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## HEALTH ADVISORY:

### Updated Practice Standard: Rabies Post-Exposure Prophylaxis (PEP)

April 5, 2022

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*This advisory is intended for emergency medicine, urgent care providers, infectious disease, primary care, internal medicine, family practice, pediatric, and OB/GYN providers. Please distribute as appropriate.*

**San Mateo County is a rabies endemic area! We need your help to control rabies in our county.**

#### **GUIDELINES FOR CLINICIANS:**

**For unvaccinated persons, the combination of human rabies immune globulin (HRIG) and vaccine is recommended regardless of the time interval between exposure and initiation of PEP.** If PEP has been initiated and appropriate laboratory diagnostic testing (i.e., direct fluorescent antibody testing) indicates that the animal that caused the exposure was not rabid, PEP may be discontinued.

#### **VACCINE USE:**

- A regimen of **four** 1-mL doses of FDA approved (HDCV or PCECV) vaccine should be administered intramuscularly to previously unvaccinated, immuno-competent individuals.
- The first dose of the 4-dose regimen should be administered as soon as possible, but can be initiated at any time after exposure. **The date of the first dose is considered to be day 0 of the PEP series. Additional doses should be administered on days 3, 7, and 14 after the first vaccination.**
- Adults should be given the vaccine in the deltoid area; the anterolateral aspect of the thigh is acceptable for children. The **gluteal area should not be used** because administration of vaccine in this area might result in a diminished immunologic response.
- Children should receive the same vaccine dose (i.e., vaccine volume) as adults.
- Previously vaccinated individuals only need 2 vaccine doses on days 0 and 3; HRIG should NOT be given.
- For persons with broadly defined immunosuppression, PEP should be administered using 5 doses of vaccine (on days 0, 3, 7, 14 and 28).

#### **IMMUNE GLOBULIN/HRIG USE:**

- HRIG is administered once on day 0 at the time PEP is initiated, in conjunction with human rabies vaccine.
- If HRIG was not administered when vaccination was begun on day 0, it can be administered up to, and including, day 7 of the PEP series.
- HRIG is administered to individuals who have never received a complete pre- or post-exposure regimen.





- If anatomically feasible, the full dose of HRIG (20 IU/Kg) is infiltrated around and into any wounds.
- Any remaining volume is injected intramuscularly at a site distant from vaccine administration such as the deltoid or the quadriceps (on the same side as the wound and on the opposite side of the rabies vaccine). The gluteal area should not be used.
- HRIG is administered regardless of whether a wound is evident or not. If there is no wound, such as following a bat-in-the-bedroom exposure, then administer the entire dose of HRIG in the quadriceps or deltoids.
- **HRIG should not be administered in the same syringe or at the same anatomic site as the first vaccine dose.** However, subsequent doses (i.e., on days 3, 7, and 14) of vaccine in the 4-dose vaccine series can be administered in the same anatomic location in which HRIG was administered.

#### **ANIMAL BITE REPORTING:**

Please help the San Mateo County Health Communicable Disease Control Program by filling out an animal bite report whenever you provide care to an individual who has been in contact with saliva or brain/nervous system tissue of an animal through a bite, open cut in the skin, or mucous membrane exposure (i.e., mouth or eyes). The form can be found on the Rabies Information for Medical Providers page at <http://smchealth.org/providers/rabies>.

Please fax the form to the Peninsula Humane Society and SPCA at 650-685-0102.

#### **BACKGROUND:**

**Rabies is a preventable zoonotic disease**, usually transmitted when the rabies virus is introduced into a bite wound, open cuts in skin or onto mucous membranes. In developed countries, rabies is usually a disease of wild carnivores, with sporadic spillover infection to domestic animals. In 2013, a young dog was surrendered to the San Mateo County Peninsula Humane Society and SPCA for euthanasia because of its aggressive behavior. The animal's brain tested positive for rabies and 8 people received rabies post-exposure prophylaxis (PEP).

Recent surveillance in the United States has identified four major animal reservoirs: bats, raccoons, skunks and foxes. A total of 4690 cases of animal rabies were reported in the U.S. in 2019. Wild animals accounted for 91.8 percent of all cases; raccoons represented the largest proportion of cases (32.9%), followed by bats (29.6%), skunks (19.5%), and foxes (7.7%) as the primary species confirmed with rabies. Domestic animals accounted for 8.2 percent of all rabid animals and included 66 dogs and 245 cats. California rabid animals accounted for 5.9 percent of all animal rabies cases nationwide in 2019. According to provisional data from the California Department of Public Health (CDPH), rabies was diagnosed in 185 wild animals in 2021. Bats (161, 87%) were the wild animal most frequently reported rabid, followed by skunks (20, 10.8%), foxes (3, 1.6%) and a cat (1, 0.5%). In 2021, four bats were confirmed to have had rabies in San Mateo County.



