

# Rabies (Human and Animal)

(Also Known as Hydrophobia)

## IMMEDIATELY REPORTABLE DISEASE

Per N.J.A.C. 8:57, healthcare providers and administrators shall immediately report **by telephone** confirmed and suspected cases of human rabies to the health officer of the jurisdiction where the ill or infected person lives, or if unknown, wherein the diagnosis is made.

The health officer (or designee) **must immediately institute the control measures listed below in section 5, “Controlling Further Spread,”** regardless of weekend, holiday, or evening schedules. A directory of local health departments in New Jersey is available at <http://localhealth.nj.gov>.

If the health officer is unavailable, the healthcare provider or administrator shall make the report to the Department by telephone to (609) 826-5964 or 4872, between 8:00 A.M. and 5:00 P.M. on non-holiday weekdays or to (609) 392-2020 during all other days and hours.



## 1 THE DISEASE AND ITS EPIDEMIOLOGY

### A. Etiologic Agent

The virus that causes rabies is a rhabdovirus of the genus *Lyssavirus*.

### B. Clinical Description and Laboratory Diagnosis

#### 1. Animal Rabies

Rabies is an acute viral encephalomyelitis that principally affects bats and carnivores, although all mammals are susceptible. Classically, clinical signs may appear in two phases: excitative or “furious” and/or paralytic or “dumb.” In the furious stage, the animal displays uncharacteristically aggressive behavior and may bite indiscriminately. The paralytic stage is characterized by depression, circling, unresponsiveness, and ascending paralysis. The early or prodromal signs may include anorexia, unusual vocalization, wobbly gait, tremors, and abnormal behavior (e.g., a wild animal may approach humans without fear). The end stages of disease are paralysis, coma, and death. The time between clinical onset and death is typically less than ten days. The behavior of an animal, however, is NOT always a reliable indicator of the animal being rabid. Wild animal species that serve as reservoirs in nature for the virus may be infected and shedding the virus without displaying clinical signs. The only way to definitively diagnose an animal with rabies is to euthanize the animal and test its brain tissue.

#### 2. Human Rabies

Rabies is a progressive illness with a duration of approximately 2 to 21 days, which is almost always a fatal infection. The incubation period is usually 3 to 8 weeks. A prodromal phase, lasting about 2 to 10 days, is characterized by pain and numbness/tingling at the site of the bite (present in 50% to 80% of cases) and nonspecific complaints such as fatigue, headache, and fever. Behavioral changes, including apprehension, anxiety, agitation, irritability, insomnia, and depression, may also be apparent.

The prodromal phase is followed by the neurologic phase, which is characterized by disorientation and hallucinations, paralysis, episodes of terror and excitement, hydrophobia, hyperventilation, hypersalivation, and seizures. These symptoms are followed by coma and usually death. Once symptoms have begun, the disease is nearly always fatal, despite intensive treatment. In 2004, one person recovered from a documented infection with rabies, after an intensive protocol that included a drug-induced coma and the administration of antiviral drugs (Willoughby et al.). This recovery is considered highly unusual, however, and no single specific course of therapy for rabies in humans has been demonstrated to be effective after clinical signs manifest.

Several tests are necessary to diagnose rabies antemortem (before death) in humans; no single test is sufficient. Specimens for rabies testing should be collected only after more common etiologies of encephalitis or myelitis have been ruled out, in consultation with the New Jersey Department of Health (NJDOH) (see section 3 B, below, for more information). Tests are performed on samples of saliva, serum, spinal fluid, and skin biopsies of hair follicles at the nape of the neck. Saliva can be tested by virus isolation or detection of rabies RNA by reverse transcription and polymerase chain reaction (RT-PCR). Serum and spinal fluid are tested for antibodies to rabies virus. Skin biopsy specimens are examined for rabies antigen in the cutaneous nerves at the base of hair follicles. NOTE: all four specimens (saliva, serum, spinal fluid, and nuchal biopsy) are required for testing. All human rabies testing is conducted at the Centers for Disease Control and Prevention (CDC), after approval by the NJDOH.

