December 2024

Rabies Control Manual

Georgia Eighth Edition

GEORGIA DEPARTMENT OF PUBLIC HEALTH

GEORGIA DEPARTMENT OF PUBLIC HEALTH

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FORWARD

The purpose of this manual is to provide current information on the control of rabies in Georgia. It is designed to be used by county health departments, hospital emergency departments, private physicians and health care practitioners, veterinarians, and animal control programs. This manual should be an educational tool for all facets of community rabies control. Additionally, it is hoped that this manual will assist communities in standardizing rabies control practices within the state.

This document was prepared by Julie Gabel, DVM, MPH, Amanda Feldpausch, DVM, MPH, Skyler Brennan, MPH, Erica Noltemeyer, DVM, MPH, Samantha Rubio, and Cherie L. Drenzek, DVM, MS. Credit is also given to authors of the following: 1) Georgia Rabies Control Manual, Third, Fourth, Fifth, Sixth, and Seventh Editions (1996, 2001, 2007, 2012, 2018); 2) National Association of State Public Health Veterinarians (NASPHV) Compendium of Animal Rabies Prevention and Control 2016, and 3) Use of a Modified Preexposure Prophylaxis Vaccination Schedule to Prevent Human Rabies: Recommendations of the Advisory Committee on Immunization Practices (2022).

If you have any questions regarding this manual, please contact the Acute Disease Section, Epidemiology Division, Georgia Department of Public Health (DPH) at (404) 657-2588.

IMPORTANT PHONE NUMBERS

RABIES CONSULTATIONS	**PHONE NUMBER**
Georgia Poison Center (available 24/7)	404-616-9000
County/District Health Departments* *Contact information and webpages for local health departments may be found at dph.georgia.gov/public-health-districts	See local phone directory or refer to DPH link
County Animal Control (where applicable)	See local phone directory
GA Department of Public Health - Epidemiology Division	404-657-2588
CDC Clinician Information Line	800-CDC-INFO (800-232-4636)
STATE PUBLIC HEALTH LABORATORIES	
Georgia Public Health Laboratory - Decatur	404-327-7900
Georgia Public Health Laboratory - Waycross	912-338-7050
SOURCES FOR HUMAN RABIES VACCINE	
Sanofi Pasteur (Imovax® Rabies - HDCV) fda.gov/vaccines-blood-biologics/vaccines/imovax	800-VACCINE (800-822-2463)
Novartis Vaccines and Diagnostics (RabAvert® - PCEC) fda.gov/vaccines-blood-biologics/vaccines/rabavert-rabies-vaccine	800-CHIRON8 (800-244-7668)
SOURCES FOR HUMAN RABIES IMMUNE GLOBULIN	
Grifols (HyperRab™ S/D) (HyperRab™ S/D) dailymed.nlm.nih.gov/dailymed/drugInfo	800-243-4153
Grifols (HyperRab®) dailymed.nlm.nih.gov/dailymed/drugInfo	800-243-4153
Kedrion Biopharma and Kamada Ltd. (KEDRAB®)www.kedrab.com dailymed.nlm.nih.gov/dailymed/drugInfo	1-855-353-7466

PROGRAMS FOR UNINSURED AND UNDERINSURED PATIENTS

Both rabies vaccine manufacturers have patient assistance programs that provide vaccines and medications to uninsured and underinsured patients. These programs are administered through the *Rx Assist Patient Assistance Program Center* (www.rxassist.org). The manufacturers may also be contacted directly for more information concerning eligibility requirements.

PROGRAM NAME	PHONE NUMBER
Sanofi Pasteur Through the Franklin Group (Imovax® Rabies)	866-801-5655
Grifols (HyperRAB®)	833-504-9983
Kedrion Biopharma (KEDRAB®)	866-234-3732

SEROLOGIC TESTING FOR HUMANS AND ANIMALS (SEE PAGES 37-38)

PROGRAM NAME	CONTACT INFORMATION
Atlanta Health Associates, Inc. 309 Pirkle Ferry Road, Suite D300 Cumming, GA 30040 *Animal and Human Serologic Testing	Phone: 800-717-5612 Fax: 770-205-9021 www.atlantahealth.net
Auburn University College of Veterinary Medicine Department of Pathobiology Diagnostic Services 350 Greene Hall Annex Auburn University, AL 36849 *Animal Serologic Testing Only	Office: 334-844-2690 Fax: (334) 844-2652 https://www.vetmed.auburn.edu/academic-departments/dept-of-pathobiology/diagnostic-services/serology-virology/rabies-serology/
Kansas State University College of Veterinary Medicine Veterinary Diagnostic Laboratory 2005 Research Park Circle Manhattan, Kansas 66502 *Animal and Human Serologic Testing	Phone: 785-532-4483 Fax: 785-532-4474 www.ksvdl.org/laboratories/rabies-laboratory/

RABIES TAGS*

Dogs, cats, and ferrets should be identified (e.g., metal or plastic tags or microchips) to allow for verification of rabies vaccination status. There is no centralized database for rabies tag information

(pet name/owner's name, rabies tag number, etc.). Rabies tags and any associated data may or may not be maintained by the issuer (veterinary clinic, shelter, or animal control agency). DPH does not oversee or regulate the issuing of rabies tags – this is the responsibility of the individual facility administering the vaccine. Additionally, DPH does not verify vaccination status via rabies tags. The clinic and/or owner must present a certificate of rabies vaccination to verify vaccine status.

*Licenses/rabies tag requirements are county-based; please contact your county for specifics.

RABIES OVERVIEW

Rabies is a viral infection transmitted primarily through the saliva of infected mammals, most commonly through a bite. Once a host is infected, the virus will enter the central nervous system, causing an encephalomyelitis that is almost always fatal. Vaccination is the best way to prevent the development of rabies in both humans and animals. For humans, both pre- and post-exposure vaccines are available. Animals should be vaccinated in accordance with the guidelines in this manual to protect them against rabies infection. Although all species of mammals are susceptible to rabies viral infections, only a few species act as important reservoirs for the disease in nature. In the United States, several distinct rabies virus variants are present in terrestrial mammals such as raccoons, skunks, foxes, and coyotes. In addition to the terrestrial reservoirs for rabies, several species of insectivorous bats also serve as reservoirs for the disease.

In animals, rabies infection usually manifests in one of two ways: furious, or aggressive rabies OR paralytic, or lethargic/"dumb" rabies. Although one form may be generally seen in a particular species, it's important to remember that any animal infected with rabies may present with either form.

- **Furious/aggressive rabies:** Generally seen in carnivorous wildlife, dogs, cats, and ferrets. Typical signs of furious rabies include hyperactivity, overt aggression, less fearful of humans, loss of coordination, chewing unusual objects, excessive salivation, fear of water (hydrophobia), hypersensitivity to light/sound, and seizures.
- **Paralytic/lethargic/"dumb" rabies:** Generally seen in livestock and bats. Typical signs of paralytic rabies include disorientation, weakness/lameness (in bats, inability to fly), head pressing, trouble swallowing/eating, dropped jaw, restlessness, loss of coordination, dull or vacant expression, excessive salivation, hypersensitivity to light/sound, seizures, and progressive flaccid paralysis.

Wildlife is the most important source of exposure to rabies for both humans and domestic animals in the United States. Limiting contact with wild animals and reducing the risk of rabies in domestic animals through vaccination are central to the prevention of human rabies infections. Vaccination of all cats, dogs, and ferrets, along with animal bite reporting and public health risk assessment and

response, are basic elements of a rabies control program. Georgia law (Rabies Control Law-O.C.G.A.-31-19) requires that **all** dogs, cats, and ferrets be vaccinated against rabies by a licensed veterinarian using approved vaccines in accordance with the national *Compendium of Animal Rabies Prevention and Control*.

Human rabies infections in the United States have declined markedly in recent years. The decline is due in part to vaccination and animal control programs which began in the 1940s and have practically eliminated the domestic dog as a reservoir of rabies. The decline can also be attributed to the development of effective human rabies vaccines and rabies immune globulin.

In Georgia, the last reported case of human rabies occurred in October 2000 and was attributed to contact with an infected Mexican free-tailed bat. Between 2009 and 2019, there were 25 reported cases of human rabies in the United States. Of the 24 reported cases for which a rabies virus variant was obtained, 13 (54%) were associated with insectivorous bats, most commonly the Brazilian free-tailed and tricolored bat. About 48% (12) of the human rabies cases had an onset date between August and November which corresponds to the seasonal increase detected in the United States bat population. Despite the considerable number of human rabies cases that are attributable to bats, the importance of these exposures is often overlooked or undervalued. In many cases, the bat bite was unrecognized, or the risk of rabies transmission was underappreciated, and medical attention was not received or was delayed.

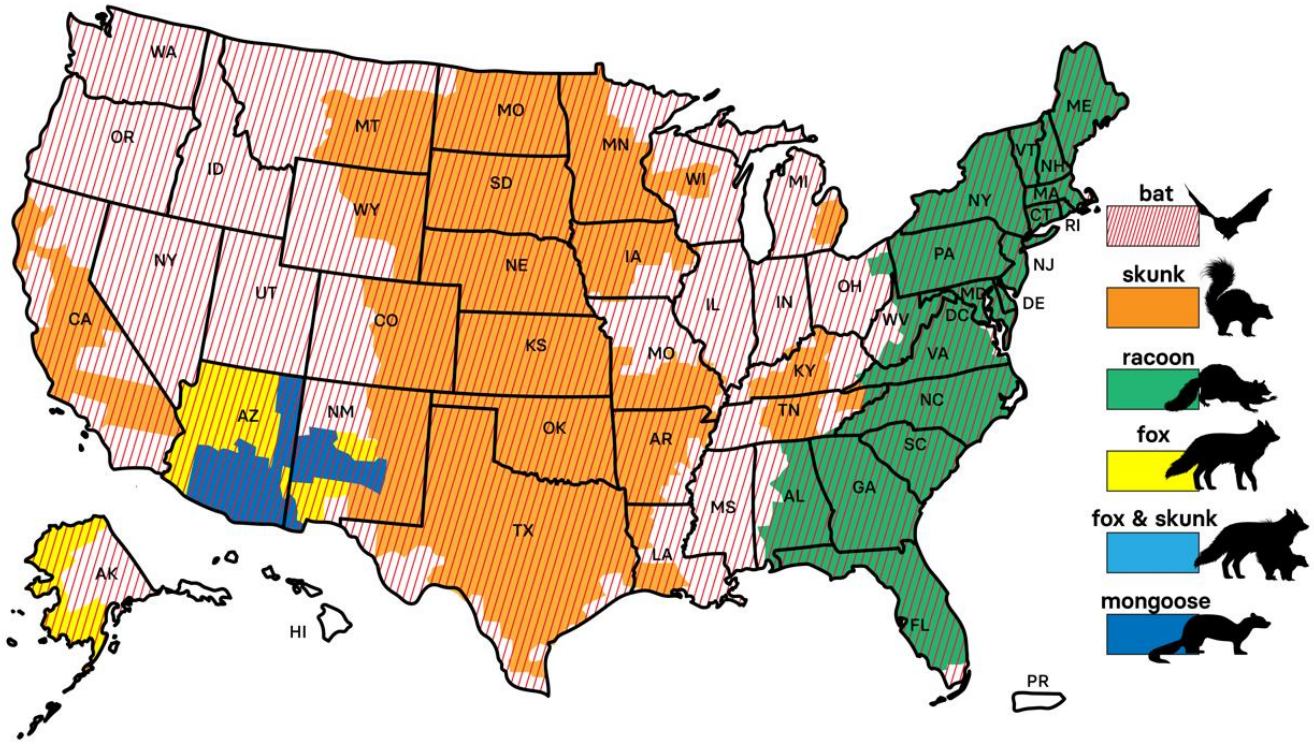
Human rabies is a completely preventable disease if the risk of acquisition is appreciated and appropriate rabies post-exposure prophylaxis (consisting of wound care as well as both active and passive immunization) is administered.

It is important that persons who may have a higher risk of exposure to rabies virus due to occupation or travel receive pre-exposure prophylaxis (page 25). Due to the high mortality rate associated with human rabies viral infections, the public health goals focus on prevention, including pre-exposure vaccination, and early post-exposure treatment. In coordination with the medical community, public health officials will work to prevent human exposure through education and implementation of animal control measures. If a potential exposure has been identified, public health will recommend the appropriate treatment and follow-up. Between 30,000 and 60,000 people receive rabies post-exposure prophylaxis treatment each year in the United States.

Although the decision to obtain post-exposure prophylaxis rests with the patient and their physician, expert consultations can be provided by the Georgia Poison Center (available 24/7), district and

county health departments, or the Epidemiology Division of the Department of Public Health to ensure appropriate recommendations (see page 4 for contact information).

Distribution of Major Terrestrial Reservoirs of Rabies in the United States



RABIES PREVENTION AND CONTROL

LEGAL AUTHORITY

The primary responsibility for the control of rabies in Georgia resides with the County Boards of Health. Chapter 31-19-1 of the Official Code of Georgia Annotated (O.C.G.A.) empowers and requires each County Board of Health to adopt and promulgate rules and regulations for the prevention and control of rabies (see pages 55-57).

PRINCIPLES OF RABIES CONTROL

As with other zoonotic diseases, the foundation for rabies control rests upon preventing the disease in animals, preventing the disease in humans, and decreasing the likelihood of exposure between humans and rabies-infected animal vectors. Public education regarding rabies exposure risk is also critical. The following principles apply:

RABIES TRANSMISSION

Rabies is transmitted only when the virus is introduced through bite wounds, scratches, open cuts in the skin, or contact with mucous membranes. **Rabies virus is primarily spread through the bite of an infected animal.** The virus is present in large concentrations in the saliva and the brain of the infected animal. Rabies is not spread through blood, urine, or feces, nor is it spread airborne through the open environment. Rabies cannot be spread through unbroken skin. People can get rabies via a bite from a rabid animal or rarely through scratches, abrasions, open wounds, or mucous membrane contact with saliva or brain tissue from a rabid animal. Once the virus is introduced, there is a variable period of time (incubation period), usually 1-3 months, before clinical signs and symptoms of rabies appear. It is important to note that the exposed animal/human is not infectious until clinical signs begin, or possibly a few days before. The virus is very fragile and doesn't survive long outside of a host; it can, however, survive in saliva and brain tissue for a short period of time depending on environmental conditions.

HUMAN RABIES PREVENTION

Rabies in humans can be prevented either by eliminating exposures to rabid animals or by providing exposed persons with prompt local treatment of wounds combined with appropriate post-exposure prophylaxis. In addition, pre-exposure vaccination should be recommended for persons in higher-risk groups, such as veterinarians, animal handlers, certain laboratory workers, and travelers to some countries (page 25).

DOMESTIC ANIMALS

County Boards of Health in Georgia should initiate and maintain effective programs to ensure the vaccination of all dogs, cats, and ferrets. Recommended vaccination procedures and licensed animal vaccines are specified in the *Compendium of Animal Rabies Prevention and Control*. In addition, adjunct procedures which enhance rabies control include 1) identification systems (e.g., metal/plastic tags, microchips; please refer to individual county requirements) to verify animal rabies vaccination status which should be maintained by the provider or clinic that administered the vaccine or the owner; 2) local domestic animal licensure requirements; 3) interstate health certificates, regulated by the Georgia Department of Agriculture, for domestic animals prior to travel within the US; 4) adherence to CDC regulations for the importation of domestic animals; and 5) when feasible, establishment of a local animal control agency responsible for stray control, leash laws, and issuance of citations for failure to vaccinate animals. In all counties, a rabies control authority should be designated.

All dogs, cats, and ferrets **must be vaccinated** against rabies and revaccinated in accordance with vaccine manufacturer recommendations and the recommendations of this manual. Vaccines should be FDA-approved and must be given by a **licensed veterinarian.** Check with local rabies authorities for specific county regulations on annual or triennial booster vaccinations. There are no state level requirements for vaccine type or manufacturer.

RABIES IN WILDLIFE

The control of rabies among wildlife reservoirs through vaccination is not feasible. Rabies control relies upon the prevention of exposure to wildlife rabies reservoirs. This can be accomplished via public education regarding the risk of rabies among wildlife and recommendations for avoidance of contact with wild animals. Leash laws and other domestic animal control laws will reduce the exposure of pets to potentially rabid wildlife.

CONTROL METHODS IN ANIMALS

ANIMAL VACCINATION PROTOCOLS

In Georgia, according to GA Code 31-19-5, animal rabies vaccines must be administered by a **licensed veterinarian**. Within 28 days after primary vaccination, a peak rabies antibody titer is reached, and the animal can be considered immunized. An animal is currently vaccinated and is considered immunized if the primary vaccination was administered at least 28 days previously and vaccinations have been administered in accordance with the *Compendium of Animal Rabies Prevention and Control*. Regardless of the age of the animal at initial vaccination, a second vaccination should be administered 1 year later. This second vaccine may be an annual or triennial product, even if the dose is overdue, unless a triennial vaccine is not permitted by local county rules and regulations. Because a rapid anamnestic response is expected, an animal is considered currently vaccinated **immediately** after booster vaccination.

