

Rabies:

Policy and Procedures



**Mono County Animal Control
Mono County Health Department**

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Policy

A. Goal and objectives

Prevent progressive fatal encephalomyelitis caused by the Lyssa-virus (rabies) through:

- Pre-exposure immunization and animal vaccination programs

- Post-exposure Prophylaxis (PEP) recommendations of appropriate medical intervention and animal control measures

B. Circumstances

1. Pre-exposure immunization simplifies the management of rabies exposure by eliminating the need for Rabies Immune Globulin (HRIG) and decreasing the number of doses of vaccine needed. It is recommended for the following:
 - a. Veterinarians
 - b. wildlife conservation personnel
 - c. animal control officers & staff of quarantine kennels
 - d. laboratory workers potentially exposed to the virus
 - e. long - term travelers to rabies endemic areas (> 1 month)
 - f. Wild mammal rehabilitators

2. Post-exposure prophylaxis (PEP) is only effective if administered before the onset of clinical disease. Administration of rabies post-exposure prophylaxis is a medical urgency but not a medical emergency, but decisions must not be delayed. Therefore, when a documented or likely exposure has occurred, PEP should be administered regardless of the delay from the time of the alleged incident, provided that compatible clinical signs of rabies are not present in the exposed person. Incubation periods of more than one year have been reported in humans. PEP consists of a regimen of 1 dose of Rabies Immune Globulin (HRIG) to establish passive immunity and 4 doses of vaccine over a 14-day period.
 - a. *Exposure can be defined as:*
 - 1) classic bite in which the teeth penetrate the skin

2) non - bite in which there is a contamination of open wounds, abrasions, mucous membranes, or scratches to animal saliva or nervous system tissue

3) when a direct contact between a human and a bat has occurred unless the exposed person can be certain a bite, scratch or mucous membrane exposure did NOT occur (e.g., a sleeping person awakens to find a bat in the room)

4) human to human as a result of organ or tissue transplantation.

b. *Assessment of risk of potential exposure* should consider:

- the species of the biting animal
- the anatomical site of the bite
- the severity of the wound (except when potential exposure is from a bat)
- the presence of an unprovoked attack
- the epidemiology of the area
- the biting animal's vaccination history and health history. (see Appendix A)

3. Once it is determined post-exposure prophylaxis is to be initiated the HRIG should be administered to the previously *unvaccinated persons when vaccination is initially started* to provide immediate passive rabies virus neutralizing antibody coverage. However, if it was not administered at that time, it can be provided up to and including 7 days of the beginning the post-exposure prophylaxis. It is contraindicated one week after vaccine series initiated because antibody response to cell culture vaccine is presumed to have occurred.

C. General Information

1. *Occurrence*: Wildlife accounts for > 90% of reported animal cases, primarily raccoons, skunks, foxes and various species of bats. (Small rodents rarely infected with rabies). In Mono County, rabies occurs most frequently in bats and skunks, however all mammals are potential carriers and must be evaluated on a case by case basis. On December 11, 2002, the Director of the California Department of Health Services declared that rabies was a public health hazard in all 58 California counties (see Appendix D). Since 2000, 9 human cases of rabies have been diagnosed in California (5 acquired

locally, 4 presumably imported). Nationwide, domestic animals account for approximately 7.5% of all rabid animals reported, and cats represent the majority of domestic animals reported as rabid (54% in 2009). The last documented case of human rabies in the US from exposure to a rabid cat was in 1975; however, the risk of human rabies from rabid cats in the US should not be discounted.

2. *Infectious Agent:* rabies virus, a rhabdovirus of the genus Lyssa-virus.
3. *Transmission:* virus laden saliva of an infected animal is introduced by a bite, or rarely by a scratch or fresh break in the skin. Rabies virus may be present in saliva of infected animal 3 to 4 days before the onset of rabid symptoms. Transmission is rarely airborne from bat to human.
4. *Incubation:* usually 1 to 3 months, although longer incubation periods have been reported. Time of incubation period depends on extent of the exposure (wound) and circulation to the wound site.
5. *Signs and symptoms:* apprehension, headache, fever, malaise, and indefinite sensory changes often referred to the site of the preceding animal bite wound. The disease progresses to paresis or paralysis, spasm of muscles on attempts to swallow leading to fear of water; delirium and convulsions follow. Death is often due to respiratory paralysis in 2 to 6 days. There is no effective treatment once clinical signs are evident.
6. Worldwide an estimate of 10 to 12 million annually receives post-exposure prophylaxis with an estimate of 16,000 to 39,000 in the United States.

Procedures

A. Pre-exposure Immunization

1. Assess client to determine if immunization is appropriate for risk of rabies exposure and individual health factors, allergies, previous vaccine reactions and immune status.
2. Obtain order from Health Officer or client's personal physician for the administration of Human Diploid Cell Rabies Vaccine (HDCV) Imovax, or purified chick embryo cell vaccine (PCECV) RabAvert.
3. Consent for immunization should be obtained from client for each of the 3 injections.
4. Administration schedule for Imovax or RabAvert is 1.0 cc IM (deltoid area) on days 0, 7, 21 or 28. Arrange schedule in consultation with the client to assure availability on defined day based on administration interval.
5. An immunization record is provided to the client for documentation.
6. Frequency of risk of exposure will determine if regular or periodic serologic testing should be conducted.

Pre-exposure recommendations

Risk category	Nature of risk	Typical populations	Pre-exposure recommendations
Continuous	Virus present continuously in high concentrations. Exposure likely to be unrecognized. Bite, nonbite or aerosolized.	Rabies research lab workers	Primary course. Sero testing every 6 months.
Frequent	Episodic exposures, recognized source or possibly unrecognized. Bite, nonbite or aerosol.	Rabies lab workers, cavers, veterinarians and staff, animal control workers, wildlife workers in areas where rabies is enzootic. Handle bats frequently.	Primary course. Sero testing every 2 years; booster vaccination if antibody titer is below acceptable level.
Infrequent (greater than general population)	Episodic exposure with recognized source. Bite or nonbite exposure.	Veterinarians, animal control staff with terrestrial animals. In areas where rabies is uncommon or rare. Travelers to areas where rabies is enzootic and medical care limited.	Primary course. No sero testing or booster vaccinations.
Rare (General population)	Episodic with source recognized. Bite or nonbite exposure.	General populations including persons in epizootic area.	No vaccination necessary.

B. Post-Exposure Management

1. Wound treatment recommendations:

- a. Immediate thorough cleansing with soap and water. If available, a virucidal agent such as povidine-iodine (Betadine) should be used to irrigate wounds (adequate cleansing markedly reduces risk for rabies).
- b. Evaluate for Tetanus booster and need for antibiotics.
- c. Emergency room visit based on severity of bite

2. Vaccination recommendations (based on assessment of risk – see appropriate algorithm)

- a. If the animal is on quarantine await the 10 days before initiating prophylaxis UNLESS animal becomes symptomatic during the 10 day period. *Treatment should be started immediately*, and the animal euthanized and sent for testing.
- b. Non quarantined cats and dogs are low risk, incident will determine need for prophylaxis.
- c. *Incident with skunk, fox, coyote or raccoon - post-exposure prophylaxis treatment will be started.* Where the animal is captured, and lab results indicate that the exposing animal is NOT rabid, post-exposure treatment will be discontinued.
- d. *Incident with bat post-exposure prophylaxis treatment will be started.* Where the bat is captured, and lab results indicate that the exposing bat is NOT rabid, post-exposure treatment will be discontinued.

Post-exposure prophylaxis

Vaccination status	Treatment	Regimen
Not previously vaccinated	Wound cleansing Rabies Immune globulin Vaccine	All wound sites to be cleansed (see 3 above). Administer 20 IU/kg body weight (applies to all weights and age groups). Do not give more than the recommended dose of RIG. If possible full dose should be infiltrated around the wound and if any remaining volume should be administered IM distal from vaccine site. (Should be administered within 7 days of first vaccination). Imovax or RabAvert 1.0 ml administered IM (deltoid) (children – anterolateral thigh OK) (gluteal never OK) on day 0, 3, 7, and 14. RIG should not be administered in the same syringe as vaccine.
Previously vaccinated	Wound cleansing Rabies Immune globulin Vaccine	Same as above Should not be administered. Imovax or RabiVert 1.0 ml administered IM (deltoid) on day 0, and 3.

