

VIRGINIA GUIDELINES FOR RABIES PREVENTION AND CONTROL

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Note: This version of these guidelines reflect updates particularly in regard to rabies vaccine exemptions (page 8) and to the protocol for unvaccinated dogs and cats that are assessed as exposed to rabies (page 10).



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ATTACHMENTS

1. [Index to Rabies Related Sections of the Code of Virginia](#)
2. [Human Rabies Prevention – United States \(ACIP Recommendations\)](#)
3. [Compendium of Animal Rabies Prevention and Control](#)
4. [Rabies Certificate example, NASPHV](#)
5. [Rabies for Animal Healthcare Providers](#)
6. [Isolation Pen Examples](#)
7. Quick reference algorithms and guides:
 - a. [Dog / Cat / Ferret Exposed](#)
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I. INTRODUCTION

This document, including the attachments, constitutes the rabies prevention and control policy for Virginia. Legal authority for actions related to rabies is found in the *Code of Virginia* (Attachment 1) and the *Virginia Administrative Code* (specifically Chapter 105 of Title 12 which can be found at

<http://law.lis.virginia.gov/admincode/title12/agency5/chapter105/>

Attachment 1: lists rabies related topics and corresponding Code Sections.

Two other documents were used as background for these guidelines:

Attachment 2: *Human Rabies Prevention – United States, 2008*. Recommendations of the Advisory Committee on Immunization Practices (ACIP), U.S. Department of Health and Human Services

(http://www.cdc.gov/rabies/resources/acip_recommendations.html)

Attachment 3: *Compendium of Animal Rabies Prevention and Control* published annually by the National Association of State Public Health Veterinarians (NASPHV)

(<http://www.nasphv.org/documentsCompendia.html>).

Although the above referenced documents were used in the development of the *Virginia Guidelines for Rabies Prevention and Control* and may justify or explain the Virginia Department of Health's (VDH) recommendations, neither these guidelines nor these two reference documents can be cited as law or regulation in Virginia. To insure that you are using the most current documents, please go to the appropriate website for each. For questions specifically related to rabies prevention and control in Virginia, call the Office of Epidemiology at 804-864-8141.

II. DEFINITIONS (as used in these guidelines)

Confinement – Dog, Cat, or Ferret

The animal should be housed in a building, pen or some other suitable escape-proof enclosure and not removed from the enclosure unless on a leash and under the immediate control of a responsible adult while being kept either on the owner's property or in the immediate area associated with the owner's place of residence. The animal should not be moved or taken to another location, site or property unless permission is obtained from the District Health Director or designee. At the first indication of the animal becoming ill, it is the responsibility of the owner or custodian to notify the Health Department and take the animal to a veterinarian for an examination. If rabies is suspected, the animal should be immediately euthanized and the brain tested for rabies.

Confinement – Livestock

The animal should be confined in a manner that is routine for that species (e.g., barn, stable, paddock, pasture). Sale or movement of the animal must be approved by the health director in consultation with the Virginia Department of Agriculture and Consumer Services (VDACS).

Currently Immunized Against Rabies – Animal

An animal is currently immunized against rabies if a vaccination certificate (NASPHV form #51, a copy of which can be found as Attachment 4, is recommended, but not required) is available that describes the animal adequately and documents that the animal received rabies vaccine approved by the United States Department of Agriculture (USDA). The duration of immunity must be adequate for that animal's species and age as outlined in Part III of the Compendium or described on the USDA approved vaccine label. In lieu of a vaccination certificate, the records of the attending veterinarian are sufficient. The Code requires that a licensed veterinarian or a licensed veterinary technician who is under the immediate and direct supervision of a veterinarian on the premises administer vaccine for dogs and cats. There is no requirement in the *Code* for rabies vaccination of other animals and no prohibition against the sale of rabies vaccine to lay persons or owners vaccinating their own animals; however, VDH will not recognize an animal as vaccinated against rabies unless the vaccine is labeled for that species and was administered by a licensed veterinarian or a licensed veterinary technician who is under the immediate and direct supervision of a veterinarian on the premises. This is the best assurance that the vaccine was handled properly and administered appropriately.