DOGS, CATS, AND FERRETS

All dogs, cats, and ferrets must be vaccinated against rabies and revaccinated in accordance with the *Compendium of Animal Rabies Prevention and Control*. For many licensed vaccines, the age at primary vaccination is 3 months, but be aware that for some rabies vaccines, these ages are 6 weeks or 4 months. An animal should be vaccinated at the earliest age according to the vaccine manufacturer label. If a previously vaccinated animal is overdue for a booster, it should be revaccinated with a single dose of vaccine (annual or triennial) and placed on the appropriate schedule, depending on the type of vaccine administered (1-year or 3-year).

LIVESTOCK

When considering livestock vaccination from a public health standpoint, it may not be economically feasible nor justified to vaccinate all livestock against rabies. However, livestock that are valuable or have frequent contact with humans, such as show animals or those in petting zoos, should be vaccinated against rabies (refer to the *Compendium of Animal Rabies Prevention and Control* for specific vaccines licensed for use in livestock). Horses traveling interstate or with significant public contact (e.g., riding stables) should be current on rabies vaccinations.

OTHER ANIMALS

WILDLIFE

No parenteral rabies vaccine is licensed for use in wild animals. Because of the risk for rabies in wild animals (especially raccoons, skunks, coyotes, foxes, and bats), the Georgia Department of Natural Resources has rigid regulations which prohibit the keeping of wild and wild/domestic hybrids, including wolf hybrids, as pets. For further information, please See www.gadnrle.org/exotics.

MAINTAINED IN EXHIBITS AND IN ZOOLOGICAL PARKS

There are no licensed rabies vaccines for animals other than dogs, cats, ferrets, and some livestock. If rabies vaccines are used "off-label", typically the animals will not be considered vaccinated. Captive mammals that are not excluded from potential contact with rabies vectors could become infected with rabies if exposed. Moreover, wild animals might be incubating rabies when initially captured; therefore, wild-caught animals susceptible to rabies should be placed in strict isolation for a minimum of 6 months before being exhibited. Employees who work with animals at such facilities should receive pre-exposure rabies vaccination. Carnivores and bats should be housed in a manner that precludes direct contact with the public.

MANAGEMENT OF ANIMALS POSSIBLY EXPOSED TO RABIES

Any animal possibly exposed to the rabies virus by a wild, carnivorous mammal or a bat that is not available for testing should be regarded as having been exposed to rabies.

DOGS, CATS, AND FERRETS

UNVACCINATED

Unvaccinated dogs, cats, and ferrets exposed to a rabid animal are difficult to manage given the long potential incubation period for rabies. In most cases, these animals should be euthanized immediately. If the owner is unwilling to have this done, the animal should be placed in strict quarantine for 4 months for dogs and cats and 6 months for ferrets. The exposed animal should be vaccinated upon entry into quarantine. If the animal is unable to be vaccinated when entering quarantine, it can be vaccinated up to 7 days prior to release from quarantine. Strict quarantine in this context refers to confinement in an enclosure that precludes direct contact with humans and other animals. Local rabies authority will determine if quarantine is feasible based on local resources, rules, and regulations.

OVERDUE FOR BOOSTER

Dogs and cats overdue for a booster (see Definitions, pages 52-54) who are exposed to a rabid animal and have documentation of having received at least one rabies vaccination in their lifetime should be revaccinated immediately, kept under the owner's control, and observed for clinical signs of rabies for a total of 45 days. Depending on the jurisdiction, the animal may be observed at home. However, some jurisdictions may require the animal to be observed in a controlled setting, such as a veterinary practice or an animal control facility. At the first sign of illness or behavioral change in the animal, the local rabies control agency should be notified, and the animal should be evaluated by a veterinarian. If clinical signs are consistent with rabies, the animal should be immediately euthanized and tested for rabies.

NO DOCUMENTATION OF VACCINATION

Animals without documentation of prior vaccination and exposed to a rabid animal should be treated as unvaccinated (refer to Unvaccinated protocol above). If the exposed animal is a **dog or cat**, and there is a strong indication that the animal may have been previously vaccinated, the Progressive Serological Monitoring (PSM) Protocol may be followed to document an anamnestic response to the booster vaccine, indicating prior vaccination. See the Appendix B for details on the PSM protocol (applies to dogs and cats only). **If the PSM is implemented, the animal should NOT be vaccinated prior to starting the protocol.**

CURRENTLY VACCINATED

Currently vaccinated (see Definitions, pages 52-54) dogs, cats, and ferrets should be revaccinated immediately and observed for a total of 45 days, in accordance with the local rabies authority. During the observation period (see Definitions, pages 52-54) the animal should not be permitted to roam freely and should be restricted to leash walks or a secure fenced area. At the first sign of illness or behavioral change in the animal, the local rabies control agency should be notified, and the animal should be evaluated by a veterinarian. If clinical signs are consistent with rabies, the animal should be immediately euthanized and tested for rabies.

LIVESTOCK

VACCINATED

All species of livestock are susceptible to rabies; cattle and horses are the most frequently infected, while swine are generally resistant and infections are rare. Livestock exposed to a rabid animal and currently vaccinated with a USDA-approved, species-specific vaccine (see Appendix A,) should be revaccinated immediately and observed for 45 days.

UNVACCINATED

Unvaccinated livestock exposed to a rabid animal are difficult to manage given the long potential incubation period for rabies. In most cases, these animals should be euthanized immediately. If the animal is not euthanized, it should be kept under strict quarantine for 6 months.

> Livestock exposed to rabies and undergoing strict quarantine should be separated from all animals during the quarantine period.

Any illness in an animal under strict quarantine should be reported immediately to the local health department and the animal should be evaluated by a veterinarian. If signs are consistent with rabies, the animal should be euthanized and the head submitted for testing when exposures to humans or domestic animals have occurred or if testing is recommended by the local rabies authority. DPH may collaborate with Georgia Department of Agriculture (GDA) on livestock exposures and GDA may issue a stop-movement order as needed.

- Handling and consumption of tissues from exposed animals may carry a risk for rabies transmission. Risk factors depend on the site(s) of exposure, the amount of virus present, the severity of wounds, and whether sufficient contaminated tissue was excised prior to preparation for consumption. If an exposed animal is to be slaughtered for consumption, it should be done immediately after exposure and all tissues should be cooked thoroughly.

- Barrier precautions should be used by persons handling the animal and tissues. Historically, federal guidelines for meat inspectors required that any animal known to have been exposed to rabies within 8 months be rejected for slaughter. USDA Food Safety and Inspection Service (FSIS) meat inspectors should be notified if such exposures occur in food animals prior to slaughter.
- Rabies virus may be widely distributed in tissues of infected animals. Tissues and products from a rabid animal should not be used for human or animal consumption. However, pasteurization temperatures will inactivate the rabies virus; therefore, drinking pasteurized milk or eating thoroughly cooked animal products does not constitute rabies exposure.
- Decisions regarding the quarantine of a single animal versus a group of potentially exposed animals in a herd-setting will be made on a case-by-case basis.

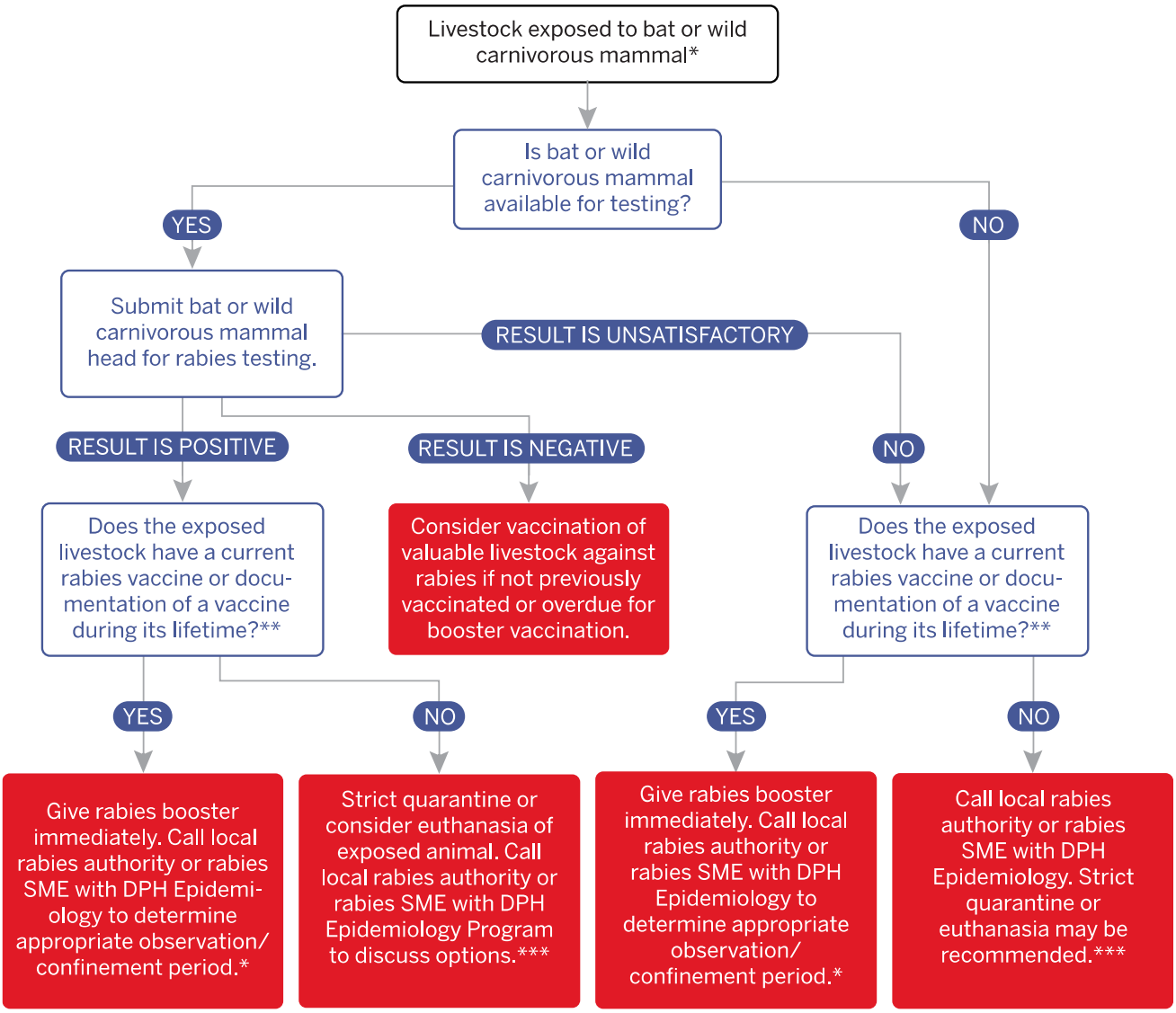
EXOTIC ANIMALS MAINTAINED IN ZOOLOGICAL PARKS, RESEARCH FACILITIES, OR PRIVATELY OWNED (PRIMATES, EXOTIC CATS, ETC.)

Data is available to support management decisions on dogs, cats, ferrets, and livestock. Little is known about rabies epidemiology in other species; therefore, we do not have the information needed to determine post-exposure management needs. Additionally, there are no licensed rabies vaccines for animals other than dogs, cats, ferrets, and some livestock. If rabies vaccines are used "off-label", typically the animals will not be considered vaccinated. If these animals are bitten by a rabid animal, please contact public health for recommendations immediately. Animals maintained in USDA-licensed research facilities or accredited zoological parks should be evaluated on a case-by-case basis. Consultations can be provided by your local rabies authority, Georgia Poison Center, or the State DPH Epidemiology Division (see page 4 for contact information).

DECISION TREES

ANIMALS POSSIBLY EXPOSED TO RABIES

PROTOCOL FOR LIVESTOCK POSSIBLY EXPOSED TO RABIES

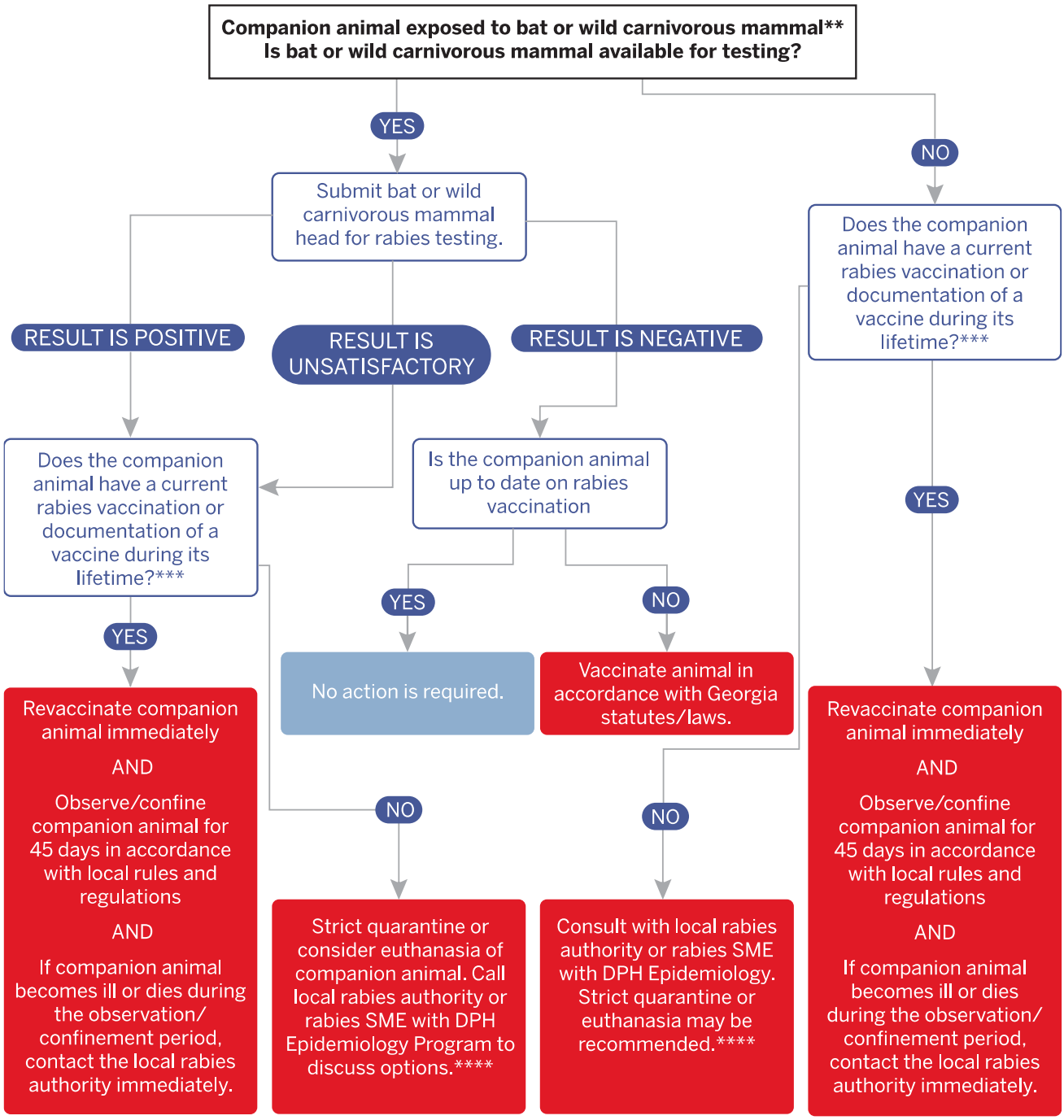


* Consultations regarding livestock exposures should be provided by your local rabies authority, Georgia Poison Center (available 24/7 at 404-616-9000), or the rabies subject matter expert (SME) in the DPH Epidemiology Division (available during business hours at 404-657-2588). Most consultations can

** An animal is currently vaccinated if the primary rabies vaccine (USDA-approved for use in livestock species) was administered by a veterinarian at least 28 days prior to the exposure and booster vaccines have been administered according to vaccine label.

*** The option for strict quarantine for unvaccinated livestock exposed to rabies will be dependent on local resources and considered on a case-by-case basis. Contact your local rabies authority or the rabies SME with the DPH Epidemiology Division to discuss options.

