



## **Feral Cats and Effective Rabies Control**

Rabies is an acute viral infection of the central nervous system. The rabies virus is transmitted in the saliva of infected animals. Most infections occur when people are bitten by an infected animal, but any contact with the saliva of an infected animal (alive or dead) can potentially lead to infection, if the person has an opening in the skin or the saliva gets into their eyes, nose, or mouth. One cannot get rabies from the blood, urine, or feces of a rabid animal, or from just touching or petting an animal.

The first symptoms of rabies are similar to a flu-like illness--fever, headache, and general discomfort. Within days, the disease can progress to symptoms such as anxiety, confusion, agitation, abnormal behavior, delirium, and hallucinations. Once symptoms appear, the disease is almost always fatal. Therefore, any person who has been bitten, scratched, or somehow exposed to the saliva of a potentially rabid animal should see a physician as soon as possible for postexposure treatment.

Of all the zoonotic diseases, rabies is one of the most feared and misunderstood even though its threat to humans in the United States is very small. In the last 100 years, the number of human deaths from rabies in the U.S. has fallen from 100 or more per year to an average of 2-3 per year. In most fatal cases, death occurs largely because the victims failed to recognize the health risks associated with bite wounds and did not seek medical advice or treatment. During the past 10 years, rabies caused a total of 28 human fatalities in the United States. Seven of those people died after contracting rabies in a foreign country (either from a bat or a dog); five others included an organ donor and organ transplant recipients who tragically succumbed to rabies after the donor was misdiagnosed.

In comparing the number of rabies cases to foodborne illness in the United States, one will see that an individual is more likely to suffer from food poisoning than rabies. According to the CDC, an estimated 76 million foodborne illnesses occur each year, with 325,000 hospitalizations and 5,000 deaths related to foodborne diseases. Major pathogens from foodborne illness in the U.S. cost upwards of US \$35 billion in medical costs and lost productivity.

Unlike in the U.S., rabies is of higher concern in other countries like Africa and Asia. The World Health Organization reports that approximately 50,000 humans die from rabies each year worldwide. Most of the cases are caused by rabies-infected dogs biting people. Unfortunately, media accounts tend to sensationalize and reinforce popular misconceptions about rabies. Much unnecessary anxiety and fear could be avoided by understanding that rabies in the U.S. is primarily a disease of wildlife (93%), that the disease can be controlled, and that the threat to humans and companion animals can be minimized.

For the past 40 years, rabies has been reported more frequently in wildlife than in domestic animals. In 2008, according to the Centers for Disease Control (CDC), 49 states and Puerto Rico reported 6,841 cases of rabies in animals. The decline in rabies cases is due to both the improved control and vaccination of domestic animals and to the development of effective postexposure treatment and vaccines.

Wildlife managers, public health officers, animal agencies, and the animal protection community face important decisions on how to control this disease. All too often, feral cats are caught in the middle of well-meaning but ill-conceived efforts to protect humans by exterminating healthy feral and stray animals. Efforts to eliminate rabies by killing animals are not only cruel, but also ineffective, costly, and difficult to implement. Nonlethal control has proven to be more effective over the long term.

Research has shown that population reduction often causes wildlife populations to expand rather than decline, as the remaining animals will quickly breed to the previous numbers. Others will enter from different areas, and these may not have the immunity of local populations. Scientific evidence confirms the long-term viability of nonlethal population and disease control through sterilization, birth control, and oral vaccines for wildlife. These methods represent a more humane and effective approach to the prevention of rabies.

## **The History of Rabies in the United States**

Ellen Perry Berkeley, in her article "The Truth about Rabies" in *I Love Cats* magazine, shares this interesting synopsis of rabies in the United States:

- Forty years ago almost 6,000 dogs got rabies every year.
- In 1997, 126 dogs were reported with rabies
- In 1953, there were 538 cases of cat rabies
- In 1993 there were 291 cases in cats and in 1998—282
- By 1960, more than half the confirmed cases of rabies were found in wildlife
- By 1992, more than 90 percent of rabies cases were found in wildlife.
- In the 1940s, an average of 40 people died from rabies every year
- During the period 1980 to 1998 around 2 to 3 people died each year from rabies.
- Licks and other non-bite exposures hardly ever cause the disease in humans.