3. Deviation from recommended post-exposure vaccination schedules. Most interruptions in the vaccine schedule do not require reinitiation of the entire series.
 - a. Minor deviations: can resume as if the patient were on schedule. Example: Patient misses day 7 dose and presents for vaccine on day 10. Day 7 dose to be administered NOW and remaining dose would maintain same interval between doses such as day 17 and 31.
 - b. Substantial deviations: will require serologic testing 7 to 14 days after administration of final dose in series.

4. Precautions and Contraindications

- a. Immunosuppression: For persons with broadly defined immunosuppression, PEP should be administered using all 5 doses of vaccine (on days 0, 3, 7, 14, and 28) with the understanding that the immune response still may be inadequate. No immunosuppressive agents should be administered during PEP unless essential for the treatment of other conditions. If PEP is administered to either an individual taking immunosuppressive medications or an immunosuppressed individual, antibody response must be tested (serum specimens collected 1-2 weeks after PEP should completely neutralize challenge virus at least at a 1:5 serum dilution by the rapid fluorescent focus inhibition test – RFFIT).
- b. Pregnancy: If adequate exposure the Risk/ benefit ratio to vaccination during pregnancy indicates that post exposure treatment should be provided.
- c. Allergies: is not contraindicated, should be administered with caution.

C. Post-exposure animal bite investigation procedure

When a healthcare provider or facility evaluates a victim for an animal bite, it is their responsibility to file the Animal Bite and Investigation Form with the appropriate agency having jurisdictional authority as soon as possible. This is Mono County Animal Control in all unincorporated areas of Mono County, and Mammoth Lakes Police Department within the town of Mammoth Lakes (referred to hereafter as “the agency”). Jurisdiction is determined by the location of the incident.

When a bite occurs in the unincorporated areas of Mono County after hours, as a courtesy, the Mono County Sheriff’s Office (SO) will respond to the call. They may respond either by telephone or to the owner and/or victim’s location for additional information as appropriate. The SO will advise the

owner that their animal is under quarantine and that Animal Control will contact them the next morning to complete the investigation. Dispatch will notify Animal Control the following morning. The exceptions to the SO's handling of Animal Control's after hours calls may be, but are not limited, to the following:

- The bite was unprovoked
- The biting animal appears to be aggressive and unmanageable
- The owner of the animal is uncooperative
- The bite was severe, and the animal is judged to be a threat to other humans who may come into contact with the animal
- The animal was contained but the owner was not located
- The animal was not located

The responding agency will respond under the authority of the Mono County Health Officer as follows:

1. Domestic animals

- a. Initial telephone or in person contact with the victim, obtaining as much information as possible, in order to complete the Animal Bite Reporting and Investigation Form – (see Appendix A)
- b. Initial telephone contact with the animal owner, followed by on site visit. The owner is requested to have a current rabies certificate ready for review, and will be advised of immediate verbal quarantine, conditions, and restrictions.
 1. If there is proof of a current rabies vaccination, the animal may remain with the household during the 10 day quarantine period, providing that the agency approves of the residence as adequate for quarantine. The agency will arrange for at least one on site visit midway through quarantine. This visit is purposely scheduled midway through the 10 day period to observe the health of the animal and to reinforce quarantine conditions. Should the owner be uncooperative at any time during the quarantine, the animal will be seized by the agency and taken to the nearest shelter for the remainder of the quarantine.
 2. If a current rabies vaccination cannot be provided, the animal will be transported to the nearest animal shelter for the 10 day quarantine. The owner is issued citations for violations of Town

of Mammoth Lakes ordinances or Mono County Code sections or State regulations, as applicable.

- c. If the animal appears to be a stray (no ID) and cannot be found, the victim will be urged to seek immediate medical attention if (s)he has not already done so, including consultation for possible rabies exposure. (See appropriate algorithm) The Health Officer will be notified immediately, and recommendations will be made by the evaluating healthcare provider in consultation with the Health Officer. The agency will continue to aggressively trap and search for the animal.
- d. If the animal appears to be a stray (no ID) and has been captured, it will be taken to the nearest animal shelter for quarantine. At any time during the quarantine, the Health Officer may direct that the animal be immediately destroyed and tested for rabies. The victim will be kept informed.
- e. Should the animal become ill during quarantine, the Health Officer will be immediately notified, and may instruct that the animal be taken to a veterinarian for evaluation. Or, the Health Officer may order that the animal be immediately destroyed and tested for rabies. The victim will be kept informed.
- f. Should the animal be destroyed by the owner or victim after the bite (an illegal act), the agency or SO destroyed the animal while escaping, or the animal dies during quarantine, the Health Officer will be notified immediately. The agency will arrange to have the head severed by a veterinarian, and have it packed and shipped to Richmond, providing there is brain tissue available. The lab will be of the incident and advised of the forthcoming shipment. The victim will also be kept informed.
- g. If the owned unvaccinated animal remains alive and well at the end of the 10 day quarantine period, it will be released from quarantine, and if at the shelter, will be returned to the owner. A telephone call will be made to the victim stating that the animal was released alive and well at the end of the quarantine period. The case will be closed.

2. Wild animals

- a. In addition to notification of “the agency” as described above under “domestic animals”, when a human is bitten by a wild animal (see algorithms 2, 3, 4, or 5), the Mono County Health Officer and the California Department of Fish and Game (CDFG) should also be notified.

1. With assistance from other agencies as requested, CDFG is responsible for coordinating the tracking, locating, and destroying of the animal.
2. CDFG is responsible for removing the head of the animal, and working with Animal Control to prepare the head for shipment to the State lab in Richmond.
 - a. Care must be used by the person destroying the animal so that a head would be avoided whenever possible and safe. Intact brain tissue is needed when testing for the rabies virus.
 - b. The State Public Health Veterinarian is notified, along with the Specimen Receiving Laboratory, and David Cotton in the Medical Records Unit.
3. The lab will begin testing immediately upon receipt of the specimen, and notify the “the agency” of the results.
4. Upon receipt of the results from the lab:
 - a. If negative, “the agency” will advise the victim, CDFG, the Health Officer, and other responding agencies.
 - b. If positive, “the agency” will immediately notify the Health Officer. The Health Officer will immediately be in contact with the victim and the healthcare provider or facility to review the exposure details and to discuss post-exposure prophylaxis recommendations. The Health Officer will initiate procedures of investigation listed in the Protocol for Reported Case of Rabies, which follows on page 15.
 - c. If inconclusive (lab needs further time for testing, or brain tissue unacceptable), “the agency” will immediately notify the Health Officer. The Health Officer, in consultation with the California Public Health Veterinarian and the evaluating healthcare facility or provider, will make a recommendation for post-exposure treatment based on the available information.
5. If the biting animal cannot be located, the Health Officer shall be advised, and in consultation with the California Public Health Veterinarian and the evaluating healthcare facility or provider,

will make a recommendation for post-exposure treatment based on the available information.

3. Human or animal contact with bat (see algorithm 5 of 5)

See algorithm 5 of 5 for bat related incidents.

a. Contact only without known bite

1. Following the algorithm, “the agency” will:

- a. Complete the Animal Bite Reporting and Investigation Form (see Appendix A)
- b. Advise the victim to seek immediate medical attention
- c. Arrange to pick up the bat and have the bat tested
- d. Advise the healthcare provider/facility of the availability of the Health Officer, the State laboratory, and the State Veterinarian for medical consultation as requested
- e. Advise the Health Officer of the situation and circumstances
- f. Advise the State laboratory of the impending shipment of a specimen (see storing and shipping instructions in Appendix C)
- g. Note: A bat found dead, without human contact as defined in algorithm 5 of 5, will generally not be tested. However, if a bat is out during the day, or is acting abnormally, or it “just fell out of the sky”, then the safe thing to do is to send it for testing. “The agency” will contact the lab and the Health Officer for further direction.

2. The lab will test the specimen ASAP, and immediately notify “the agency” and the Health Officer of the results.

3. The Health Officer will confer with the healthcare provider/facility regarding the need for post-exposure prophylaxis.

b. Known bite of human or animal

1. Same procedure as above, WITH URGENCY!

2. Emergency transportation to Richmond may need to be arranged with the cooperation and participation of the SO and the California Highway Patrol (CHP).

