

## MANAGEMENT OF DOMESTIC ANIMAL RABIES EXPOSURES August 2018

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## **AUTHORITY**

New Jersey law requires that whenever a dog, cat, or other animal has been known or suspected to have been bitten by an animal known or suspected to be affected by rabies, the owner of the animal or any person with knowledge of the incident shall notify the local health department with jurisdiction where the animal is located (<u>N.J.S.A.</u> 26:4-78). The Health Officer has the authority to serve notice on the owner of the animal requiring euthanasia or confinement for up to 6 months and observation for the emergence of clinical signs of rabies (<u>N.J.S.A.</u> 26:4-83).

The New Jersey Department of Agriculture has authority over livestock animals (cattle, horses, etc.) that may be infected with or exposed to rabies.

### **DEFINITIONS**

#### Known rabid animal

Any animal confirmed rabid through laboratory testing

#### Suspect rabid animal

- Any bat, raccoon, skunk, fox, or groundhog, unless found negative for rabies through laboratory testing
- Other wildlife and domestic animals showing clinical signs of rabies (abnormal behavior with neurologic impairment), unless found negative for rabies through laboratory testing
- Any mammal with clinical signs of rabies submitted for rabies laboratory testing that is found unsatisfactory for testing by the Rabies Laboratory staff

In general, fights between dogs and cats are not usually considered to be rabies exposures unless one of the animals is considered a "suspect rabid animal" due to clinical signs of rabies, past exposure to a rabid animal or a positive laboratory test for rabies.

#### Personal protective equipment

Personal protective equipment (PPE) is specialized clothing or equipment, worn by an individual for protection against infectious materials. Veterinarians, veterinary technicians, and animal control officers should always wear gloves and eye protection when handling animals recently attacked (i.e., within two hours) by a known or suspect rabid animal to prevent exposure to saliva from the attacking animal that may be present on the attacked animal's fur. After handling recently attacked animals, PPE should be carefully removed, hands should be thoroughly washed with soap and water and all surfaces in contact with the animal thoroughly disinfected.

#### Proof of animal vaccination

A fully completed rabies vaccination certificate signed by a veterinarian licensed to practice in the State where vaccination was administered, which includes the specific vaccine used, date of vaccination and duration of immunity.

#### **Prospective Serologic Monitoring Protocol**

A process to determine if a dog or cat has been previously vaccinated with a USDA licensed rabies vaccine but for which the owner cannot produce a vaccine certificate or other vaccination documentation. The protocol requires vaccination and serum collection within 96 hours of the exposure and a second serum collection 5 days later to determine if the exposed animal has an immune response indicative of past vaccination (2-fold rise in titer and second titer is > 0.5 IU/ml) and therefore can be observed by the owner for 45 days. If these conditions are not met, the animal must remain in strict quarantine for 4 months or be euthanized.

#### Strict quarantine

Confinement of the animal in a secure enclosure that prevents direct contact with people and other animals

## SUMMARY OF EXPOSURE CATEGORIES

Rabies Exposures (for dogs, cats, and ferrets) are defined as follows:

**Exposure Category 1**: Visible bite wound or wounds known to have been sustained from a known or suspect rabic animal.

**Exposure Category 2**: Situations in which saliva or central nervous system tissue from a known or suspect rabid animal is likely to have had direct contact with mucous membranes (eyes) or a break in the skin of the animal. Example of this would be a dog fighting face to face with a raccoon or having a raccoon in its mouth.

**Exposure Category 3**: Wounds of unknown origin suspected by a veterinarian to be bite wounds.

**Exposure Category 4**: Situations when an animal may have been near a known or suspect rabid animal, but direct contact was not witnessed. Examples of this include a sick raccoon is found near a yard where dogs are kept, or a bat is found in a room with a cat. If the suspect rabid animal is tested and found to be negative for rabies, the potentially exposed animal would not need to be confined and observed.

### **ANIMAL CONFINEMENT GUIDELINES**

Note: Animals that have received a rabies booster vaccination due to exposure would not need an additional booster if exposed to rabies again within 3 months.