## **What to Do If You are Bitten by an Animal**

All animal bites should be immediately flushed and cleansed with soap and water. Wash the wound for five minutes - this is very important. The idea is to remove as much dirt and saliva—and therefore, bacteria—as possible. It may hurt to scrub a wound, but an infection will hurt a lot more. Scrub it well and run water over it for several minutes to make sure it is clean and all soap is rinsed out.

Apply pressure with a clean towel to the injured area to stop any bleeding. Once the bleeding has stopped and the area has been thoroughly washed, apply an antiseptic solution, such as iodine or other disinfectant. Then, apply antibiotic ointment two times a day and keep the wound covered with gauze or a bandage until the wound has completely healed.

You need to see a doctor or go to the emergency room if the bite becomes infected (redness, swelling, warmth, increased tenderness, oozing of pus from the wound or a fever). Cat and dog bites can become infected very quickly and especially if the wound is not thoroughly cleaned.

Your doctor may want you to take antibiotics to prevent infection from developing. If you have not had a recent tetanus booster, you may be advised to take one. Rabies is treatable through effective post-exposure treatment that must be started before symptoms appear. If you know the owner of the dog or cat that bit you, ask for the pet's vaccination record. An animal that appears healthy and has been vaccinated may still be quarantined (kept away from people and other animals) for 10 days to make sure it doesn't start showing signs of rabies. If the animal does have rabies, you will need to get a series of rabies shots. Rabies testing in animals means the animal has to be euthanized and the head and brain sent off to a lab for testing.

### **How to Prevent Animal Bites**

- Never leave a young child alone with an animal, even a family pet. They often don't know how to be gentle with animals, which can cause an animal to get irritated and bite.
- Do not try to separate fighting animals. You may get bit in the process.
- Leave animals alone while they are eating. Animals are often very protective of their food.
- Keep pets on a leash when in public.
- Spay or neuter your pets to help reduce the number of unwanted animals that may not be properly cared for or vaccinated regularly.
- Seal openings into your home (basement, porch, attic, and chimney openings) to prevent wild animals from gaining entrance.

When working with stray or feral cats, always and most importantly use the correct equipment. Do NOT try to throw a towel over a cat or try to use a box to catch it. ALWAYS use humane traps and/or nets to catch a cat. Always wear thick leather gloves when taming feral kittens.

If you work with stray or feral cats on a regular basis it is a good idea to make sure your tetanus vaccination is current. This vaccination lasts for ten years, but each time you are bitten, its potency is depleted. Also, it is highly recommended that you have pre-exposure rabies vaccines. These are available from your local Department of Public Health. The series of 3 injections usually costs \$150— depending on your area. If you work with stray and feral cats on a regular basis, your health insurance company may provide the vaccinations for free.

### **Rabies and Wildlife**

Rabies has been a part of wildlife ecology since prehistoric times and is present throughout the world with the exception of Hawaii, a few Caribbean islands, England, Ireland, Japan, Taiwan, Spain, and Portugal. Rabies is a big problem in Asia, Africa, and Central and South America.

In 2008, Canada reported 235 cases of rabies in animals, a 13.9% decrease from 273 in 2007. Rabies in skunks increased though rabies in bats decreased by 34%. Canada

reported no cases in humans. Mexico reported 232 cases of rabies in animals, a decrease of 19.4% from 2007. Dogs accounted for 13% of rabies cases. Mexico confirmed 3 cases of rabies in humans, the source: vampire bats. The primary carriers in the U.S. (in descending order) are raccoons (2,389), bats (1806), skunks (1589), and foxes (454). Infection is nearly non-existent in rodent populations.