D. Protocol for Suspected or Reported Animal or Human Case of Rabies

1. Should an animal or human case of rabies be suspected or confirmed in Mono County, the Health Officer will coordinate necessary activities and instruct Public Health, Environmental Health, and “the agency” staff as to their responsibilities.
2. If a human case, a Public Health Incident Command will be set up in order to facilitate an efficient and effective response both within the department and with involved partners.
3. If a human case, a formal interview process with the victim and/or family will be conducted, to include (but not limited to) questions on the Animal Bite Reporting and Investigation Form. In addition, questions regarding additional human or animal exposures will be essential.
4. The Health Officer will direct and epidemiological investigation into the assessment of human and animal exposures prior to and following capture, investigation will determine humans and animals that may have been involved, as well as the type of exposure that may have occurred. An Animal Bite Reporting and Investigation Form will be filled out for each potential contact and exposure. In addition, other questions may include:
 - a. How was the animal identified as being the alleged biter?
 - b. How was the animal located, captured, or destroyed?
 - c. Who were the people involved in the capture?
 - d. During the capture, were there possible exposures?
 - e. What type of protection was used by staff during the capture?
 - f. How was the animal destroyed? What protection was used?
 - g. What staff was involved in any decapitation? What type of protection was used?
 - h. How was the specimen packed, transported, and shipped? What staff were involved? What type of protection was used?
 - i. What possible exposures were there to other animals?

5. In a laboratory confirmed animal case, or a suspected or confirmed human case, the Health Officer or designee will act as the Public Information Officer (PIO). All information delivered to the public or media must be delivered by or be approved by the PIO.
6. All information sharing with involved partners will be coordinated through the Health Officer so as to minimize duplication, gaps, rumors, and inaccuracies.
7. In the event of a laboratory confirmed cases(s) of rabies in animals in Mono County, the Health Officer may as “the agency(ies)” to organize emergency rabies vaccination clinics in appropriate locations in Mammoth Lakes and/or unincorporated areas of the county. The sole purpose of the clinics would be to expedite the immediate vaccination of all unprotected domestic animals (above and beyond ones that have been previously vaccinated and licensed). “The agency(ies)” may request assistance by licensed veterinarians and their staff that are presently practicing in the Eastern Sierra in order to facilitate a timely process.

References used for “Policy and Procedures” development:

Use of a Reduced (4-Dose) Vaccine Schedule for Postexposure Prophylaxis to Prevent Human Rabies

Recommendations of the Advisory Committee on Immunization Practices
MMWR, Recommendations and Reports, March 19, 2010, Vol. 59, No. RR-2, 1-9

Compendium of Animal Rabies Prevention and Control, 2008

National Association of State Public Health Veterinarians, Inc.
MMWR, Recommendations and Reports, April 18, 2008, Vol. 57, No. RR-2, 1-9

Human Rabies Prevention ---United States, 2008

Recommendations of the Advisory Committee on Immunization Practices
MMWR, Recommendations and Reports, May 23, 2008, Vol. 57, No. RR-3), 1-28

California Compendium of Rabies Control and Prevention, 2004

California Department of Health Services
Veterinary Public Health Section

Laws and Regulations Relating to RABIES

Excerpts from the California Health and Safety Code and the California Code of Regulations

Department of Health Services

Division of Communicable Disease Control

Disease Investigations and Surveillance Branch

Veterinary Public Health Section

Human Rabies Exposure Algorithm

San Mateo County Health Department

Disease Control and Prevention

October 30, 2006

Other Resources:

CDC rabies home page:

www.cdc.gov/rabies

CDPH Health Information - Rabies home page:

www.cdph.ca.gov/HealthInfo/discond/Pages/rabies.aspx

CDPH Veterinary Public Health Section:

www.cdph.ca.gov/programs/vphs/Pages/default.aspx

Contact information:

Mono County Animal Control

Office: (8-5, M-F): 760-932-5630
After-hours: 760-932-7549 (Sheriff's Dispatch)
animal@mono.ca.gov

Director: Nancy Boardman
Support Staff: Angelle Nolan
Animal Control Officers: Barbara Fritsch, William Clayton, Alex Flores

Mono County Public Health

Office: (8-5, M-F): 760-924-1830
After-hours: 760-932-7549 (Sheriff's Dispatch)

Health Officer: Richard O. Johnson, M.D., MPH
760-914-0496 (cell)
drrickjohn@gmail.com

Health Director: Lynda Salcido
760-221-4325 (cell)
lsalcido@mono.ca.gov

Environmental Health Director: Louis Molina
760-937-7246 (cell)
lmolina@mono.ca.gov

Mammoth Lakes Police Department

Office: 760-934-2011, on the menu, press "5"
Afterhours: 760-932-7549 (Sheriff's Dispatch)

Mammoth Hospital, Emergency Department, and Sierra Park Clinics

24/7: 760-934-3311

California Department of Public Health (CDPH):

Center for Infectious Diseases (CID)
Division of Communicable Disease Control (DCDC)
Infectious Disease Branch (IDB)

Veterinary Public Health Section (VPHS)

Curtis Fritz, DVM, MPVM, PhD, Dipl. ACVPM (Epidemiology)
State Public Health Veterinarian

916-552-9740 (P)

916-552-9725 (F)

curtis.fritz@cdph.ca.gov

vetph@cdph.ca.gov

After-hours (DCDC Duty Officer):

510-620-3434

800-971-9631 (Pager)

POB 997377, MS 7307

Sacramento, CA 95899-7377

Viral and Rickettsial Disease Laboratory

850 Marina Bay Parkway, Attn: Specimen Receiving, Rm B106

Richmond, CA 94804

510-307-8474

David Cottom, Supervising Microbiologist, Medical Records Unit

510-307-8585

David.Cottom@cdph.ca.gov

Deb Wadford, VRDL Supervisor, Isolation Department

510-307-8624

Sharon Messenger, PhD

Chief, Viral Immunoserology and Molecular Diagnostics Section, VRDL

510-307-8623

Sharon.messenger@cdph.ca.gov

VRDL Laboratory pager: 510-641-5283

California Department of Fish and Game (CDFG)

