



SELECTED ZONOOSES FOR CONSIDERATION

The documented occurrence of certain arthropod and vertebrate borne diseases in San Diego County warrants your consideration of a number of zoonotic illnesses when seeing patients with recent history of exposure to arthropods, rodents and other vertebrates of public health significance, particularly those patients with travel history to endemic areas within and outside the United States. Mosquito-borne encephalitis, malaria, Lyme Disease, Rocky Mountain spotted fever, plague, tularemia, hantavirus, and rabies are highlighted below for your review.

RABIES. This fatal acute viral encephalomyelitis is transmitted through virus-laden saliva of rabid animals. Initial symptoms are nonspecific and include onset of apprehension, headache, fever, malaise and sensory changes. The disease progresses with neurological symptoms, which may include insomnia, anxiety, confusion, slight or partial paralysis, excitation, hallucinations, agitation, hypersalivation, difficulty swallowing, and hydrophobia. Death usually occurs within days of the onset of symptoms. Human rabies can be prevented by eliminating exposure to rabid animals and administration of appropriate pre-exposure and post-exposure prophylaxis to those at risk. The diagnosis of rabies should be considered seriously in cases of encephalitis where the patient has lived or recently visited in an area where rabies is enzootic, even in the absence of a significant exposure history.

For the latest California Compendium on Rabies Control call (619) 515-6620, FAX: (619) 515-6644, or visit the California Department of Health Services website at: www.dhs.ca.gov/ps/dcdc/html/publicat.htm

RABIES PROPHYLAXIS. Because rabies is invariably fatal, post exposure prophylaxis (PEP) should be administered immediately whenever a patient is bitten, scratched or has other exposure, such as open wound, abrasion or mucous membrane contact with the saliva or nervous system tissue of a high risk animal. PEP should be administered immediately whenever a domesticated animal, such as a dog, cat or ferret, is not available for rabies testing or follow-up observation, regardless of the animal's vaccination status. If the animal is wild (non-domesticated), such as a bat, skunk, raccoon, fox, coyote, bobcat or other wild mammal, and it is not available for rabies testing, PEP should also be administered immediately. PEP should be seriously considered if a patient was asleep in a room where a bat is found dead or alive, and the animal is not available for rabies testing. PEP is not indicated if a patient

is bitten, scratched or otherwise exposed to a low risk animal, such as a mouse, rat, squirrel, guinea pig or hamster. For consultation about human exposure to rabies and animal laboratory testing and quarantines, contact the Community Epidemiology Division at (619) 515-6620.

PLAGUE: Plague, which is caused by *Yersinia pestis*, has been documented in San Diego County in wild animals, primarily ground squirrels. Patients should be asked about possible exposures to fleas and/or their wild animal hosts, particularly in rural and mountainous areas if symptoms are consistent for plague. The most common presentation in humans is lymphadenitis in nodes of the inguinal (90%), axillary or cervical area. The involved nodes are swollen and tender and may suppurate. Fever is often present. All forms of this bubonic plague, including those without lymphadenopathy, may progress to septicemic plague disseminating to various parts of the body. Secondary lung involvement may lead to pneumonia, possibly with mediastinitis or pleural effusion. Plague pneumonia may lead to person to person [or animal to person] transmission of respiratory droplets resulting in primary pneumonic or pharyngeal plague.

TULAREMIA: Commonly known as "rabbit fever" and "deer fly fever", this zoonotic disease is caused by the gram-negative coccobacillus *Francisella tularensis*. The disease manifests varyingly according to route of exposure and host response, but characteristically presents as an acute febrile illness. Most often patients present with an ulcer at the site of introduction, accompanied by swelling of regional lymph nodes, pharyngitis, ocular lesions, and pneumonia. Transmission may be through an arthropod bite, including hard (ixodid) ticks, less frequently by deer flies, by inoculation with contaminated water, blood or tissue while handling infected animal carcasses particularly those of rabbits, squirrels, voles, mice and rats. Tularemia can also be contracted from 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.

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.

MOSQUITO-BORNE ENCEPHALITIS. Saint Louis encephalitis (SLE) and western equine encephalitis (WEE) are the two main mosquito-borne virus agents of encephalitis in Southern California. Although West Nile Virus (WNV) has not yet been detected in California, because of ease of travel and the rapid westerly spread of WNV in mosquitoes and birds, this disease should also be considered in your diagnosis. Most people exposed to mosquito-borne encephalitis viruses remain asymptomatic or may present as nonspecific flu-like syndromes. Mild cases of SLE, WEE and WNV may occur as viral meningitis. Severe infections may include acute onset of headache, high fever, meningial signs, stupor,

disorientation, coma, tremors, occasionally convulsions in infants, coma, and spastic, but rarely flaccid paralysis. Physicians are requested to report all cases of encephalitis, aseptic meningitis, and atypical Guillain-Barre Syndrome to County Public Health Services.