Within wildlife populations, the disease usually follows a self-limiting pattern. The outbreak of an epidemic is characterized by a peak that stabilizes and then declines over a cycle of approximately five years. Increased population immunity follows infection, thus limiting further outbreaks. During the progression of the disease, infected animals exhibit behavioral changes such as restlessness, excitability, and severe aggression, often attacking and biting any approaching animal or human. Wildlife seen during the day, seemingly unafraid of humans, or displaying strange behavior, should be suspected of being rabid. Do not attempt to approach or handle these animals. Carefully back away and immediately report the incident to local animal or public health officials.

## **Rabies and Bats**

Rabies acquired from bats has been the main cause of rabies deaths in humans in the U.S. Even then this incidence is very low—just a few each year. It has not always been clear how humans acquire rabies from bats. In many cases, the fact that those people who died from rabies had contact with a bat was established only after the death of the person. It may be that the bite wounds are so small that they have not been noticed.

As a precaution, if anyone ever encounters a sick bat, you should call a wildlife rehabilitation center for advice and do not handle the bat. If a bat dies or bites a human, rabies tests should be done immediately on the bat. If rabies is confirmed, post-exposure treatment should be started right away.

Remember that bats are a vital part of the environment. A lot of misinformation and many myths surround bats. For instance, they will not get tangled in your hair! They are one of the most beneficial creatures on earth. They help to keep diseases down by consuming vast quantities of insects, and for this alone they should be treated with a great deal of respect. The number of rabid bats is indeed very small—1,806 in 2008.

## **Feral Cats and Rabies**

First, **no cat has infected a human with rabies for over 4 decades.** Cats are less susceptible to rabies than many other animals. When cats do get rabies, they usually get the “furious” type; they stop eating, become very aggressive, and make unprovoked attacks on other animals and humans. **Rabid cats usually die within four to six days.** Generally, the CDC recommends 10-day rabies quarantine for cats who have come in contact with a wild animal. Some health departments, such as the one in Maryland, insist on a six-month quarantine period.

Although not natural vectors of rabies, feral cats can become exposed to the virus by attacks from infected wildlife. Since ferals often live in close proximity to humans and wildlife, animal control officials may try to eliminate colonies in ill-conceived efforts to control the disease to protect human health. However, if colonies are destroyed, other cats soon move in to fill the vacated territory. And if the ferals are TNR'd, they are

usually vaccinated for rabies, which provides a buffer zone between humans and wildlife. It is also now known that the rabies vaccine lasts for longer than one year. World famous pet vaccination experts Drs. Jean Dodds and Ronald Schultz (Chair of the Department of Pathobiology at the University of Wisconsin, Madison) are volunteering their efforts to run five- and seven-year studies to test the duration of vaccine protection so that we can vaccinate our animals less frequently.

The best means to protect both feral cats and human health is to vaccinate all cats and maintain up-to-date, accurate records. This solution requires legislators, regulatory agencies, public health departments, wildlife managers, and animal control personnel to become educated about the advantages, effectiveness, and necessity of implementing this safe, ecologically sound, and humane response to the rabies epidemic. Even though much is made of the fact that more rabid cats are found in the U.S. now than rabid dogs, still the figures are very low - 294 rabid cats in 2008. Cats are not considered a vector species. There is no "cat" rabies. Rabid cats are reported by states experiencing epizootics of rabies in raccoons, followed by states with rabid skunks and finally by states with rabid foxes.

### **Lethal Solutions Vs. Nonlethal Solutions**

The main response to rabies control in the U.S. in the past has been to try to reduce the vector species by killing groups of animals. This effort has proven totally ineffective, hastening the spread of the disease by removing healthy animals and thus creating territorial "vacuums" for other animals of those species to enter. The mid-Atlantic epidemic was actually caused by hunters bringing infected raccoons into the region from Florida.

