

ANIMAL AND HUMAN HEALTH PREVENTION OPPORTUNITIES

Rabies in Montana — Not All Bites Are Equal

Rabies is a preventable, viral, zoonotic disease of significant public health concern and is enzootic among bats and skunks in Montana. In 1996 and 1997, two Montanans died of rabies after bat exposure and annually around 200 people require post exposure prophylaxis after exposure to an animal capable of transmitting rabies. In this issue of Montana One Health, we describe animal rabies infections, human health concerns, and rabies prevention methods.

Animal Health

All mammals are susceptible to a rabies infection. Animals infected with the rabies virus initially show non-specific clinical signs and then develop cerebral dysfunction, which is often noticed through abnormal behavior, aggression, and death.

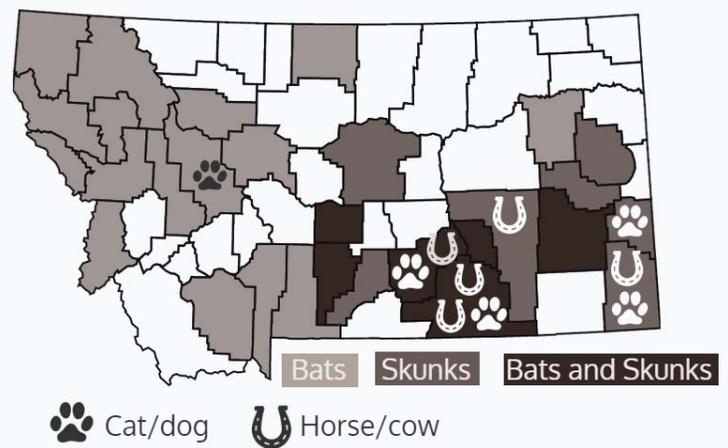
Domestic animals are at-risk of acquiring rabies through contact with wildlife. No treatment exists for rabies infected animals. Prevention through vaccination is the best protection for animals. Rabies vaccines are available for dogs, cats, sheep, cattle, horses and ferrets. Rabies is extremely rare in vaccinated animals; however, vaccinations alone don't completely eliminate the risk of disease. Pets and livestock require quarantine if they were exposed to a potentially rabid animal, and vaccination status affects the duration of quarantine (Table 1). However, vaccination status of an animal does not change the course of action if an animal bites a human.

Yearly in Montana approx. 20 cases of animal rabies are reported. Rabid bats are diagnosed across the state, whereas rabid skunks and livestock are often found in the eastern parts of the state (Figure 1). Between 2009 and 2014, the most common animals tested for rabies in Montana were dogs (699, 26%) and cats (669, 25%), but rarely test positive. Bats and skunks comprised one third of the animals tested but accounted for >90% of rabies positive animals. Sometimes livestock are submitted for testing, but very few animals are found rabid. Suspected cases of animal rabies should be reported immediately to the Montana Department of Livestock (DOL) at (406

444-2043 (Administrative Rules of Montana [ARM] 32.3.1201).

Wild animals, if available, must be tested for rabies following a bite to a human, as only a negative direct fluorescent antibody test (DFA) result can rule out infection with the virus. Animals should be euthanized by a method that prevents damage to the brain. The whole brain including brain stem should be submitted fresh and cooled to the Montana Veterinary Diagnostic Laboratory for rabies testing. Dogs, cats and ferrets must either be

Figure 1. Rabies positive animals in Montana, 2009-2014



Human Health

Humans typically acquire rabies through a bite or scratch from an animal infected with rabies virus. The initial symptoms of rabies are nonspecific, general weakness, discomfort, fatigue, or headache. The symptoms progress to cerebral dysfunction and almost always death.

Because of the high fatality rate associated with rabies infection, appropriate post-exposure response is crucial. Clinicians are required to report cases of human exposure to animals susceptible of carrying rabies immediately to their local health department (ARM 37.114.203). Public health consultation following animal bites is important to ensure appropriate decisions are made regarding the use of rabies post-exposure prophylaxis (rPEP).

Persons who were exposed to animals not known to be protected against rabies have the potential for acquiring rabies, and

Table 1. Recommended quarantine for animals that were exposed to a confirmed/suspected rabid animal*

	Vaccinated and current	Vaccinated (with proof), but overdue	Unvaccinated
Cat, Dog	45 days	45 days	4 months
Ferret	45 days	Evaluate	6 months
Livestock	45 days	Evaluate	6 months
Other mammal	n/a	n/a	Euthanasia
USDA research	n/a	n/a	Evaluate

* Compendium of Animal Rabies Prevention and Control, 2016

require appropriate risk assessment, which often include activities related to animal control, public health investigation, laboratory testing, and administration of costly rPEP if deemed necessary (avg. cost were \$4653 based on MT Medicaid data from 2010-2014).

Dogs, cats and ferrets can be observed following a human exposure and may eliminate the need for rPEP if deemed healthy. If animal observation is not possible, and the risk of rabies cannot be ruled out otherwise, prompt administration of rPEP according to the Advisory

Committee on Immunization Practices is the best option to prevent human death from rabies.

Humans in high risk settings, like veterinarians, animal researchers and diagnostic laboratorians often require a pre-exposure series due to the nature of their work. Travelers should consult with their health care provider if they plan on travelling to an area where rabies is endemic. Getting vaccinated against rabies removes the need for immunoglobulin after an exposure occurred and simplifies the rPEP protocol (Table 2).

Table 2. Recommended post exposure prophylaxis for humans following an exposure to a potentially rabid animal*

	<u>Not previously vaccinated</u>	<u>Previously vaccinated</u>
Wound cleansing	Clean wound with soap and water. If available a virucidal agent should be used.	Clean wound with soap and water. If available a virucidal agent should be used.
Rabies immune globulin (RIG)	Administer 20 IU/kg body weight. If anatomically feasible, the full dose should be infiltrated around the wound and any remaining volume should be administered intramuscular at an anatomical site distant from vaccine administration.	RIG should not be administered.
Vaccine	Four doses of Human Diploid cell vaccine (HDCV) or purified chick embryo cell vaccine (PCECV) 1.0ml IM (deltoid area) one each days 0,3,7 and 14.**	Two doses of HDCV or PCECV 1.0ml, IM (deltoid area) on days 0 and 3.

*Always consult with pharmacist and Advisory Committee on Immunization Practices (ACIP) for additional restrictions and clarification.

** A fifth dose of vaccine may be recommended for individuals who are immuno-compromised. Consult with physician.

Rabies Key Points

Animal Health

- Dogs and cats should be vaccinated against rabies. Consider vaccination for livestock if feasible.
- Cities/counties should consider vaccination ordinances for domestic pets and enforce existing ordinances.
- Cases of animal rabies should be reported immediately to the Montana Department of Livestock at (406) 444-2043.

Human Health

- Human exposure to animals susceptible to rabies should be reported immediately to the local health department.
- When indicated, rabies post-exposure prophylaxis (rPEP) should be administered properly per the Advisory Committee on Immunization Practices recommendations as described at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm>.

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