Exposure of Animal

Rabies is transmitted when the virus is introduced into bite wounds or when wet saliva or central nervous system tissue (CNS) enters into open wounds in the skin or mucous membranes like eyes, nose or mouth. Any circumstance where wet saliva or CNS tissue from a rabid or suspect rabid animal did have or may have had direct contact with mucous membranes or a break in the skin of a domestic animal is considered an exposure. The actual witnessing of a bite or attack by a rabid or suspect rabid (see definition below) animal is not necessary to define an exposure; however, a suspect or rabid animal needs to have been witnessed in close proximity to the exposed animal where, in the judgment of the health director or his designee, contact with the suspected rabid or rabid animal likely occurred. Any high risk or suspect rabid animal that has exposed a domestic animal and is not available for laboratory testing should be presumed to be rabid. Domestic animals that bite other domestic animals are not usually considered rabies suspects unless showing signs compatible with the disease.

Exposure of Human

Any bite, scratch or other circumstance where saliva or CNS tissue from a suspected rabid animal enters an open, fresh wound or comes in contact with a mucous membrane by entering the eye, mouth, or nose. Scratches should be evaluated like any other wound. The touching or handling of a suspected rabid animal or another animal or inanimate object that had contact with a rabid animal does not constitute an exposure unless wet saliva or CNS material from the potentially rabid animal entered a fresh, open wound or had contact with a mucous membrane.

Due to the nature of bat bites (small, often unnoticed), evaluating exposures to bats is different than evaluating exposures to terrestrial mammals. Therefore, anyone who has been:

1. Bitten by a bat and knows he has been bitten, OR
2. In direct, bare-skinned contact with a bat and cannot rule out that a bite has not occurred, OR
3. In a room with a bat and is unable to tell or articulate whether an exposure took place (e.g. child, senile or unconscious adult) should be considered exposed. *

*Particularly in situations involving mentally competent adults where the only evidence of potential exposure is scenario #3 above, further evaluation should be performed to ascertain the likelihood of being exposed without being aware of the exposure.

High Risk Animals

The highest risk for rabies is posed by bats (scientific order *Chiroptera*) and certain mammals in the scientific order *Carnivora* (carnivorous mammals) such as raccoons, skunks and foxes. In areas where raccoon rabies is established, some mammals in other scientific orders are considered high risk, including opossums, which are in the scientific order *Didelphimorphia*, and groundhogs (woodchucks) and beavers, both of which are large rodents in the scientific order *Rodentia*.

Hybrid Animals

The direct offspring or any subsequent generations of domestic animals bred to wild animals, e.g. wolf hybrids, Savannah and Bengal cats.

Low Risk Animals

Small rodents (including, mice, rats, squirrels, chipmunks, moles, voles, guinea pigs, gerbils and hamsters) and lagomorphs (rabbits and hares).

Suspected Rabid Animal

A suspected rabid animal any animal that has not been tested for rabies and that the VDH considers to be a species at high risk for acquiring or transmitting rabies whether or not the animal is exhibiting clinical signs compatible with rabies and any animal VDH considers at low risk for acquiring or transmitting rabies that is exhibiting clinical signs compatible with rabies. At the discretion of the local health director, any animal to which an observation period will be applied that may have bitten a person should be considered a suspected rabid animal until the end of the observation period. The status of animals for which an observation period will not be applied and/or that VDH has not identified as either high or low risk for acquiring or transmitting rabies is at the discretion of the local health director.

Rabid Animal

A rabid animal is one that has had the diagnosis of rabies confirmed by the Virginia Division of Consolidated Laboratory Services, Fairfax Health Department Laboratory, Centers for Disease Control and Prevention Rabies Laboratory, or a laboratory in another state that has been designated by the state health department for rabies testing.

Strict Isolation – Dog, Cat, or Ferret

A kennel in a veterinary hospital, animal control facility, commercial boarding establishment, or a pen at home (see Attachment 6 for examples) that prevents direct contact between the animal and any human or other animal, but allows for feeding, watering, and cleaning. The District Health Director or his designee is responsible for approving the adequacy of the isolation unit.