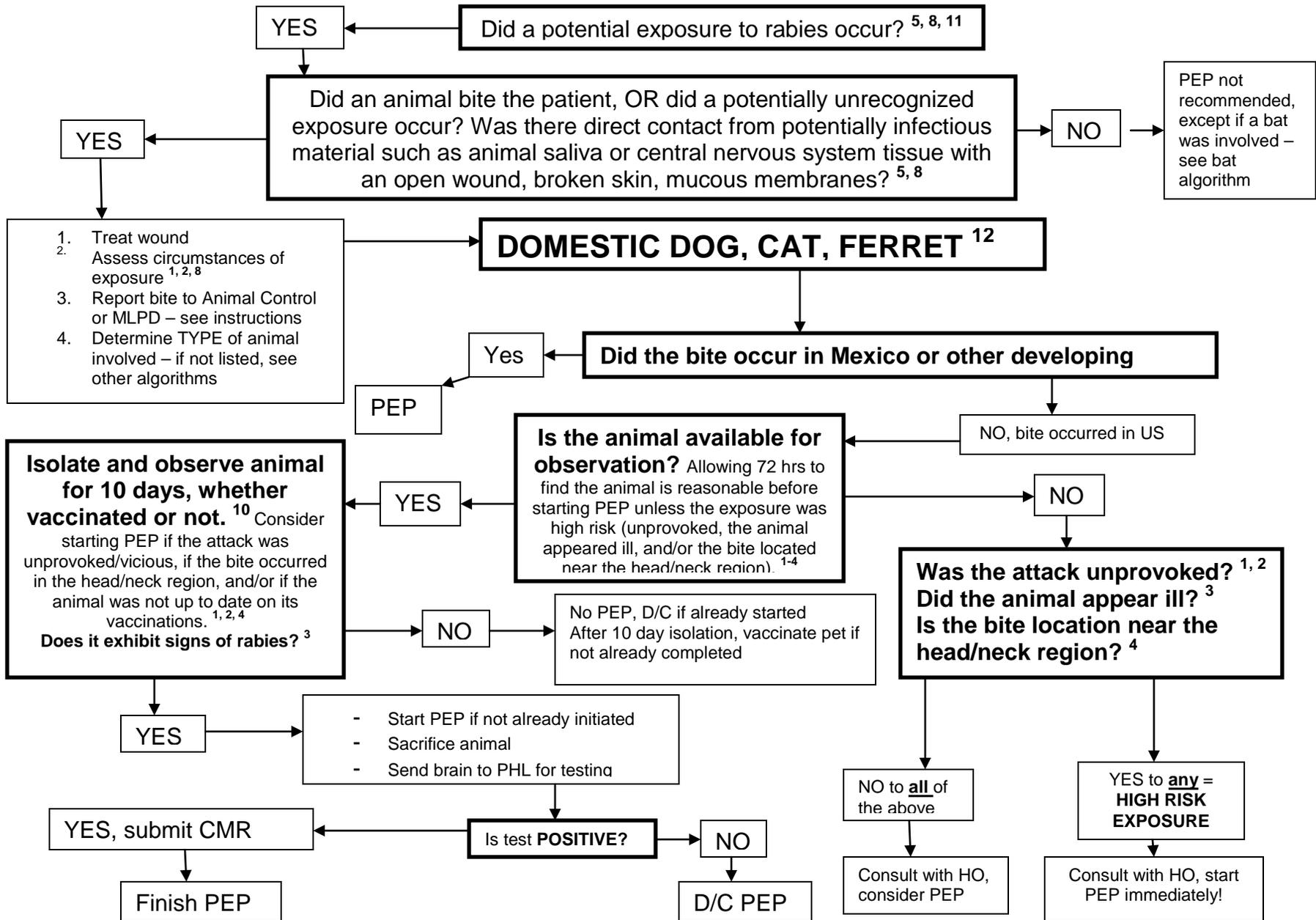
Tim Taylor, Wildlife Biologist

760-932-5749

Chad Elliott, Game Warden

760-937-1663

Human Rabies Exposure Algorithm, Page 1 of 5

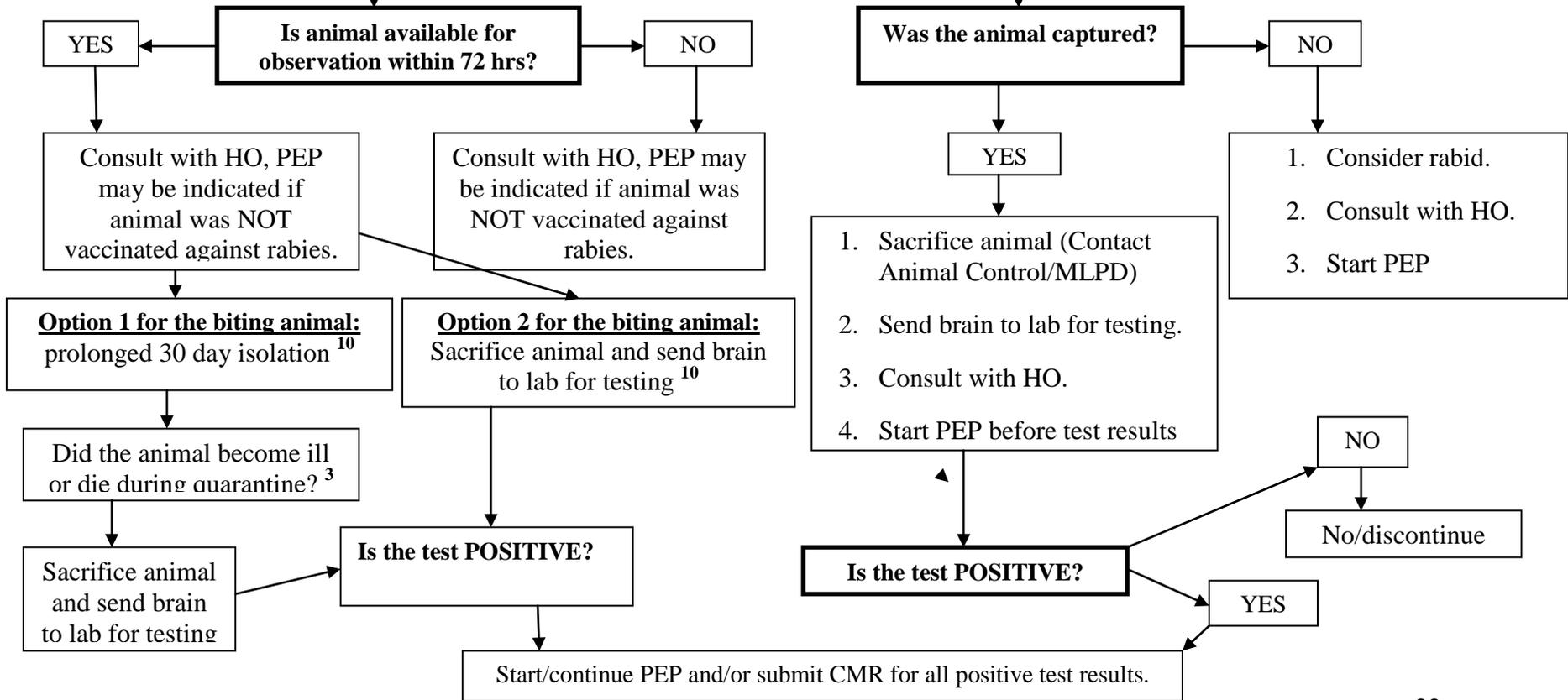


Human Rabies Exposure Algorithm, Page 2 of 5

What type of animal was involved? (large mammals – high risk)

