

The Rabies Risk

Legislation around rabies vaccination varies from state to state, and county to county, sometimes leading to a lack of awareness and low compliance.

By Laura Thill

Rabies involving domestic animals has dropped considerably in the last 50 years. Whereas domestic animals once comprised the majority of rabies cases reported in the United States, this is no longer the case, according to the Centers for Disease Control and Prevention (CDC). Increasing awareness on the part of veterinarians and pet owners with regard to health issues associated with rabies has led to more dogs and cats being vaccinated. Currently, in the United States, the principal rabies hosts include wild carnivores and bats.

That's the good news. Unfortunately, rabies still poses a significant risk. Cases have been reported in 49 of the United States and Puerto Rico, and it continues to be prevalent in Canada, according to Richard Ford, DVM, MS, Diplomate ACVIM & ACVPM and emeritus professor of medicine at North Carolina State University College of Veterinary Medicine. The disease poses a threat in Mexico as well, he says. "Ninety-two percent of reported rabies cases [involve] wildlife," he says. "And, when you leave the United States, the risk of rabies is substantial. The CDC estimates that as many as 60,000 people worldwide die of rabies each year. Ninety percent of exposure comes from rabid dogs, and rabid dogs contribute to 99 percent of human deaths from rabies."



What's the law?

While more pet owners today comply with rabies vaccination compared to years past, in some areas, compliance varies – from 30 to 80 percent, Ford estimates. In part, this is due to ambivalence on the part of pet owners with regard to compliance with rabies laws. "Rabies vaccination is legislated by state, and sometimes by city or county," says Ford. "There's a lot of misunderstanding as to what the law actually requires."

The safest bet is for veterinarians to encourage their clients to get their pets vaccinated for rabies, regardless of what local law mandates. Once unvaccinated pets (or pets whose rabies vaccination has lapsed) encounter a wild, carnivorous mammal or bat that is not available for testing, they should be regarded as having been exposed to rabies, according to the CDC.

In such cases, the CDC recommends euthanizing unvaccinated dogs, cats and ferrets immediately. And, in some cases, public health officials require euthanasia if unvaccinated, exposed pets come into contact with humans, says Ford.

In fact, in order to test animals for rabies, they must be euthanized. Testing must include at least two locations of the affected brain – preferably the brain stem and the cerebellum. Tissue samples may be tested

owner's responsibility to comply with rabies law and ensure a pet is vaccinated at the appropriate age and interval," he says. "It is the veterinarian's responsibility to ensure that rabies vaccines are administered in accordance with existing laws or ordinances. If the state doesn't have a law, the county will. In fact, some counties have very strict laws. What complicates awareness is that some cities or counties may impose laws that are more – never less – strict than state laws." (A small number of states, as

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by a state public health or veterinary diagnostic laboratory, and results generally are available within 24 and 72 hours. Vaccinated pets with a low probability of rabies exposure, such as domestic dogs, cats and ferrets, may be observed for 10 days, which may be adequate to rule out the possibility of rabies. However, unvaccinated pets that are exposed to rabies may be subjected to significantly longer quarantine periods (up to six months) at the owner's expense, adds Ford.

Increasing client awareness

For the most part, veterinarians rely on rabies laws in their efforts to encourage clients to vaccinate their pets, notes Ford. "It is the pet

well as Ontario, Canada, do not have rabies laws for dogs and cats, he points out.)

"If a pet is one day overdue for its rabies vaccine, according to the law it is unvaccinated," he continues. "Cats and dogs should be vaccinated at a minimum of 12 weeks (or three months), and then again within a year. Then, they should be vaccinated every three years [thereafter]. In all states, a three-year booster interval is recognized."

Veterinarians have an opportunity to educate clients on the necessary steps to protect their pets from potentially rabid animals. For instance, pet owners should supervise their animals when outdoors and have their local animal control department remove stray

animals, which may be unvaccinated or ill, from their neighborhood. Moreover, people should refrain from adopting stray or free-roaming cats. “Cats are becoming a link between wildlife and humans,” says Ford. “Since 1986, there has been more rabies documented in cats than dogs. If a child finds a kitten and brings it to school for show-and-tell, and then the kitten dies, you now have a classroom of children who may have been exposed to rabies. We need to educate pet owners about not feeding stray cats. This can be a draw for raccoons, skunks, coyotes and more to urban areas.”