III. DOMESTIC ANIMALS

- A. Vaccination (this section refers to routine or preexposure vaccination; not post-exposure vaccination, which is discussed in B. Postexposure Management)

1. Dogs and Cats

- a. Legal requirement for vaccination: The *Code of Virginia* requires that all dogs and cats receive rabies vaccine prior to attaining 4 months of age (3.2-6521). A licensed veterinarian or a licensed veterinary technician under the immediate and direct supervision of a veterinarian must administer the vaccine.
- b. Rabies Clinics: Animal rabies clinics that are held at a site that is not licensed by the Board of Veterinary Medicine fall under a special exception in the *Code* (§ 3.2-6521). To comply with the Veterinary Practice Act, a veterinarian who administers vaccine at such clinics should ensure that the local governing body and health department have approved the clinic. See Attachment 5 for more information about rabies clinics.
- c. Licensing linked to vaccination: The *Code of Virginia* requires that all dogs be licensed by 4 months of age and allows counties, cities and towns to require licensing of cats (§ 3.2-6524). Section 3.2-6526 of the *Code of Virginia* indicates that in order to be licensed, evidence of rabies vaccination that is satisfactory to the licensing agent must be shown to the person issuing the license (§ 3.2-6526). In most localities this would be the county clerk. As per § 3.2-6521, rabies vaccine exemptions are now available in Virginia (see subsection i of this section below) and so exemption certificates may now be presented in lieu of a rabies vaccination certificate in order to purchase a license.
- d. Vaccine labels: USDA is the federal agency that approves vaccines and the language for their labels. Most vaccines for dogs and cats are labeled for animals as young as 3 months, but there are vaccines for cats that can be used as early as eight weeks (see list of vaccines in Attachment 3).
- e. Regimen: No matter what the age at initial vaccination, the second vaccination should be administered within a year regardless of whether the initial vaccine had 1 year or 3-year duration of immunity. If vaccine

approved by the USDA for 3 years' duration of immunity is used, triennial or vaccinations can be administered beginning with the second vaccination, even if the second vaccination is overdue or early. For the most part, the initial vaccination should occur between 3 and 4 months of age, however, there are some vaccines now available for cats that can be given as early as 8 weeks of age.

- f. Vaccinations not current: If the animal is overdue for a booster vaccination, it does not have to start the series again. No matter how long overdue, if a vaccine labeled for 3 years' duration is given, a certificate for 3 years can be written. However, an animal is not considered immunized for at least 28 days after the initial vaccination is administered, but with any subsequent vaccination the animal is considered current immediately.
- g. Triennial vs. annual vaccinations: There is no evidence that administering vaccine every year is more protective than using a triennial vaccine every three years. In general, VDH encourages the use of triennial vaccines after the initial vaccination. However, there are vaccines for cats that are labeled for annual use that might be preferred by some veterinarians and their use should not be discouraged.
- h. Titers in lieu of vaccination: Rabies antibody titers are indicative of an animal's response to vaccine or infection. Titers do not directly correlate with protection because other immunologic factors also play a role in preventing rabies, and our abilities to measure and interpret those other factors are not well developed. Therefore, evidence of circulating rabies virus antibodies should not be used as a substitute for current vaccination in managing rabies exposures or determining the need for booster vaccinations in animals.
- i. Vaccine exemptions and rabies regulations: Virginia's rabies regulations, in part, provide for an exemption to rabies vaccinations for dogs and cats "if a vaccination would likely endanger the animal's life due to a previously diagnosed disease or other previously documented medical considerations as documented by a licensed veterinarian." This exemption is designed to create a mechanism whereby owners could still obtain a county or city license without having to produce a current rabies certificate; however, it is important to keep in mind that for the purposes of rabies exposure response, an exempted animal will be considered unvaccinated. The entire text of Virginia's rabies regulations can be found at <http://law.lis.virginia.gov/admincode/title12/agency5/chapter105/>.

A guidance document has been developed to assist veterinarians with the process of rabies vaccine exemptions which discusses the language of the law associated with exemptions and examples of certain conditions for which an exemption may be appropriate.

A standard application form has also been developed for this process. Veterinarians interested in applying for an exemption should discuss the process by which they can apply with their local health departments. A directory of local health departments can be found at <http://www.vdh.virginia.gov/local-health-districts/>. The guidance document for veterinarians considering applying for an exemption as well as the standardized application form can be found at the VDH "Rabies for Animal Healthcare Providers site; <http://www.vdh.virginia.gov/environmental-epidemiology/rabies-control/rabies-for-animal-healthcare-providers/> (Attachment 5). Veterinarians are also encouraged to contact their local health departments to report exposures or if they have questions about any of the regulatory language.