**DOMESTIC LIVESTOCK:
CATTLE, SHEEP, GOAT, PIG,
HORSE^{9, 12}**

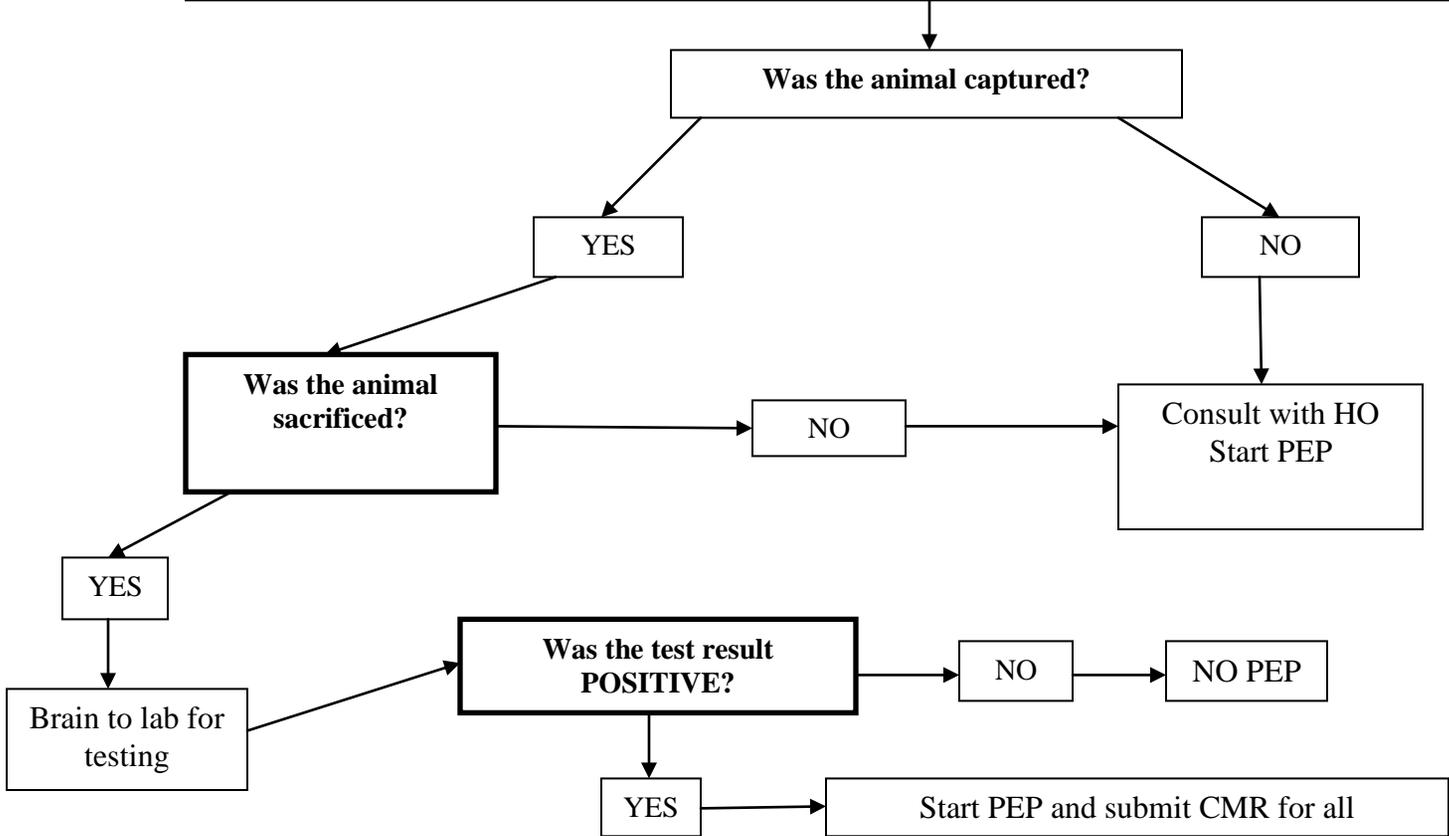
**FOX, SKUNK, RACCOON, COYOTE, BEAR,
FERAL/WILD CAT, EXOTIC MAMMAL (MONKEY)¹²**



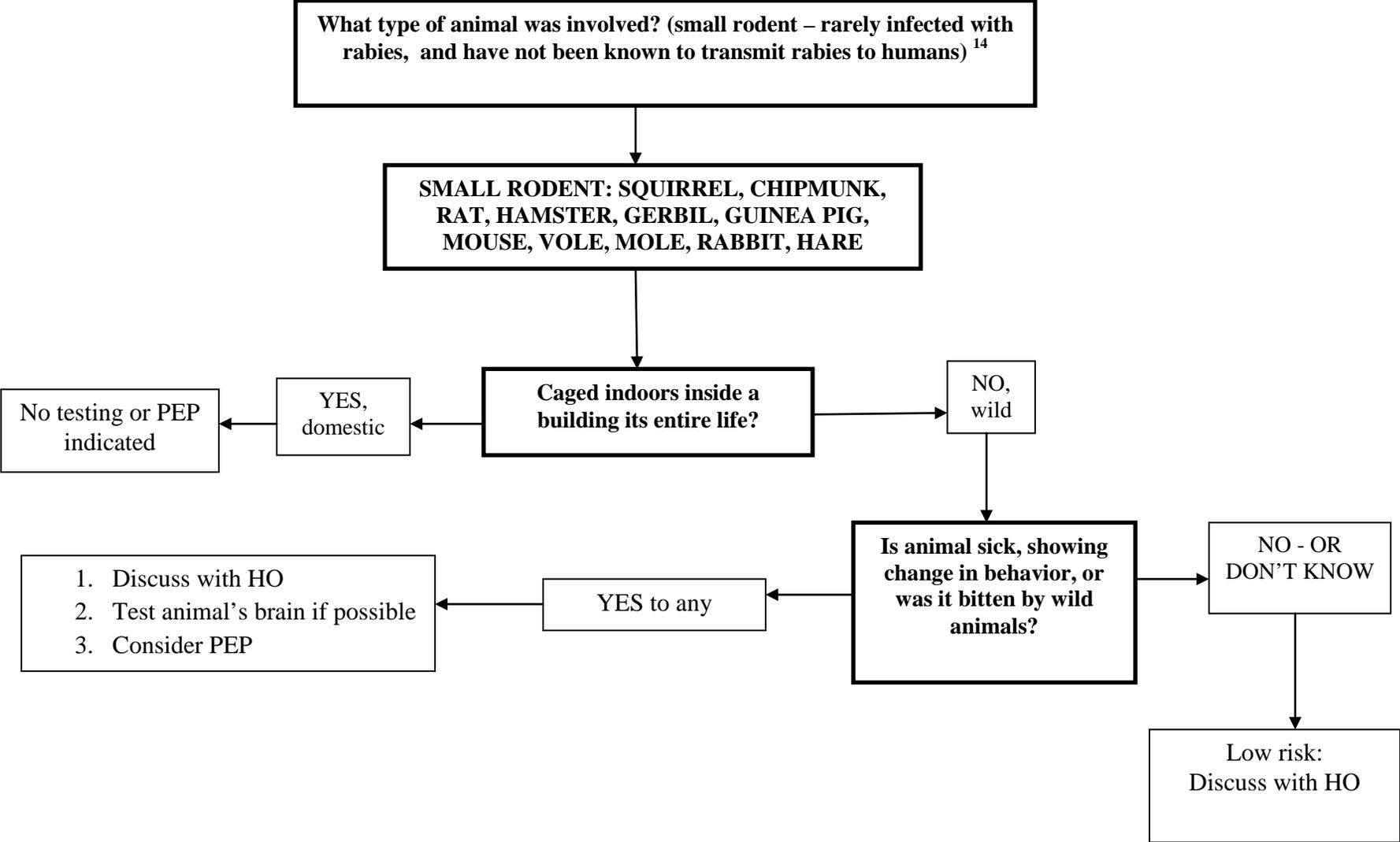
Human Rabies Exposure Algorithm, Page 3 of 5

What type of animal was involved? (large rodent/marsupial – intermediate risk)

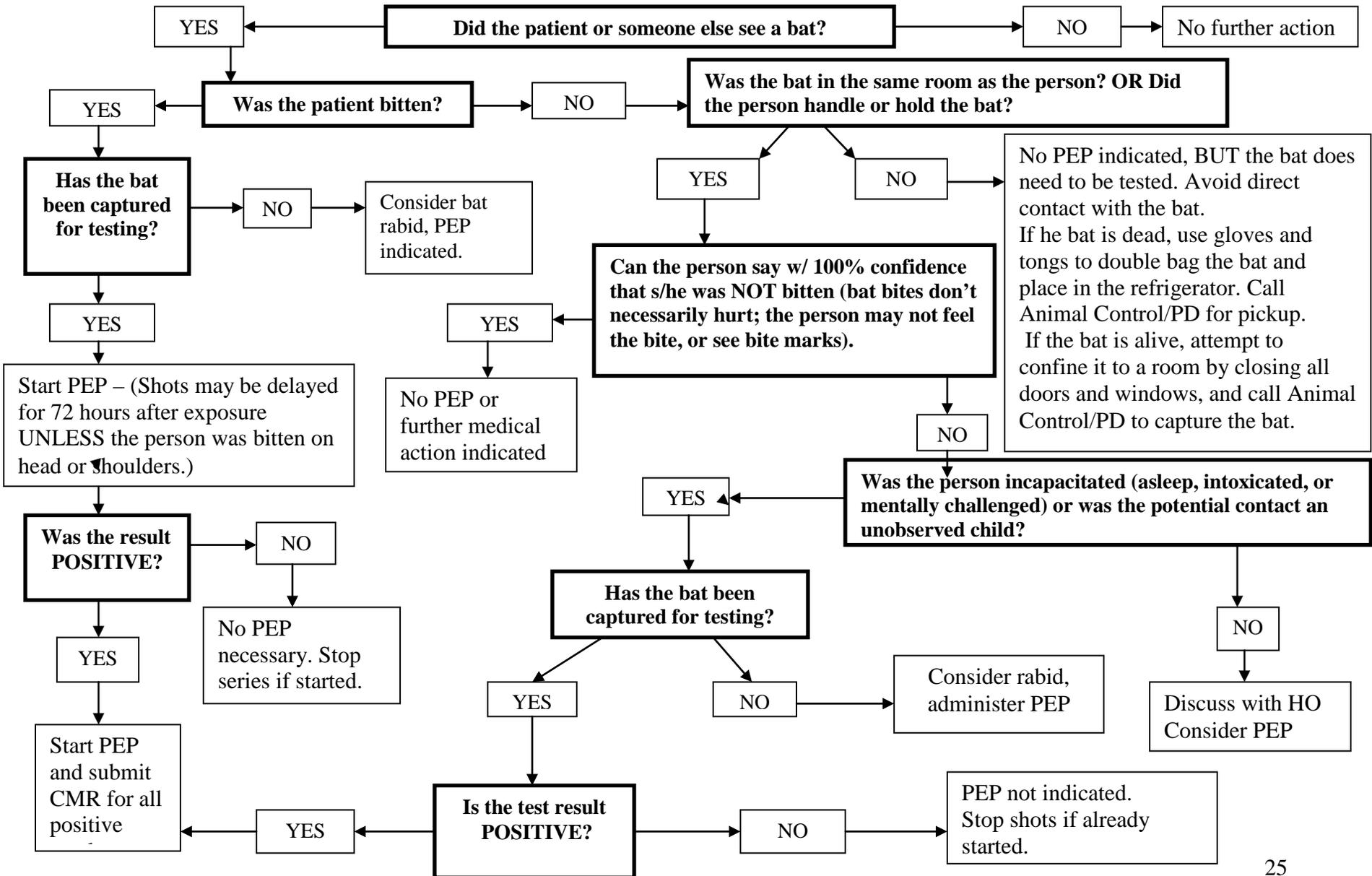
LARGE RODENT: GROUNDHOG (WOODCHUCK), BEAVER, MARMOT, PORCUPINE ¹³
MARSUPIAL: OPOSSUM ¹³