PROTOCOL FOR COMPANION ANIMALS* POSSIBLY EXPOSED TO RABIES



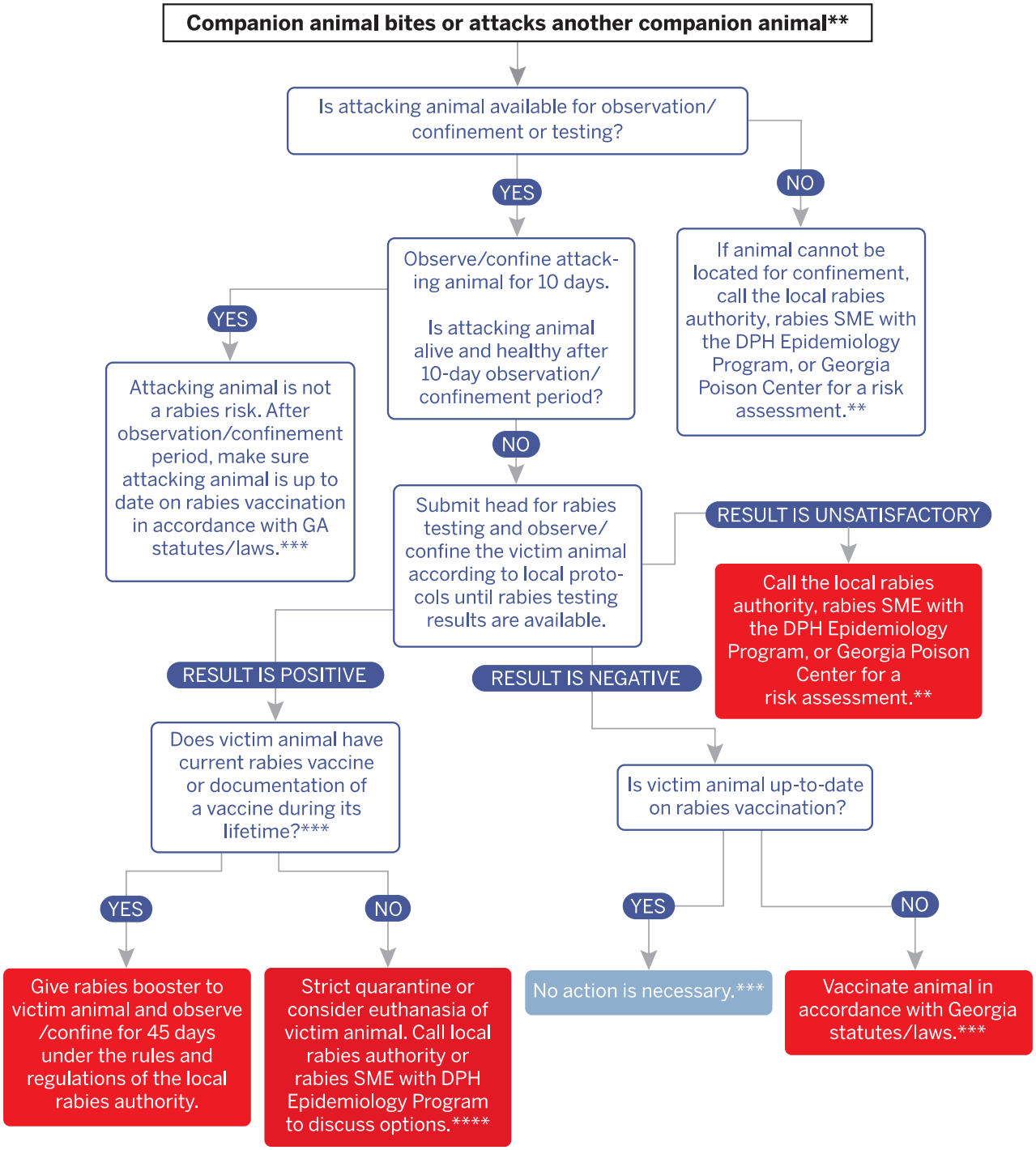
* Companion animals are defined as all dogs, cats, and ferrets, no matter if they are owned or stray.

** Consultations regarding companion animal exposures should be provided by your local rabies authority, Georgia Poison Center (available 24/7 at 404-616-9000), or the rabies subject matter expert (SME) in the DPH Epidemiology Division (available during business hours at 404-657-2588). Most consultations can be done during regular business hours. For emergency after-hours or weekend calls, please contact Georgia Poison Center at 404-616-9000.
An animal is currently vaccinated if the primary rabies vaccine was administered by a veterinarian at least 28 days prior to the exposure and booster vaccines have been administered on an annual or triennial schedule according to the vaccine manufacturer label and local ordinances.

*** An animal is currently vaccinated if the primary rabies vaccine was administered by a veterinarian at least 28 days prior to the exposure and booster vaccines have been administered on an annual or triennial schedule according to the vaccine manufacturer label and local ordinances.

**** Strict quarantine of unvaccinated cats/dogs lasts four months. Strict quarantine of unvaccinated ferrets lasts six months. The specifications of strict quarantine for unvaccinated companion animals exposed to rabies will be dependent on local rules and regulations. Contact your local rabies authority or the rabies SME with the DPH Epidemiology Division to discuss options.

PROTOCOL FOR COMPANION ANIMAL-TO-COMPANION ANIMAL* EXPOSURES



* Companion animals are defined as all dogs, cats, and ferrets, no matter if they are owned or stray.

** Consultations regarding exposures between companion animals should be provided by your local rabies authority, Georgia Poison Center (available 24/7 at 404-616-9000), or the rabies subject matter expert (SME) in the DPH Epidemiology Division (available during business hours at 404-657-2588). Most consultations can be done during regular business hours. For emergency after-hours or weekend calls, please contact Georgia Poison Center at 404-616-9000.

*** An animal is currently vaccinated if the primary rabies vaccine was administered by a veterinarian at least 28 days prior to the exposure and booster vaccines have been administered on an annual or triennial schedule according to the vaccine manufacturer label and local ordinances.

**** Strict quarantine of unvaccinated cats/dogs lasts four months. Strict quarantine of unvaccinated ferrets lasts six months. The specifications of strict quarantine for unvaccinated companion animals exposed to rabies will be dependent on local rules and regulations. Contact your local rabies authority or the rabies SME with DPH Epidemiology Division to discuss options.

MANAGEMENT OF ANIMALS THAT BITE HUMANS

DOGS, CATS, AND FERRETS

10-DAY OBSERVATION PERIOD

Rabies virus is present in the saliva of infected dogs, cats, and ferrets from a few days prior to illness onset until death. Therefore, a domestic animal that bites a person should be monitored for clinical signs of rabies to ensure the victim has not been exposed. A dog, cat, or ferret that bites a person should be confined (see Definitions, pages 52-54) and observed for 10 days, **REGARDLESS OF THE ANIMAL'S VACCINATION STATUS**. Administration of rabies vaccine, or any other vaccines, is not recommended during the observation period to avoid confusing signs of rabies with possible side effects of vaccine administration. The Epidemiology Division of the Department of Public Health should be consulted at 404-657-2588 during regular business hours when unique circumstances warrant the administration of vaccines other than rabies vaccine, during the 10-day observation period. If these questions come up after hours, please call the 24/7 Georgia Poison Center line at 404-616-9000.

SPECIFICATIONS OF 10-DAY OBSERVATION PERIOD

During the 10-day observation period, direct contact with other animals or persons must be prevented. The observation period shall be instated per the local rabies authority and should include specifications such as the location and designation of persons responsible for monitoring. For example, observation may take place at the owner's home, a veterinary hospital, or animal control facility, depending on local requirements.

If the animal develops illness or behavioral changes during the observation period, the local rabies control agency should be notified immediately, and the animal should be evaluated by a veterinarian. If clinical signs are consistent with rabies, the animal should be immediately euthanized and tested for rabies and the exposed person(s) notified. Testing must be coordinated through the local rabies control agency.

STRAY DOGS, CATS, AND FERRETS

Any stray dog, cat, or ferret that bites a person or a domestic/owned animal should be observed for 10 days if feasible, as an alternative to euthanasia and testing. If the animal is not demonstrating signs consistent with rabies at the end of 10 days, then local protocols can be followed for stray animals. If the animal is euthanized before 10 days have passed since the bite, then the local rabies authority should be consulted to determine if rabies testing is indicated.

Domestic animals (dogs, cats, and ferrets) that bite humans should be observed for 10 days, REGARDLESS OF THE ANIMAL'S VACCINATION STATUS.

LIVESTOCK

Management of livestock that bite humans depends on a variety of factors, including the species, the circumstances of the bite, the epidemiology of rabies in the area, the biting animal's history, current health status, and potential for exposure to rabies.

The Epidemiology Division at the Department of Public Health should be consulted at 404-657-2588 when a human is bitten by livestock. If these questions come up after hours, please call the 24/7 Georgia Poison Center line at 404-616-9000.

ANIMALS MAINTAINED IN ZOOLOGICAL PARKS, WOLF HYBRIDS, PET EXOTIC CATS, ETC.

CONSIDERATIONS FOR MANAGEMENT

Management of animals maintained in zoological parks, wolf hybrids, and pet exotic cats that bite humans depends on a variety of factors, including the species, the circumstances of the bite, the epidemiology of rabies in the area, the biting animal's history, current health status, and potential for exposure to rabies. The Epidemiology Division at the Department of Public Health should be consulted at 404-657-2588 when circumstances warrant. If these questions come up after hours, please call the 24/7 Georgia Poison Center line at 404-616-9000.

EUTHANASIA/TESTING

Since the duration of clinical signs and the period of virus shedding are unknown for many species, confinement may not be a feasible management strategy. When one of these animals bites a human, euthanasia and testing may be **considered on a case-by-case basis.** Euthanasia and testing may be recommended for these animals even if they have been previously vaccinated, due to the unknown viral shedding period. Contact the local rabies authority for recommendations.

WILDLIFE

Wild mammals that bite or otherwise expose persons should be euthanized and tested for rabies, with the exception of rodents, lagomorphs and a few other species, which are assessed on a case-by-case basis. Since the duration of clinical signs and the period of viral shedding are unknown for these species, an appropriate confinement period cannot be ascertained. Assessing rabies risk and the need for rabies diagnostic testing can be guided by the following:

WILD CARNIVORES

Raccoons, skunks, and foxes are rabies vector species, and the most common terrestrial wildlife infected with rabies in Georgia. All bites and scratches by these animals must be considered possible exposures to the rabies virus. Non-bite exposures may occur and should be evaluated on a case-by-case basis. Signs of rabies among wildlife cannot be interpreted reliably; therefore, any wild terrestrial mammal that exposes a person should be euthanized at once (without unnecessary damage to the brain) and the head should be submitted for rabies testing. Testing and risk assessment should be coordinated through your local rabies authority.

BATS

A bat that bites, scratches, or has any direct physical contact with a person should be safely captured page 43), immediately euthanized, and the entire body sent to the laboratory for rabies examination. Alert and oriented people usually know when they have been bitten by a bat. However, because bats have small teeth that may leave marks that are not easily seen, there are situations in which rabies testing and medical advice should be sought even in the absence of an obvious bite wound. These include awakening to find a bat in the room, finding a bat in the room of an unattended child, having a bat physically brush against you, or finding a bat near a mentally impaired or intoxicated person. In these situations, a bite cannot be definitively ruled out. If physical contact or the situations above occur and the bat is not available for testing (i.e., escapes from the house), rabies post exposure prophylaxis should be administered as soon as possible. Risk assessments should be

conducted through your local rabies authority, the Georgia Epidemiology Division, or Georgia Poison Center.

OTHER WILD ANIMALS

Human exposures involving non-reservoir species (opossums, otters, beavers, groundhogs, etc.) should be considered on a case-by-case basis. Rabies testing may be indicated if the animal is ill or exhibiting abnormal behavior. Risk assessments should be conducted through your local rabies authority, the Georgia Epidemiology Division, or Georgia Poison Center.

Note: Opossums are marsupials and have a lower internal body temperature that is not conducive to rabies infection. Therefore, bites and/or scratches from opossums are generally not considered to be a rabies risk. These will be evaluated on a case-by-case basis by the local rabies authority.

Approval must be obtained from the epidemiology division of the department of public health prior to submitting other wild animals for rabies testing and will be coordinated with your local rabies authority.

RODENTS AND LAGOMORPHS

Squirrels, rats, mice, hamsters, guinea pigs, gerbils, chipmunks, and rabbits are almost never infected with rabies and are not a meaningful contributor to the transmission of rabies to humans. Bites by these animals are usually not considered a rabies risk and do not warrant rabies testing unless the animal is sick or behaving in a very unusual manner. Rodents that **may be** a rabies risk include woodchucks or groundhogs (*Marmota monax*) because they are typically large enough to survive the attack of a rabid animal, unlike smaller rodents. Risk assessments should be conducted through your local rabies authority, the Georgia Epidemiology Division, or Georgia Poison Center.

Approval must be obtained from the epidemiology division of the department of public health prior to submitting a rodent for rabies testing and will be coordinated with your local rabies authority.

CONTROL METHODS IN HUMANS

Prevention of human rabies depends on eliminating exposure to rabid animals and providing exposed persons with prompt treatment of their wounds, combined with appropriate rabies post-exposure prophylaxis (PEP). Additionally, pre-exposure vaccination is recommended for persons in high-risk groups, such as veterinarians, animal handlers, and certain laboratory workers. See pre-exposure section for details (pages 25-30).

RABIES BIOLOGICS (VACCINES AND IMMUNE GLOBULIN)

In general, two types of rabies biologics are available in the United States, namely, rabies vaccines and rabies immune globulin. Rabies vaccines induce an active immune response that includes the production of virus-neutralizing antibodies. This antibody response requires approximately 7-10 days to develop and usually persists for several years. Conversely, rabies immune globulin (RIG) provides a rapid, passive immunity that persists for only a short time (half-life of approximately 21 days) to bridge the gap until active immunity occurs in response to rabies vaccine administration. For details on rabies biologics, such as formulations and considerations for use, please refer to the manufacturer package insert.

Major considerations for providers when administering PEP:

- The site of administration of RIG and vaccine is important!
- All of the calculated RIG dose, or as much as anatomically possible, should be infiltrated into the wound. The remaining RIG should be injected intramuscularly at a distant site from the area of vaccine injection
- Vaccine should always be given intramuscularly (IM), generally the deltoid for adults and the anterolateral quadriceps.
- **RIG and vaccine should never be put in the same syringe, nor administered at the same site.**
- Persons with a history of PrEP or PEP prior to a current exposure do not need RIG. If there is a concern based on how long ago the series was administered, please call public health for consultation.
  Minor deviations to the recommended schedule are usually acceptable. Please contact DPH Epidemiology or Georgia Poison Center with questions about vaccine deviations.

VACCINES:

Human Diploid Cell Vaccine (HDCV):

- Manufacturer: Sanofi Pasteur
- Product name: Imovax®Rabies

- Please see manufacturer package insert for information about formulations or considerations for use.

Purified Chick Embryo Cell Vaccine (PCECV):

- Manufacturer: Novartis Vaccines and Diagnostics
- Product name: RabAvert®
- Please see manufacturer package insert for information about formulations or considerations for use.

RABIES IMMUNE GLOBULIN (RIG):

There are two human rabies immunoglobulin (RIG) biologics licensed in the United States: HyperRab™ S/D and KEDRAB®. Both RIG preparations are considered equally efficacious.

These products are made from the plasma of hyperimmunized human donors that, in theory, might contain infectious agents. Nevertheless, the risk that such products will transmit an infectious agent has been substantially reduced through screening of plasma donors for previous exposure to certain viruses, by testing for the presence of certain viral infections, and by inactivating and/or removing certain viruses. No transmission of adventitious agents has been documented after administration of a licensed RIG biologic in the United States.

HyperRab™ S/D:

- Manufacturer: Grifols Biotherapeutics
- Please see manufacturer package insert for information about formulations or considerations for use.

KEDRAB®:

- Manufacturer: Kedrion Biopharma and Kamada Ltd.
- Please see manufacturer package insert for information about formulations or considerations for use.

Currently Available Rabies Biologics -- United States, 2018

HUMAN RABIES VACCINE					
Preparation	Product Name	Manufacturer	Dose	Route	Indications
Human diploid cell vaccine (HDCV)	Imovax® Rabies*	Sanofi Pasteur 800-822-2463 Sanofi.us Fda.gov	1ml	Intramuscular	Pre-exposure or post-exposure†
Purified chick embryo cell vaccine (PCECV)	RabAvert®	Novartis Vaccines and Diagnostics 800-244-7668 rabavert.com fda.gov	1ml	Intramuscular	Pre-exposure or post-exposure**

HUMAN RABIES IMMUNE GLOBULIN (HRIG OR RIG)				
Product Name	Manufacturer	Dose	Route	Indications
HyperRab™ S/D HyperRab® ****	Grifols Bayer Biological Products 800-243-4153 dailymed.nlm.nih.gov	20 IU/kg (please note this is a concentrated formulation)	Local (at the site of the bite/scratch)	Post-exposure only***
KEDRAB™	Kedrion Biopharma and Kamada Ltd. 1-855-353-7466 dailymed.nlm.nih.gov	20 IU/kg	Local (at the site of the bite/scratch)	Post-exposure only§

* Imovax rabies I.D., administered intradermally, is no longer available in the United States.