2. Ferrets

State law does not require ferrets to be vaccinated; however, at least one vaccine is labeled by the USDA (Attachment 3) for use in ferrets and its use should be encouraged.

3. Livestock

Virginia state law does not require any species of livestock to be vaccinated. USDA approved vaccines are available for cattle, horses and sheep (Attachment 3). The vaccination of livestock that have high contact with the public (e.g., in petting zoos, riding stables) should be encouraged. In addition, owners of valuable livestock may want their animals vaccinated. Although it is legal for owners to purchase rabies vaccine and vaccinate their own animals, VDH will not recognize an animal as vaccinated unless a licensed veterinarian or a licensed veterinary technician who is under the immediate and direct supervision of a veterinarian on the premises administered the vaccine.

B. Postexposure Management (see also Attachments 7a, 7b, and 7e)

Please note that the *Code* in section § 3.2-6522 gives the local health director broad discretion in regard to rabies exposure response associated with animals that are not dogs or cats.

1. Vaccinated Dog, Cat, or Ferret (note: *Code* does not mention ferrets)

Any currently immunized dog, cat, or ferret that is exposed to a proven or suspected rabid animal should receive an immediate booster dose of rabies vaccine from a licensed veterinarian and be confined for 45-day observation (see definition).

A veterinarian should evaluate the animal at the first signs of illness. If the signs are compatible with rabies, the animal should be humanely euthanized and tested for rabies, or if the animal dies, it should be tested for rabies.

2. Unvaccinated Dog, Cat, or Ferret

Any unvaccinated dog, cat, or ferret that may have been exposed to a proven or suspect rabid animal should be humanely euthanized unless the exposing animal tests negative for rabies. If the owner of an exposed dog, cat, or ferret is unwilling to euthanize it, the dog, cat, or ferret should be placed in strict isolation.

Please note that the specific wording of the *Code* section § 3.2-6522 that speaks to rabies exposure response to any dog or cat with no proof of current vaccination and is exposed is that the animal shall be isolated “for a period not to exceed six months at the expense of the owner or custodian in a manner and by a date certain as determined by the local health director.” The health department, therefore, may choose to isolate for 6 months or a period of time that does not exceed 6 months. Please also note that the [Compendium of Animal Rabies Prevention and Control](#) which is national guidance that, while not law in Virginia, is often used to guide Virginia’s rabies response practices, now recommends four month strict isolation period for dogs and cats, with a 6 month strict isolation still recommended for ferrets. Local health departments should consider using no more than a 4-month strict isolation period for dogs and cats. A rabies vaccination is to be administered by a licensed veterinarian prior to release. (The *Code* allows for the administration of rabies vaccine at the beginning of isolation.) A veterinarian should evaluate the animal at the first signs of illness. If the signs are compatible with rabies, the animal should be humanely euthanized and tested for rabies, or if the animal dies, it should be tested for rabies.

3. Dog, Cat, or Ferret with Expired Vaccination

The disposition of any dog, cat, or ferret with an expired vaccination that may have been exposed will be determined by the local health department (§ 3.2-6522). Many animals with expired vaccinations may be handled as currently vaccinated unless the exposed animal is immunosuppressed. Exposures should be reported to local health department or local animal control personnel. These situations should be discussed with personnel in the Office of Epidemiology.

4. Livestock

All species of livestock are susceptible to rabies; cattle and horses are the most frequently reported infected species. Food safety and human exposures of those who have direct contact with rabid livestock or tissues from rabid

livestock are the primary public health concerns associated with livestock species infected with rabies. Because rabies virus is widely distributed in tissues of rabid animals, it is recommended that tissues and products from a rabid animal not be used for human or animal consumption.