Human Rabies Exposure Algorithm, Page 4 of 5



Human Rabies Exposure Algorithm, Page 5 of 5 - (Bat-Related Incidents) ¹⁵



Notes

¹ **Provoked exposures** may include attempting to feed an animal, entering an animal's territory, petting or playing with an animal, handling an animal, attempting to break up a fight between animals, having contact with an injured animal, and walking, running, or riding a bicycle past an animal.

² **Unprovoked exposures** are rare and typically require an animal to cross a neutral space and attack. You should attempt to get the injured individual to describe the scenario in order to establish the true nature of the circumstances surrounding the biting incident – DO NOT simply ask if the bite was provoked or unprovoked.

³ **Behavior of animals with rabies:** Animals with rabies can appear aggressive (“furious rabies”) or normal or meek (“dumb rabies”). Common signs of rabies include neurological signs, such as paralysis and ataxia, and hyper-salivation. Aggressiveness in a normal friendly pet or withdrawal in a normally aggressive pet may be signs of rabies. A wild animal which approaches a human or a normally nocturnal animal (such as a bat, skunk, raccoon, or fox) which is seen in the day should be considered rabid. Clinical signs of rabies can vary by species. Livestock tend to be withdrawn, anorexic and inactive. Carnivores tend to be aggressive and exhibit signs of encephalitis, such as hind leg paralysis and incoordination (similar to West Nile virus). Dogs are likely to have a peculiar, high-pitched bark.

⁴ **The severity and location of the wound** (severe wounds or obvious wounds near the head and neck should be given highest priority – the incubation period is shorter than from bites on the hands, torso, or legs), and the expected interval between the time of the bite and the receipt of rabies test results should be considered when making a decision to begin PEP while awaiting test results. In most cases, it is acceptable to withhold PEP for up to 48 hours while awaiting results of rabies testing of the animal. **An individual who has been bitten on the head or shoulders by a high risk animal (fox, skunk, raccoon, coyote, bear, feral/wild or unvaccinated domestic cat, exotic mammal (monkey), or bat are all considered high-risk animals) should be treated without awaiting the results of rabies testing.** A bite with prominent salivary contamination (i.e., through exposed skin) is more likely to produce rabies than one through thick clothing that removes saliva from the animal's teeth. Multiple bites are more likely to transmit disease than a single bite.

⁵ **Rabies is transmitted** when the virus is introduced into **bite** wounds, open cuts in skin, or onto mucous membranes. Any penetration of the skin by teeth constitutes a bite. Some animals, such as bats, can inflict only minor injury that can go undetected. **Non-bite exposures** rarely cause rabies. The contamination of open wounds, abrasions, mucous membranes, or theoretically, scratches, with saliva, constitutes a non-bite exposure.

⁶ Once **clinical signs of rabies** appear in humans, the disease is nearly always fatal within 2 to 10 days. To date, only 6 documented cases of human survival from clinical rabies have been reported. 5 of the 6 patients received either occupationally related pre-exposure prophylaxis vaccination or PEP. The last patient (who was bitten on her index finger by a bat) did not receive PEP. Treatment included induction of coma while a native immune response matured. She survived but with significant neurological impairment (NEJM 2005; 352:2508-14)

⁷ **Every year, there are about 200 animals which test positive for rabies in California – mostly bats, but also skunks, raccoons, fox, and an occasional coyote.** Only mammals are at risk – birds, reptiles, and fish do not get rabies.

⁸ **Situations with little or no risk:** Direct contact of saliva or brain tissue with intact skin, including a wound with a well-formed scab, does not present a risk of exposure. Sunlight, ultraviolet (UV) light and detergent inactivate the virus. **Petting a rabid animal or coming into contact with an animal's blood, urine, feces, or skunk spray generally does NOT constitute an exposure or require prophylaxis.**

⁹ **Vaccinated domestic animals or livestock:** Rabies vaccine is available for dogs, cats, cattle, horses and sheep. There is presently no vaccine licensed for use on wildlife or exotic pets. Even after an initial rabies vaccination, young or naïve animals remain at risk for rabies because of potential exposures preceding vaccination or before adequate induction of immunity during the 28 days after primary vaccination.

¹⁰ **Period of isolation:** Vaccinated animals need to be isolated just like unvaccinated animals, because rabies vaccination in domesticated animals and livestock is not 100% effective.

Cats, dogs, and domestic ferrets need to be isolated for 10 days.

There is little data on rabies incubation, clinical presentation, and viral shedding in domestic animal species other than dogs, cats, and ferrets. The period of virus shedding in the saliva of infected domestic, wild, or nondomestic animals prior to showing signs of clinical rabies is generally not known. Therefore, isolation and observation of animal species other than dogs, cats, and ferrets that bite humans is not appropriate. Biting domestic, wild, or nondomestic animals other than dogs, cats, and ferrets should be euthanized and tested for rabies immediately.

While isolation of biting animals other than dogs, cats, and ferrets is not recommended, the local health officer has an alternative to euthanizing and testing the animal in special circumstances. In the situation where the biting animal has a comprehensive history that minimizes the potential for rabies infection, and the risk of rabies in the biting animal is judged by the Health Officer to be acceptably low, the Health Officer may offer the option of instituting a prolonged (30-day) isolation of the biting animal. Under the care of a physician, the bite victim could be started immediately on PEP. This special exemption can be considered due to the low risk for exposure, the high efficacy of PEP, and the low incidence of serious adverse reactions with PEP.

¹¹ **Other management considerations:** Other factors to consider when evaluating a potential rabies exposure include the epidemiology of rabies in the area, the species of biting animal, the circumstances of the bite, the biting animal's history and health status (e.g., abnormal behavior and signs of illness, and the potential for the animal to be exposed to rabies (e.g., presence of an unexplained wound or history of exposure to a rabid animal).

¹² **High risk large mammals (see algorithm pages 1 and 2)**

In the continental US, rabies among dogs has decreased substantially, with cases being reported sporadically along the US-Mexico border and in areas with enzootic wildlife rabies. In recent years, more cats than dogs have been reported with rabies, usually associated with the epizootic of rabies among raccoons in the eastern US. The large number of rabid cats compared with other domestic animals might be attributed to a lower vaccination rate among cats because of less stringent vaccination laws; fewer confinement or leash laws; and the nocturnal activity patterns of cats placing them at greater risk for exposure to infected raccoons, skunks, foxes, and bats.

All livestock species are susceptible to rabies infection. Cattle and horses are the most common livestock species diagnosed with rabies.

¹³ **Large rodents, intermediate risk (see algorithm page 3)**

These include opossum, groundhog, marmot, and porcupine, and fairly large **aquatic animals**, such as beavers, muskrats, and otters, because they may be large enough to fight off or effectively escape the attack of a rabid animal.

¹⁴ **Small rodents, low risk (see algorithm page 4)**

Small wild animals such as wild rodents (squirrel, chipmunk), insectivores (shrews, voles, and moles) and lagomorphs (rabbits and hares) are very low risk animals for rabies. These animals are so small that if a rabid animal (raccoon, fox, skunk, etc.) were to attack, the animal would likely die before having a chance to develop rabies. They may also be less susceptible to infection with the rabies virus, or may seek and remain in shelter after resisting attack or becoming ill with rabies. Only when such animals attack in an unprovoked manner should there be a suspicion of rabies.