** For post-exposure prophylaxis in persons who have not been previously vaccinated, the vaccine is administered on days 0, 3, 7, and 14, with immunocompromised persons receiving an additional dose on day 28. Patients who have been previously vaccinated should receive vaccine on days 0 and 3da. For pre-exposure prophylaxis, the vaccine is administered on days 0 and 7.

*** As much of the product as is anatomically feasible should be infiltrated into and around the wound. Any remaining product should be administered intramuscularly in the deltoid or quadriceps (at a location other than that used for vaccine inoculation to minimize potential interference).

**** HyperRab has a different concentration compared to the other immunoglobulin products and requires a lower volume to administer the recommended dose of 20 IU/kg. Care should be taken to ensure the correct dose of immunoglobulin is administered to ensure an adequate immune response.

Sources:

CDC. Use of a reduced (4-dose) vaccine schedule for post-exposure prophylaxis to prevent human rabies – recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2010; 59(02);1-9.

CDC. Rao AK, Briggs D, Moore SM, et al. Use of a Modified Preexposure Prophylaxis Vaccination Schedule to Prevent Human Rabies: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. MMWR Morb Mortal Wkly Rep 2022;71:619–627. DOI: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9098245/

SOURCES FOR RABIES BIOLOGICS

Health departments in Georgia do not routinely maintain supply of rabies vaccine and do not administer Rabies Immune Globulin (RIG). Post-exposure prophylaxis in persons without prior completion of a rabies vaccine series will require RIG. Persons who need RIG will need to seek careat a hospital emergency department.

Large hospital emergency departments routinely maintain supplies of rabies biologics (i.e., rabies vaccine and immune globulin) and healthcare providers can order biologics from the manufacturer/ distributor. To obtain prophylaxis, consult your healthcare provider or call ahead to ensure they have rabies biologics available unless you are experiencing a medical emergency. Occasionally, shortages of human rabies vaccines or RIG occur. CDC maintains a webpage on vaccine and RIG availability at cdc.gov/rabies/hcp/clinical-overview/rabies-biologics.html

PRE-EXPOSURE VACCINATION IN HUMANS

Pre-exposure vaccination should be offered to persons who may have a higher risk of being exposed to rabies through their occupation or international travel. These risk categories are outlined in the exposure table below.

While pre-exposure vaccination does not eliminate the need for additional medical evaluation after a rabies exposure, it does simplify management by eliminating the need for RIG and decreasing the number of post-exposure vaccine doses needed. This is particularly important for persons at high risk for rabies exposure while in areas where rabies biologics may not be available or where there are cold chain concerns. This could place the exposed person at an increased risk for adverse events or insufficient immunologic response. Additionally, pre-exposure prophylaxis will offer protection for those at risk of unrecognized exposures to rabies.

PRE-EXPOSURE VACCINATION REGIMENS ARE AS FOLLOWS:

PRIMARY VACCINATION SERIES

Two 1.0-mL injections of HDCV or PCECV should be administered intramuscularly (deltoid muscle) -- one injection per day on days 0 and 7. In small children, an alternative administration site is the anterolateral quadriceps. **The gluteal muscle should never be used as an administration site in any patient.**

RISK CATEGORIES AND MANAGEMENT OF LONG-TERM IMMUNOGENICITY

Following completion of the pre-exposure primary vaccination regimen, persons should follow the long-term immunogenicity recommendations for their individual risk category below. Depending on a person's individual level of risk as defined in the Risk Category table below or subject to public health review, their initial adherence to the pre-exposure vaccination guidelines, and their

observed serum titer, serial serum rabies-neutralizing antibody titer levels may be necessary. If the titer is <0.5 IU/mL, an additional IM booster should be administered, and subsequent titers evaluated. Additional information regarding rabies antibody titer testing is available in Use of a Modified Preexposure Prophylaxis Vaccination Schedule to Prevent Human Rabies: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. Please contact the Epidemiology Division at the Georgia Department of Public Health at 404-657-2588 or Georgia Poison Center for further consultation.

The following table summarizes pre-exposure vaccination guidelines based on risk categories:

Pre-Exposure Prophylaxis Based on Risk Category				
Risk Category	**Nature of Exposure**	**Typical Populations***	**Recommendations:**	
			Primary§ PrEP	**Long-term Immunogenicity¶**
Elevated risk for unrecognized and recognized†† exposures including unusual or high-risk exposures**	Exposure, often in high concentrations, might be recognized or unrecognized, might be unusual (e.g., aerosolized virus)	Persons working with live rabies virus in research or vaccine production facilities or performing testing for rabies in diagnostic laboratories	IM rabies vaccine on days 0 and 7	Check titers every 6 months; booster if titer <0.5 IU/mL§§.
Elevated risk for unrecognized and recognized†† exposures**	Exposure typically recognized but could be unrecognized; unusual exposures unlikely	Persons who frequently 1) handle bats, 2) have contact with bats, 3) enter high-density bat environments, or 4) perform animal necropsies (e.g., biologists who frequently enter bat roosts or who collect suspected rabies samples)	IM rabies vaccine on days 0 and 7	Check titers every 2 years; booster if titer <0.5 IU/mL§§.
Elevated risk for recognized†† exposures, sustained risk¶¶	Exposure is nearly always recognized; risk for recognized exposures higher than that for the general population and duration exceeds 3 years after the primary vaccination	Persons who interact with animals that could be rabid***; occupational or recreational activities that typically involve contact with animals include 1) veterinarians, technicians, animal control officers, and their students or trainees; 2) persons who handle wildlife reservoir species (e.g., wildlife biologists, rehabilitators, and	IM rabies vaccine on days 0 and 7	1) One-time titer check during years 1–3 after 2-dose primary series; booster if titer <0.5 IU/mL§§, or 2) booster no sooner than day 21 and no later than year 3 after 2-dose primary series†††

		trappers); and 3) spelunkers Selected travelers. PrEP considerations include whether the travelers 1) will be performing occupational or recreational activities that increase risk for exposure to potentially rabid animals (particularly dogs) and 2) might have difficulty getting prompt access to safe PEP (e.g., rural part of a country or far from closest PEP clinic)		
Elevated risk for recognized†† exposures, risk not sustained¶¶	Exposure nearly always recognized; risk for exposure higher than for general population but expected to be time-limited (≤3 years from the 2-dose primary PrEP vaccination series)	Same as for risk category 3 (above), but risk duration ≤3 years (e.g., short-term volunteer providing hands-on animal care or infrequent traveler with no expected high-risk travel >3 years after PrEP administration)	IM rabies vaccine on days 0 and 7	None
Low risk for exposure	Exposure uncommon	Typical person living in the United States	None	None

Abbreviations: IM = intramuscular; IU = international units; PEP = postexposure prophylaxis; PrEP = preexposure prophylaxis.

* Refer to pages 38-40 for information about serologic testing. Nature of exposure and type of work performed are the most important variables to consider when determining a person's risk category. The examples provided are intended to be a guide, but ultimately categorizations should be done on a case-by-case basis with nature of exposure considered. Some persons might be categorized into a different risk group from those suggested by the provided examples. For example, most veterinarians are in risk category 3 because they are at risk for recognized exposures after direct contact with animals. However, a veterinary pathologist who often performs necropsies on mammals suspected to have had rabies might have risk for rabies virus exposure that is more consistent with risk category 2 than risk category 3; such persons should follow the recommendations for the risk category with which their activities best fit. Similarly, most spelunkers do not often enter high-density bat caves; those who do may follow the recommendations for risk category 2 rather than risk category 3. Persons involved in the diagnosis of rabies virus, but for whom the frequency of handling rabies virus–infected tissues is low, or the procedures performed do not involve contact with neural tissue or opening of a suspected rabid animal's calvarium could consider following the recommendations for risk category 2 rather than those for risk category 1.

§ Primary immunogenicity refers to immunogenicity that peaks 2–4 weeks after completing the recommended primary vaccination schedule. Persons without altered immunity are expected to mount appropriate responses, and checking titers is not routinely recommended. Persons with altered

immunity are advised to confirm, through laboratory testing, a rabies antibody titer ≥0.5 IU/mL ≥1 week after booster vaccination (but ideally, 2–4 weeks after completing the recommended schedule) and before participating in high-risk activities. Individual laboratories set facility-specific rules about whether acceptable antibody titers should be laboratory-confirmed for all personnel, regardless of whether personnel have altered immunity.

¶ Long-term immunogenicity refers to the ability to mount an anamnestic response to rabies virus >3 years after completion of the primary rabies vaccination series.

** Unrecognized exposures are those that recipients might not know occurred; for example, a small scratch during an inconspicuous personal protective equipment breach might not be noticed by persons testing neural tissue from a rabid animal or persons conducting ecologic studies on bats in the field.

†† Recognized exposures are bites, scratches, and splashes that are usually registered by a person because the exposure is unusual (e.g., contact with a bat) or painful (e.g., bite or scratch from a raccoon).

§§ When rabies antibody titers are <0.5 IU/mL, a booster vaccination should be provided. Antibody titers to verify booster response need not be checked after these boosters are administered to persons who are immunocompetent. For persons who are immunocompromised, the indicated antibody titer should be verified ≥1 week (ideally, 2–4 weeks) after administration of every booster vaccination.

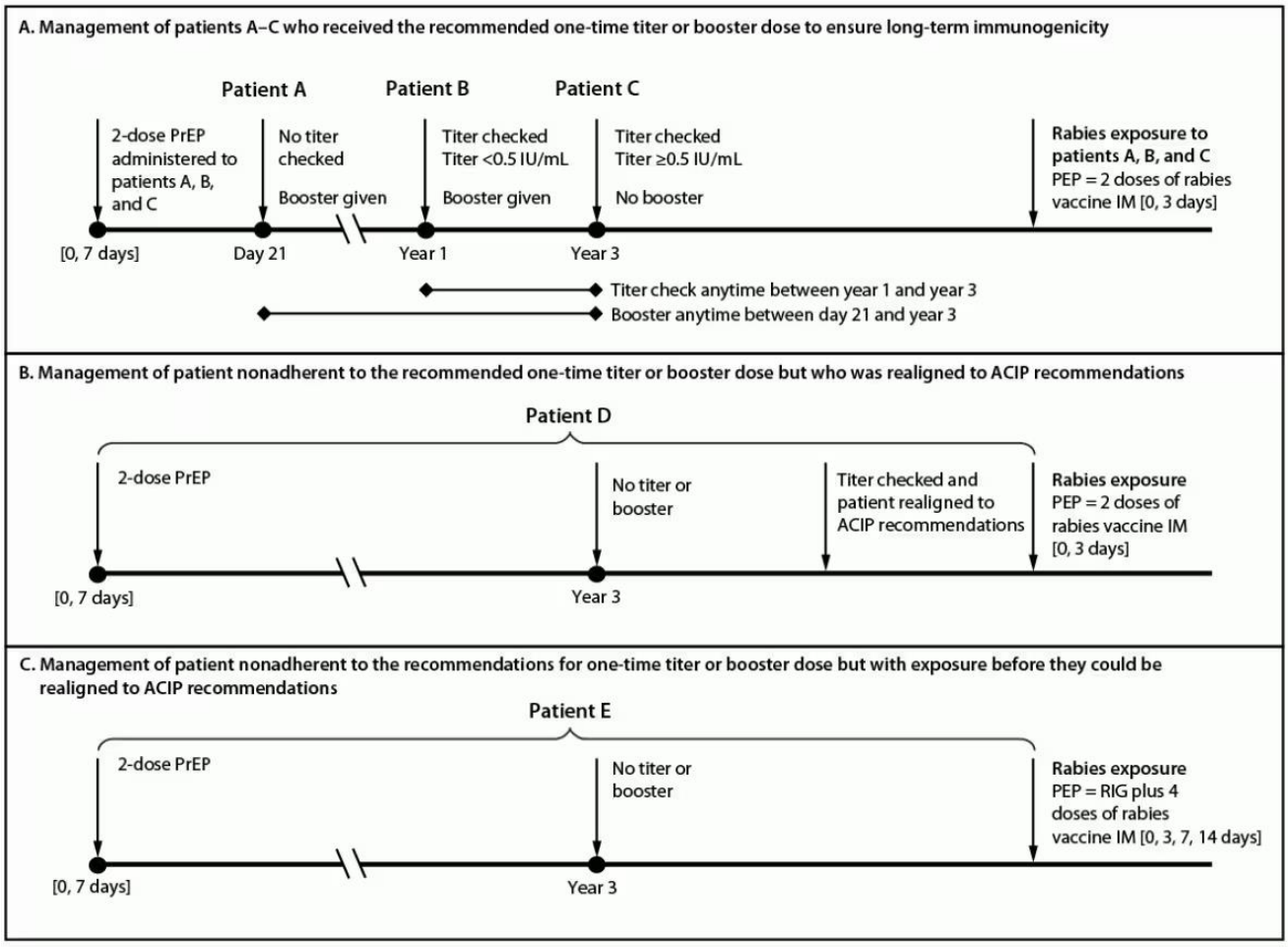
¶¶ Sustained risk is elevated risk for rabies >3 years after the completion of the primary rabies PrEP vaccination schedule.

*** Rabies virus is unlikely to persist outside a deceased animal's body for an extended time because of virus inactivation by desiccation, ultraviolet irradiation, and other factors. Risk from transmission to persons handling animal products (e.g., hunters and taxidermists) is unknown but presumed to be low (risk category 5); direct skin contact with saliva and neural tissue of mammals should be avoided regardless of profession.

††† Checking titers after recommended booster doses is not indicated unless the recipient has altered immunity.

Source: CDC. Rao AK, Briggs D, Moore SM, et al. Use of a Modified Preexposure Prophylaxis Vaccination Schedule to Prevent Human Rabies: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022. MMWR Morb Mortal Wkly Rep 2022;71:619–627. DOI: Morbidity and Mortality Report (MMWR).

Management of long-term immunogenicity* for hypothetical patients (A–E)†,§,¶ who received the Advisory Committee on Immunization Practices recommended 2-dose rabies preexposure prophylaxis schedule and have sustained risk for recognized exposures (risk category 3) — Advisory Committee on Immunization Practices, United States, 2022**



Abbreviations: ACIP = Advisory Committee on Immunization Practices; IM = intramuscular injection; IU = international units; PEP = postexposure prophylaxis; PrEP = preexposure prophylaxis; RIG = rabies immunoglobulin.

* Long-term immunogenicity is considered a successful anamnestic response (i.e., rapid rise in antibody levels) after an encounter with the rabies virus antigen >3 years after the primary vaccination series.

† Patient A received the recommended booster dose during day 21–year 3 and patients B and C received the recommended one-time titer check during years 1–3. Recommended options for patients A–C include 1) a one-time rabies vaccine booster dose from day 21 to 3 years after the 2-dose primary series (patient A) and 2) a one-time rabies antibody titer check 1–3 years after the 2-dose primary series (patients B and C).

§ Patient D did not receive the recommended one-time titer or booster dose but was realigned to the ACIP recommendations before an exposure occurred. Realigning involves checking a titer. If the titer is ≥0.5 IU/mL, no further action is needed, and the patient is considered realigned with the ACIP recommendations. If the titer is <0.5 IU/mL, patient D should receive a booster dose followed by an additional titer no sooner than 1 week later (preferably 2-4 weeks later) to confirm the appropriate response.

¶ Patient E did not receive the recommended one-time titer or booster dose and had an exposure before they could be realigned to the ACIP recommendations. This patient should receive RIG and the 4-dose rabies vaccine PEP series indicated for persons not previously vaccinated.

** An acceptable antibody titer (i.e., ≥0.5 IU/mL) should be confirmed after boosters are administered to immunocompromised persons.

POST-EXPOSURE VACCINATION IN HUMANS

POST-EXPOSURE PROPHYLAXIS FOR PREVIOUSLY VACCINATED PERSONS

If a person is exposed to rabies, clinical evaluation and wound care remains an important part of post-exposure prophylaxis, even for previously vaccinated persons. If a person is exposed to rabies and they have received either the pre-exposure vaccine regimen OR post-exposure regimen, then they should receive TWO post-exposure IM doses of rabies vaccine (1.0 mL each in the deltoid). The first dose should be administered as soon as possible after exposure. The day of the first dose is day 0, the second dose administered on day 3 following initial vaccine. Administration of RIG is not indicated and should not be administered. If an exposure occurs in a person who was previously immunized over 20 years ago, please call DPH Epidemiology for recommendations.