If encephalitis, aseptic meningitis, or atypical Guillain-Barre Syndrome is part of the differential diagnosis, collect acute phase serum and CSF specimens without delay and contact the Community Epidemiology Division for instructions on submission to the California Department of Health Services.

MALARIA. Malaria in humans is caused by *Plasmodium falciparum*, *P. vivax*, *P. ovale* and *P. malariae*. Competent anophelene vector mosquitoes are relatively common in San Diego County, and locally acquired cases of malaria have occurred in this county during the mid to late 1980's. A history of mosquito bites should be reviewed in patients presenting with symptoms compatible with malaria, which include shaking chills, high fever, sweats, and headache. Because

of the cyclic nature of this disease, persons with mild symptoms should return when symptoms intensify and the parasite, which is not evident in the blood during mild symptoms, is once again present. If malaria is suspected, a thick and thin smear of peripheral blood should be obtained and examined for the presence of malaria parasites. The blood should be collected prior to therapy. Optimal results are obtained with blood collected during spikes of fever and with smears prepared from freshly collected uncoagulated blood. The smears and the blood (in purple top tubes with EDTA anticoagulant) should be delivered or sent to the Public Health Laboratory.

LYME DISEASE. *Borrelia burgdorferi*, the causative spirochete of Lyme Disease, has been found in the Western Black Legged tick, *Ixodes pacificus*, which is fairly common in San Diego County. Locally acquired Lyme Disease cases have also been reported in this county. Initial symptoms of Lyme Disease may include skin lesion/rash, frequently, but not always, annular (erythema migrans - EM), accompanied by flu-like symptoms, fever and muscle aches. Some individuals exhibit swollen lymph glands. Most

persons treated with appropriate antibiotics at this stage will have a quick recovery. Lack of treatment of Lyme Disease may result in long-term complications including disorders of the heart or nervous system, and arthritis. Because serological tests are not standardized, and their sensitivity is unclear, the patient should be treated based on clinical observations.

ROCKY MOUNTAIN SPOTTED FEVER. Rocky Mountain spotted fever, which is caused by *Rickettsia rickettsii*, is characterized by a sudden moderate to high fever, nausea, vomiting, severe headache, muscle pain, joint pain, chills, conjunctival injection, lack of appetite, abdominal pain, diarrhea, and a maculopapular rash (35% to 60% of patients) which appears on the extremities at first, including the palms and soles (50% to 80% of patients with rash), and rapidly spreading to much of the body. RMSF is transmitted by the Rocky Mountain wood tick, *Dermacentor andersoni*, in the western region of the US, and the American dog tick, *D. variabilis*, in the eastern region. Both tick vectors also serve as reservoirs, maintaining the pathogen in nature through transovarial and transtadial transmission.

For information on **West Nile Virus**, including questions and answers for clinicians, testing algorithm, referral of cases for testing, and case and specimen submission forms, visit the San Diego County Emergency Medical Alert Network (EMAN) website at: <http://www.emansandiego.com>

EMAN is a network dedicated to facilitating bi-directional confidential communication between San Diego County's medical community and public health and safety agencies in order to ensure rapid identification of and response to unusual disease events or public health emergencies.

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EPIDEMIOLOGY: For epidemiologic consultations contact the San Diego County Community Epidemiology Division 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: For a fee, the County Veterinarian's Office will test *Ixodes* ticks for Lyme Disease. Call for instructions at (858) 694-2838.

REPORTING REMINDER

Health care providers are urged to promptly notify the County Health and Human Services Agency, Epidemiology Division of any reportable communicable and noncommunicable disease & condition at:

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

REPORTING OF PESTICIDE RELATED ILLNESSES AND INJURIES

California physicians are required to promptly report any case of pesticide poisoning or any disease or condition caused by a pesticide to the local health officer by telephone within 24 hours. If the pesticide illness is a result of an occupational exposure, physicians are also required to (1) send a copy of the "Doctor's First Report of Occupational Injury or Illness" (DFR) to the local health officer within 7 days; (2) file the DFR with the worker's compensation insurance carrier or the selfinsured employer, within 5 days after initial examination, and (3) send a copy of the DFR to the California Division of Labor Statistics and Research, P. O. Box 420603, San Francisco, CA. 94142-0603.

Pesticides cover all substances or mixtures of substances intended to defoliate plants, regulate plant growth, or for preventing, destroying, repelling or mitigating any pest which may infest or be detrimental to vegetation, man, animals, or household. Pesticides include disinfectants and sanitizers used to mitigate microbial pests, but they do not include pharmaceuticals, which are

used for the treatment of humans and animals. A case seen as a pesticide poisoning or suspected as pesticide poisoning must be reported even if treated on a "first aid" basis only.

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.

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