Particularly when clients bring a new pet to a veterinary clinic, this is an opportunity for the veterinarian to educate them on the importance of compliance with rabies vaccination, notes Ford. He recommends that veterinarians discuss the following key points with their clients:

- Communicate information about current state and local requirements for rabies vaccination compliance in writing with pet owners.

- In the rare situation where no state or local rabies laws exist, indicate to clients why compliance with rabies vaccination is still important. They should remind clients that both the American Association of Feline Practitioners (AAFP) and the American Animal Hospital Association (AAHA) include rabies vaccination in their core vaccine guidelines.
- Educate clients on what it means for the pet when a vaccinated vs. an unvaccinated dog or cat is exposed to rabies.
- Explain the consequences of a vaccinated vs. and unvaccinated dog or cat biting a person. The bitten individual must be treated as if he or she has been exposed to rabies – meaning the pet must be euthanized.
- Clarify to clients the importance of keeping current with their pet’s rabies vaccination. When a dog or cat is even one day overdue for its rabies vaccine, it is considered unvaccinated. ■

Testing and diagnosis

When it comes to rabies in the United States, raccoons and skunks are the most highly reported rabid wildlife species, followed by foxes and coyotes. Small animals, such as squirrels, rats, mice, hamsters, guinea pigs, gerbils, chipmunks, rabbits and hares, are rarely discovered to be infected with rabies, according to the CDC.

Generally, there are two types of rabies exposures: bite and non-bite. A bite refers to the penetration of the skin by teeth. A non-bite includes the contamination of open wounds, abrasions, mucous membranes or scratches. Rabies is only transmitted through saliva and brain/nervous system tissue.

Rabies is transmitted when the virus is introduced into a bite wound, open cuts in the skin or onto mucous membranes, such as the mouth or eyes. When the virus is introduced by a bite into a dog, cat or ferret, it travels within the animal's nerves from the site of the bite to the brain. During this time – the incubation period, which may last between three weeks to two or three months in dogs and two to six weeks in cats – the animal does not appear ill. Because the rabies virus has not yet reached the animal's saliva, it will not pass along the virus if it bites another animal or human. However, studies have shown that rabies can be excreted in an infected animal's saliva for up to 10 days before the illness is apparent, according to the CDC.

Once the virus reaches the animal's brain and multiplies, it causes inflammation of the brain before moving from the brain to the salivary glands and saliva. Infected animals generally show signs of illness once the virus has multiplied in its brain (usually between three and five days). In dogs, the early signs of rabies include a change in the dog's tone of bark, chewing at the bite site, fever, loss of appetite or small changes in the animal's behavior. These signs may last for two or three days, followed by aggressive behavior that lasts for two to four days. During this time, rabid dogs may viciously attack a moving object, person or animal, show strange food (and/or non-food) cravings, constantly growl and bark, behave erratically, disoriented or restless, or have seizures or lack muscle coordination. In the last two to four days of illness, the rabid dog may appear to be choking, have difficulty swallowing, leading to drooling and foaming of saliva, or have paralysis of the jaw. Paralysis

spreads to other parts of the body and the animal enters a coma and dies.

With cats, the first stage of illness involves anxiety and sometimes a fever. They likely will lick the site of the bite. After a couple of days, cats often become restless and vicious. They become disoriented, have seizures and develop paralysis, which generally affects the throat and facial area. They

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have trouble swallowing, become increasingly weak and die of respiratory failure.

There are several methods used to test euthanized animals for rabies, according to the CDC. These include:

- A histologic exam.
- Immunocytochemistry.
- Electron microscopy.
- Amplification methods.
- Direct fluorescent antibody (dFA).

The CDC considers the direct fluorescent antibody test, which has been used in the United States for about 50 years, to be highly sensitive and specific and, as such, the gold standard diagnostic method for rabies. Animals infected with the rabies virus have rabies virus proteins – or antigens – present in their tissues. Unlike many viruses, which are present in the blood, rabies is present in nervous tissue, making brain tissue the ideal place to test.