For previously vaccinated persons who are exposed to rabies, checking a titer to determine need for prophylaxis is inappropriate. Some reasons for this include:

- Several days will be required to collect the serum and receive results back to determine antibody levels.
- There is no "protective" titer value known for post-exposure assessment.
- Although rabies virus-neutralizing antibodies are important components, other immune effectors are operative in disease prevention.

POST-EXPOSURE PROPHYLAXIS FOR PERSONS NOT PREVIOUSLY VACCINATED

In general, post-exposure prophylaxis (PEP) is indicated for persons exposed to or suspected of having exposure to rabies. In the United States, the PEP regimen consists of clinical evaluation and wound treatment, administration of one dose of immune globulin (except for persons who have previously received complete vaccination regimens, either pre-exposure or post-exposure), and administration of 4 doses of the rabies vaccine over a 14-day period.

Human rabies immune globulin (HRIG or RIG) and the first dose of rabies vaccine should be given as soon as possible after exposure. The additional doses of rabies vaccine should be given on days 3, 7, and 14 after the first vaccination. A 5-dose regimen (days 0, 3, 7, 14, and 28) of rabies vaccine should be administered for persons with immunocompromising conditions, as they may experience a reduced immune response to rabies vaccines. See the chart below for specific schedules and administration instructions.

If RIG was not administered when vaccination series began (i.e., day 0), it can be administered up to and including day 7 of the post-exposure prophylaxis series. Beyond the seventh day,

RIG is not indicated because an antibody response to the cell culture vaccine is presumed to have occurred.

RIG should not be administered in the same syringe as vaccine, nor should it be given in the same anatomical site.

Rabies Post-Exposure Prophylaxis Regimen		
Vaccination Status	**Treatment**	**Regimen***
Not previously vaccinated	Wound Care	PEP should **always** begin with the immediate cleansing of all wounds with soap and water. If available, a virucidal agent such as a povidone-iodine solution should be used to irrigate the wounds.
	RIG	Administer 20 IU/kg body weight. If anatomically feasible, the **full** dose should be infiltrated around the wound(s) and any remaining volume should be administered IM at an anatomical site distant from vaccine administration. In anatomical sites with limited subcutaneous space (i.e., hands/face), HyperRab may be preferable, since it is more concentrated and less volume is needed. RIG should **never** be administered in the same syringe as the vaccine, nor should it be given at the same anatomical site. Because RIG might partially suppress the active production of antibodies, no more than the recommended dose should be given.
	Vaccine	HDCV or PCECV 1.0 mL, IM (deltoid)[§], one each on days 0[#], 3, 7, and 14[‡] (and 28 if the person is immunocompromised).
Previously vaccinated[†]	Wound Care	PEP should **always** begin with the immediate cleansing of all wounds with soap and water. If available, a virucidal agent such as a povidone-iodine solution should be used to irrigate the wounds.
	RIG	RIG should not be administered.
	Vaccine	HDCV or PCECV 1.0 mL, IM (deltoid)[§], on days 0[#] and 3[‡].

* These regimens are applicable for all age groups, including pregnant women and children.

§ The deltoid area is the only acceptable site for the vaccination of adults and older children. For younger children, the outer aspect of the thigh may be used. In unique situations where the deltoid is not a viable option, please reach out to your public health office for guidance. **Rabies vaccines should never be administered in the gluteal area.**

Day 0 is the day the first dose of vaccine is administered.

† Any person with a history of a complete pre-exposure or post-exposure vaccination regimen with HDCV, PCECV, or rabies vaccine adsorbed (RVA), or previous vaccination with any other type of rabies vaccine and a documented history of antibody response to the prior vaccination.

Source: CDC. Use of a reduced (4-dose) vaccine schedule for post-exposure prophylaxis to prevent human rabies – recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR 2010; 59(02); 1-9.

ASSESSING THE NEED FOR PEP

Administration of rabies PEP is a medical urgency, not a medical emergency.

Persons who have been bitten by animals suspected or confirmed to be rabid should begin PEP as soon as possible. However, very long incubation periods (up to 1 year) have been reported in humans. Thus, when a documented or likely exposure has occurred, PEP is indicated regardless of the length of the delay, provided the symptoms and clinical signs of rabies are not present. In most circumstances, PEP should not be initiated while the attacking, healthy dog, cat, or ferret is in a 10-dayobservation period. If an animal in observation develops signs consistent with rabies, immediate euthanasia and testing should be performed. In general, waiting for the test results before initiating PEP is appropriate. However, immediate initiation of PEP may be considered in some circumstances that involve severe bites on or near the head or neck, but decisions for administration should be made in consultation with public health. Healthcare providers may consult with the Georgia Poison Center or public health officials regarding the need for rabies PEP.

In the United States, the following factors should be considered in the rabies risk assessment before PEP is initiated:

- type of exposure (bite or non-bite)
- the geographic location of the incident (rabies endemic area)
- the type of animal that was involved
- circumstances of the exposure (provoked or unprovoked)
- the vaccination status of the animal
- whether the animal can be safely captured and observed and/or tested for rabies (captured wild animals are euthanized and tested immediately, depending on species)

Refer to the chart below and to the Decision Trees on pages 35-39 for specific guidelines for rabies exposure risk.

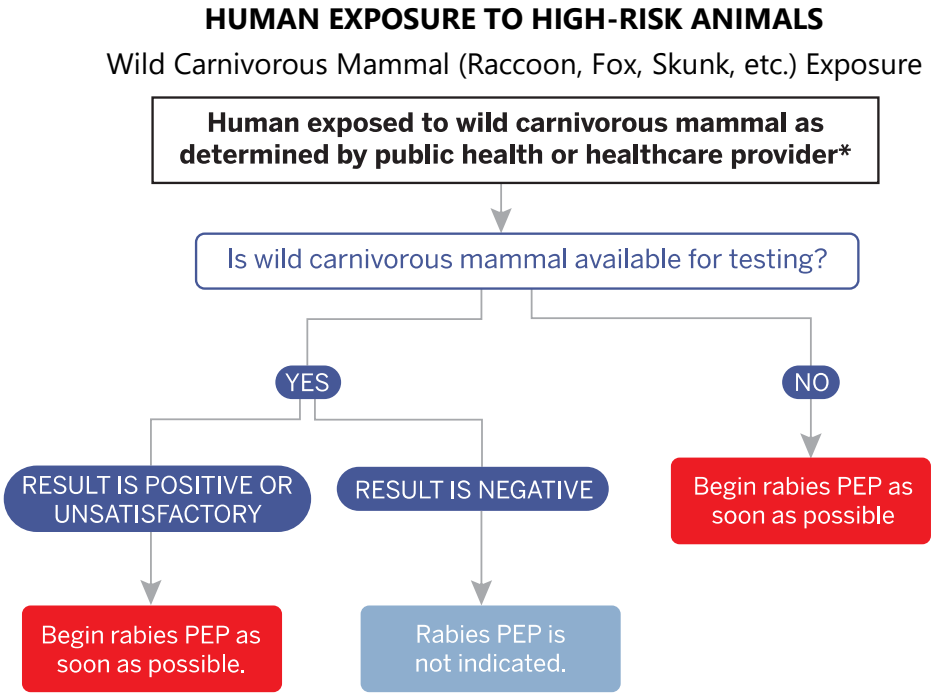
Rabies Post-Exposure Prophylaxis Recommendations Based on Animal Type		
Animal Type	**Evaluation and Disposition of Animal**	**Post-Exposure Prophylaxis Recommendations**
Dogs, cats, and ferrets	Healthy and available for 10-day observation	Persons should not begin PEP unless the animal develops clinical signs of rabies*
	Rabid or suspected rabid	Immediately begin PEP
	Unknown (e.g., escaped)	Consult Georgia Poison Center or public health offici
Skunks, raccoons, bobcats, foxes, and mo other carnivores; bats	Regarded as rabid unless animal is proven negative by laboratory tests†	In most situations, it is appropriate to wait for test results. A severe bite to the head/neck may warrant immediate PEP.
Livestock, small rodent lagomorphs (rabbits a hares), large rodents (woodchucks and beavers), and other mammals	Considered individually	Consult Georgia Poison Center or public health officials. Bites from squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, other small rodents, rabbits, and hares almost never require PEP. Larger rodents may be a risk.

* Generally PEP should not be initiated while the attacking, healthy dog, cat, or ferret is in a 10-day observation period. If an animal in observation develops signs consistent with rabies, immediate euthanasia and testing should be performed. In general, waiting for the test results before initiating PEP is appropriate. However, immediate initiation of PEP may be considered in some circumstances that involve severe bites on or near the head or neck, but decisions for administration should be made in consultation with public health.

† The animal should be euthanized and tested as soon as possible. Holding for observation is not recommended.

DECISION TREES

HUMANS EXPOSED TO POSSIBLY RABID ANIMALS

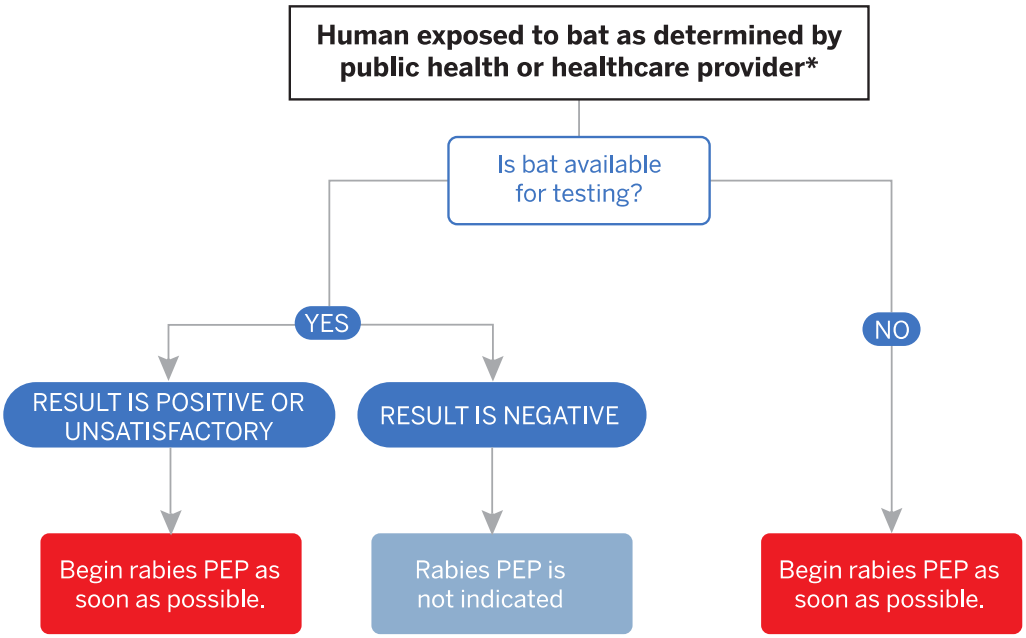


* Consultations regarding human exposures to wild carnivorous mammals should be provided by your healthcare provider, local rabies authority, Georgia Poison Center (available 24/7 at 404-616-9000), or the rabies subject matter expert (SME) in the DPH Epidemiology Division (available during business hours at 404-657-2588). Most consultations can be done during regular business hours. For emergency after-hours or weekend calls, please contact Georgia Poison Center at 404-616-9000.

** Rabies test results are typically returned within 24-48 business hours once a specimen is received by the laboratory. In most situations, it is recommended that people wait to start post-exposure prophylaxis until results are returned. However, if bite is severe or located on the head or neck, and/or testing delays are anticipated, consider starting PEP immediately. If result is negative, consult with public health to determine if PEP should be continued.

HUMAN EXPOSURE TO HIGH-RISK ANIMALS

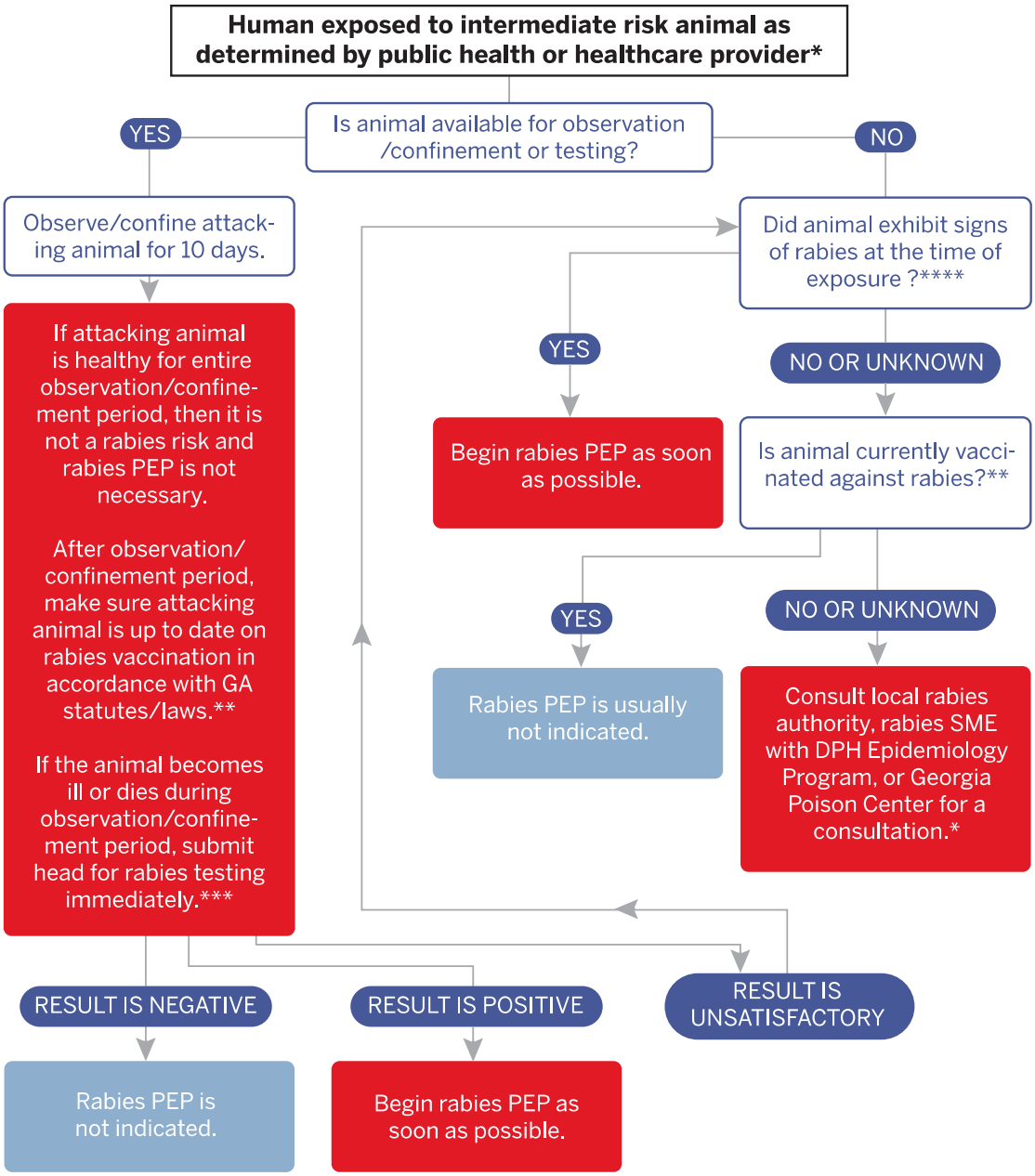
Bat Exposure



* Any direct contact between a person and a bat should be evaluated for an exposure. If the person can be reasonably certain a bite, scratch, or mucous membrane exposure did not occur, or if the bat is available for testing and is negative for presence of rabies virus, post-exposure prophylaxis is not indicated. Other situations that might qualify as exposures include finding a bat in the same room as a person who might be unaware that a bite or direct contact had occurred (e.g., a sleeping person awakens to find a bat in the room or an adult witnesses a bat in the room with an infant, toddler, and mentally impaired or intoxicated person). These situations should not be considered exposures if rabies is ruled out by diagnostic testing of the bat, or circumstances suggest it is unlikely that an exposure took place. Other household members who did not have direct contact with the bat or were awake and aware when in the same room as the bat should not be considered as having been exposed to rabies.

HUMAN EXPOSURE TO INTERMEDIATE RISK ANIMALS

Dog, Cat, or Ferret Exposure



* Consultations regarding human exposures to intermediate risk animals should be provided by your healthcare provider, local rabies authority, Georgia Poison Center (available 24/7 at 404-616-9000), or the rabies subject matter expert (SME) in the DPH Epidemiology Division (available during business hours at 404-657-2588). Most consultations can be done during regular business hours. For emergency after-hours or weekend calls, please contact Georgia Poison Center at 404-616-9000.