- a. **Vaccinated livestock:** Vaccinated livestock that are exposed to a rabid animal should receive an immediate booster, be confined in a manner that is routine for that species, and be observed for signs of rabies for 45 days. VDACS should be notified when animals are placed under observation. The health department should be alerted if any signs of clinical illness associated with rabies occur within the observation period. Movement of animals under observation must be approved by the health director in consultation with VDACS. Considerations associated with movement of animals off of the property may include the type of exposure, the length of time elapsed between the exposure and when movement would occur, the health of the animals, as well as where and for what purpose the animal(s) is/are being moved. Animal handlers and attending veterinarians should be reminded to avoid exposure and about the use of appropriate barrier precautions if an animal shows any sign of illness or abnormal behavior.
- b. **Unvaccinated Livestock:** Unvaccinated livestock that are exposed to a rabid animal can be immediately slaughtered. Otherwise they should be confined in a manner that is routine for that species and observed for signs of rabies for 6 months. If practical, exposed animals should be separated from unexposed animals, especially if a bite from a rabid or highly suspicious animal was witnessed. VDACS should be notified of the exposure and confinement. The health department should be alerted if any signs of clinical illness associated with rabies occur within the observation period. Movement of animals under observation must be approved by the health director in consultation with VDACS. Considerations associated with movement of animals off of the property may include the type of exposure, the length of time elapsed between the exposure and when movement would occur, the health of the animals, as well as where and for what purpose the animal(s) is/are being moved. Animal handlers and attending veterinarians should be reminded to avoid exposure and about the use of appropriate barrier precautions if an animal shows any sign of illness or abnormal behavior.
- c. **Rabid Livestock:** Herbivore to herbivore transmission is uncommon. If the only rabid animal associated with a herd or flock is an herbivore, the main concern is that other members of the herd or flock may have been similarly exposed when the animal that has been laboratory confirmed with rabies was exposed. In situations like this, monitoring the remaining animals in the herd or flock for 30 days beyond the day the index case became ill should be sufficient to rule out exposure to other animals. During this time, animals should be housed in a manner that is routine for

that species and observed. Sale or movement of the animals during this time must be approved by the health director and VDACS.

C. Postexposure Prophylaxis in Unvaccinated Animals

Currently there are no USDA licensed biologics or nationally recognized protocols for postexposure prophylaxis of previously unvaccinated domestic animals, and there is concern that the use of vaccine alone will not reliably prevent the disease. Rabies immune globulin is not available for animals. Some veterinarians may want to experiment with postexposure treatment for animals, but this should not change confinement or isolation requirements.

D. Rabies in Vaccinated Animals

Rabies is rare in vaccinated animals. Suspected or confirmed rabies in a vaccinated animal should be reported to the Office of Epidemiology. Confirmed rabies should also be reported to the vaccine manufacturer and USDA, Animal and Plant Health Inspection Service, Center for Veterinary Biologics (telephone: 800-752-6255; or online via <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/veterinary-biologics>). Health department personnel should conduct a thorough investigation and the Domestic Animal Rabies Report Form (which can be found within the Office of Epidemiology's Disease Control Manual) should be completed and sent to the Division of Environmental Epidemiology.

E. Domestic Animal Control Strategies

1. Localities should be encouraged to enact and enforce animal control laws that increase responsible pet ownership, enhance the elimination of stray and feral domestic animals and reduce the ownership of hybrid and exotic animals.
2. Localities should be encouraged to conduct campaigns to increase vaccination rates of dogs and cats.
3. Regardless of the species or vaccination status, a Domestic Animal Rabies Report Form should be completed for any domestic animal that has been laboratory confirmed with rabies. This form should then be sent to the Division of Environmental Epidemiology.

IV. WILDLIFE

A. Vaccination

1. Injectable

Currently there are no injectable rabies vaccines labeled by USDA for use in wild animals. However, they are often administered off-label to wildlife in an attempt to protect them; this most often occurs at zoos, wildlife rehabilitation facilities and research institutions. In exposure situations, rabies vaccination status is not recognized by VDH.

2. Oral

Oral rabies vaccine (ORV) labeled by USDA is currently available for use in federal or state mass immunization rabies control programs and is not available to individual veterinarians or citizens. The ORV program in which Virginia participates is intended to treat raccoons on a population level rather than targeting smaller properties in raccoon variant rabies virus endemic areas and is not licensed for use on individual private property. Since 2002, USDA has conducted an oral rabies vaccination program for raccoons in southwest Virginia in cooperation with VDH, [Virginia Department of Game and Inland Fisheries \(VDGIF\)](#) and local governments. The oral rabies vaccination program in Virginia is part of a national project to prevent the westward movement of raccoon rabies. More information about USDA's national rabies management program can be found at:

<https://www.aphis.usda.gov/aphis/ourfocus/wildlifedamage/programs/nrmp>.