#### Exposure categories 1 or 2:

<u>Dogs, cats and ferrets with proof of current rabies vaccination</u> (i.e., the duration of immunity from the last vaccination has not expired):

- The attending veterinarian shall notify the local health department where the animal resides, immediately administer rabies booster vaccination and issue a Rabies Advisory Notice to the animal owner.
- The animal shall be kept under the owner's control (i.e. kept inside a building or pen, or on a leash under the immediate control of an adult) and observed for clinical signs of rabies for **45 days**. Any illness in an exposed animal should be reported immediately to the local health department.
- The veterinarian shall notify the local health department if the exposed animal does not receive a rabies booster vaccination within 96 hours of exposure and the Health Officer shall order the exposed animal to be kept under the owner's control (i.e. kept inside a building or pen, or on a leash under the immediate control of an adult) and observed for clinical signs of rabies for **4 months** instead of 45 days.
- Veterinarians or other persons aware of a <u>ferret</u> exposed to rabies shall report the situation to the local health department and the New Jersey Division of Fish and Wildlife, Exotic and Nongame Permits Office at 908-735-5450 or email <u>EXOTICPERMITS@dep.nj.gov</u>.

**Dogs, cats and ferrets that have never been vaccinated against rabies** (including when reports of past vaccination cannot be verified):

• Euthanasia is strongly recommended. If the exposed animal has bitten a human within 10 days of the date

of euthanasia, a specimen should be promptly submitted for rabies testing.

- If not euthanized, the attending veterinarian shall notify the local health department where the animal resides, administer rabies booster vaccination within 96 hours of exposure, and issue a Rabies Advisory Notice to the animal owner.
- The Health Officer shall order the exposed dog or cat to be **confined and observed for 4 months in <u>strict</u> <u>quarantine</u> (i.e., no human or animal contact) in a kennel or cage in a veterinary hospital, animal control facility, or commercial boarding establishment, or escape-proof pen at the owner's home. The local health department shall approve confinement facilities and perform unannounced inspections to ensure compliance with the quarantine order. Any illness in an exposed animal should be reported immediately to the local health department.**
- Veterinarians or other persons aware of a ferret exposed to rabies shall report the situation to the local health department and the New Jersey Division of Fish and Wildlife, Exotic and Nongame Permits Office at 908-735-5450 or email <u>EXOTICPERMITS@dep.nj.gov</u>.
- Ferrets shall be confined and observed for <u>6 months</u> in strict quarantine.
- The exposed animal shall be strictly confined until it is either euthanized or placed into a 4 month strict quarantine.

#### Ferrets that are overdue for rabies booster vaccination:

- Veterinarians or other persons aware of a ferret exposed to rabies shall report the situation to the local health department and the New Jersey Division of Fish and Wildlife, Exotic and Nongame Permits Office at 908-735-5450 or email <u>EXOTICPERMITS@dep.nj.gov</u>.
- The attending veterinarian shall issue a Rabies Advisory Notice to the animal owner and report to the local health department.
- Situations should be evaluated by the Health Officer on a case by case basis taking into consideration factors such as the severity of the exposure, time elapsed since last vaccination, number of past vaccinations to determine if the exposed ferret must be either euthanized or receive an immediate booster vaccination and placed into observation or strict quarantine for 6 months.

# Dogs and cats that are overdue for rabies booster vaccination and the owners have appropriate documentation of past vaccination with a USDA-licensed rabies vaccine:

- The attending veterinarian shall notify the local health department where the animal resides, immediately administer rabies booster vaccination and issue a Rabies Advisory Notice to the animal owner.
- The animal shall be kept under the owner's control (i.e. kept inside a building or pen, or on a leash under the immediate control of an adult) and observed for clinical signs of rabies for **45 days**. Any illness in an exposed animal should be reported immediately to the local health department.
- If the exposed animal does not receive a rabies booster vaccination within **96 hours of exposure** and the Health Officer shall order the exposed animal to be kept under the owner's control (i.e. kept inside a building or pen, or on a leash under the immediate control of an adult) and observed for clinical signs of rabies for **4**

months instead of 45 days.