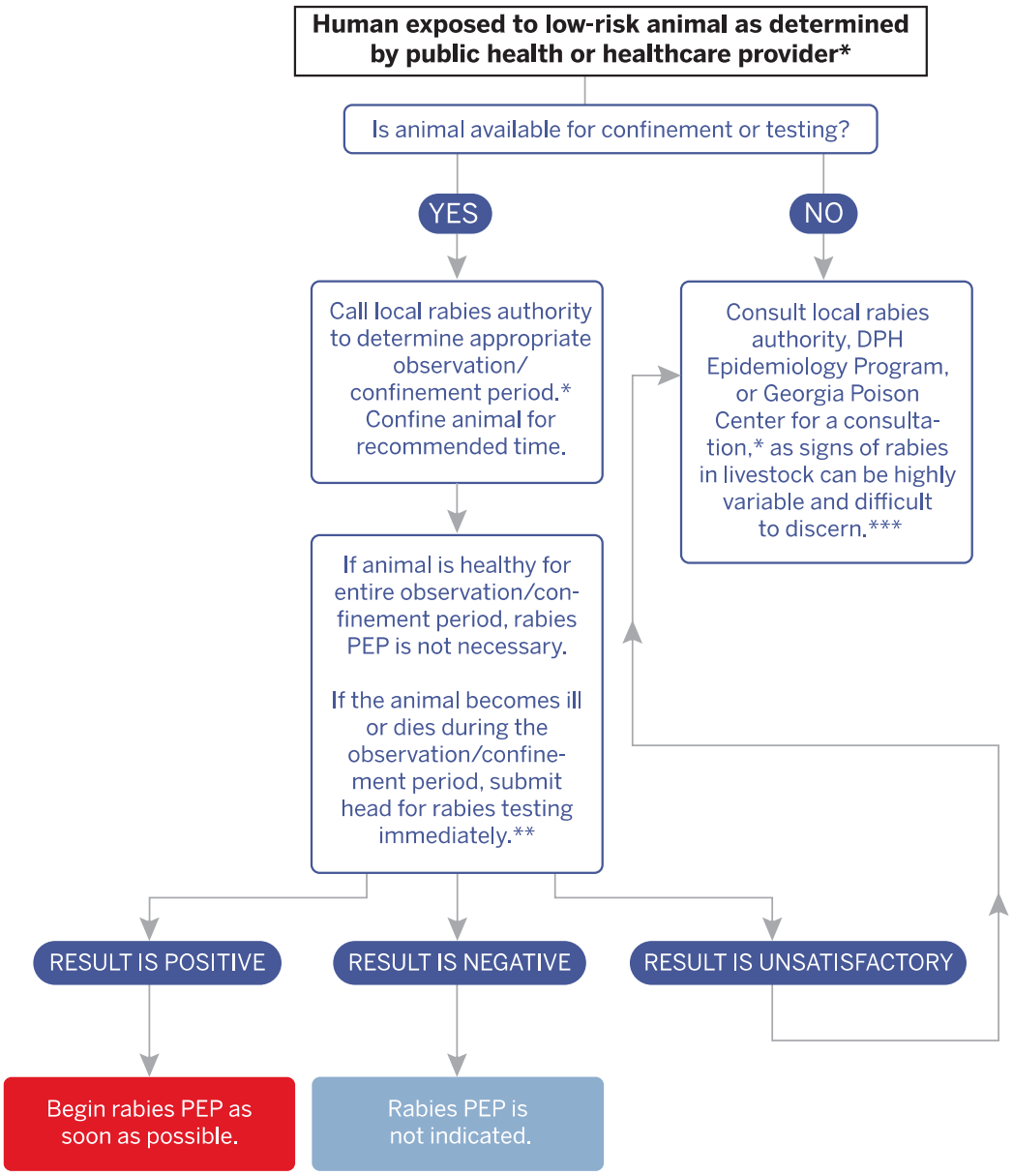
** An animal is currently vaccinated if the primary rabies vaccine was administered by a veterinarian at least 28 days prior to the exposure and booster vaccines have been administered on an annual or triennial schedule according to the vaccine manufacturer label and local ordinances.

*** Rabies test results are typically returned within 24-48 business hours once a specimen is received by the laboratory. In most situations, it is recommended that people wait to start post-exposure prophylaxis until results are returned. However, if bite is severe or located on the head or neck, and/oner testing delays are anticipated, consider starting PEP immediately. If result is negative, consult with public health to determine if PEP should be continued.

**** Reference page (XX) in Rabies Manual for signs of rabies in dogs, cats and ferrets.

HUMAN EXPOSURE TO LOW-RISK ANIMALS

Livestock Exposure



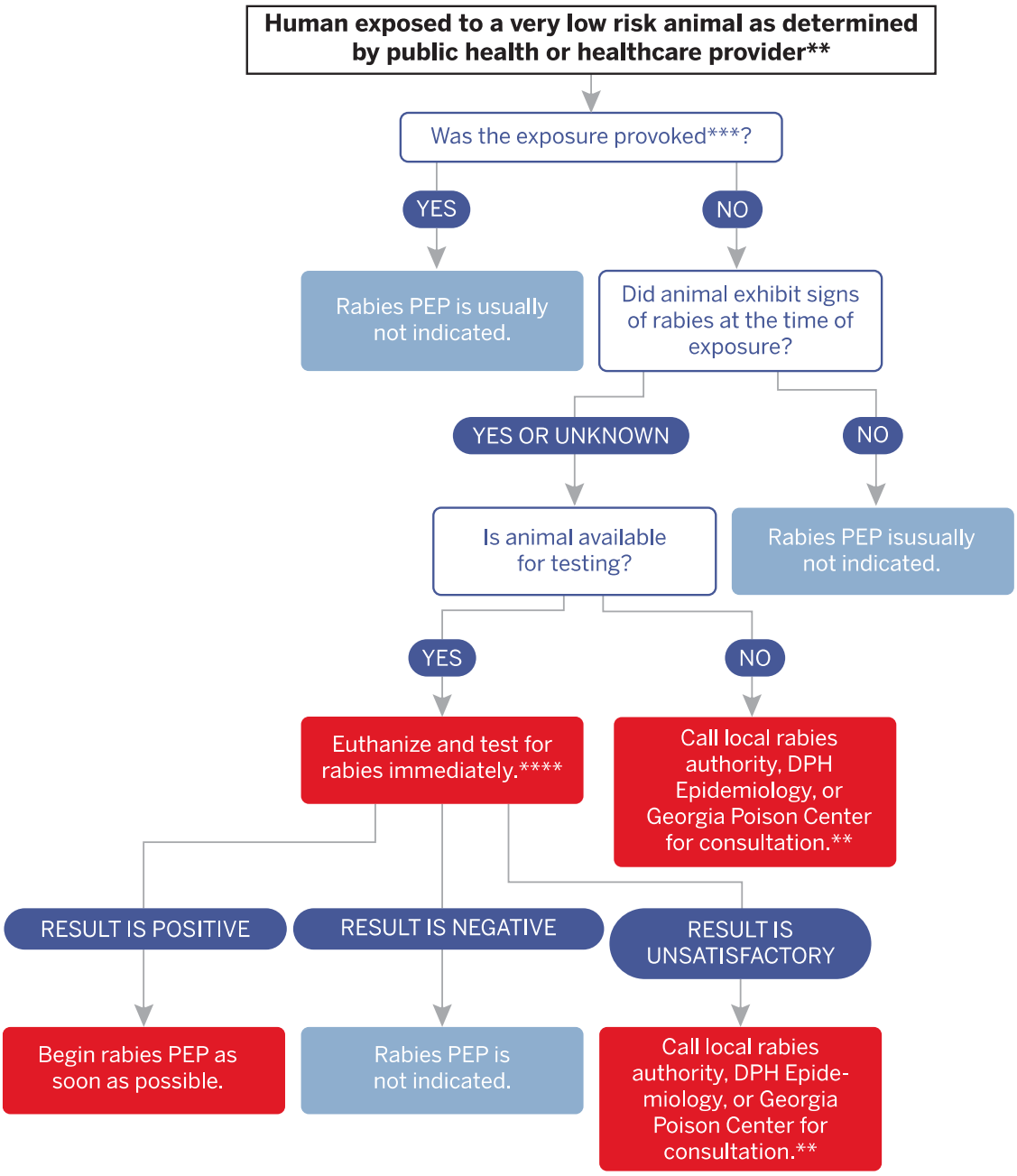
* Consultations regarding human exposures to livestock should be provided by your healthcare provider, local rabies authority, Georgia Poison Center (available 24/7 at 404-616-9000), or the rabies subject matter expert (SME) in the DPH Epidemiology Division (available during business hours at 404-657-2588). Most consultations can be done during regular business hours. For emergency after-hours or weekend calls, please contact Georgia Poison Center at 404-616-9000.

** Rabies test results are typically returned within 24-48 business hours once a specimen is received by the laboratory. In most situations, it is recommended that people wait to start post-exposure prophylaxis until results are returned. However, if bite is severe or located on the head or neck, and/or testing delays are anticipated, consider starting PEP immediately. If result is negative, consult with public health to determine if PEP should be continued.

*** Reference page (XX) in Rabies Manual for signs of rabies in livestock.

HUMAN EXPOSURE TO VERY LOW RISK ANIMALS

Rodent* and Rabbit Exposure



* Includes squirrels, chipmunks, rats, mice, hamsters, guinea pigs, gerbils.

** Consultations regarding human exposures to very low risk animals should be provided by your healthcare provider, local rabies authority, Georgia Poison Center (available 24/7 at 404-616-9000), or the rabies subject matter expert (SME) in the DPH Epidemiology Division (available during business hours at 404-657-2588). Most consultations can be done during regular business hours. For emergency after-hours or weekend calls, please contact Georgia Poison Center at 404-616-9000.

*** A provoked exposure is when a human or animal behaves in a way that causes another animal to experience pain, become excited, threatened, or frightened, causing that animal to attack the human or animal exhibiting the behavior. If an exposure is provoked, meaning the attacking animal's reaction was expected given the situational circumstances, then the attacking animal is less likely to have been rabid.

**** Rodents and rabbits must be approved for rabies testing beforehand by the rabies SME in the DPH Epidemiology Division. Please call 404-657-2588 during regular business hours for approval.

LABORATORY DIAGNOSIS OF RABIES

GENERAL PRINCIPLES OF DIAGNOSIS IN ANIMALS

The rapid and accurate laboratory diagnosis of rabies infections in animals is essential for the timely administration of rabies post-exposure prophylaxis. Diagnosis may also aid in defining current epidemiologic patterns of rabies and in recognizing the need for the development of rabies control programs.

The rabies virus has an affinity for brain tissue and not blood, unlike many other viruses. Due to this affinity, the ideal test and most used method to diagnose rabies in animals is the direct fluorescent antibody test (DFA). This test can only be performed on brain tissue collected by post-mortem (after death) . The DFA test is based on the principle that an animal infected by rabies virus will have the rabies virus protein (antigen) present in the neural tissue. The most important part of a DFA test is the detection of rabies antigen using fluorescein labeled (FITC-conjugated) anti-rabies antibody. When the labeled antibody is added to rabies-suspect brain tissue and the rabies viral antigen is present, it forms a FITC-antibody-rabies virus antigen complex. The unbound antibody can be washed away and the areas where the antigen has bound will appear as a bright fluorescent apple-green color when viewed under fluorescent microscope.

All rabies laboratories in the United States perform the DFA test on the brain tissue of animals suspected of having rabies. This test has been thoroughly evaluated for more than 40 years and is recognized as the most rapid and reliable of the tests for routine use. The Georgia Public Health Laboratory (GPHL) is the state confirmatory laboratory and is in accordance with the established national standardized protocol for rabies testing including variant typing. While the University of Georgia Veterinary Diagnostic Laboratory offers rabies testing, specimens for animals involved in a domestic animal or human exposure should be prioritized for testing at the GPHL unless a necropsy or other post-mortem testing is indicated. (http://www.cdc.gov/rabies/pdf/RabiesDFASPv2.pdf).

SPECIMEN COLLECTION, LABELING, AND SUBMISSION OF ANIMAL SPECIMENS FOR RABIES TESTING

The condition of the submitted specimen when received by the laboratory plays a crucial role in obtaining reliable results**. Shipping of specimens should be coordinated with the county health department or animal control officer**. Containers for shipment are available from county health departments or from the GPHL Virology Lab (404-327-7980).

SUBMISSION GUIDELINES:

1	Make sure to wear appropriate PPE when preparing a specimen for rabies testing.
2	Only specimens received in good condition with at least two identifiable brain parts qualify for reporting test results.
3	For a specimen to be accepted for testing at the GPHL, there must have been an exposure of a human or domestic animal to the suspected rabid animal.
4	The GPHL is not equipped to handle whole carcasses: only the HEAD is accepted as a specimen, except for bats and animals of similar size , which should be submitted as whole . Whole carcasses of any larger animal cannot be tested.
5	Only brain material (not the entire head) of very large or horned animals (e.g., cows, horses, goats) will be accepted due to limitations for handling in the laboratory. Removal of the brain should only be attempted by a veterinarian or referred to Athens/Tifton Diagnostic Labs (706-542-5568). Athens/Tifton Diagnostic Labs will forward half of the brain to the GPHL. If whole heads of large animals are received by the laboratory, they will be returned to the sender for resubmission of the BRAIN ONLY.
6	The following guidelines are recommended for the removal of animal heads (whenever possible, this procedure should be performed by a person who has received an appropriate pre-exposure rabies vaccine series and training on animal head removal, for example: veterinarians, DPH environmental health staff, Georgia Department of Agriculture staff, and animal control officers). • Rubber gloves and protective clothing, as well as face and eye protection, should be worn while the head is being removed and packaged. • Sever the head between the foramen magnum and the atlas. Local veterinarians or trained animal control personnel can assist in this removal. • Allow fluids and blood to drain from the head. Keep as clean as possible and place the head in a double plastic bag for transport to the laboratory. Keep animal head cold by placing ice packs in the shipping container. • Cutting surfaces and instruments should be thoroughly cleaned with detergent and water followed by a disinfectant. Gloves should also be cleaned and disinfected, or discarded, following use.
7	Rodents (e.g., rats, mice, gerbils, hamsters, guinea pigs, chipmunks, voles, squirrels, moles) and rabbits are not usually involved in the rabies cycle and will not be accepted for testing without prior arrangements with the State Epidemiology Division (404-657-2588) during regular business hours or Georgia Poison Center (404-616-9000) after hours.

8	If specimens cannot be delivered to the laboratory immediately, refrigerate but DO NOT FREEZE. Frozen specimens cannot be tested until they thaw, which may cause a delay in reporting.
9	Do NOT send tissue in a preservative such as formalin, as rabies testing cannot be performed on such specimens.

LABORATORY SUBMISSION FORM

A Rabies Submission Form #3583B should accompany each specimen submitted for rabies examination. **This form should be generated automatically in SendSS from the Animal Bite Module by your local rabies authority**. Handwritten forms should not be used. If you are having issues with your SendSS access, please contact our DPH SendSS team at sendss.support@dph.ga.gov. If a handwritten form must be submitted, it should be filled out completely and legibly, making sure to include accurate addresses and phone numbers for use in reporting results. If you do not have a GPHL submitter code, please call GPHL at 404-327-7980 to have one assigned to you prior to submission. A 24/7 phone number must be provided on the form for results to be received. Veterinary clinics/hospitals and private citizens should not submit specimens directly to GPHL. Veterinarians, clinics/hospitals, and private citizens should contact the local health department, environmental health agency, or animal control agency for assistance in submitting specimens for rabies testing. Blank forms may be found on the Department of Public Health website at: https://dph.georgia.gov/rabies

SPECIMEN SHIPMENT GUIDELINES

Specimens submitted to GPHL for rabies testing using ground transportation such as UPS, Fed EX, Greyhound, couriers, etc. must be packaged and labeled according to the Department of Transportation (DOT) requirements for transporting infectious substances under U.S. Department of Transportation's (DOT's) Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180).