Since the 1980s, **bat variant rabies viruses have emerged as the dominant source associated with indigenous human deaths in the United States.** Of the 34 naturally acquired bat-associated human cases of rabies in the United States between 1990 and 2007, 8 reported confirmed or probable bat bite, 15 reported physical contact with a bat but no bite was documented and 11 did not report a bat encounter. Bats were the most frequently reported rabid animal in California in 2021 as they have been each year since 2000. During the last 20 years bats have accounted for 62 to 95 percent of all rabid animals identified in California. According to provisional data from California Department of Public Health, 1004 rabid bats were identified in California from 2017 to 2021, with 16 rabid bats identified in San Mateo County during that time period. Bats are considered a high-risk species as they can harbor and transmit the rabies virus, often without people even knowing they were exposed. Bite marks from bats are very small and often go unnoticed. Individuals who find a bat in their room when they awake or see a bat in the room of an unattended child, mentally impaired or intoxicated person, should seek medical advice and have the bat tested, if possible, even in the absence of an obvious bite wound. Patients who develop bat-associated rabies usually present with **atypical features**, including neuropathic pain, sensory or motor deficits, choreiform movements of the bitten limb, cranial nerve palsies, myoclonus and seizures.

After entry to the central nervous system, rabies causes an **acute, progressive encephalomyelitis**. The incubation period usually ranges from 1 to 3 months after exposure, but can range from days to years. Rabies is associated with the highest case fatality rate of any infectious disease, and there is no proven effective medical treatment after the development of clinical signs. Patients who don't receive prophylaxis prior to the onset of clinical symptoms usually do not survive. Two patients survived after being treated with the so-called "**Milwaukee protocol**" in the United States, but the treatment protocol failed in several other reports.

Twenty-five cases of human rabies have been reported in the United States in the past decade (2009-2018). Seven of these were contracted outside of the U.S. and its territories. Three cases of human rabies were identified in 2018 in residents of Delaware, Florida, and Utah. Though there were no human rabies cases reported in the United States during 2019 and 2020, five human rabies cases were identified in 2021 (including three deaths over a five-week period in late 2021) which prompted CDC to issue a press release and subsequent MMWR to raise awareness of the risks of rabies from bats in the US. The three deceased human rabies cases – one each in Idaho, Illinois and Texas – all had direct contact with bats in or around their homes and none received rabies PEP. Three cases of rabies were diagnosed in California residents between 2007 and 2020, the most recent in a Contra Costa County resident in 2012.

Rabies can be prevented by avoidance of exposure to the virus and initiation of prompt medical intervention when exposure does occur. In a recent study in the United States, approximately 23,000 persons per year were estimated to have been exposed to potentially rabid animals and received rabies post-exposure prophylaxis (PEP). **Prompt wound care and the administration of human rabies immune globulin (HRIG) and vaccine are highly effective in preventing human rabies following exposure.** According to the CDC, PEP is known to be



universally effective in preventing rabies when administered promptly and appropriately following an exposure. Of the >59,000 persons who die annually of rabies worldwide, the majority either did not receive any PEP, received some form of PEP (usually without HRIG) after substantial delays, or were administered PEP according to schedules that deviated substantially from current recommendations. In the United States, there has been an average of three fatal human cases per year since 1980. **While it is preferable to initiate PEP as soon as possible after an exposure, PEP should be administered after a documented or likely exposure regardless of the length of delay, provided that compatible clinical signs of rabies are not present in the exposed person.** The San Mateo County Communicable Disease Control Program gets about 250 reports of exposure to potentially rabid animals per year and PEP is recommended in about half of the cases.

### **ADDITIONAL RESOURCES:**

If you have questions or need more information regarding rabies, management of animal bites or reporting in general, please call **650-573-2346** during normal business hours and 650-363-4981 for after-hours emergencies. Please note that these phone numbers are intended for medical providers and should not be disseminated further.

For more detailed information about rabies and prevention of rabies, please visit the following:

- CDC [Rabies webpage](#)
- CDC [Avoid Risks of Rabies from Bats](#)
- CDC [ACIP Recommendations](#)
- CDPH [Rabies Surveillance and Prevention](#) webpage
- CDPH Veterinary Public Health Section [Reported Animal Rabies Data](#)
- Journal of the American Veterinary Medical Association [Rabies surveillance in the United States during 2019](#)
- CDC MMWR [Use of a reduced \(4-dose\) vaccine schedule for post exposure prophylaxis to prevent human rabies – recommendations of the Advisory Committee on Immunization Practices](#)
- CDC MMWR [Notes from the Field: Three Human Rabies Deaths Attributed to Bat Exposures – United States, August 2021](#)

*The Communicable Disease Control Program is available to help meet the reporting needs of, and answer questions for, San Mateo County providers. To report a disease or outbreak, please call 650-573-2346, Monday through Friday, 8:00 am to 5:00 pm, or fax a Confidential Morbidity Report (CMR) to 650-573-2919. You may download an electronic copy of the CMR at [smchealth.org/cmr](http://smchealth.org/cmr). Web-based reporting via CalREDIE is also available. Please contact us if you would like to know more about, and sign up for, web-based reporting. Non-urgent questions and/or general inquiries may be directed to [SMCCDControl@smcgov.org](mailto:SMCCDControl@smcgov.org).*

### **Categories of urgency levels:**

*Health Alert: conveys the highest level of importance; warrants immediate action or attention.*

*Health Advisory: provides important information for a specific incident or situation; may not require immediate action.*

*Health Update: provides information regarding an incident or situation; unlikely to require immediate attention.*