### **C. Reservoirs**

Although all species of mammals are susceptible to rabies virus infection, only a few species are important in maintaining the disease cycle in nature. In the United States, raccoons, skunks, foxes, and coyotes are the significant reservoirs in terrestrial animals, with bats being the other significant animal reservoir. Two variants of rabies virus are present in New Jersey, the bat and raccoon rabies virus variants. Any of the rabies variants can be passed to other animals and humans through exposure to infectious saliva. Small rodents and lagomorphs (e.g., squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, mice, wild rabbits, and hares) have not been known to transmit rabies to humans and are almost never found to be infected with rabies. Domestic rabbits caged outdoors have been found rabid, because cages often allow exposure to rabid animals while still providing enough protection for the rabbit to survive and then develop the disease. Although groundhogs are rodents, have been found to be rabid in areas where raccoon rabies is present. For this reason, they are considered a high-risk animal even though they are rodents.

Rabies occurs in more than 150 countries and territories worldwide. In contrast to the United States and Europe where wildlife rabies predominates, dogs remain the principal reservoir of rabies in Mexico, South and Central America, Eastern Europe, Asia, Africa, the Caribbean, and Asia. Dogs are very effective in transmitting rabies to people in these regions and are the source of 99% of the human rabies deaths worldwide.

## **D. Modes of Transmission**

Rabies is transmitted when the virus-laden saliva or other potentially infectious material (brain, spinal cord) from an infected animal is introduced into bite wounds, open cuts in the skin, or mucous membranes. Bites by some animals, such as bats, can inflict injury so minor that bites may go undetected. Also, indirect exposure to saliva of a rabid animal can occasionally occur through contact with a pet or object contaminated with saliva. Direct person-to-person transmission is theoretically possible, but cases occurring under such conditions have not been documented. However, cases have been documented after transplants of corneas and other tissues from infected donor individuals. Airborne spread in specific situations (i.e., in a cave with a multitude of bats or in a laboratory with rabies virus or infected specimens) has occurred on rare occasions. Rabies is not transmitted through contact with blood, urine, skunk spray, or feces of an infected animal. Because rabies virus is rapidly inactivated by desiccation and ultraviolet irradiation, if the material potentially containing virus is dry to the touch, it can generally be considered noninfectious.

## **E. Incubation Period**

### **1. Animal Rabies**

Depending on the species of animal, dose of virus, and site of inoculation, the incubation period may vary from 12 days to one year or more, but is typically three to 12 weeks. The progression of rabies infection in dogs and cats has been studied extensively, and it is known that the incubation period of these animals rarely exceeds six months.

### **2. Human Rabies**

The incubation period of rabies is highly variable and is usually between one and three months after exposure but can range from 9 days to several years in rare cases. The length of the incubation period depends in part on wound severity, wound location in relation to nerve supply, the relative distance from the brain, the amount and variant of the virus, vaccination history, and the degree of protection from clothing. Therefore, a bite to the face may have a shorter incubation period compared to a bite to an extremity and deep or multiple bites may have a shorter incubation period than a single superficial bite.

## **F. Period of Communicability or Infectious Period**

### **1. Animal Rabies**

Generally, animals are not infectious until virus appears in their saliva, which occurs at or very near the end of the incubation period in most domestic animals. Testing has shown that most cats, dogs, and ferrets will begin to shed the virus either at the onset of clinical signs or shortly thereafter, with a very small number starting to shed three to four days before onset. Therefore, if the animal is healthy (i.e., not showing signs of rabies) at the time of a bite to a human, it is unlikely to be rabid.

All domestic animals that have bitten or exposed a person shall be placed under a 10-day confinement and observation period by the Health Officer with jurisdiction in case the animal is shedding virus prior to onset.

When evaluating exposures from a domestic animal after it has been diagnosed with rabies, the date of onset should be ascertained (or estimated as closely as possible), and the animal should be considered to have been infectious for a period of ten days prior to its onset, as well as throughout the full course of the illness.

The shedding/communicability period for wild animals has not been determined, although it has been demonstrated that skunks may shed the virus up to 18 days before death. Therefore, there is no safe confinement and observation period for raccoons, skunks and other wildlife as there is with dogs, cats, ferrets and other domestic animals. Wildlife are more likely to potentially shed the virus via saliva and still appear healthy. Carcasses of animals with rabies may contain infectious virus, depending on temperature and environmental conditions. Rabies virus may persist in a frozen carcass for many weeks. Because drying and sunlight exposure rapidly deactivate rabies virus, a desiccated or decomposed carcass would not contain live rabies virus.