Small animals, such as squirrels and chipmunks that bite humans while feeding them are acting normally. The only exception to this rule is the woodchuck, also called a groundhog, which is considered at high risk for acquiring rabies, in areas of the country affected by the raccoon rabies virus variant (mid-Atlantic and southeastern US)

Rodents and other small mammals caged outdoors have on occasion acquired rabies infections, as the cage allows exposure to rabid animals, but offers enough protection for the small animal to survive the exposure..

Rodents and other small mammals caged indoors such as hamsters, gerbils, rats, mice and rabbits which have been caged exclusively indoors for the past 6 months or more are extremely low risk.

There has never been documentation of rabies transmission from a rodent to a human being.

¹⁵ **Bats are considered high risk for rabies (see algorithm, page 5)**

Human and domestic animal contact with bats should be minimized, and bats should never be handled by untrained and unvaccinated persons or kept as pets.

Exposures or potential exposures to bats should be carefully evaluated. Because the size of bites or scratches from bats may be very small, individuals may not recognize that an exposure has occurred. PEP should be given in any situation in which a bat is physically present and a bite, or any other exposure or contact, cannot be ruled out. In situations in which there is a reasonable probability that such contact occurred (e.g., a sleeping individual awakes to find a bat in the room, an adult witnesses a bat in the room with a previously unattended child, mentally-challenged person intoxicated individual, etc.) PEP is appropriate, **even in the absence of a demonstrable bite or scratch**. If the bat is available and can be tested promptly, PEP may be postponed pending test results, as long as the bite did not involve the head or shoulders. 14 of the 15 human cases of rabies that were acquired in the United States between 2000 and 2004, were associated (as determined by genetic analysis) with rabid bats. **Only 3 of these cases involved a report of a definite history of a bat bite.**

Appendix A:

Animal Bite Reporting and investigation Form

ANIMAL BITE REPORTING AND INVESTIGATION FORM

Procedure: A healthcare provider/facility is requested to report all incidents to the appropriate agency ASAP by **completing this page:**

- In Mammoth Lakes, to the Police Dept. (FAX 760-934-2490, ATTN: Records)
- In non-incorporated areas of Mono County, to Mono County Animal Control (FAX 760-932-5284)

Any clinical questions should be directed to the Health Officer, Dr. Johnson, at 760-914-0496 (cell)

Report sent by: (Name) _____ Agency/facility: _____ Date: _____

Person Bitten (victim, patient):

Name: _____ Age: ____ yrs. Guardian (if minor): _____ Relationship: _____

Physical/Mailing Address: _____

Phone: (home) _____ (work) _____ (cell) _____

If a non-resident, staying at (condo, hotel, campground, location, town): _____

Arrival date: ____ Departure date: ____ Next destination: _____ Contact info: _____

DL #: _____ Vehicle Descrip.: _____ Lic # _____ State: _____

Animal owner:

Name: _____

Physical/Mailing Address: _____

Phone: (home) _____ (work) _____ (cell) _____

If a non-resident, staying at (condo, hotel, campground, location, town): _____

Arrival date: ____ Departure date: ____ Next destination: _____ Contact info: _____

DL #: _____ Vehicle Descrip.: _____ Lic # _____ State: _____

Incident Details:

Date: ____ Time: ____ Location: _____

Circumstances (provoked or not?): _____

If a bat, did an adult awake to find a bat in the room? (Circle): Y N If a bat, did an adult witness the bat in a room with a sleeping child, a person with a mental disability, or an intoxicated person? (Circle): Y N

Location/Descrip of wounds: _____

Witness(s): _____ Contact info: _____

Medical Treatment:

Medical Treatment Received? (Circle) Y N Unk If not, was the victim advised to do so? (Circle) Y N

Location of treatment: _____ Provider: _____ Contact info: _____

Nature of treatment: (circle) wound care: Y N RIG: Y N vaccine series started: Y N

Description of animal:

Dog (circle): Owned Stray In custody/where? _____

Cat (circle): Owned Stray Feral In custody/where? _____

Other (circle): skunk raccoon bat other: _____ In custody/where? _____

Description of animal: _____

Name: _____ Age: _____ (Circle): M F S/N

Additional info: _____

Location of animal:

(Circle): With owner BPT Shelter South County Shelter Vet Other: _____

Vaccine/license history:

Vaccinated for rabies prior to bite: (Circle) Y N Date of vacc.: _____ (Circle): 1 yr 3 yr

Animal licensed: (Circle) Y N If Yes, expiration date: _____

Citations issued for: (Check) ___ No rabies ___ No license ___ At large ___ Interference ___ Nuisance

Quarantine Information:

Animal under quarantine at: (Check) ___ Owner's residence ___ BPT shelter ___ S County shelter ___ Other

Verbal – Date: _____ Physical – Date: _____ Quarantine by: _____ Notice Posted: (Circle) Y N

On-site isolation check: Date: _____ By: _____ Date: _____ By: _____

Telephone check: Date: _____ By: _____ Released from quarantine: Date: _____ By: _____

Owner notified of release: Date: _____ By: _____ Victim notified: Date: _____ By: _____

Owner turn-in to county: Date: _____

Additional Information:

Animal died after bite: Y N How: _____

Animal killed after bite: Y N How: _____

Head recovered/sent to lab: Y N Date: _____ By: _____ Results: (Circle) Pos Neg

Date results reported to: _____ healthcare provider _____ Victim _____ Owner _____ Health Officer

If positive, verification victim received RIG and completed vaccine series:

Date of completion: _____ Healthcare provider: _____ Contact info: _____

This report sent to another agency: Name of agency: _____ Contact person: _____

Contact info: _____ By: _____ Date: _____

Date investigation closed: _____ By: _____

Appendix B:
Notice of Animal Quarantine

NOTICE OF ANIMAL QUARANTINE

By order of the Mono County Health Officer dated _____

Owner's Name: _____

Mailing address: _____ Town: _____

Physical Address: _____

Phone: Home: _____ Work: _____ Cell: _____

Animal: Dog ____ Cat ____ Description: _____

Name: _____ Age: _____ Rabies Vacc Date: _____ 1 YR ____ 3 YR ____

Vet's name: _____ License #: _____ Expires: _____

Citations issued:

_____ **9.20.010 not current for rabies vaccination**

_____ **9.12.060 not wearing current dog license**

In compliance with Mono County Ordinance 9.32.020, you are hereby notified that it is necessary that your animal be quarantined in strict confinement under proper care and observation. The place and manner of confinement shall be approved by the Health Officer or designated Animal Control staff for a period of ten (10) days to begin after the incident.

Approved places of confinement shall be:

_____ *Mono County Animal Shelter

_____ ** Owner's residence

_____ veterinary hospital

*The Health Officer and Mono County Animal Control assume no responsibility for expenses incurred in quarantining the animal at approved Mono County animal shelters during the quarantine period. The owner shall be responsible for all board fees charged during the ten (10) day quarantine period.

**Confinement at the owner's premises may be permitted at the discretion of the Health Officer or designated Animal Control staff providing that the owner of the animal has proof of a current rabies vaccination and that the residence is deemed acceptable for secured confinement. Secured confinement shall mean that quarantined animals shall be under restraint at all times, be controlled and supervised when allowed outside and not allowed contact with other animals or persons other than the ones providing care.

The animal under quarantine shall not be removed from the approved confinement area without prior permission of the Health Officer or designated Animal Control staff.

Date of incident: _____ Date report received: _____ By: _____

Quarantine issued by: _____ Quarantine begins (date): _____

Quarantine compliance check (date): _____ Quarantine release (date): _____ released by: (circle) Visual Verbal

I have read and understand the above information referencing my responsibility involving the Mono County Quarantine Ordinance. I shall comply with the ordinance and be responsible for the secured confinement of my pet throughout the quarantine period should it be allowed to remain at my residence. I also understand that I am responsible for all boarding charges should my animal be ordered to a county shelter or veterinary hospital for the ten (10) day quarantine period.

