus of the following:

- Avoid areas, especially indoors, where wild rodents are likely to have been present.
- When cleaning areas contaminated with rodent droppings, urine and nesting material, make sure not to stir up dust by sweeping, vacuuming or blowing the contaminated areas. Wear rubber, latex, vinyl or plastic gloves. Spray the contaminated areas with a disinfectant or diluted bleach (1 part bleach to 10 parts water) and let it soak for at least 5 minutes. Use paper towels to pick up the droppings and urine; place all waste in double plastic bags, each tightly sealed, and discard in the trash. Wash hands thoroughly afterward.
- Do not touch or handle live or dead rodents with your bare hands. Spray dead rodents with diluted bleach, and wear gloves when handling them; dispose of the carcasses in the same way as droppings. Wash hands thoroughly after handling any dead animal.
- Keep rodents out of buildings by removing stacked wood, rubbish piles and discarded junk from around homes and sealing any holes where rodents could enter. Keep food in tightly sealed containers and store away from rodents.
- If there are large numbers of rodents in a home or other building, contact a pest control service to remove them.

Additional information on vector-borne and zoonotic diseases is available in prior year Physicians' Bulletins posted on the San Diego County Emergency Medical Alert Network (EMAN). Physicians are encouraged to enroll in EMAN, a secure communications system providing important health information to local medical and public safety officials relating to unusual disease occurrence and other potential threats to public health in San Diego County. To enroll, go to [www.emansandiego.com](http://www.emansandiego.com) and click on the "Subscribe to EMAN" link at the top of the page.

## WEB-BASED REPORTING IS NOW AVAILABLE TO HEALTH CARE PROVIDERS

The County of San Diego Health and Human Services Agency (HHS) is now making Visual Confidential Morbidity Report (VCMR) available to health care providers as an additional reporting tool. VCMR is a secure, web-based reporting and case management system acquired by HSSA to enhance and facilitate reporting of communicable and non-communicable diseases specified in the California Code of Regulations (CCR). Physicians, infection control practitioners, medical examiners, nurse practitioners, physician assistants, school nurses, nurse midwives, designated administrators of health facilities and clinics are encouraged to register and use VCMR. There is no cost to health care providers to register and use VCMR.

The key features and benefits offered by VCMR include:

- A Web-based reporting system
- HIPAA compliant secure electronic transfer of sensitive information
- Capacity to maintain historical patient data sent to the County of San Diego Public Health Services (PHS)
- Acknowledgement and receipt of report made to PHS
- Improved technology to enhance early detection of diseases, clusters, and outbreaks by PHS, leading to early intervention to reduce the spread of illness.
- Covers most reportable diseases specified in the CCR, Title 17, Section 2500.

To learn more about VCMR or to apply for participation in the system, please contact the San Diego County Community Epidemiology Branch by telephone at (619) 515-6620 Monday-Friday 8:00 AM to 5:00 PM (ask for VCMR Support), or by email at [vcmr.hhsa@sdcounty.ca.gov](mailto:vcmr.hhsa@sdcounty.ca.gov)

### - REPORTING -

Health care providers are urged to promptly notify the County Community Epidemiology Branch of any reportable communicable and non-communicable disease and condition at:

(619) 515-6620, M-F 8:00 AM to 5:00 PM;  
(858) 565-5255, Evenings & Weekends;  
FAX (619) 515-6644

*The Physicians' Bulletin is published on an as needed basis by the County of San Diego Health and Human Services Agency to provide updated information on health issues of concern to San Diego County's medical community.*

Board of Supervisors  
Greg Cox, District 1  
Dianne Jacob, District 2  
Pam Slater-Price, District 3  
Ron Roberts, District 4  
Bill Horn, District 5

Chief Administrative Officer  
Walter F. Ekard

Director, Health and  
Human Services Agency  
Jean Shepard

Public Health Officer  
Nancy L. Bowen, M.D., M.P.H.

Chief, Community Epidemiology  
Michele M. Ginsberg, MD