In Western Europe, the very successful oral vaccine (vaccinia-rabies glycoprotein—V-RG) developed in the U.S., has proven to be an effective, economical, and humane control for rabies. Wildlife vaccination via food bait has blocked the spread of the disease and prevented small outbreaks from becoming major epidemics by maintaining healthy populations of key vector species as immune barriers.

Vaccines placed in baits ensure very high immunization rates. Field tests on over 40 species of animals have demonstrated the vaccine's safety. Scientific experts stated long ago that killing populations to control rabies might actually aggravate the spread of the disease. In 1973, The National Academy of Sciences stated: "Persistent trapping or poisoning campaigns as a means to rabies control should be abolished. There is no evidence that these costly programs reduce either wildlife reservoirs or rabies incidence." In addition, the World Health Organization has recommended vaccination rather than removal to control rabies in stray dog populations since 1982.

In 1997, veterinarians and wildlife biologists at the Cornell University College of Veterinary Medicine stated that vaccination barrier zones could halt the spread of raccoon rabies. Cornell's Dr. Donald Lein called for congressional action to appropriate funds through the government's Animal Damage Control (ADC) unit of the USDA-APHIS, to use for oral vaccination programs.

The V-RG vaccine has been used in several "drops" across parts of the eastern U.S. for raccoons and in Texas for coyotes and gray foxes. Approximately 355,000 doses of the vaccine were distributed over 1,500 square miles in four counties in Ohio in 1998. Since the programs were initiated, a total of 8.6 million doses of the vaccine have been

distributed over 140,000 square miles. So far the results have been excellent, with markedly reduced rabies cases reported in the targeted areas.

States that have used vaccine-laced bait include: Ohio, Florida (Pinellas County), Massachusetts (Cape Cod), New Jersey (Cape May), New York (upstate), Vermont, and parts of Texas. During 2002 multiple state agencies, the CDC and the USDA, continued to expand an immune barrier from Lake Erie, PA and New York that will eventually reach the Gulf of Mexico in Alabama. In the Northern U.S. and Canada, the red fox virus variant has not been detected for over 5 years, after the bait was used there, and oral vaccines have worked in western and central Texas in reducing gray fox rabies.

### **ALLEY CAT RESCUE ADVOCATES A COMPREHENSIVE NONLETHAL RABIES CONTROL PROGRAM BASED ON THREE PRIMARY INITIATIVES:**

1. Implement widespread oral-vaccine immunization barriers for key wildlife vector species, primarily raccoons and skunks.
2. Educate the public on steps to minimize human risk from wildlife rabies, including vaccination of outdoor cats and dogs and reporting sick bats to wildlife groups or your health department—do not kill bats indiscriminately. They are a vital asset to our environment.
3. Recognize and support the vaccination and nonlethal management of feral cat colonies as an effective and important part of a comprehensive control program.

### **Preventing Rabies in Feral Cats**

The most effective means of stabilizing and reducing populations, controlling rabies, and protecting human health, is to sterilize and return healthy vaccinated cats back to their supervised colonies. This helps to reduce roaming for mates, searching for food, and fighting; reducing these behaviors also reduce the transmission of other diseases. As mentioned previously, vaccinated colonies also act as a buffer zone between humans and wildlife.

Frequent rabies boosters in cats can cause fibrosarcomas (tumors) that can be fatal. Therefore, annual rabies vaccinations are no longer recommended, and a three-year vaccination plan is now advocated. Please note, after vaccinating domestic cats, it is normal for a lump to appear at the injection site for a few days. However, you should check the vaccination site for lumps a few weeks later, and if one appears at that time, report this to your veterinarian immediately.

In areas where rabies remains endemic, colony management may require retrapping for periodic booster vaccinations. Two other steps are crucial to the enterprise: individual members of the colony must be made recognizable in the future by an immediate ear-tipping of the left ear, and overall colony health must be monitored by continued supervision of all colony members.

Finally, pre-exposure rabies vaccinations are vital for all those who handle feral cats: veterinarians, technicians, animal control officers, and those involved in trapping. Call your local health department for information on how to obtain the vaccination.