## **2. Human Rabies**

The period during which a patient is considered infectious begins up to ten days before symptom onset and lasts until death. Saliva, brain and spinal cord tissue, and spinal cord fluid are potentially infectious. It should be noted, however, that except for organ transplants unknowingly received from rabies-infected persons, there have been no documented cases of person-to-person transmission of rabies in the United States.

## **G. Epidemiology**

### **1. Animal Rabies**

Animal rabies exists in most parts of the world. Dogs are a primary reservoir for rabies in Mexico and much of Central and South America, the Caribbean, Asia, and Africa. Children are exposed to rabid and potentially rabid animals much more often than are adults.

In the United States, Hawaii is the only state that has never reported an indigenously acquired rabies case in humans or animals. Most of the continental United States and Alaska has enzootic rabies in terrestrial mammals, as well as bat rabies. In 2014, 5,588 wild animals accounted for approximately 92.6% of the reported 6,033 animal rabies cases in the United States and Puerto Rico. Raccoons continued to be the most frequently reported rabid wildlife species (30.2% of all animal cases in 2014), followed by bats (29.1%), skunks (26.3%), and foxes (5.1%). Domestic animals are less commonly infected. Cats (4.5%) are the most frequent domestic animal infected followed by cattle (1.3%) and dogs (1%).

In New Jersey, the raccoon rabies epizootic entered the state in 1989, with peak years in 1991 and 1992, and has now spread into all areas of the state. In the raccoon rabies

epizootic, raccoons are the primary species cycling the disease (i.e., the reservoir species), but raccoons can infect other terrestrial wildlife and domestic animals. From 1989 through 2016, over 7,400 terrestrial animals were confirmed positive for rabies by laboratory testing in New Jersey, including 5,484 raccoons (73.5%), 1,068 skunks (14.3%), 192 foxes (2.6%), and 174 groundhogs (2.3%). Although rabies has been confirmed in a variety of pets, livestock, and other domestic animals, rabid cats (n = 467) account for over 90% of the total domestic animal cases.

Summer months are peak months for exposures to animals, as people and animals are both outside and more likely to interact with each other and wild animals. Raccoon rabies is considered to be enzootic in New Jersey, resulting in some immunity in the raccoon population and a lower number of yearly cases compared to when the virus was first introduced into the wildlife population in 1989.

**NOTE: If referring to a disease in the human population, the corresponding terms would be epidemic and endemic.**

## **2. Human Rabies**

In the United States over the past century, the number of human deaths attributed to rabies has declined from hundreds each year to an average of three per year. The decline is due to widespread vaccination of pets and animal control programs begun in the 1940s that have practically eliminated the domestic dog as a reservoir of rabies, and to the development of effective human rabies vaccines and immune globulin. From 2003 through 2015, 37 human rabies deaths in the United States and Puerto Rico have been reported to the Centers for Disease Control and Prevention (CDC), with 22 (59.5%) of those associated with bat variants. Ten cases (27%) are associated with dog or dog/mongoose variant occurring outside the United States where dog rabies is enzootic. Worldwide, approximately 60,000 human rabies deaths occur each year. Most of these deaths occur in developing countries from exposure to rabid dogs. Exposure to rabid dogs is the cause of over 90% of human rabies exposures and of over 99% of human deaths worldwide.

The last indigenous case of human rabies in New Jersey was in 1997 in a man who had direct contact with bats but did not seek treatment. He was infected with the silver-haired/pipistrelle bat rabies variant strain. The last case prior to that was in 1971 and was due to incomplete post exposure prophylaxis (PEP) following a bat bite.

In 2011, New Jersey confirmed one case of human rabies (canine variant) in a Haitian woman without a reported history of animal exposure. This is the third report of human rabies in the United States acquired in Haiti since 2000 and highlights the importance of obtaining a detailed history for patients who have traveled from a rabies-endemic country and the value of prompt consultation with medical and public health professionals regarding any animal bites.

## 2 CASE DEFINITION

### A. New Jersey Department of Health (NJDOH) Case Definition

The NJDOH Zoonotic Disease Program follows the most current case definition as published on the CDC National Notifiable Disease Surveillance System (NNDSS) website.

Human Rabies Case Definition: <https://wwwn.cdc.gov/nndss/conditions/rabies-human/>

Case definitions enable public health to classify and count cases consistently across reporting jurisdictions, and should not be used by healthcare providers to determine how to meet an individual patient's health needs. Every year, case definitions are updated using CSTE's Position Statements. They provide uniform criteria of nationally notifiable infectious and non-infectious conditions for reporting purposes. To search for other notifiable diseases' case definitions by name and by year, use the search tools on the left side of the NNDSS website: <http://wwwn.cdc.gov/nndss/>

#### Clinical Description

Rabies is an acute encephalomyelitis that usually progresses to coma or death within 14 days after the first symptom if prompt post-exposure prophylaxis is not administered.

