

# RABIES CONTROL AND FERAL CATS IN THE U.S.

**R**abies is an acute viral infection of the central nervous system. If a person has been exposed to the rabies virus and does not receive treatment while the virus is incubating, i.e., before onset of symptoms, the result will virtually always be fatal. This is why rabies continues to be the most feared of all zoonotic diseases (diseases that can be transmitted from animals to humans). In fact, fear of rabies far outweighs the actual threat from this disease.

The danger of humans contracting rabies in the United States is extremely slight, although in many other countries rabies continues to be a danger to the human population. Much unnecessary fear can be alleviated by educating people that rabies in the U.S. is overwhelmingly a disease of wildlife that is in most areas contained, that treatment is fully effective if begun within a known time frame, and that the threat to humans and companion animals is minimal and can be even further reduced.

## FACTS ABOUT RABIES IN THE U.S.

1. Massive immunization and education programs begun in the 1940s have virtually eliminated rabies in domestic animals.
2. Oral rabies vaccine (ORV) has been highly effective in halting the spread and eliminating rabies in several wildlife species where adequate programs are carried out.<sup>1,2,11,13</sup>
3. Treatment for humans who have been exposed to the rabies virus, called post-exposure prophylaxis (PEP), is fully effective in destroying the virus when it is administered before the onset of symptoms. "In the United States, human fatalities associated with rabies occur in people who fail to seek medical assistance, usually because they were unaware of their exposure."<sup>3</sup>

**While no one underestimates the lethal nature of this disease when it is left untreated, the fact is that ongoing immunization, prevention, and awareness campaigns currently exceeding \$300 million annually (most for dog vaccinations)<sup>3</sup> have contained the danger of rabies to humans. Rabies is not a public health crisis in the United States.**

## Compare these statistics from the Centers for Disease Control (CDC):

Period	Disease	Cases in humans in the U.S.
1990-2002 (12 years)	Rabies <sup>4</sup>	36*
2002 (1 year)	West Nile virus <sup>5</sup>	4,161 resulting in 277 deaths

\*Of 36 laboratory-confirmed rabies cases, at least seven were known to originate outside the U.S.

**None was acquired from a cat.**

## BACKGROUND OF RABIES CONTROL

Rabies is an ancient disease which appears in recorded human history as early as 2,300 B.C. Rabies is found throughout much of the world today and, in many countries other than the U.S., still presents a serious threat to humans.

In the United States, rabies was found primarily in dogs through the middle of the last century, but

starting as early as the 1940s, widespread immunization and education programs brought canine rabies under control. Today, more than 90 percent of rabies cases occur in wildlife.<sup>1</sup> The primary carriers, in descending order, are raccoons, skunks, bats, and foxes. Infection is extremely rare, although not unheard of, in rodent populations.

With the effective end of the canine rabies epizootic, cats became the domestic animal with the highest incidence of rabies, possibly because while laws requiring vaccination of dogs are standard, many jurisdictions still do not require vaccination of cats. Although cats are now the domestic animal with the highest rabies rate, it should be noted that the rate is consistently very low, ranging between three and four percent of reported cases.<sup>6,7,8</sup>

Raccoon rabies is the most prevalent variant of the disease today. Raccoon rabies appeared in Florida in the 1950s and spread very slowly through Florida and neighboring states until 1976, when some 3,500 raccoons were transported to West Virginia as hunting stock.<sup>9,10</sup> How many of the translocated raccoons were infected with the rabies virus is unknown, but the disease became established in the Mid-Atlantic States and rapidly spread northward, reaching Maine and into Canada by the century's end.

## CONTROLLING RABIES IN WILDLIFE

Development of an oral rabies vaccine (ORV) for raccoon-strain rabies began in the 1970s, with the first field evaluation conducted in 1990. ORV is a liquid vaccine embedded in baits that are distributed either manually or by air throughout target areas and has been found to be effective for species other than raccoons. ORV has been or is being utilized in at least eleven rabies control efforts in Pennsylvania, New Jersey, Massachusetts, Florida, New York, Vermont, Ohio, Maryland, Virginia, and Texas.<sup>1</sup> For example:

- Using ORV, in five years (1996-2000) the state of Ohio was able to establish an effective buffer zone of immunity along its border with Pennsylvania and West Virginia, thereby halting the westward progress of raccoon-strain rabies. This buffer zone and the natural barrier formed by the Appalachian mountains have prevented the possibly uncontrollable spread of raccoon

rabies through the Midwestern and western United States.<sup>11</sup>

- In 1988, canine rabies was discovered in coyote populations in South Texas. The same year, gray fox rabies appeared in West Central Texas. The state experienced human deaths from these outbreaks, as well as significant costs for extensive PEP treatments which were necessary because canine rabies spread easily from coyotes to pet dogs and then to humans.<sup>12</sup>