# Dogs and cats that are previously vaccinated without appropriate documentation of receiving a USDA-licensed rabies vaccine:

- The animal can be treated as never vaccinated or the attending veterinarian may request guidance from local health departments to use **Prospective Serologic Monitoring** (see page 9) prior to rabies booster vaccination, to document previous vaccination.
- The dog or cat owner wishing to pursue Prospective Serologic Monitoring shall promptly engage the services of a New Jersey licensed veterinarian to complete all the provisions of the protocol and be responsible for the associated costs.
- This procedure would entail vaccinating the dog or cat within **96 hours of exposure** and collecting 2 serum samples to document evidence of an anamnestic (immune) response to rabies booster vaccinations.
- The dog or cat undergoing Prospective Serologic Monitoring shall remain in strict confinement until the results are received and evaluated by the attending veterinarian, in consultation with the Health Officer, which may take 4 weeks or more. Any illness in an exposed animal should be reported immediately to the local health department.
- If an adequate anamnestic response is documented, the animal would be considered previously vaccinated and shall be kept under the owner's control (i.e. kept inside a building or pen, or on a leash under the immediate control of an adult) and observed for clinical signs of rabies for **45 days from the date of exposure**. Any illness in an exposed animal should be reported immediately to the local health department
- If the immune response is inadequate, the animal would be considered unvaccinated and placed into strict quarantine for **4 months or euthanized**.
- The full Prospective Serologic Monitoring protocol is described at the end of this guidance document and on the NASPHV website: <u>http://www.nasphv.org/documents/NASPHVSerologicMonitoring2016.pdf</u>.

### **ANIMAL OBSERVATION PERIODS GUIDELINES**

Note: Animals that have received a rabies booster vaccination due to exposure would not need an additional booster if exposed to rabies again within 3 months.

#### Exposure categories 3 or 4

#### Dogs, cats and ferrets with proof of a current or past rabies vaccination:

- A report to the local health department is not necessary.
- The attending veterinarian shall administer a rabies booster vaccination to the exposed animal as soon as possible and issue a Rabies Advisory Notice to the animal owner.
- The animal shall be kept under the owner's control (i.e. kept inside a building or pen or on a leash under the immediate control of an adult) and observed for clinical signs of rabies for **45 days**. Any illness in an exposed animal should be reported immediately to the local health department.
- The veterinarian shall notify the local health department if the exposed animal does not receive a rabies booster vaccination after exposure and the Health Officer shall order the exposed animal to be kept under the owner's control (i.e. kept inside a building or pen, or on a leash under the immediate control of an adult) and observed for clinical signs of rabies for **4 months**.

#### Dogs, cats and ferrets without documentation of current or past vaccination:

- A report to the local health department is not necessary.
- The attending veterinarian shall administer a rabies booster vaccination to the exposed animal as soon as possible and issue a Rabies Advisory Notice to the animal owner.
- The animal shall be kept under the owner's control (i.e. kept inside a building or pen, or on a leash under the immediate control of an adult) and observed for clinical signs of rabies for **4 months**. Any illness in an exposed animal should be reported immediately to the local health department.
- Ferrets shall be observed for clinical signs of rabies for 6 months.

### SUMMARY OF ANIMAL CONFINEMENT PERIODS UTILIZED IN RABIES CONTROL

#### 10-day period

Used by local health departments when a dog, cat, ferret bites a human.

If rabies virus was present in saliva at the time of the bite, the biting animal would exhibit clinical signs of rabies or would develop signs within three days of the bite. If the dog or cat is free of clinical signs of rabies for a period of 10 days following the bite, rabies virus was not in the saliva at the time of the bite and the bite victim is not at risk of infection.

There has never been a human case of rabies in the US from a dog, cat, or ferret that was confined and observed to be healthy for a period of 10 days from the date of the bite.

#### 45-day period

Used when a previously immunized dog, or cat, is vaccinated against rabies after it is bitten or exposed to a rabid or suspect rabid animal.

This observation period is necessary because it is possible, but very unlikely, for a currently vaccinated animal that receives a rabies booster vaccination after exposure to develop rabies. Exposed domestic animals should be vaccinated as soon as possible after a bite or exposure.

#### 4-month period

Used when a dog or cat not immunized against rabies is bitten or exposed to a rabid or suspect rabid animal.