#### Laboratory Criteria for Diagnosis

Detection of Lyssavirus antigens in a clinical specimen (preferably the brain or the nerves surrounding hair follicles in the nape of the neck) by direct fluorescent antibody test, OR

- Isolation (in cell culture or in a laboratory animal) of a Lyssavirus from saliva or central nervous system tissue, OR
- Identification of Lyssavirus specific antibody (i.e. by indirect fluorescent antibody test or complete rabies virus neutralization at 1:5 dilution) in the cerebrospinal fluid (CSF), OR
- Identification of Lyssavirus specific antibody (i.e. by indirect fluorescent antibody test or complete rabies virus neutralization at 1:5 dilution) in the serum of an unvaccinated person, OR
- Detection of Lyssavirus viral RNA (using reverse transcriptase-polymerase chain reaction [RT-PCR]) in saliva, CSF, or tissue.

## Case Classification

### Confirmed

A clinically compatible case that is laboratory confirmed by testing at a state or federal public health laboratory.

# 3 LABORATORY TESTING SERVICES AVAILABLE

## A. Animal Rabies

Animals are tested at PHEL using the direct fluorescent antibody test. Local health departments (LHDs) must arrange for transport and proper packaging of specimens to PHEL. Animal control officers and veterinarians need to be familiar with the proper methods to euthanize, prepare, and submit animals to the laboratory. Except for whole bats, only animal heads will be accepted for rabies testing. For more information on submitting specimens, contact the PHEL via email at [rabies.PHEL@doh.nj.gov](mailto:rabies.PHEL@doh.nj.gov) or by calling (609) 530-8416, (609) 671-6418 or (609) 671-6419.

All animal test results submitted to PHEL are reported directly to the Health Officers via fax; all positive reports are telephoned to the LHD immediately.

## B. Human Rabies

PHEL does not test human specimens for rabies; all testing for suspect human cases in New Jersey is performed by the CDC rabies laboratory. CDC will not accept specimens from suspect human cases unless reviewed by NJDOH Infectious and Zoonotic Disease Program (IZDP) staff, approved by CDC rabies personnel, and shipped by PHEL.

Contact NJDOH IZDP at (609) 826-5964 for human rabies testing approval and specific instructions regarding the types of specimens to submit and the proper methods for submission.

# 4 DISEASE REPORTING AND CASE INVESTIGATION

## A. Purpose of Surveillance and Reporting

- To develop knowledge of the reservoir species in the State and the relative incidence of rabies in this and other species; to forward this information to CDC to add to national surveillance data

- From the above, develop educational information for the public, so they may avoid contact with the vector species, ensure rabies vaccination of pets and livestock, and report all animal bites for the evaluation of rabies exposure risk
- To educate the healthcare community about the risk of rabies in various species and ensure appropriate post-exposure treatment of exposed individuals

## **B. Laboratory and Healthcare Provider Reporting Requirements**

### **1. Animal Rabies**

Suspect cases of animal rabies shall be reported to the LHD by any person having knowledge thereof, as mandated by state statute (N.J.S.A. Title 26, Chapter 4-78). It is then the responsibility of the local health agency to evaluate the reported situation as to the likelihood of rabies and act accordingly, which may include submission of the appropriate specimen from an animal to PHEL for testing, observation of the biting animal or recommendation to consult with a physician to begin rabies post-exposure prophylaxis (PEP).

The LHD will be informed of the results of all animal rabies testing performed by PHEL submitted from their jurisdiction. Positive results will be telephoned to the LHD by NJDOH IZDP staff immediately after NJDOH IZDP is notified by PHEL; the test result will be faxed to the LHD after results are finalized. Notification of all negative results is by fax from the laboratory to the LHD.

### **2. Animal Bites**

New Jersey statutes (N.J.S.A. Title 26, Chapter 4-79 to 81) require all animal bites to be reported to the LHD by the attending physician, bite victims themselves or their caretaker, or parent or guardian in the case of a child. As per state statutes (N.J.S.A. Title 26, Chapter 4-82 and 86) the LHD shall confine the biting animal for observation for at least ten days and may order the animal's brain tested for rabies if the animal dies or is euthanized during the observation period.