Beginning in 1995, intensive ORV baiting programs were conducted in South and West Central Texas that have resulted in a 100 percent decline in reported canine (coyote) rabies cases and a 91 percent decline in gray fox rabies.<sup>13</sup>

## BASIC FACTS ABOUT FERAL CATS

1. Feral cat populations are prevalent throughout the United States. They are the result of decades of human irresponsibility in failing to neuter pet cats.
2. Feral cats breed prolifically—far faster than they can be effectively trapped and removed. Decades of trap-and-remove campaigns have failed to either stabilize or reduce the numbers of feral cats. There is no realistic expectation that ongoing trap-and-remove programs will succeed in eliminating feral cat populations in the long term.
3. The public is becoming increasingly intolerant of the massive killing of healthy animals.<sup>14,15</sup> No jurisdiction has enough money to exterminate all feral cats if the public won't cooperate.

## VALUE OF TRAP-NEUTER-RETURN (TNR) IN RABIES CONTROL

The best way to eliminate the threat of rabies to feral cats (and thereby protect humans who may come into contact with them) is to vaccinate feral cats for rabies. Feral cats that undergo TNR in any jurisdiction where rabies is enzootic or vaccination for rabies is required by law, and in many other jurisdictions as well, are vaccinated for rabies. The multitudes of feral cats that escape trap-and-remove efforts are not vaccinated.

If exposed to a rabid raccoon or other rabid animal, a vaccinated cat will not acquire the rabies virus

and therefore cannot transmit it to other animals or humans. Sterilized feral cats also are less likely to encounter infected wildlife because of behavioral changes that result from neutering, such as reduced roaming. In the very unlikely event of a feral cat coming into contact with a human other than a caretaker, a vaccinated (TNR-ed) cat presents no rabies threat.

Is revaccination necessary? This question arises because pet cats are traditionally boosted at regular intervals and many local ordinances require it. However, virtually no feral cat TNR programs in place around the country require a second rabies vaccination for cats in managed colonies.

One reason for this is that rabies immunity far outlasts the expiration date indicated on the vaccine label. According to "Experimental Rabies in Cats: Immune Response and Persistence of Immunity,"<sup>16</sup> a study conducted in 1981, "Complete protection was observed after more than 3 years following a single vaccination." In other words, a one-year rabies vaccine maintained immunity for a full three years, and possibly for much longer. The study was concluded after three years, however, so the actual period of immunity could not be determined.

Further, a *Wall Street Journal* article published July 31, 2002 reported: "No one truly knows how long protection from vaccines lasts. Vaccine makers say that proving their duration would be expensive and would require large numbers of animals to be isolated for years. One company, Pfizer Inc., ... sells the identical (rabies) formula simply packaged under different labels – Defensor 1 and Defensor 3 – to satisfy different vaccination requirements."<sup>17</sup>

## RABIES CONTROL AND PEOPLE

Humans are most commonly exposed to rabies when bitten by a rabid animal. This exposure does not constitute "getting rabies." A person is only classified as having rabies at the onset of symptoms, at which point there is no cure. However, the incubation period in humans is generally from three to eight weeks, during which treatment is completely effective in eliminating the virus.

Treatment for exposure to the rabies virus consists of one dose of human rabies immune globulin (HRIG) and five doses of rabies vaccine over a 28-day period, with the regimen begun as soon as possible

after exposure. Current vaccinations are given in the arm, like a tetanus vaccine, and are painless.

People who work with wild animals often receive pre-exposure rabies vaccinations. If a person heeds established safety precautions for working with feral cats, it is unlikely that he or she will ever get close enough to be bitten and, therefore, would not need a pre-exposure rabies vaccination. However, persons working with feral cats should be aware that pre-exposure rabies vaccinations are available to them.

If a person with a current pre-exposure rabies vaccination is subsequently bitten by an animal suspected to have rabies, that person will still have to undergo treatment for rabies, but to a lesser degree than someone who was not vaccinated. Pre-exposure vaccination eliminates the need for HRIG and decreases the number of vaccine doses needed. This can be significant in areas where treatment products are not readily available or where post-exposure therapy could be delayed. It also lowers the risk of adverse reactions to multiple doses of vaccine. Finally, pre-exposure vaccination may provide protection when a person's exposure to rabies is not obvious, e.g., a bat's teeth are very small and a bat's bite may not be recognized as such.<sup>18</sup>

## RECOMMENDATIONS

Alley Cat Allies advocates comprehensive rabies control based on three initiatives:

1. Further implement widespread oral vaccine (ORV) immunization barriers for key wildlife species susceptible to rabies.
2. Educate the public on steps to minimize human risk from wildlife rabies, including vaccinating outdoor cats and dogs, reporting sick or suspicious-acting animals to appropriate agencies, animal-proofing homes and outbuildings, and educating children on safety precautions.
3. Support and promote the vaccination and nonlethal management of feral cat colonies as an effective part of a comprehensive control program.