Further measures for colonies in areas where rabies has occurred include feeding only during the day and providing only enough food for immediate consumption. This minimizes contact with nocturnal wildlife. Feeding areas should be kept clean and, where possible, other nearby food sources should be eliminated.

## **Human Rabies Update**

Between 1980 and 1997 a total of 21 (58%) of the 36 human cases of rabies diagnosed in the United States have been caused by bats. In most other countries -- including most of Asia, Africa, and Latin America -- dogs remain the major species with rabies and the most common source of rabies among humans. Twelve (33%) of the 36 human rabies deaths reported to the Centers for Disease Control and Prevention (CDC) from 1980 through 1997 appear to have been related to rabid animals outside the United States.

Between the years 2000 and 2008, 26 humans died in the U.S. from rabies. Fourteen from bats, 1 from raccoon rabies, 6 from dogs and in 2004, five people died from rabies after organ transplants. The bat rabies variant caused these transplant deaths, and the 6 caused by dog bites were people who got bitten outside the U.S. and got sick once they returned to the U.S.

During 2008, 2 humans in the U.S. contracted rabies. A new immigrant arrived from Mexico and died soon after from encephalitic symptoms. Testing identified that he had died from rabies acquired from a free-tailed bat found in Mexico. In Missouri, a 55-year old male arrived in hospital with suspected rabies symptoms. His family said he had been bitten on the ear by a bat 4 to 6 weeks before clinical signs. The bat did not appear to be sick, so no prophylaxis treatment was sought.

If anyone comes into contact with a bat, it is strongly recommended that a quarantine or rabies test be considered for the bat and postexposure rabies treatment be started as a precaution. Only a small number of individuals who died from the bat rabies variants showed any bite wounds; the majority shows no signs at all. This may be because the wound left by a bat is very small. It is possible to be bit by a bat and not know it.

The treatment for possible rabies-exposure has been reduced from 5 to 4 doses: one dose of immune globulin on day 0, then four doses of rabies vaccine (days 0, 3, 7, 14). The shots are given in the arm—shots in the abdomen were discontinued long ago.

## **Minimize Your Risk**

- If you feed feral colonies, remove food sources after dark
- Remove food sources from areas outside your home
- Animal-proof your home and outbuildings
- Vaccinate outdoor companion animals with a three-year vaccination
- Approach unfamiliar animals with caution
- Use proper safety equipment when handling stray/feral cats
- Observe wildlife from a distance
- Educate children on safety precautions

## **Need for Education and Better Public Relations**

Rabies in wildlife represents a very minor threat to public health and can effectively be controlled using nonlethal management practices. The threat of rabies can also be further minimized with a few simple precautions like those mentioned in this article.

When a rabies case is reported, the public only needs to be reminded of the necessary precautions to take in minimizing exposure. The media does not need to over dramatize each case and cause any unnecessary fear or culling of innocent animals.

According to the CDC, long-term lethal control (sustainable population reduction) has not been successful in North America or elsewhere. For the first time, through the use of oral immunization, a method for the elimination of rabies is available that is effective, safe, inexpensive, and practical (L.G. Schneider of the World Health Organization Center for Rabies Surveillance and Research).

## **What You Can Do**

Contact state and federal agencies responsible for wildlife management and public health and encourage the implementation of comprehensive nonlethal wildlife rabies control programs using the V-RG oral vaccine. These agencies include: state game commissions, local animal control authorities, and federal, state, and local health departments. Explain that studies show that vaccination programs are more effective in preventing the spread and transmission of rabies over tradition eradication methods. Also, encourage local authorities to spay or neuter and vaccinate feral cats.

After using oral vaccinations in wildlife populations:

- Switzerland declared rabies-free status in 1998,
- France declared it was rabies-free in 2000,
- Germany declared it was rabies-free in 2008,
- Southern Ontario, Canada has eliminated rabies in red foxes, and
- In Texas, the oral vaccine is showing great promise in eliminating rabies in gray foxes and coyotes.

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