### **3. Human Rabies**

Because of the rarity and potential severity of human rabies, NJDOH requests that information about any known or suspect case of human rabies be immediately reported to the local health officer having jurisdiction over the locality in which the patient lives or, if unknown, to the health officer in whose jurisdiction the healthcare provider requesting the laboratory examination is located. Alternatively, healthcare providers may call NJDOH IZDP at (609) 826-5964 or (609) 826-4872 (nonholiday weekdays between 8 AM and 5 PM), or (609) 392-2020 (emergency number for nights/weekends and holidays). Detailed information on the clinical signs, laboratory test results, and patient history and/or medical records will be requested to be sent to the NJDOH IZDP. It should be emphasized that human rabies is an extremely rapidly progressing disease (i.e., ventilator support needed

within one week of onset or less), and that patients who have had a more extended course of illness not requiring respiratory support would not be considered suspect rabies cases.

The protocol for suspect human rabies cases is for NJDOH IZDP staff to review the reported case with the attending physician and contact CDC for further review if an evaluation is made that rabies is a possibility. If CDC determines that the case warrants testing, NJDOH IZDP staff will work with the physician/hospital to facilitate submission of specimens from the patient to CDC for testing. PHEL does not test human specimens for rabies, nor do other laboratories in New Jersey. Specimens should be forwarded (hand delivered if possible) to PHEL for shipment to CDC, as PHEL is highly experienced with the interstate shipping protocols for different classes of medical specimens. In the past, testing has been delayed when hospitals have attempted to ship human rabies specimens to CDC on their own, with specimens returned by the shipping company because of improper labeling or packaging.

See section 1B2 above for the types of specimens needed for testing. More detailed information on specimen collection and packaging are provided on CDC laboratory forms and information sheets.

#### **4. Reporting of Administration of Rabies Post-exposure Prophylaxis (PEP)**

The administration of PEP, which consists of rabies immune globulin and vaccine, is reportable to the local health officer by all healthcare providers using NJDOH Report of Rabies Post-Exposure Treatment Form (CDC-2) on the NJDOH Web site (<http://www.state.nj.us/health/cd/forms.shtml>). Please request that all healthcare providers report PEP administrations.

### **C. Local Health Departments Reporting and Follow-Up Responsibilities**

#### **1. Reporting Requirements**

The New Jersey Administrative Code (N.J.A.C. 8:57-1.9) stipulates that each local health officer must report the occurrence of any case of human rabies, as defined by the case definition in section 2A above. Current requirements are that cases be immediately reported to NJDOH IZDP.

#### **2. Case Investigation**

- The most important step a local health officer can take if he or she learns of a suspect case of human rabies is to immediately call IZDP at (609) 826-5964 or (609) 826-4872 (nonholiday weekdays between 8 AM and 5 PM), or (609) 392-2020 (emergency number for nights/weekends and holidays).
- NJDOH IZDP will direct case investigation of human rabies in New Jersey as described in section 4A3 above.

- Following immediate notification of NJDOH, the health officer may be asked to assist in investigating any suspect case within their community, including gathering the following:
  - The patient’s name, age, address, telephone number, status, and parent/guardian information, if applicable
  - The name and telephone number of the hospital where the patient is, or was, hospitalized
  - The name and telephone number of the patient’s attending physician
  - The name and telephone number of the infection control official at the hospital
  - If the patient was seen by a healthcare provider before hospitalization, or was seen at more than one hospital, including all contact names and telephone numbers
  - History of travel outside the United States within one year
  - History of bites, scratches, or other exposure to animals within the past year
  - Exposure to attics, barns, caves and other areas where bats might roost
  - People who have been exposed to the suspect case and may need post-exposure rabies treatment
  - Enter all data into the Communicable Disease Reporting and Surveillance System (CDRSS).
- Institution of disease control measures is an integral part of case investigation. It is the local health officer’s responsibility to understand, and, if necessary, institute the control guidelines listed below in section 5, Controlling Further Spread.

## **5 CONTROLLING FURTHER SPREAD**

### **A. Isolation and Quarantine Requirements**

#### **1. Minimum Period of Isolation of Patient**

Known or suspect human rabies cases should be isolated for the duration of illness. Contact isolation for respiratory secretions should be put in place.

