

# Pathogenesis of Rabies

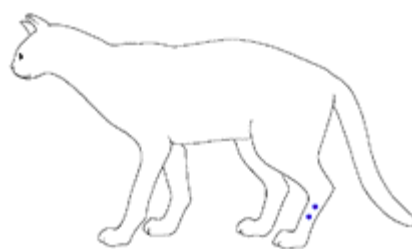
Rabies is a viral disease which affects all mammals. It is usually contracted through a bite from an infected animal, though transmission can occur if the virus is introduced onto any mucous membrane (eyes, nose, mouth). When the virus is **1) introduced through a bite**, it begins to replicate in the skin or muscle tissue before it works its way into the peripheral nerves. Since the nervous tissue is stationary, **2) the virus moves slowly as it jumps from nerve cell to nerve cell** on its way to the brain. Though very small amounts of virus could enter the blood stream when the bite occurs, it would be unable to replicate there, so the blood from a rabid animal is not considered infectious.

**3) The time it takes the virus to go from the bite wound to the brain is the Incubation Period.** The incubation period can range anywhere from 2 weeks to several months. The average incubation period for dogs and cats is about 2 months. Usually, the location of the bite wound will determine the length of incubation. If an animal is bitten on the neck, the virus would have a relatively short distance to travel to the brain, and would likely have a short incubation period.

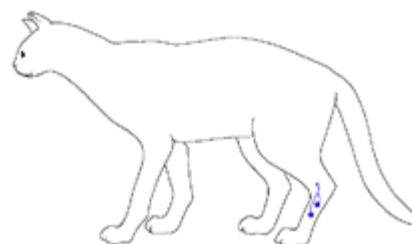
**4) As soon as the virus reaches the brain it works its way in to the salivary glands** where it replicates in abundance and is shed in the saliva. At this point the animal becomes **infectious** and can transmit the disease through a bite. There is a period of about 3 days that the animal will be actively shedding the virus but will not appear to be sick in any way.

After this 3 day period, **5) the virus in the brain has infected enough of the brain tissue that it begins to affect the animal's behavior.** Symptoms of rabies may include unexplained aggression, impaired locomotion, varying degrees of paralysis, and extreme depression or viciousness. Individual animals may be affected in different ways. Some animals will display the well-known "vicious" form, while others, displaying the "dumb" form, will merely appear sick or dazed and become very lethargic. Once an animal begins to show signs of rabies it is likely to die within 5 days. Usually, the longest any dog or cat can live while actively shedding the virus is only going to be about 8 days.

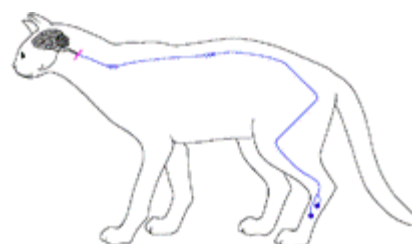
However, some wildlife species have been observed to shed virus for several weeks before showing any signs of illness and dying. Because of this, in any situation where a human or a domestic animal is exposed (bitten or scratched) by a wild animal, if at all possible, the wild animal should be immediately killed and tested for rabies.



1. Virus normally transmitted by bite.



2. Virus moves from cell to cell on its path to brain.



3. At end of incubation period, virus reaches the brain.



4. Virus is distributed from the brain to salivary glands. It is infectious, but still acts normal.



5. Animal's brain has become infected enough to affect its behavior.



