



THE UNIVERSITY OF TENNESSEE
Occupational Health Program

Rabies

1.0 Introduction

Rabies is a viral disease which infects the central nervous system of mammals. There is no effective treatment for rabies – once the infection is established, it is fatal. If a person experiencing a potential exposure to rabies does not receive the appropriate medical care, the virus can cause disease in the brain, ultimately causing death. Rabies is rare in people in the United States, CDC reports only 1 to 3 cases annually, largely due to effective post-exposure prophylaxis (PEP) in the event of a suspected rabies exposure. The CDC states that approximately 60,000 Americans annually receive PEP after being bitten or scratched by an infected or suspected infected animal. The majority of the rabies cases reported in the U.S. are in wildlife mammals, with the most prevalence in raccoons, skunks, foxes, and bats. Domestic pets, such as dogs and cats, as well as livestock, including cattle and horses, can contract rabies. Most of the pet and livestock rabies cases are due to contact with rabid wildlife. Nearly all domestic animals contracting rabies have not been vaccinated or were not up to date on rabies vaccination.

2.0 People at Risk

Veterinarians, vet hospital support staff, and vet students are at increased risk of rabies, due to continued exposure to animals with an unknown vaccination status. Researchers engaged in field work with wild animals are also at increased risk as wild mammals are the most prevalent carriers of rabies.

3.0 Transmission

The rabies virus is transmitted via direct contact between the brain/nervous system tissue, saliva, or tears from an infected animal and non-intact skin (open wound or abrasion) or mucous membranes of a human or other mammal. The incubation period of rabies is highly variable, in domestic animals it typically is within 3-12 weeks, but can range from just a few days to months, but rarely ever over 6 months. The typical incubation period for rabies in humans is between 1 and 3 months.

People usually contract rabies from the bite of a rabid animal. It is rare, but still possible, for people to become infected from non-bite exposures, including scratches from an infected animal. Personnel performing necropsies on infected animals can contract rabies via inhalation of aerosolized rabies virus when slicing the brain tissue for testing purposes. Rabies virus is not found in blood or feces.

4.0 Symptoms

Clinical Signs of Rabies in Animals:

- Excessive salivation
- Lethargy
- Fever
- Vomiting
- Anorexia
- Weakness
- Paralysis

- Seizures
- Difficulty breathing
- Difficulty swallowing
- Abnormal behavior
- Aggression
- Self-mutilation

The rabies incubation period, the time required for the virus has to travel to the brain prior to the onset of symptoms, can last for weeks to months.

Clinical Signs of Rabies in Humans:

- First symptoms may be similar to the flu including weakness or discomfort
- Fever
- Headache
- Itching sensation at the site of the animal bite
- Progression to anxiety/confusion/agitation/delirium/or other abnormal behavior

5.0 Diagnosis, Prevention and Treatment

Rabies Prevention in pets:

- Ensure rabies vaccinations are up to date.

Rabies Prevention in humans:

- Avoid contact with wildlife, especially bats, raccoons, skunks and foxes. The rabies virus can persist in carcasses.
- Wash animal bites or scratches immediately with soap and water.
- If you are bitten or scratched by an animal with an unknown rabies status seek health care evaluation to determine the need for post exposure prophylaxis. Rabies is 100% preventable in humans through prompt medical care.
- Vaccinate your pets to protect them, yourself and your family.
- Rabies Prophylaxis
 - Rabies Pre-Exposure Prophylaxis (PrEP)-** Recommended for veterinarians, vet hospital staff/students and wildlife workers encountering susceptible rabies hosts. PrEP consists of 2 doses of rabies vaccine given 7 days apart with the option of a one-time titer check done 1 year following vaccination or a single dose booster given between 3 weeks and 3 years following the 2-dose PrEP. For individuals deemed at higher risk, such as people who are working with bats or in bat environments, such as caves, or perform animal necropsies, titer checks are to be completed every 2 years. This guidance was issued in May 2022 by the centers for disease control (CDC) [CDC 2022 updated rabies PrEP guidance link](#)
 - Rabies Post Exposure Prophylaxis (PEP)-** Recommended for people who have never been vaccinated against rabies and who have bite or non-bite exposure to rabid animals. PEP includes administration of human rabies immune globulin (HRIG) and rabies vaccine, given together, initially on day 0, and repeated on days 3, 7, and 14 following the exposure. For individuals who have received the rabies PrEP prior to the exposure, HRIG is not indicated and those exposed should only receive the rabies vaccine.

Rabies Diagnosis in animals:

- Direct fluorescent antibody (DFA) test which detects the presence of rabies virus antigens in brain tissue.

- A diagnostic laboratory can determine whether the animal is rabid based on the DFA test results and inform the patient to seek immediate post-exposure prophylactic (PEP) treatment.

6.0 Resources

[CDC Rabies link:](#)

For further information related to possible zoonotic disease exposure, or further related resources, please contact UT Occupational Health Nurse Bryan Cranmore RN, COHN at bcranmore@utk.edu, or for urgent response the OHP nurse can be reached at 865-755-8924

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