Owner's signature and/or care and custody signature

Date

Appendix C:
Procedure for Rabies Testing

Procedure for Rabies Testing

Warm blooded, domesticated, or wild mammals

If an animal that has bitten someone dies or is killed during a quarantine period, the State of California requires mandatory testing of the animal for rabies. This requirement is for all animals whether proof of rabies vaccination has been provided or not.

Large or small rodents (See algorithm 3 and 4 of 5)

The State of California Viral and Rickettsial Disease Laboratory in Richmond, as well as the State Veterinarian, do not usually recommend that these categories of animals be tested since the risk of rabies is low. If the victim or family requests testing for rabies, the testing will be done only after receiving prior approval from the laboratory or veterinarian. When in doubt, always call the laboratory and/or the veterinarian for direction.

Procedures for shipping and testing

Step 1

Domesticated or wild animals:

Arrange to have the animal's head severed by a veterinarian. Pack the head in cold packs. Transport to the shelter freezer until shipment arrangements are made.

Small animals or rodents:

Keep the animal cool and transport the animal to the shelter freezer until shipping arrangements can be made.

Bat:

1. Do not place the bat in formalin or glycerol saline.
2. Do not freeze the bat, but keep refrigerated.
3. If not dead, the bat must be humanely destroyed (chloroform or injection).
4. Place the bat into a large bat mailer container.

Step 2

1. Contact the State Laboratory (510-307-8474) in Richmond and advise them of the forthcoming shipment. If there are any circumstances, questions, or issues out of the ordinary, laboratory staff may direct us to call the state veterinarian (916-552-9740). Lab staff will ask for the following:
 - a. Type of animal
 - b. The name of the victim
 - c. When the incident occurred
 - d. The circumstances of the incident
 - e. The vaccination status of the animal
 - f. Shipping date
2. Prepare the specimen by double bagging to prevent fluid seepage.
3. Place specimen in a cool pack mailer or Styrofoam container with frozen cold packs. Pack newspaper, etc., around the specimen to keep it in place, and to keep it from freezing (bat).
4. Complete the rabies testing lab slip and place it inside the mailer/container. The lab slip should be placed in a sandwich bag on top of the double bagged specimen or secured to the inside lid of the mailer/container. The sandwich bag will protect the paperwork from possible fluid seepage that can occur during shipment.
5. Be sure to have the specimen ready for mailing on Monday, Tuesday, or Wednesday. If shipped later in the week, the thawing specimen will most likely sit unattended over the weekend. Be sure to keep in mind any holiday lab closures.
6. Bat specimens may be shipped on any day, since testing is required, be sure to get special directions from the laboratory or the state veterinarian, so that state staff can be alerted and be present for arrival of the specimen.
7. Ship specimens by overnight delivery only.
8. State laboratory staff will contact Animal Control and/or the Health Officer with results usually within three (3) hours of shipment arrival.
9. Animal Control staff and the Health Officer will relay the results to the victim, the healthcare provider/facility, the animal owner, and any other response partners, including all potentially exposed individuals.

Appendix D:
Declaration of Rabies Areas

State of California—Health and Human Services Agency
Department of Health Services

P. 02/1



GRAY DAVIS
Governor



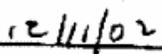
California
Department of
Health Services
DIANA M. BONTÁ, R.N., Dr. P.H.
Director

DECLARATION OF RABIES AREAS

In accordance with Sections 121580 and 121690 of the California Health and Safety Code, the existence of rabies in the following California counties has been determined to constitute a public health hazard. This geographical block of fifty-eight (58) counties include: Alameda, Alpine, Amador, Butte, Calaveras, Colusa, Contra Costa, Del Norte, El Dorado, Fresno, Glenn, Humboldt, Imperial, Inyo, Kern, Kings, Lake, Lassen, Los Angeles, Madera, Marin, Mariposa, Mendocino, Merced, Modoc, Mono, Monterey, Napa, Nevada, Orange, Placer, Plumas, Riverside, Sacramento, San Benito, San Bernardino, San Diego, San Francisco, San Joaquin, San Luis Obispo, San Mateo, Santa Barbara, Santa Clara, Santa Cruz, Shasta, Sierra, Siskiyou, Solano, Sonoma, Stanislaus, Sutter, Tehama, Trinity, Tulare, Tuolumne, Ventura, Yolo, and Yuba. The California Department of Health Services hereby redeclares as a rabies area the block of fifty-eight (58) counties mentioned above, effective December 2, 2002.



Diana M. Bontá, R.N., Dr.P.H.
Director



Date



Do your part to help California save energy. To learn more about saving energy, visit the following web site:
www.consumerenergycenter.org/flex/index.html

P. O. Box 942732, Sacramento, CA 94234-7320
(916) 857-1425

Internet Address: www.dhs.ca.gov

Appendix E:
CDPH Animal Rabies Case Report



ANIMAL RABIES CASE REPORT

I. TESTING LABORATORY: Please complete Section I, fax or email to the Veterinary Public Health Section using the contact information above, and forward the original to the County Rabies Investigator.

Laboratory: _____ Date Received: _____

Sample Submitted By: _____ Phone: _____

Animal Species: _____

Sample Submitted: Animal Head Brain Other _____

Lab Specimen #: _____

Laboratory Test Results: _____ Date Reported _____

FRA Test: _____ Positive Unsatisfactory Pending Not Done

VRDL Referral: _____ Positive Unsatisfactory Pending Not Done

VRDL Lab #: _____

Humans Exposed (bitten or significant saliva contact?) Yes No Unknown

Other Animals Exposed (bitten or direct contact?) Yes No Unknown

II. RABIES EPIDEMIOLOGIC INVESTIGATION: Please complete Section II and fax or email to the Veterinary Public Health Section using the contact information above.

Type of Rabid Animal: Pet Livestock Stray Wild Date Animal Found: _____

Address/Location Where Found: _____

Cause of Death: Euthanized Died in Quarantine Killed- How? _____

Clinical Impressions: Dumb Furious Found Dead Unknown Other _____

Other Animals Exposed? Yes No Unknown Vaccinated at Time of Exposure? Yes No

Species: _____ Number: _____ Bitten Direct Contact Unknown

Please Describe Details/Disposition of Exposed Animals (i.e. revaccinated, quarantined, euthanized, etc.)

Humans Exposed? Yes No Unknown Number: ___ Bitten ___ Scratched ___ Saliva Contact Only

Attack: Unprovoked Provoked? (includes attempts to help injured animals)

Name, Address, & Phone of Exposed Persons:

Explain if Exposed but Not Treated: _____ Number: ___ Persons Treated?

County Personnel Reporting:

Name: _____ Date Reporting: _____

Title: _____ County Agency: _____

Address: _____ Phone: _____

_____ Email: _____



ANIMAL RABIES CASE REPORT

Domestic Animal Information Form

Please complete this page if the rabid animal was a domestic dog, cat, horse, cattle, goat, sheep, etc.

Owner's Contact Information:

Name: _____ Home Phone: _____
Address: _____ Work Phone: _____

Domestic Animal's Information:

Name: _____ Sex: Male Female
Breed: _____ Altered? Yes No Unknown
Age (estimate for strays): _____ Date of First Signs: _____ Date of Death: _____
Licensed? Yes No Unknown
Rabies Vaccinated? Yes No Expired Vaccination Date: _____
Administering DVM: _____ Product Name: _____
Manufacturer: _____ Lot Number: _____
Animal's Environment? Urban Suburban Rural Other _____
If the animal was originally from another country/state, please specify: _____

Veterinarian's Information:

Seen by a DVM? Yes No DVM's Name: _____
Date of Initial Visit: _____ DVM's Phone: _____
Initial Diagnosis/Ruleout: _____ DVM's Email: _____

For The 6-Month Period Before the Animal's Death:

How many hours per day was the animal kept outside? _____
Kept on a lead or in a pen while outside? Yes No Unknown
Kept indoors or in a pen at night? Yes No Unknown
Missing for more than 24-hours? Yes No Unknown
Observed fighting/playing with any wild animal? Yes No Unknown
Observed fighting/playing with a confirmed rabid animal? Yes No Unknown
Exhibited signs of an unexplained lameness? Yes No Unknown
Unexplained wound or cut? Yes No Unknown
Describe location and type of injury: _____
Used for hunting wild animals? Yes No Unknown
Traveled out-of-state or out-of-country? Yes No Unknown
Specify destination & date(s): _____

Comments: _____