**TNR is the only widely available, effective, and cost-effective method to exclude rabies infection from feral cat populations.**

## NOTES

- <sup>1</sup> Controlling Wildlife Vectors of Bovine Tuberculosis and Rabies: Rabies, National Wildlife Research Center, USDA. Available at [www.aphis.usda.gov/ws/nwrc/research/mammal\\_diseases/rabies.html](http://www.aphis.usda.gov/ws/nwrc/research/mammal_diseases/rabies.html). Accessed April 14, 2003.
- <sup>2</sup> Details of the Fairfax County, Virginia, oral rabies vaccination program: [www.co.fairfax.va.us/service/hd/rabpilot01.htm](http://www.co.fairfax.va.us/service/hd/rabpilot01.htm).
- <sup>3</sup> [www.cdc.gov/ncidod/dvrd/rabies/introduction/intro.htm](http://www.cdc.gov/ncidod/dvrd/rabies/introduction/intro.htm)
- <sup>4</sup> Cases of rabies in human beings in the United States, by circumstances of exposure and rabies virus variant, 1990-2001. Available at [www.cdc.gov/ncidod/dvrd/rabies/Professional/publications/Surveillance/Surveillance01/Table2-01.htm](http://www.cdc.gov/ncidod/dvrd/rabies/Professional/publications/Surveillance/Surveillance01/Table2-01.htm). Accessed April 14, 2003.
- <sup>5</sup> West Nile Virus Update Current Case Count. Data currently listed shows case counts for 2002 only. Available at [www.cdc.gov/od/oc/media/wncount.htm](http://www.cdc.gov/od/oc/media/wncount.htm). Accessed April 14, 2003.
- <sup>6</sup> "Rabies surveillance in the United States during 2001," *Journal of the American Veterinary Medical Association* (JAVMA), Vol. 221, No. 12, Dec 15, 2002.
- <sup>7</sup> "Rabies surveillance in the United States during 2000," *Journal of the American Veterinary Medical Association* (JAVMA), Vol. 219, No. 12, Dec 15, 2001.
- <sup>8</sup> "Rabies surveillance in the United States during 1999," *Journal of the American Veterinary Medical Association* (JAVMA), Vol. 217, No. 12, Dec 15, 2000.
- <sup>9</sup> "Trappers and rabies return to rampage," *Animal People*, June 1997.
- <sup>10</sup> "Rabies Risk," Amy Shojai. *Cat Fancy*, June 1994.
- <sup>11</sup> Ohio Oral Rabies Vaccination Program. Ohio Department of Health, Division of Prevention, Bureau of Infectious Disease Control, Zoonotic Diseases – Rabies Program. Available at: [www.odh.state.oh.us/odhprograms/zoodis/rabies/pubs/orvslide\\_files/frame.htm](http://www.odh.state.oh.us/odhprograms/zoodis/rabies/pubs/orvslide_files/frame.htm). Accessed April 14, 2003.
- <sup>12</sup> [www.tdh.state.tx.us/zoonosis/EDUCATIO/PAMPHLET/711broc.pdf](http://www.tdh.state.tx.us/zoonosis/EDUCATIO/PAMPHLET/711broc.pdf). Accessed April 14, 2003.
- <sup>13</sup> Texas Department of Health Zoonosis Control Division's Oral Rabies Vaccination Programs (ORVP). Background and details by year are available at: [www.tdh.state.tx.us/zoonosis/orvp/](http://www.tdh.state.tx.us/zoonosis/orvp/). Accessed April 14, 2003.
- <sup>14</sup> "Evaluation of the effect of a long-term trap-neuter-return and adoption program on a free-roaming cat population," *Journal of the American Veterinary Medical Association* (JAVMA), Vol 222, No. 1, January 1, 2003.
- <sup>15</sup> "Urgent! Feral Cats on Navy Bases Need Your Help!" *Feral Cat Activist*, Spring 2002.
- <sup>16</sup> "Experimental rabies in cats: immune response and persistence of immunity," *Cornell Vet.* 1981, 71: 311-325.
- <sup>17</sup> "Are Annual Shots Overkill? For Some Pet Diseases, Yearly Boosters Are Based On Tradition, Not Science," by Rhonda L. Rundle. *The Wall Street Journal*, July 31, 2002.
- <sup>18</sup> [www.cdc.gov/ncidod/dvrd/rabies/bats\\_&\\_rabies/bats&.htm](http://www.cdc.gov/ncidod/dvrd/rabies/bats_&_rabies/bats&.htm). Accessed April 14, 2003.