3. Relevance of Vaccination Status

In exposure situations, wild animals that received injectable rabies vaccine should be managed the same way as unvaccinated animals. Administration of vaccines that are not labeled for use in wildlife may create a false sense of security for people exposed to such animals.

Because there is no way to determine uptake of oral rabies vaccine by individual animals or immunity status of that animal, raccoons from oral rabies program areas should be treated as unvaccinated like any other wild animal.

B. Wildlife Control

1. Wildlife as Pets

For human safety and wildlife well-being, wild animals should not be kept as pets. In Virginia, the keeping of wild animals that are regulated by the VDGIF requires a permit from that agency. Assistance is available from VDGIF in situations where wild animals are being kept without a permit.

2. Wildlife Population Reduction

- a. General or large-scale population reduction programs have generally not proven effective for controlling rabies, however wildlife population

reduction programs may be useful in certain situations (Attachment 8), but the disadvantages should be weighed against the benefits.

- b. The VDGIF should always be consulted when wildlife population reduction programs are being considered.
3. Control of Nuisance Wildlife at High Risk for Rabies
 - a. Remove attractants such as denning sites and sources of food.
 - b. Utilize a reputable company that is familiar with eliminating wildlife from human premises and regulations for handling such animals.
 - c. Captured nuisance wildlife must be released on site or euthanized, and not relocated. It is illegal to transport Virginia wildlife without a permit from VDGIF. Always consult VDGIF if there is a question or concern about the disposition of nuisance wildlife.
 4. Bat Control
 - a. Bats are beneficial in many ways and should be protected; efforts should be made to prevent killing them unnecessarily or destroying their habitat.
 - b. To prevent rabies exposures, bats should be discouraged from living in buildings frequented by humans (see Attachment 9 for bat exclusion methods).

V. HYBRID ANIMALS

A. Virginia Law

Enabling legislation (§ 3.2-6582) allows localities to adopt a permitting system for the regulation of hybrid canines and to set a fee to cover the cost of the permitting system.

B. Vaccination

USDA has not labeled any vaccines for use in hybrid animals. Veterinarians may choose to vaccinate hybrids as an extra-label use of a biologic. The American Veterinary Medical Association liability insurance program recommends that the administering veterinarian inform the owner that the vaccine is not approved for use in hybrid animal, no studies to prove the efficacy of the vaccine have been performed in hybrids and then note the extra-label use in the animal's medical record, including language explaining that public health officials may not recognize the vaccination, and have the owner initial the record.

C. Postexposure Management

Section 3.2-6522 of the *Code* states “When any animal, other than a dog or cat, is exposed or may have been exposed to rabies through a bite, or through saliva or central nervous system tissue, in a fresh open wound or mucous membrane, by an animal suspected to be rabid, decisions regarding the disposition of that newly exposed animal shall be at the discretion of a local health director.” The public health response, therefore, to any animal that is not a dog or a cat that may have been exposed to rabies is at the health director’s discretion and may include euthanasia of an exposed hybrid animal if the exposing animal was unavailable for testing.

VI. HUMAN

Refer to the most recent ACIP recommendations on evaluating human exposures and rabies biologics details (http://www.cdc.gov/rabies/resources/acip_recommendations.html, Attachment 2) Human medical and animal health care providers, law enforcement, animal owners and bite victims should report rabies exposures to the local health department. The local health department can: provide advice on the risk of rabies based on the animal species involved; recommend the appropriate management of the biting animal; facilitate having animal control officials confine the animal for observation or euthanize it for testing; and provide advice to medical care professionals on postexposure prophylaxis.

A. Vaccination – Preexposure

1. Rationale for Preexposure Vaccination

- a. Reduces postexposure therapy to only two doses of vaccine and eliminates the need for rabies immune globulin.
- b. May protect persons whose postexposure therapy is delayed.
- c. May provide protection to persons at risk for inapparent exposures.

2. Target Populations

- a. Persons whose activities bring them into frequent or continuous contact with the rabies virus or potentially rabid animals (e.g. veterinarians, veterinary technicians, kennel staff, animal control officers, rabies laboratory workers, wildlife biologists and rehabilitators).
- b. International travelers who are likely to come in contact with animals in areas where dog rabies is enzootic and immediate access to appropriate medical care, including biologics, might be limited.