- Specimens being submitted for rabies testing meet the DOT classification of Biological Substance, Category B.
- Containers for shipment are available from county health departments, GPHL Virology Lab (404-327-7980), or from WPHL Virology Department (912-338-7050). **Rabies testing is available Monday through Friday**.
- Packaging and shipping training for internal public health officials can be found on PHIL or direct link here: FRM-CA 25 Rabies Packaging and Training Aug 2024

INSTRUCTIONS FOR PACKAGING AND SHIPPING BIOLOGICAL SUBSTANCES, CATEGORY B:	
1	Properly package the specimen by placing the severed animal head in a double plastic bag and secure the bag by twisting and knotting. For bats or similar size animals, do not remove the head, but submit whole. For large animals or horned animals (e.g., cows, horses, goats) submit the BRAIN ONLY (consult the attending veterinarian).
2	Place the large plastic bag into the Styrofoam container. Add cold packs, not loose ice, to keep the animal head cold. DO NOT USE DRY ICE!
3	Use sufficient absorbent packing material, to cushion the specimen(s) and to absorb any leaks.
4	Seal the Styrofoam container.
5	Print and complete the SendSS rabies submission form. Ensure the point of contact name and number are provided on the form. This contact must be available to receive telephone results from the GPHL Virology Unit.
6	Place the completed submission form in the gold envelope and tape the envelope to the lid of the Styrofoam container.
7	Place the Styrofoam container in the outer cardboard box shipper.
8	Secure the outer container with packing tape. Courier agents may need to inspect the container to ensure the contents have been properly packaged for transport before accepting the shipment. Do not seal the box until inspection occurs, if necessary.
9	Tape the GPHL address found below, and the (supplied) diamond-shaped "Biological Substance, Category B" UN3373 label to the outer cardboard box. **NOTE:** DO NOT send specimens for testing to the DPH Epidemiology Division. The Georgia Public Health Laboratory (address below) is located several miles from the state DPH Epidemiology office. Specimens sent to the incorrect address will be returned and may not be suitable for testing after a several day delay.
10	When shipping specimens to the nearest Public Health Laboratory, senders should consider the best method for prompt delivery. • Senders may utilize PREPAID "Ground Transportation" for specimen delivery. • CONTAINERS WITH SPECIMENS TO BE SENT BY AIR must meet additional packaging requirements. Please coordinate with your specific air courier to ensure air transport packaging and pressure requirements are met.

<table>
<tr><td>11</td><td>Addresses and telephone numbers of PH laboratories are as follows:
<table><tr><td>Georgia Public Health Laboratory
1749 Clairmont Road
Decatur, Georgia 30033-4050
Phone (GPHL): 404-327-7900
Phone (GPHL-Virology): 404-327-7980</td><td></td><td>Waycross Public Health Laboratory
1751 Gus Karle Parkway
Waycross, Georgia 31503
Phone: 912-388-7050</td></tr><tr><td colspan="3">**Please note, specimens should NOT be shipped to these laboratories without coordination with local public health, environmental health, animal control, or rabies coordinators.</td></tr></table></td></tr>
<tr><td>12</td><td>Avoid shipping specimens to arrive on weekends or holidays unless prior approval has been obtained from the laboratory manager. Special instructions regarding labeling will be needed to ensure that the weekend courier or security personnel are notified to receive the specimen from the carrier. A better alternative is to place the specimen in double plastic bags as described above and refrigerate until shipment can be made when the laboratory is in operation Monday through Friday, unless the test result is urgent.</td></tr>
</table>

REPORTING AND INTERPRETING RESULTS OF RABIES TESTING IN ANIMALS

Rabies testing is available Monday through Friday. Due to the time required for tissue fixation, reports will ordinarily be issued the **next** business day following receipt of the specimen, provided that the specimen is received by 10:00 a.m. Reporting will be delayed on specimens that are frozen. A 24/7 phone number must be provided on the form for results to be received.

- Specimens received on Friday or those involved in emergency situations (i.e., severe human head or neck exposures or human exposures for which emergency testing has been approved by the Epidemiology Division at 404-657-2588) will be tested and reported the same day received, provided they arrive in the laboratory by 10:00 a.m. Otherwise, results will be reported the following business day.
- If the brain is decomposed or damaged to the point that the laboratory is uncertain as to whether the specimen is the appropriate brain tissue, testing will not be done unless there is human exposure. The report will read “UNSATISFACTORY" with the comment: "Test requires at least two identifiable brain parts." In this situation, an unsatisfactory test result should be treated as if POSITIVE.
- If the submitted specimen is POSITIVE or NEGATIVE, the report will so state.

- All positive and unsatisfactory rabies results are immediately telephoned or electronically reported to the submitter listed on the Rabies Submission Form. All negative results will be available electronically in the Apollo LIMS portal the day the test is performed.
- Local rabies authority personnel with access to the Animal Bite Module will be able to view results within the Bite Incident the day after testing is complete.
- Electronic reporting is available for all submitters via the Apollo LIMS portal. To initiate access to electronic reporting please contact GPHL (404-321-2261). This number should not be used to check for results.
- Paper copies of reports will be mailed to submitters that do not receive their reports electronically.

SEROLOGIC TESTING IN HUMANS AND ANIMALS

Serum samples from patients completing pre-exposure or post-exposure prophylaxis do not need to be tested to document seroconversion unless the person is immunosuppressed or in some cases when the rabies biologics were received outside of the United States or certain deviations or errors occurred in administration. If titers are obtained, specimens collected 2-4 weeks after completion of the pre-exposure or post-exposure prophylaxis regimen should completely neutralize the challenge virus at a 1:5 serum dilution by the Rapid Fluorescent Focus Inhibition Test (RFFIT). **Although antibody levels do not define a person's immune status, they are markers of a continuing immune response**.

Checking titers after an exposure is not indicated and does not replace the need for vaccination, even if the person has received pre-exposure prophylaxis in the past.

In humans and animals, neutralizing antibody titers have been shown to be imperfect markers of protection. Antibody titers will vary over time in relation to the last administered vaccine. Titers do not directly correlate with protection because other immunologic factors play a role in preventing rabies, and we do not have the ability to measure and interpret those factors. **Therefore, evidence of circulating rabies virus antibodies should never be used as a substitute for vaccination in managing rabies exposures or determining the need for booster vaccinations in humans and animals**.

Although virus-neutralizing antibody levels may not definitively determine a person's protection or susceptibility after a rabies virus exposure, titers in persons at risk for exposure are used to monitor rabies immune status (see page 25). Serologic testing to quantitate antibody levels after rabies vaccination in humans and animals is applicable in the following cases:

- Certain persons who have received rabies pre-exposure vaccination series according to their risk category (see page 25).
- Some "rabies-free" jurisdictions may require evidence of vaccination and rabies antibodies in domestic animals (dogs and cats) for importation purposes. Below links details protocols for importing and exporting animals from the US:
    - Information on traveling with or exporting animals to another country: https://www.aphis.usda.gov/pet-travel/us-to-another-country-export

CDC regulations govern the importation of certain animals capable of carrying diseases that can be transmitted to humans, such as rabies. Pets taken out of the United States are subject upon return to the same regulations as those entering for the first time. These regulations apply whether the person bringing the animal into the United States is a U.S. citizen, legal U.S. resident, or foreign national. CDC-regulated animals are subject to inspection at ports of entry.

- Information on traveling with or importing animals into the US: https://www.cdc.gov/importation/bringing-an-animal-into-the-us/index.html Keep in mind there is not an established "protective" titer in animals.
- In exposed animals with unknown/undocumented vaccination that have a presumed vaccine history, titers may be considered in management to confirm a history of vaccination. See Progressive Serological Monitoring Protocol (Appendix B).

Even if a person has had pre-exposure vaccination, having their titers checked after a subsequent exposure is not indicated and does not replace the need for appropriate post-exposure vaccination. Titers do not directly correlate with protection because other immunologic factors play a role in preventing rabies, and we do not have the ability to measure and interpret those factors. Therefore, evidence of circulating rabies virus antibodies should never be used as a substitute for vaccination in managing rabies exposures or determining the need for booster vaccinations in humans.

There are two types of rabies titer tests (RFFIT): 1) A **screen** test utilizes serum tested at two dilutions and simply tells the patient/client if a booster of rabies vaccine is indicated. 2) An **end-point** titer is used to determine a quantitative titer and is tested at serial five-fold dilutions until an endpoint is reached. This test is indicated for those who want to know their exact titer and for animals being exported to some rabies-free countries. Testing requires two milliliters (mLs) of serum.

SEROLOGIC TESTING FOR HUMANS AND ANIMALS: LABORATORIES

PROGRAM NAME	CONTACT INFORMATION
Atlanta Health Associates, Inc. 309 Pirkle Ferry Road, Suite D300 Cumming, GA 30040 *Animal and Human Serologic Testing	Phone: 800-717-5612 Fax: 770-205-9021 www.atlantahealth.net
Auburn University College of Veterinary Medicine Department of Pathobiology Diagnostic Services 350 Greene Hall Annex Auburn University, AL 36849 *Animal Serologic Testing Only	Office: 334-844-2690 Fax: (334) 844-2652 https://www.vetmed.auburn.edu/academic-departments/dept-of-pathobiology/diagnostic-services/serology-virology/rabies-serology/
Kansas State University College of Veterinary Medicine Veterinary Diagnostic Laboratory 2005 Research Park Circle Manhattan, Kansas 66502 *Animal and Human Serologic Testing	Phone: 785-532-4483 Fax: 785-532-4474 www.ksvdl.org/laboratories/rabies-laboratory/

- Phoning the laboratory in advance for correct forms, testing costs, and proper instructions is recommended.
- Serologic testing for dogs and cats exposed to rabies without documentation of a rabies vaccine must be coordinated with the State Epidemiology Division – see Appendix B, Progressive Serological Monitoring Protocol (page 60).

RABIES CONTROL DURING DISASTER RESPONSE

Animals may be displaced during and after manmade or natural disasters and require emergency sheltering. Animal rabies vaccination and exposure histories are often not available for displaced animals, and disaster response often creates situations where animal caretakers may lack appropriate training and previous vaccination. For these situations, it is critical to implement and coordinate rabies prevention and control measures to reduce the risk of rabies transmission and the need for human PEP. Public health officials and other response partners should consider the following control measures, when feasible:

- Examine each animal at a triage site for signs of rabies.
- Isolate animals exhibiting signs of rabies pending evaluation by a veterinarian.

- Ensure that all animals have a unique identifier.
- Consider administration of rabies vaccination to dogs, cats, and ferrets without reliable proof of vaccination.
- Adopt minimum standards for animal caretakers that include personal protective equipment, verification of previous rabies vaccination if applicable, and appropriate training in animal handling.
- Maintain documentation of animal disposition and location (e.g., returned to owner, died, euthanized, adopted, or relocated to another shelter with documentation of new location address).
- Ensure facilities have a place to confine and observe animals involved in potential exposures.
- Report human exposures to appropriate public health authorities.

Source: Centers for Disease Control and Prevention "Working with Displaced Domestic Animals"

BATS AND RABIES

The most common source of human rabies acquired in the United States is bats; therefore, any potential exposure to a bat requires a thorough evaluation. From 2009 - 2019, thirteen bat-associated human rabies cases were reported in the United States. In 4 cases, a bat bite was reported; in 5 cases, contact with a bat was reported (e.g., the removal of a bat from the home/workplace or the presence of a bat in a room where the person had been sleeping) but no bite was documented. In 4 cases, no bat encounter was reported. In these cases, an unreported or undetected bat bite is the most plausible source of infection per molecular sequencing. Clustering of human cases associated with bat exposures has never been reported in the United States (e.g., within the same household or among a group of campers where bats were observed during their activities). The risk for rabies resulting from an encounter with a bat may be difficult to assess. Reasons include 1) bat bites are often unrecognized (due to their small teeth), 2) an inaccurate recall of a bat encounter that may have occurred several weeks or months earlier, and 3) evidence that some bat-related rabies viruses may be more likely to result in infection after inoculation into superficial epidermal layers. For these reasons, any direct contact between a human and a bat should be evaluated for exposure.

Awareness of bats and their associated rabies risk can help people protect themselves, their families, and their pets.

- **It is not possible to tell if a bat has rabies by looking at it; therefore, it is best to never handle any bat.**

- Rabies can only be confirmed by laboratory testing. However, any bat that is active during the daytime, found in a place where bats are not usually seen (for example, in a room in the house or on the lawn), or unable to fly is more likely to have rabies.
- Bat bites are usually not visible due to the size of bats' teeth. Therefore, in situations in which a bat is physically present and there is a possibility of exposure, the person should seek medical advice, the bat should be safely captured (see next page), and the bat submitted to a rabies laboratory for testing. If rabies cannot be ruled out by laboratory testing, or if the bat is not available for testing, people with possible exposure should seek rabies post-exposure prophylaxis.

Scenarios that may indicate exposure to rabies from bats include:

- A person touches or picks up a live bat
- A bat flies into a person (these situations likely require public health consultation)
- A person steps on a bat with bare feet
- A sleeping person awakens to find a bat in the room
- A bat is found near an infant, toddler, or mentally impaired or intoxicated person.
- The above may not capture all potential bat exposures, please consult with public health if you have questions about a possible bat exposure

Resources for assistance with bat capture are provided by a pest/wildlife removal service or *may* be provided by the local animal control agency. If professional help is immediately unavailable, the bat can be safely captured by following these steps:

SAFE BAT CAPTURE/REMOVAL:

- **If any possible contact between the bat and a person or domestic animal has occurred, DO NOT release the bat.**
- **Contact the local health department or animal control agency to make arrangements for rabies testing.**
- If no human or pet exposure has occurred, please refer to the below resource for safe bat removal:
- Bat Conservation International: "Bats in Homes and Buildings" (www.batcon.org/about-bats/bats-in-homes-buildings/)
- Some bats live in buildings, and there may be no reason to remove them as long as the bats are excluded from areas where humans are present. Bats should always be excluded from any living quarters or occupied spaces in homes, churches, schools, and other similar areas where they might contact people and pets. Assistance with "bat-proofing" homes can be provided by a pest/wildlife control service.

- **Bats are a protected species and therefore should not be harmed or killed if there has been no exposure to humans or animals. However, if a human or domestic animal has been exposed, the bat should be submitted for testing, if available.**
- **If there is suspicion that a human, domestic animal, or livestock has had contact with a bat, call your local health department (and veterinarian, if applicable) for assistance and have the bat tested for rabies if possible.**
- **Remember, it is very important to keep vaccinations current for cats, dogs, ferrets, and other domestic animals.**

FREQUENTLY ASKED QUESTIONS (FAQ) ABOUT RABIES

* Consult with your local rabies authority, DPH Epidemiology, or Georgia Poison Center for individual scenarios if the FAQs below do not fully answer your questions.

How can I protect my pet from rabies?
Be sure to keep your cats, dogs, and ferrets up to date on rabies vaccinations. Maintain control of your pets by not allowing cats to roam outdoors and by keeping dogs leashed and under direct supervision when outside. Spay or neuter your pets to reduce roaming behaviors and decrease the number of stray animals that may not be properly cared for or regularly vaccinated.

Why does my pet need the rabies vaccine?
Domestic animals are rarely infected with rabies due to long-standing domestic animal rabies vaccine programs in the U.S. However, pets and other domestic animals can still be infected when they are bitten by rabid wildlife, though it is uncommon in vaccinated animals. When "spillover" rabies occurs in domestic animals, the risk to humans is increased due to close contact with domestic animals. Pets should be vaccinated by your veterinarian to prevent them from acquiring the disease from wildlife and secondarily transmitting it to humans.

Can a vaccinated animal ever get rabies?
Rabies is rare in vaccinated animals. If rabies is suspected in any animal, including a vaccinated animal, it should be reported immediately to local public health officials and the State Epidemiology Division. Infection should be confirmed with laboratory diagnosis and the virus characterized by a rabies reference laboratory. A thorough epidemiologic investigation should be conducted.

An animal is overdue for its rabies booster. Should a 1-year or 3-year booster be administered?

A 1-year OR 3-year booster vaccine can be given to animals with an expired vaccine if the animal was initially vaccinated appropriately with a 1-year vaccine. Veterinarians should check with their local rabies authority to see if the county has any regulations on 1 vs 3-year booster vaccines. Boosters should be administered, according to county specifications, if the animal is overdue for any length of time.

My animal just fought with a raccoon (or other potentially rabid animal). Am I at risk for rabies if I handle my animal and may have gotten saliva on my hands from the attacking animal?

This would be considered minimal risk. The first thing you should do is wash your hands with soap and water. Non-bite exposures (other than organ or tissue transplants) leading to rabies infection have rarely been documented, and post-exposure prophylaxis is not indicated unless saliva or other potentially infectious material was directly introduced into fresh, open cuts in the skin or mucous membranes (i.e., eyes, nose, mouth). Rabies virus is inactivated by desiccation (drying), ultraviolet irradiation, and other factors and does not survive well in the environment (e.g., on a dog's fur).

Can I use rabies titers as a substitute for current vaccination or in the management of domestic animals exposed to rabies?

No, titers should never be used to replace vaccination for humans or animals. In both animals and humans, rabies titers alone are only one marker of immunity. Titers do not directly correlate with protection because other immunologic factors also play a role in preventing rabies. For humans, titers should only be used as documented in the Serologic Testing for Humans and Animals section.