#### **2. Minimum Period of Quarantine of Human and Animal Contacts**

##### ***Human***

None.

### *Animal*

Dogs and other domestic animals exposed to a known or suspect rabid animal should be given a rabies booster vaccination if they are currently vaccinated and observed for a 45-day period. Exposed animals that are not vaccinated should be appropriately quarantined by the LHD as per NJDOH IZDP guidelines or euthanized. These guidelines have been supplied to LHDs and posted on the NJDOH website:

[http://www.state.nj.us/health/cd/documents/topics/rabies/appxIII\\_animal\\_confine.pdf](http://www.state.nj.us/health/cd/documents/topics/rabies/appxIII_animal_confine.pdf) .

Contact NJDOH IZDP at (609) 826-5964 if you do not have this guidance or wish to consult with staff concerning the situation. If animals show signs of rabies while under observation or confinement, the animal should be taken to a veterinarian for examination and the LHD should be notified immediately.

## **B. Managing Rabies Situations**

### **1. Protection of Humans Exposed to a Rabid or Potentially Rabid Human**

Minimize the number of healthcare workers interacting with the patient and educate them regarding the disease and its mode of transmission. Attending personnel should wear appropriate PPE (gloves, gowns, face protection) to prevent any exposure to saliva. Articles soiled with saliva should be disinfected. If a patient who has rabies exposes another person via his or her saliva (through a bite, an open wound, or a mucous membrane), PEP for the contact should be considered. Once a patient is diagnosed with rabies, other human contacts from the patient's home/family and work environment should be interviewed by the LHD to determine their exposure risk. **The patient should be considered infectious for a period of ten days previous to their onset of illness date, and all throughout the duration of illness.**

### **2. Protection of Humans Exposed to a Rabid or Potentially Rabid Animal**

If a biting animal is found to be positive for rabies, humans who were exposed to the infected animal's saliva through a bite, scratch, or mucous membrane contact should receive PEP as soon as possible.

N.J.S.A. 26:4-79, 80, and 81 establish that all animal bites or attacks are reportable to the LHD. Domestic animals (i.e., dogs, cats, ferrets and domestic livestock) that have bitten, scratched, or otherwise exposed a human and appear healthy should be quarantined for ten days in lieu of euthanasia and testing. Dogs, cats, and ferrets that are incubating rabies will begin to exhibit signs of the disease very soon after they begin shedding virus in their saliva and die within seven days. Therefore, a ten-day quarantine is an acceptable and appropriate way to rule out rabies in these animals; if the animal begins to show signs of rabies during the quarantine period, there is still time to safely administer PEP to the bite victim.

Wild animals may be classified as high or low risk. **High-risk wild animals** are those that commonly carry rabies. In New Jersey, this includes raccoons, skunks, foxes, groundhogs

(woodchucks), and bats. Because viral-shedding periods are not known for these animals, quarantining the animal following a bite to a human is not appropriate—the animal should be immediately euthanized and submitted for rabies testing. If the animal is unavailable for testing, it must be assumed that the animal is rabid and PEP should be administered to the bite victim. **Low-risk wild animals** almost never carry rabies. These include small animals such as voles, mice, rats, squirrels, and chipmunks. PEP is not specifically recommended following provoked bites from healthy rodents of this type; however, it may be recommended if the animal is showing neurologic signs or is unusually aggressive. Bites by trapped mice and rats, by squirrels being fed, or by chipmunks and other animals captured by cats or dogs are considered provoked, and PEP is rarely recommended after such a bite. **Other animals:** Post-exposure treatment decisions regarding exposure to other animals (e.g., beaver, opossum, coyotes) are made on a case-by-case basis. Refer to the New Jersey Guide for Post-Exposure Prophylaxis for the Healthcare Professional at [http://www.state.nj.us/health/cd/documents/rabies/postexp\\_rabies\\_Guide.pdf](http://www.state.nj.us/health/cd/documents/rabies/postexp_rabies_Guide.pdf) for more information.

**Bats** pose a unique problem. The bite or scratch of a bat can be so small that it may be undetected. Physicians treating persons who awaken to find a bat in their room or small children who have been alone with a bat in a room may recommend PEP. If an exposure cannot be ruled out and the bat is unavailable for testing, PEP may should be considered. For more information. refer to the Guide to Proper Handling of Bat Exposures at <http://www.state.nj.us/health/cd/documents/rabies/batexposure.pdf>.