3. Regimen

a. Initial Vaccination:

- i. Three 1.0 mL injections of rabies vaccine.
- ii. Administer intramuscularly (deltoid area).
- iii. One injection per day on days 0, 7, 21 or 28 (day 0 is the first day of vaccination).

b. Boosters:

- i. Persons who continue to be at frequent risk of rabies exposure (see 2. Target Population above) should have a rapid fluorescent focus inhibition test (RFFIT) test on a serum sample every two years. Serum of those at continuous risk should be tested via RFFIT every 6 months. The RFFIT is the only accepted test for determining virus neutralizing antibody levels against the rabies virus. Other available titer tests (including the ELISA test) are not recommended for this purpose.
- ii. There are currently two working guidelines (or recommended “cut-offs”) for antibody titer levels below which a rabies-vaccinated person should receive a booster vaccination. The ACIP (See attachment 2) recommends a single booster dose of vaccine if the titer is less than complete neutralization at a 1:5 serum dilution by the RFFIT. VDH generally recommends that the ACIP guidance be used. The World Health Organization (WHO) recommends that a single booster rabies vaccination be given when the titer drops below 0.5 IU/mL by the RFFIT. (see Attachment 10 for further details)
- iii. Even in the absence of a measurable titer, persons with healthy immune systems will respond immediately to the stimulation of a vaccine.
- iv. Information on laboratories that do such testing, as well as downloadable submission forms are available at: www.atlantahealth.net/ and <http://www.ksvdl.org/rabies-laboratory>.
- v. Both laboratories that perform the RFFIT, Kansas State University (KSU) and Atlanta Health Associates, report results in terms of international units (IU) and both recommend booster doses according to the WHO protocol. Complete viral neutralization at a 1:5 dilution is approximately equal to a titer of 0.1-0.2 IU/mL, depending on the reporting laboratory. For patients whose titers fall below 0.5 IU but are above 0.1 IU, healthcare providers should consult with their local health department in regard to the best course of action and take into consideration their patient’s risk of

exposure, time until the next titer test, previous rabies titer results, health status, and accessibility to healthcare should a potential exposure occur when determining when to administer a rabies vaccine booster to a patient.

More information about human rabies titer interpretation can be found at <http://www.ksvdl.org/rabies-laboratory/rffit-test/index.html>.

B. Vaccination – Postexposure Prophylaxis (PEP)

1. Persons Who Have Never Received Rabies Vaccine

a. Vaccine:

- i. Four 1 mL injections of rabies vaccine.
- ii. Administer intramuscularly (deltoid area).
- iii. One injection per day on days 0, 3, 7, 14 (day 0 is the first day of treatment).

b. Rabies Immune Globulin (RIG):

- i. 20 IU/kg body weight.
- ii. Infiltrate the full dose in and around the wound(s), if anatomically feasible.
- iii. Any remaining volume should be administered intramuscularly (IM) at an anatomical site distant from vaccine administration.
- iv. RIG provides passive protection during the time that the body is making antibodies in response to the stimulation of the vaccine so the earlier it is administered, the better; day 0 is preferred.
- v. Do not administer after the 7th day of vaccine administration because it may interfere with the antibody response.

2. Previously Vaccinated Persons

a. Vaccine:

- i. Two 1 mL injections of rabies vaccine.
- ii. Administer intramuscularly (deltoid area).
- iii. One injection per day on days 0 and 3.

- b. **Do not administer RIG.** RIG will interfere with the antibody response in previously vaccinated persons.

C. Deviations from Recommended Schedules

Every effort should be made to adhere to the recommended pre- or postexposure vaccination schedule. If a minor deviation of a day or two has occurred, the schedule can be resumed as though the patient were on schedule and future doses should be maintained with the recommended intervals between them. If a substantial deviation from the schedule occurs, the person should have a blood sample drawn 7 to 14 days after administration of the final dose in the series to assess immune status.

