



Preventing Rabies after Animal Exposure

Patient Name _____ Date of Birth _____

Date of Recommendation: _____

Strength of Recommendation for Rabies Post-Exposure Prophylaxis (PEP):

- Strong Recommendation** (Significant rabies risk exposure; San Francisco Department of Public Health strongly urges post-exposure prophylaxis in this case)
- Permissive Recommendation** (Low risk exposure; cannot exclude the possibility that the patient was exposed to rabies; San Francisco Department of Public Health supports post-exposure prophylaxis)

Series Recommended:

- HRIG plus 4 doses rabies vaccine (days 0, 3, 7, 14).** Immunocompetent patient; did not previously complete rabies vaccine series.
- HRIG plus 5 doses rabies vaccine (days 0, 3, 7, 14, 28), rabies RFFIT test (day 35-42).** Immune compromised patient; did not previously complete rabies vaccine series.
- 2 doses rabies vaccine (days 0, 3), no HRIG.** Patient previously completed rabies vaccine series.

Additional Recommendations:

- _____
- None

For questions about rabies PEP administration: SFDPH Communicable Disease Control (415) 554-2830

Administration of Rabies PEP

Rabies vaccine should be injected intramuscularly into the deltoid muscle of the upper arm, and NEVER in the buttocks. (For young children the anterolateral thigh muscle is also acceptable).

Human Rabies Immune Globulin (HRIG) should be infiltrated into the wound area and the remainder injected intramuscularly into the anterolateral thigh muscles, at an anatomic site distant from vaccine. DO NOT give HRIG in the buttocks, except to infiltrate a wound that is in the buttocks area.

Rabies PEP is administered according to guidelines from the US Centers for Disease Control and Prevention. See www.cdc.gov/mmwr/preview/mmwrhtml/rr5703a1.htm and www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm

- Clean and irrigate wound(s) thoroughly with dilute povidone-iodine solution.
- Update tetanus vaccine and administer measures to control bacterial infection, if indicated.
- Initiate rabies PEP promptly following exposure.
- To determine whether the patient has previously completed a rabies vaccine series: a complete rabies vaccine series consists of: (a) 3 doses of pre-exposure rabies vaccine administered on days 0, 7, and 21-28; **OR** (b) at least 4 doses of post-exposure rabies vaccine administered as described below.

Rabies PEP for patients who not previously completed a rabies vaccine series:

- a. Administer passive immunization with HRIG plus active immunization with vaccine.
- b. HRIG is administered only once to previously unvaccinated persons to provide immediate, passive, rabies virus-neutralizing antibody coverage until the patient responds to rabies vaccine by actively producing antibodies.
- c. Administer HRIG and dose #1 of rabies vaccine on the same day (day 0). If not administered with dose #1, HRIG may be given up to and including day #7 of PEP. After day #7, HRIG is not indicated.
- d. The dose of HRIG is 20 IU/kg body weight. Calculate the total volume of HRIG to be injected based on body weight and the concentration of the HRIG solution. Carefully check the HRIG vial or prescribing info for the concentration: either 150 IU/mL or 300 IU/mL depending on the formulation. Because HRIG can partially suppress active production of antibody, the dose administered should not exceed the recommended dose.
- e. If there is no wound, give HRIG at a site distant from vaccine administration, preferably the anterolateral thigh muscle(s). For larger volumes of HRIG, both anterolateral thighs may be injected at multiple points, if needed.
- f. If there is a wound, infiltrate as much of the dose of HRIG into and around the wound(s) as is anatomically feasible.
- g. Inject any remaining volume of HRIG intramuscularly (IM) at an anatomical site distant from vaccine administration. The anterolateral thigh muscle(s) are best for HRIG as they can accommodate a significant volume of HRIG.
- h. Do not inject HRIG into the gluteal area (except to infiltrate a wound in the gluteal area) due to the possibility that HRIG will be deposited in subcutaneous tissue rather than muscle.
- i. If HRIG is infiltrated into an arm wound, give rabies vaccine in the opposite arm.
- j. Administer rabies vaccine intramuscularly (IM) in the deltoid muscle. For young children the anterolateral thigh muscle is also acceptable. Never administer rabies vaccine into the gluteal area as it may be deposited in subcutaneous tissue rather than muscle.
- k. For immunocompetent patients the rabies PEP vaccine series consists of a total of 4 doses given on a schedule of days 0, 3, 7, and 14.
- l. Post-treatment serologic testing is not routinely recommended in immunocompetent persons because antibody response has been satisfactory.
- m. Patients who are immune compromised should receive a 5th dose of rabies vaccine on day 28. Rabies immunity should be verified by drawing serum for rapid fluorescent focus inhibition testing (RFFIT) 1-2 weeks after the 5th dose. A result of at least 0.5 IU/mL or titer of 1:5 is considered an acceptable response to rabies vaccination.
- n. Once vaccination is initiated, delays of a day or so for individual doses do not require re-initiation of the entire series. Vaccination can be resumed, maintaining the normal intervals between doses. For example, if the patient does not receive dose #3 on day 7 and presents for vaccination instead on day 8 or 9, dose #3 should be administered that day and dose #4 would be given 7 days later.