### 3. Treatment of Domestic Animals Exposed to a Rabid or Potentially Rabid Animal

N.J.S.A. 26:4-78 requires a veterinarian, animal control officer, or any person with knowledge of the case, to notify the local health officer of an animal known or suspected to be affected with rabies or an animal known or suspected of being bitten or exposed to a known or suspect rabid animal. Dogs, cats, and other domestic animals exposed to rabies shall be confined and observed for either 45 days (currently vaccinated or previously vaccinated with documentation) or four months (never vaccinated or previously vaccinated without documentation). Euthanasia may be recommended for unvaccinated animals exposed to rabies. For more information, refer to the Management of Domestic Animal Rabies Exposures ([http://www.state.nj.us/health/cd/documents/topics/rabies/appxIII\\_animal\\_confine.pdf](http://www.state.nj.us/health/cd/documents/topics/rabies/appxIII_animal_confine.pdf))

### 4. Preventive Measures

Control of human rabies relies on preventing human exposure to rabid or potentially rabid animals. Therefore, it is important to enforce animal quarantine regulations and licensing requirements, and encourage rabies vaccination of dogs, cats, and other domestic animals.

#### *Personal Preventive Measures/Education*

- Vaccinate pets. Dogs are required by law to be vaccinated and licensed and most municipalities also require rabies vaccination and licensure of cats. Although not

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required by law, vaccination of ferrets and other indoor pets, is strongly encouraged. Vaccination of domestic animals will create a protective barrier between humans and rabid wildlife.

- Do not feed or handle wild or stray animals. Avoid sick or strangely acting animals.
- Cover your garbage cans securely and keep pet food indoors so that wild animals are not attracted to your yard.
- Do not keep wild animals as pets. This may be illegal as well as dangerous.
- Travelers to developing countries with enzootic canine rabies should receive pre-exposure prophylaxis if it is anticipated that they will be in situations where exposure is likely (e.g., camping, hiking, backpacking, or away from areas where they would be able to receive prompt treatment for a bite wound). Travelers should be warned to avoid petting or having other contact with all animals when in these areas; dog rabies is common in many international areas and pet dogs may not be vaccinated against rabies.
- Do not touch or handle dead animals. Wear gloves if there is a need to handle an animal carcass.
- Contact the local animal control officer concerning all stray domestic animals, and ill or strangely acting wild animals. The public should be discouraged from capturing these animals, as they may get bitten or exposed to saliva
- Never handle bats. A bat bite or scratch from a bat may be so small as to go unnoticed. People who awaken to find a bat in their room, or children, awake or asleep, who have been alone with a bat in a room may require PEP. When a bat is in a room, have the people leave and shut the door to keep the bat contained, or if it is on the floor, place a solid-walled garbage can around it so it is contained. Bats found in rooms with people should **NOT** be let go until a health department consultation is obtained as to whether the bat needs to be submitted for rabies testing.
- When handling a pet that was very recently fighting with or bitten by a wild or potentially rabid animal, avoid touching the animal until the fur is dry. If the animal must be handled, the handler should wear waterproof gloves and use soap and water to clean their hands and skin that may have touched bat saliva.

**NOTE: For more information regarding international travel and rabies, contact the CDC's Traveler's Health Office at 1-877-394-8747 or through the Internet at <http://www.cdc.gov/travel/> .**

### Case Investigation

The LHD should:

- Receive and investigate animal bite reports

- Receive reports of human PEP and assist healthcare provider in ensuring completion of the treatment according to the prescribed schedule
- Receive and investigate reports of suspect cases of animal rabies and domestic animal exposures to rabies
- Issue and enforce animal confinement orders
- Train local police to as to the proper handling of “bat in the house” calls, because the public will often call the police at night about these situations—make sure police do NOT tell them to let the bats go outside!
- Assist veterinarians, animal control officers, and private citizens with preparing and submitting specimens to the PHEL Rabies Laboratory
- Help enforce pet licensing vaccination laws and encourage livestock vaccination
- Conduct rabies education and awareness efforts within its jurisdiction

**NOTE: Rabies educational materials for the public (e.g., brochures and pamphlets) are available online (<https://www.nj.gov/health/cd/rabies>).**

### Additional Information

NJDOH Web site: <http://www.state.nj.us/health/cd/topics/rabies.shtml>

CDC Web site: <http://www.cdc.gov/rabies>

### References

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