D. Management of Animals That Expose Humans (see also Attachments 7c, 7d and 7f)

1. Dogs, Cats, or Ferrets

- a. Confine (see definition) any healthy dog, cat, or ferret (vaccinated or unvaccinated) for 10-day observation. If the animal was shedding rabies virus at the time of the bite, it will be symptomatic at the time or within a few days (and almost certainly within 10 days). The animal may be euthanized if it is requested by the owner and should then be tested for rabies.
- b. Because a reaction to vaccination could be confused with early signs of rabies, rabies vaccinations during confinement are not recommended.
- c. If signs of rabies develop, a veterinarian should evaluate the animal and determine if the signs are compatible with rabies. If they are, the animal should be humanely euthanized and tested for rabies as soon as possible.
- d. If the animal dies, it should be tested for rabies as soon as possible.
- e. If the animal is not available for observation or testing, the victim should receive a rabies exposure risk assessment and recommendation for PEP.

2. Livestock

- a. Livestock such as cattle, horses, sheep, goats, and pigs are not usually at high risk for transmitting rabies.
- b. When livestock expose a person many factors should be considered.
 - i. If the animal's health and behavior are normal, there is no history of

exposure, and no potentially rabid animals have been in close proximity, it may be reasonable to keep the animal under observation for 10 days.

ii. Otherwise, euthanasia and testing of the animal should be considered.

3. Native Terrestrial Wildlife

- a. Wild animals that are defined as high risk (see Definitions) and that expose people should be euthanized and tested. Confinement periods are not applicable for wild animals because the length of time between rabies virus shedding and onset of signs has not been established for these animals and such signs may not be readily recognized.
- b. Low risk wild animals (see Definitions) are rarely rabid, have never been known to transmit rabies to a human in the US and should only be tested if acting sick or abnormal.
- c. If a suspected rabid animal (see Definitions) is not available for testing, the exposed person should receive a recommendation for PEP.

4. Confined Wildlife or Exotic Animals

Some species, such as primates, are not likely to contract rabies and may not require euthanasia. Additionally, some animals may be part of a valuable exhibit, breeding or research colony and difficult or impossible to replace if euthanized. These situations should be discussed with personnel in the Office of Epidemiology and decisions made on a case-by-case basis. Persons who work with such animals should understand the potential rabies risk, have preexposure prophylaxis, be educated and trained in preventing exposures, and accept the decision, in some circumstances, to receive PEP in lieu of sacrificing the animal.

5. Hybrids (e.g. wolf hybrids, coydogs, Savannah or Bengal cats)

Euthanasia of the hybrid animal and rabies testing is the safest course of action when such animals bite humans. However, because wolves and dogs appear to have very similar genetic makeup and many animals that are advertised as “wolf-dogs” may really be dogs, each wolf hybrid bite situation should be evaluated individually. If the bite victim is an adult who is capable of understanding the risk, and after consultation with a physician does not want the animal sacrificed, it may not be worth pursuing euthanasia and testing, however the recommendation as to the safest course of action (including PEP for the victim if the animal is not tested) should be put in writing and signed by the victim. The local health director does, however, have the authority to have animal control take possession of the animal and have it euthanized and tested.

6. Bats

- a. The determination of a bat exposure is different from defining an exposure to a terrestrial mammal because bat bites are small and sometimes go unnoticed.
- b. A bat exposure refers to a situation where a person has:
 - i. been bitten by a bat and knows he has been bitten, OR
 - ii. been in direct, bare-skinned contact with a bat and cannot rule out that a bite has not occurred OR
 - iii. been in a room with a bat and is unable to tell or articulate whether an exposure took place (e.g., infant, senile or unconscious adult) should be considered exposed. *
- c. In any of the above situations, the bat should be captured (Attachment 9) and submitted for testing if possible.
- d. If the bat is not available, the person should receive PEP.

*Particularly in situations involving mentally competent adults where the only evidence of potential exposure is scenario #3 above, further evaluation should be performed to ascertain the likelihood of being exposed without being aware of the exposure.

E. Public Education

1. Avoid contact with wildlife (i.e., hand-feeding, touching).
2. Discourage wildlife (especially raccoons) from sharing the human environment by:
 - a. Removing food sources close to homes.
 - b. Not feeding wildlife.
 - c. Not feeding pets outside.
 - d. Securing trash cans.
 - e. Excluding wildlife from denning sites in and around buildings.
3. Promptly report exposures to potentially rabid animals in order to receive appropriate and timely treatment.