#### 6-month period

Used when a ferret not immunized against rabies is bitten or exposed to a rabid or suspect rabid animal.

Unvaccinated domestic animals are of greatest concern because they have a significant chance of developing rabies if exposed to the virus by raccoons or other wildlife. The incubation period for domestic animals infected with rabies is variable and generally 3 - 16 weeks.

# TABLE 1: CONFINEMENT AND OBSERVATION GUIDANCE

This table applies to dogs or cats with known or suspected exposures to a known or suspect rabid animal.

Exposure Category	Vaccination Status and Response	
	Currently Vaccinated	Never Vaccinated
Category 1 (visible bite from known or suspect rabid animal) OR Category 2 (direct contact with known or suspect rabid animal; no visible wounds)	<ul> <li>Notify the local health department</li> <li>Veterinarian administers rabies vaccine immediately</li> <li>Veterinarian issues the Rabies Advisory Notice</li> <li>The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days</li> </ul>	<ul> <li>Recommend euthanasia. If owner declines, report rabies exposure to the local health department.</li> <li>Veterinarian issues the Rabies Advisory Notice</li> <li>Veterinarian administers rabies vaccine before confinement begins</li> <li>Health Officer issues notice to strictly quarantine the exposed animal for 4 months</li> </ul>
	Previously Vaccinated with Documentation	Previously Vaccinated without Documentation
	<ul> <li>Notify the local health department</li> <li>Veterinarian administers rabies vaccine immediately</li> <li>Veterinarian issues the Rabies Advisory Notice</li> <li>The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days</li> </ul>	<ul> <li>Treat animal as if never vaccinated (above) <u>OR</u> veterinarian may request that Health Officer assist with the Prospective Serological Monitoring protocol.</li> <li>Notify the local health department</li> <li>Veterinarian issues the Rabies Advisory Notice</li> <li>Health Officer issues notice to strictly quarantine the exposed animal until serology results are interpreted</li> </ul>
Category 3 (bite wounds of unknown origin) OR Category 4 (possible contact with, or in the vicinity of, a known or suspect rabid animal; no visible wounds)	Currently or Previously Vaccinated with Documentation	No Documentation of Current or Past Vaccination
	<ul> <li>Veterinarian administers rabies vaccine</li> <li>Veterinarian issues the Rabies Advisory Notice</li> <li>The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days</li> </ul>	<ul> <li>Veterinarian administers rabies vaccine</li> <li>Veterinarian issues the Rabies Advisory Notice</li> <li>The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 4 months</li> </ul>

## **APPENDIX1: PROSPECTIVE SEROLOGICAL MONITORING PROTOCOL, 2016**

This guidance on prospective serologic monitoring is for use with dogs and cats as referred to in Part I B.5(4b) of the NASPHV Compendium of Animal Rabies Prevention and Control, 2016.

This protocol applies only to a dog or cat:

- that has been exposed to a confirmed or suspected rabid animal (as defined in Part I A.2 of the Compendium) and;
- that has been, or very likely has been, previously vaccinated with a USDA-licensed rabies vaccine, but for which there is no valid documentation, e.g. a rabies vaccination certificate, and;
- whose owner or guardian wants to avoid euthanasia or strict quarantine, and;
- that can immediately be managed by a veterinarian who can collect serum specimens as described below and administer a rabies vaccine.

**The justification for this recommendation relies on the information presented in the following peer-reviewed publication:** Moore MC, David RD, Kang Q, et al. Comparison of anamnestic responses to rabies vaccination in dogs and cats with current and out-of-date vaccination status. J Am Vet Med Assoc 2015;246:205–211.

Dogs and cats that have previously received a USDA-licensed rabies vaccine which was administered in compliance with the manufacturers label insert, will mount a strong anamnestic (or secondary immune) response within days following the administration of a booster USDA-licensed rabies vaccine. The paper provides evidence that this is true regardless of the number of vaccines received (even a single vaccine) or the amount of time that has elapsed since the last vaccine was administered.

