

# Addendum 4: Rabies

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Rabies is a viral infection of the central nervous system that is transmitted in the saliva of infected animals. Most infections occur when people are bitten by an infected animal. The rabies virus cannot cross intact skin, but infection can occur if the saliva gets into a person's 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.

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. Since 2003, rabies has caused a total of 31 human fatalities in the U.S. Ten of those people died after contracting rabies in a foreign country (from a bat, dog, or fox); five others included an undiagnosed organ donor and the four transplant recipients who received his infected organs.

## Rabies and Wildlife

For the past 40 years, rabies has been reported more frequently in wildlife than in domestic animals. The Centers for Disease Control (CDC) reported 5,865 cases of animal rabies in the U.S. in 2013, a 4.8 percent decrease from the previous year — 92 percent of the total were wildlife, 85 percent of which were raccoons, bats, and skunks (Dyer et al., 2014). The decline in rabies cases is due to both the improved control and vaccination of domestic animals and to the development of effective post-exposure treatment and vaccines.

In 2013, Canada reported 116 cases of rabies in animals, a 17.7 percent decrease from 2012 and a 58 percent decrease since 2007. Rabies in skunks decreased 15.6 percent from the previous year, though rabies in bats increased by 24.4 percent. Canada reported no cases in humans, cattle, or wolves. Mexico reported 232 cases of rabies in animals, a decrease of 19.4 percent from 2007. Dogs accounted for 13 percent of rabies cases. Mexico confirmed 3 cases of rabies in humans, the source: vampire bats. The primary carriers in 2013 in the U.S. were raccoons (1,898), bats (1,598), skunks (1,447), and foxes (344). Infection is nearly non-existent in rodent populations (Dyer et al., 2014).

## Rabies and Bats

Rabies acquired from bats has been the main cause of rabies deaths in humans in the U.S for some time. Even then, this incidence is very low — only 18 times over the last ten years (Dyer et al., 2014). 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.

The number of rabid bats is indeed very small — only 1,598 in 2013, which is less than six percent of all bats submitted for testing (Dyer et al., 2014). As a precaution, if you ever encounter a sick bat, 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.

## Rabies and Feral Cats

First, no person in the U.S. has died of rabies acquired from a cat since 1975. This last incident occurred in Minnesota, when a 60-year-old man was bitten on the finger and died approximately seven weeks later (Texas DSHS, 2013). Cats are less susceptible to rabies than many other animals, and in fact there is no cat-specific rabies — cats are infected with whichever species-specific strain is present in the infecting animal, such as raccoons, skunks, or bats. (The same is true for humans.) 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 a 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.

## 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 those 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 VRG (vaccinia-rabies glycoprotein), 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 (Browne, 1994). A new oral vaccine, ONRAB (AdRG1.3 or human adenovirus-rabies virus glycoprotein), has shown promise in Canadian studies and is being investigated in the U.S. in Ohio, Vermont, New York, New Hampshire, and West Virginia. ONRAB is different in that it cannot induce rabies in humans or domestic animals who come into contact with it (Canadian Centre, 2012). Early trials have shown ONRAB to be significantly more effective than VRG in vaccinating raccoon populations (Fehliner-Gardiner et al., 2012). This is particularly important, as raccoons are the primary carriers of rabies in the U.S. and a threat to pass the virus to community cats.

***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 vaccinating outdoor cats and dogs and reporting sick bats to wildlife groups or the local 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.

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 reduces the transmission of other diseases. As mentioned previously, vaccinated colonies also create a buffer zone between humans and wildlife.