Rabies PEP for patients who have previously completed a rabies vaccine series:

- a. For these patients, PEP consists of vaccine only. Do not administer HRIG.
- b. Administer rabies vaccine intramuscularly (IM) in the deltoid muscle. For young children the anterolateral thigh muscle is also acceptable. Never administer rabies vaccine into the gluteal area as it may be deposited in subcutaneous tissue rather than muscle.
- c. The rabies vaccine series consists of a total of 2 doses given on a schedule of days 0, 3.

Rabies Frequently Asked Questions

WHAT IS RABIES?

Rabies is a preventable fatal disease of the nervous system. It is caused by infection with the rabies virus.

In humans, rabies symptoms usually appear between 3 and 8 weeks after exposure, but in a few cases, it has taken up to several years before symptoms occurred. Symptoms begin with anxiety, headache, fever and malaise, and progress within days to include paralysis, spasm of the muscles used for swallowing, confusion, convulsions and eventually death.

Once infected with rabies virus, there is no effective treatment, and rabies disease almost always causes death of the patient. For this reason, preventing rabies infection is extremely important. The best way to prevent rabies is to avoid contact with all unfamiliar animals.

WHAT DOES RABIES POST-EXPOSURE PROPHYLAXIS (PEP) MEAN?

Rabies post-exposure prophylaxis (PEP) means: after contact with (exposure to) an animal that may have rabies, the patient receives rabies vaccine and rabies immune globulin (HRIG) in order to prevent rabies infection.

HOW CAN ANIMALS TRANSMIT RABIES?

Rabies is transmitted to humans from the saliva of an animal that is infected with rabies. Usually this occurs with an animal bite or scratch that breaks the person's skin. It could also happen if the animal's saliva gets into the person's eyes, nose, or mouth, or if the animal licks someone's open skin wound.

Normally, people can report being bitten by an animal. However, there are some important exceptions. Bat bites may not be recognized because bat teeth are needle-thin and can leave almost invisible marks. Someone may not realize they have been bitten by a bat if they are asleep or intoxicated, and a young child may not be able to report a bat bite if unwitnessed by an adult or older child.

WHICH ANIMALS TRANSMIT RABIES?

In the United States, most animal cases of rabies occur among wild raccoons, skunks, foxes, and bats (only the state of Hawaii is rabies-free). Coyotes and opossums can also transmit rabies. Domestic animals such as dogs, cats, and cattle, can get infected with rabies, but they only rarely do. A pet dog, cat, or ferret that was born in the USA and is documented to be current with rabies vaccines is very unlikely to have rabies.

In the USA, rabies has not been transmitted to humans by small, ground-based mammals such as gophers, squirrels, mice, rats, gerbils, hamsters, or guinea pigs.

In San Francisco, all animal rabies cases during the past 65 years have occurred in bats.

In developing countries, including most of Asia, Africa, and Latin America, there is still quite a bit of rabies in domestic and wild animals. In these countries, dogs are the most common source of rabies transmission to humans.

CAN SOMEONE TELL IF AN ANIMAL IS INFECTED WITH RABIES?

In general, no. An animal can appear normal if it is in the earliest stages of infection. The only sure way to tell if an animal is rabid is to test it for rabies. Animals (including bats) that are promptly captured and euthanized can be tested for rabies by the San Francisco Public Health Laboratory. The results can help guide decisions about PEP. If an animal that has bitten someone escapes or cannot be tested, decisions about PEP will depend on evaluation of other risk factors. Some animal behaviors can be clues to rabies infection.

Rabies may be more likely in animals with abnormal behavior such as:

- wild animals that seem unusually unafraid of people
- nocturnal animals (skunks, foxes, bats, raccoons) that are active during the daylight
- bats that are unable to fly or have been caught by a domestic dog or cat
- pets that have difficulty walking, eating, drinking, or making sounds, or who have marked changes in personality (such as new viciousness or withdrawal)
- neurologic signs such as paralysis or uncoordinated movement
- excessive saliva or choking

DO I NEED RABIES SHOTS (PEP) AFTER A DOG OR CAT BITE?

It depends.

Can the health of the animal be determined at 10 days after the bite? Dogs, cats, and ferrets that are still healthy 10 days after the bite do not have rabies, and there is no need for the bite victim to get rabies shots.

If the health of the animal cannot be determined at 10 days (it was a stray that ran away, for example) then:

- If the animal lives in San Francisco, it is extremely unlikely to have rabies – San Francisco has not identified a rabid dog, cat, or ferret since 1941. Therefore the San Francisco Department of Public Health (SFPDH) does not strongly recommend PEP. However, since the possibility of infection cannot be completely ruled out, SFPDH issues a “permissive recommendation” supporting rabies PEP for that individual.
- If the animal lives outside San Francisco, SFPDH will attempt to determine the likelihood of rabies in the area where the animal lives, and then make a recommendation. Persons bitten by dogs, cats, or ferrets outside the USA will typically receive a “strong recommendation” for rabies PEP.