# Protocol for prospective serologic monitoring for decision-making regarding 4 month quarantine versus 45 day observation:

The dog or cat must be seen by a veterinarian immediately following an exposure to a confirmed or suspected rabid animal. The veterinarian must report the case to public health authorities or the entity which serves as the local Rabies Control Authority (RCA). The RCA in New Jersey is the local health department (LHD). LHDs shall determine whether prospective serologic monitoring is indicated.

The LHD will work with the veterinarian and the owner to define a timeline during which the protocol must be implemented and the veterinarian shall be responsible for sample submission and receiving the test results. All fees for vaccination, serologic testing and other associated veterinary services will be assumed by the animal owner. The veterinary visit in which the first serum is collected and the rabies vaccine is administered must occur as soon as possible following the exposure and should not exceed 96 hours post exposure. The date of this visit will be counted as Day 0.

### On Day O the veterinarian shall;

- 1. Collect 1-2 mL of serum;
- Label and keep the serum specimen refrigerated until the second specimen is collected. <u>Serum held for more than 7 days may need to be frozen. Follow the instructions provided</u> <u>by the laboratory that will be performing the tests;</u>
- 3. Administer a USDA-licensed rabies vaccine labeled for use in that species; and
- 4. Schedule a follow up appointment to ensure the pet will return in 5-7 days.

#### On Day 5 (but no later than day 7) the veterinarian shall;

- 1. Collect a second (paired) serum specimen (1-2 mL).
- 2. Label and store the specimen appropriately according to the instructions from the laboratory where it will be submitted;
- 3. Submit the paired serum specimens to an approved Rabies Laboratory for Rapid Fluorescent Foci Inhibition Test (RFFIT) testing with the appropriate forms completed and carefully following shipping instructions provided by the laboratory; and
- 4. Contact the RCA to document submission of the specimens.

The paired serum specimens must be delivered to an approved Rabies Laboratory. At this time, the laboratories approved and available to perform the testing are:

- Atlanta Health Associates, Inc.;
- Kansas State University Rabies Laboratory (KSU-RL); and
- Wadsworth Rabies Laboratory (for New York State residents only).

The Centers for Disease Control and Prevention (CDC) may occasionally provide testing services by special arrangement only. The definition of an approved laboratory is one that is currently licensed by CLIA or NYSDOH and has been approved to participate in this Prospective Serological Monitoring Protocol by NASPHV's Rabies Compendium Committee.

The submission form for the appropriate laboratory must be complete, accurate, and accompany properly labelled paired specimens to avoid delays in testing. The submitting veterinarian is responsible for ensuring the accuracy of all specimen collection, submission form completion and shipping. Turnaround time for results are dependent upon the laboratory and their current testing volume. The submitting veterinarian is responsible for immediately contacting the RCA with the results to finalize recommendations for the animal.

# The dog or cat shall remain in strict quarantine during the testing process until approved by the RCA.

Interpretation of the results must be done in conjunction with the laboratory performing the testing as the determination of a statistically significant change in titer is determined by analysis of the laboratory's own data regarding testing performance. The test results will be used to determine whether the animal has evidence to suggest a previous rabies vaccine. Based on data analysis from the approved Rabies Laboratories, in general, the paired serum specimens must show both a statistically significant (usually defined as greater than two-fold at the currently approved Rabies Laboratories) rise in titer between the first and second specimens and the second titer must be above 0.5 IU/mL. If either of these conditions is not met, the animal must be treated as previously unvaccinated for the purposes of rabies control decisions.

Serology test results do not pre-empt the authority of the RCA to order continued strict quarantine of the animal if it judges such actions to be in the best interest of protecting the public's health. Nor do these recommendations supersede any applicable state laws and regulations or local ordinances.

#### **Prospective Serological Monitoring Protocol - Frequently Asked Questions**

- 1. What if the dog or cat did not receive care immediately (within 96 hours) after the exposure?
  - Such cases should be discussed with the RCA and managed on a case by case basis. Factors to consider include the number of days that have elapsed since the exposure, the severity of the exposure, number of previous vaccinations, the health of the animal and the local rabies epidemiology.

# 2. What if the dog or cat cannot return to the veterinarian for collection of the second specimen on DAY 5?

The second specimens must be collected by Day 7. Delaying collection of the specimen prevents accurate interpretation of the test results as any increase in rabies antibody titer might be due to the rabies exposure itself or the booster vaccination rather than an anamnestic response to a previous vaccination.

#### 3. What test will be used to test the serum specimens?

The laboratory will test the specimens using a Rapid Fluorescent Focus Inhibition Test (RFFIT). It is a serum neutralization (inhibition) test, which means it measures the ability of rabies specific antibodies to neutralize rabies virus and prevent the virus from infecting cells. These antibodies are called rabies virus neutralizing antibodies (RVNA).

# 4. What values will be used to determine if the dog or cat has evidence of a prior rabies vaccination and an acceptable anamnestic response?

A greater than two-fold rise in the titer values of the paired specimens, as well as a RVNA titer equal to or above 0.5 IU/mL for the second specimen, provides evidence of a robust anamnestic immune response after rabies vaccination. <u>Considerable variability exists as to any individual's response to vaccination and the RCA should consult the laboratory for help in interpreting results that fall outside these guidelines.</u>

If an anamnestic response is demonstrated, the animal should be issued a vaccine certificate with an expiration date consistent with the vaccine label. If there is no evidence of an anamnestic response, the vaccine is considered the initial dose and the animal should be boostered in one year, consistent with the vaccine label.

5. If the titer is equal to or above 0.5 IU/mL and there is evidence of an anamnestic response, is it impossible for the animal to go on to develop rabies?

A specific value equal to or above 0.5 IU/mL and evidence of an anamnestic response suggests the animal will be protected. However, there have been rare instances in which vaccinated animals have gone on to develop rabies. Contributing factors may include other immunological factors involved in the protection from rabies infection, or the location, viral dose, and severity of the wound. Because of this uncertainty, confinement with observation or quarantine is warranted regardless of the presence of antibodies.

#### 6. Where can I find the appropriate submission forms and shipping instructions?

- Atlanta Health Associates, Inc.: <u>http://www.atlantahealth.net/</u>
- Kansas State University Rabies Laboratory: <u>http://www.ksvdl.org/rabieslaboratory/rffit-test/rffit-submission-forms.html</u>
- New York State Wadsworth Center (New York residents only): <u>http://www.wadsworth.org/programs/id/rabies</u>

#### 7. Can this protocol be used for animals other than dogs or cats such as ferrets?

No. Data regarding anamnestic responses following revaccination with rabies vaccine are only available for dogs and cats.

# RABIES ADVISORY NOTICE

#### 2018

Rabies is a fatal disease of warm-blooded mammals caused by a virus, most frequently spread through a bite from an infected animal. An infected animal has the rabies virus in its saliva and can infect other animals or people through bites and contact with saliva. Once infected animals become ill, they may bite or attack other animals or people.

This notice is being provided to you because you are the owner of a dog, cat, or ferret which has been exposed to rabies through a bite, contact with a rabid animal, has suffered a wound of unknown origin suspected to be a bite wound, or because your pet has been near or in the same area as a known or suspect rabid animal.

You are advised to notify your local health department and to seek the advice of a veterinarian if your animal(s) shows any of the following clinical signs during the period of observation: fever, loss of appetite, irritability, inability to swallow, excess salivation, unusual vocalization, abnormal behavior, restlessness, unprovoked aggression, trouble walking, tremors, seizures, or paralysis.

Rabies usually begins subtly, with animal owners first noticing that their animal stops eating and "doesn't seem right." The pet may then become restless, irritable, and make strange vocalizations. As the illness progresses, the animal will have a fever and nervous system impairment becomes more prominent with tremors, difficulty walking and swallowing, seizures and/or paralysis. Affected animals may or may not show signs of aggression and try to attack people or other animals. Progression to death is rapid.

At the first signs of illness, isolate your exposed animal(s) from other animals and people and immediately contact your veterinarian or local health department.

If you have any questions about rabies in dogs, cats and other domestic animals, please contact your local health department (<u>www.localhealth.nj.gov</u>).

For questions about rabies regarding horses, cattle, sheep, and other livestock, please contact the New Jersey Department of Agriculture, Division of Animal Health at 609-671-6400 for assistance.