For animals, titers should only be used as documented in Serologic Testing for Humans and Animals section and Appendix B: Progressive Serological Monitoring Protocol. Titers may be required for domestic animal travel and or relocation.

Will the rabies vaccine make humans or animals sick?

Adverse reactions to rabies vaccination are not common. Newer vaccines for humans cause fewer adverse reactions than previously available vaccines. Mild, local reactions to the rabies vaccine, such as pain, redness, swelling, or itching at the injection site, have been reported in humans and animals. Rarely, symptoms in humans such as headache, nausea, abdominal pain, muscle aches, and dizziness may occur. The potential vaccine reaction is inconsequential compared to the implications of contracting rabies.

What if I cannot get the rabies vaccine on the day I am scheduled to receive my next dose or I received it on a different day?

Consult with your healthcare provider or your state or local public health officials for recommendations if there is a deviation from the recommended pre- or post-exposure prophylaxis schedule. Minor changes may be inconsequential but should be evaluated by a healthcare provider or public health official. Rabies prevention is a serious matter and the vaccine schedule should be followed as closely as possible.

Should I be concerned about rabies when I travel outside the United States?

Yes. Rabies is present in other areas of the world. Before traveling abroad, consult a health care provider, travel clinic, or health department about your risk of exposure to rabies and how to handle an exposure should it arise. When traveling, it is always prudent to avoid approaching/handling any wild or unfamiliar domestic animal. In some countries in Africa, Asia, and Latin America, dog rabies is common and dog bites should be taken seriously. Additionally, rabies biologics may be difficult to obtain in these areas. It is very important to seek medical assistance as soon as possible after a dog bite or other exposure.

Can rabies be transmitted from one person to another?

The only documented cases of rabies caused by human-to-human transmission, although extremely rare, occurred among recipients of transplanted corneas and other solid organs. Organ and tissue transplantation resulting in rabies transmission has occurred among transplant recipients in several countries, including the United States. Casual contact, such as touching a person with rabies or contact with non-infectious fluid or tissue (i.e., urine, blood, and feces) does not constitute an exposure and does not require PEP. In addition, contact with someone who is receiving rabies vaccine does not constitute rabies exposure and does not require post-exposure prophylaxis.

DEFINITIONS

Confinement:

A general term referring to limiting an animal's contact with humans or other animals.

Currently Vaccinated Against Rabies:

An animal is considered "currently vaccinated" if a vaccination certificate documents one of the following: 1) for an animal receiving its first dose, or primary vaccination, an appropriate rabies vaccine was administered by a licensed veterinarian at least 28 days previously, or 2) considered current immediately after any booster vaccination (for previously vaccinated animals), in accordance with the *Compendium of Animal Rabies Prevention and Control* (or as described on the individual vaccine label).

Exposure:
Rabies exposure occurs when the virus is presumed to have been introduced via bite wounds, scratches, into fresh, open cuts, or mucous membranes. There are two categories of exposure: bite and non-bite.

- **Bite:** Any penetration of the skin by teeth constitutes a bite exposure. All bites, regardless of location on the body, represent a potential risk of rabies transmission. Keep in mind that bites by some animals, such as bats, can inflict minor injury and thus be undetected.
- **Non-bite:** The contamination of open wounds, abrasions, mucous membranes, or theoretically, scratches, with saliva or other potentially infectious material (such as neural tissue) from a rabid animal constitutes a non-bite exposure. Non-bite exposures are rarely documented as a source of rabies infection. However, occasional reports of transmission via non-bite exposures suggest that such exposures constitute sufficient reason to consider post-exposure prophylaxis.

45-day Observation Period:
A 45-day period of observation in which the health status of a domestic animal (dogs, cats, and ferrets) that have been exposed to rabies is monitored, provided the animal has received at least one rabies vaccine in its lifetime. Conditions should limit direct contact with other animals or persons. The observation shall be conducted under the supervision of the designated local rabies authority. Note: for livestock, a similar observation period may be recommended, but should be evaluated and determined on a case-by-case basis by state or local public health officials.

Incubation period:
The incubation period of an infectious disease is the time between exposure and onset of clinical signs/symptoms. The incubation period for rabies may vary widely, but is typically 1 to 3 months in both animals and humans. This time period can vary based on the location and severity of the bite, wound, or other route associated exposure to the virus. This period is highly variable because the rabies virus migrates along the peripheral nerves to the spinal cord and brain. There are no signs of illness during the incubation period; rabies virus is not transmissible during this time. When the virus reaches the brain, it multiplies rapidly. At this point, there is a large amount of virus in the salivary glands, clinical signs of rabies are evident, and the virus can be transmitted via bite.

Non-Exposure:
Other types of animal contact, such as being in the vicinity of, petting, or handling an animal, or coming into contact with their blood, urine, or feces do NOT constitute an exposure and do NOT require PEP. Because desiccation (drying) and ultraviolet irradiation inactivate the rabies virus, in general, if the material containing the virus is dry, the virus can be considered noninfectious.

Overdue/Expired Vaccination Status:
An animal with documentation of having received at least one licensed rabies vaccination it its lifetime but has not received booster vaccinations on an annual or triennial schedule.

Provoked Attack:
An attack is considered "provoked" if the attacking animal is placed in a situation in which the expected reaction would be to bite or attack. Examples include invasion of an animal's territory, attempting to pet or handle an unfamiliar animal, startling an animal, breaking up an animal fight, running or bicycling past an animal, assisting an injured or sick animal, trying to capture an animal, or removing food, water, or other objects in the animal's possession.

Strict Quarantine:
Strict quarantine of an unvaccinated animal potentially exposed to rabies in which the health status of the animal is very closely monitored **AND** the animal is strictly confined so that direct contact with other animals or persons is restricted. The specifications of the animal's housing during this time must meet the approval of the local rabies authority. Since the development of rabies in these unvaccinated animals is of high concern, ensuring the animal is securely contained is paramount. The duration of strict quarantine should be four months for dogs and cats and six months for livestock and ferrets.

10-day Observation Period:
A **10-day** period of observation in which the health status of a domestic animal (dogs, cats, and ferrets) that has bitten a person is monitored, **regardless of its vaccination status.** Conditions should limit direct contact with other animals or persons. The observation shall be conducted under the supervision of the designated local rabies authority. Note: for livestock, a similar observation period may be recommended, but should be evaluated and determined on a case-by-case basis by state or local public health officials.

Unprovoked Attack:
An attack or bite is considered to be "unprovoked" when none of the conditions for a "provoked" attack are met; essentially, the animal bites or attacks for no apparent reason.

GEORGIA RABIES CONTROL LAW

OPINIONS OF THE ATTORNEY GENERAL

- **Control of rabies generally is delegated to county boards of health**, and control of dangerous drugs is vested with the State Board of pharmacy and state drug inspector (now director of Georgia Drugs and Narcotics Agency). 1975 Op. Atty. Gen. No. 75-23.
- **Expense of confining animals included in county board's budget**—Local County Boards of Health should prescribe rules for prevention and control of rabies by providing for vaccination, tagging, and certification of dogs, and for confinement of any animal which exhibits any signs of rabies; cost of such confinement would be an expense of County Board of Health to be included in its budget which is submitted to local taxing authorities under provision of section 31-3-14, 1965-66 Op. Atty. Gen. No. 65-21.
- **Responsibility of County Boards of Health regarding strays and unwanted dogs**—Local County Boards of Health should adopt rules and regulations relative to catching and impounding of strays and unwanted dogs. 1965-66 Op. Atty. Gen. No. 65-21.

OFFICIAL CODE 31-19, CONTROL OF RABIES

31-19-1. Responsibility for Control
Each county board of health shall have primary responsibility for the control of rabies within its jurisdiction. Such boards, in addition to their other powers, are empowered and required to adopt and promulgate rules and regulations for the prevention and control of such disease.

31-19-2. Powers of department in infected area.
The department (DPH) may declare any County or any area therein or any group of counties or areas therein where rabies exists to be an infected area and may provide for immunization and such other measures as shall be indicated for the prevention and control of the disease.

31-19-3. Licensing and regulation of animals by local authorities.
The governing authorities of each county and municipality are authorized and required, in the control of rabies, to require regulation or licensing of animals.

31-19-4. Duty of notification.
It shall be the duty of any person bitten by any animal reasonably suspected of being rabid immediately to notify the appropriate county board of health. It shall be the duty of the owner, custodian, or person having possession and knowledge of any animal which has bitten any person or animal or of any animal which exhibits any signs of rabies to notify the appropriate county board

of health and to confine such animal in accordance with rules and regulations of the county board of health.

31-19-5. Inoculation of canines and felines against rabies.
The county boards of health are empowered and required to adopt and promulgate rules and regulations requiring canines and felines to be inoculated against rabies and to prescribe the intervals and means of inoculation, the fees to be paid in county sponsored clinics, that procedures be in compliance with the recommendations of the National Association of State Public Health Veterinarians for identifying inoculated canines and felines, and all other procedures applicable thereto. As used in this chapter, the term "inoculation against rabies" means the administering by a licensed veterinarian of antirabies vaccine approved by the department.

31-19-6. Certificates of inoculation: tags.
Reserved. Repealed by Ga. L. 1992, p. 2089, sec. 2, effective July 1, 1992.

31-19-7. County rabies control officer.
(a) The County board of health shall appoint a person who is knowledgeable of animals to be the County rabies control officer. It shall be the duty of the County rabies control officer to enforce this chapter and other laws which regulate the activities of dogs. (b) The County governing authority of each County is authorized to levy a fee not to exceed 50 cents for each dog, such fee to be collected by the veterinarian administering the antirabies vaccine required by this chapter. This fee shall be in addition to that provided for in Code Section 31-19-5. If any County has no resident veterinarian, the out-of-county veterinarian administering the antirabies vaccine and collecting the fee provided for by this Code section shall forward to the treasurer of the County of the dog owner's residence the fee prescribed by that County's governing authority.

(c) The fees collected under this Code section shall be used to help in paying the salary of the County rabies control officer.

31-19-8. Joint administration of chapter by adjoining counties.
The governing authority of each County may devise and implement plans whereby this chapter, as amended, is administered jointly with one or more adjoining counties.

31-19-9. Applicability to municipalities with rabies control laws.
This chapter shall not apply to municipalities which already have a rabies control law unless and until such law is repealed.

31-19-10. Penalty.
Any person who violates any provision of this chapter or any rule or regulation adopted pursuant thereto shall be guilty of a misdemeanor.

OFFICIAL CODE 27-5, WILD ANIMALS

27-5-5. Wild animals for which license or permit required

(b) Except as provided in this Code section, a license or permit is required for the following wild animals and any others specified by regulation of the board:

(1) Class Mammalia:

(K) Order Carnivora (weasels, **ferrets,** cats, bears, wolves, etc.) -- All species, except that a European ferret (Mustela putorius furo) may be sold, purchased, exhibited, or held as a pet without a license or permit; provided, however, that the ferret owner can provide valid documentation that the ferret was sexually neutered prior to seven months of age and is vaccinated against rabies with a properly administered vaccine approved for use on ferrets by the United States Department of Agriculture.

APPENDICES

APPENDIX A. ANIMAL RABIES VACCINES

Note: Adapted from the NASPHV *Compendium of Animal Rabies Prevention and Control, 2016*, the current compendium at the time of publication (December 2024). For the most up-to-date NASPHV rabies compendium, please visit https://www.nasphv.org/documentsCompendia.html.

Monovalent (inactivated)						
Product Name	Produced By	For Use In	Dose	Age at First Vaccine	Booster	Route
RABVAC 1	Elanco	dogs/cats	1 ml	3 mo.	annually	IM/SC
RABVAC 3	Elanco	dogs/cats	1 ml	3 mo.	1-yr and triennially	IM/SC
		horses	2 ml	3 mo.	annually	IM
EQUI-RAB with Havlogen	Merck Animal Health	horses	1 ml	4 mo.	annually	IM
Vanguard Rabies 1 year	Zoetis	dogs	1 ml	3 mo.	annually	IM/SC
		cats	1 ml	3 mo.	annually	SC
		ferrets	1 ml	3 mo.	annually	SC
Vanguard Rabies 3 year	Zoetis	dogs	1 ml	3 mo.	1-yr and triennially	IM/SC
		cats	1 ml	3 mo.	1-yr and triennially	SC
		ferrets	1 ml	3 mo.	annually	SC
NOBIVAC: 3-Rabies	Merck Animal Health	dogs	1 ml	3 mo.	annually	IM/SC
		cats	1 ml	3 mo.	annually	SC
		ferrets	1 ml	3 mo.	annually	SC
IMRAB I	BIAH[1]	dogs/cats	1 ml	3 mo.	annually	SC
IMRAB I TF	BIAH[1]	dogs/cats	1 ml	3 mo.	annually	SC
IMRAB 3	BIAH[1]	dogs/cats	1 ml	3 mo.	1-yr and triennially	IM/SC
		sheep	2 ml	3 mo.	1-yr and triennially	IM/SC
		cattle/horses	2 ml	3 mo.	annually	IM/SC

		ferrets	1 ml	3 mo.	annually	SC
IMRAB Large Animal	BIAH[1]	cattle/horses	2 ml	3 mo.	annually	IM/SC
		sheep	2 ml	3 mo.	1-yr and triennially	IM/SC
Monovalent (rabies glycoprotein; live canary pox vector)						
PUREVAX Feline Rabies	BIAH[1]	cats	0.5 ml or 1 ml	3 mo.	annually	SC
PUREVAX Feline Rabies 3 YR	BIAH[1]	cats	0.5 ml or 1 ml	3 mo.	1-yr and triennially	SC
Combination (inactivated)						
Equine POTOMAVAC+IMRAB	BIAH[1]	horses	1 ml	3 mo.	3-4 wks then annually	IM
Combination (rabies glycoprotein; live canary pox vector)						
PUREVAX Feline 3/Rabies	BIAH[1]	cats	0.5 ml or 1 ml	8 weeks ***	every 3-4 wks until 12 wks then annually	SC
PUREVAX Feline 4/Rabies	BIAH[1]	cats	0.5 ml or 1 ml	8 weeks ***	every 3-4 wks until 12 wks then annually	SC

1 Boehringer Ingelheim Animal Health USA, Inc. (BIAH)

*** These multivalent vaccines are licensed for use in felines 8 weeks of age or older. However, animal rabies vaccines must be administered at a minimum age of 12 weeks or older to ensure proper immunization against rabies. Therefore, if the initial dose is administered at 8 or 9 weeks of age, a booster or a single agent rabies vaccine must be given at a minimum of 12 weeks of age.

ANIMAL RABIES VACCINE MANUFACTURER CONTACT INFORMATION

Manufacturer	Phone Number	Internet Address
Boehringer Ingelheim Animal Health USA, Inc	800-542-6257	https://www.boehringer-ingelheim.com/animal-health
Merck Animal Health Inc	800–521–5767	https://www.merck-animal-health-usa.com/
Zoetis	800-963-8471	https://www.zoetis.com/
Elanco	888-545-5973	https://www.elanco.com/en-us

ADVERSE EVENTS: Adverse events should be reported to the vaccine manufacturer and to USDA, Animal and Plant Health Inspection Service, Center for Veterinary Biologics by phone at 800-752-6255 or visiting https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/veterinary-biologics/adverse-event-reporting/ct_vb_adverse_event.

APPENDIX B. PROGRESSIVE SEROLOGICAL MONITORING PROTOCOL

Adapted from the NASPHV *Compendium of Animal Rabies Prevention and Control, 2016*

GEORGIA DEPARTMENT OF PUBLIC HEALTH PROSPECTIVE SEROLOGIC MONITORING (PSM) PROTOCOL FOR DOGS/CATS EXPOSED TO RABIES WITHOUT DOCUMENTATION OF PREVIOUS RABIES VACCINATION

This protocol applies only to a DOG or CAT that is…

1. exposed to a confirmed or suspected rabid animal (as defined in Part I A.2 of the Compendium), AND;
2. 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;
3. whose owner or guardian wants to avoid euthanasia or a strict 4-month quarantine, AND;
4. can immediately be managed by a veterinarian who can collect serum specimens as described below and administer a rabies vaccine.

The dog or cat must be seen by a veterinarian immediately (within 96 hours) following exposure to a confirmed or suspected rabid animal. The veterinarian must contact the Georgia Department of Public Health (DPH) Epidemiology Division and speak with the Rabies Epidemiologist or State Public Health Veterinarian at 404-657-2588 **BEFORE** the vaccine is given.

DPH staff will work with the veterinarian and owner to determine if the animal meets the criteria and define a timeline during which the protocol must be implemented. Laboratory testing, submission, and all associated fees will be assumed by the animal owner and submitting veterinarian. The veterinary visit in which the first serum specimen 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 0:

5. Call DPH Rabies Epidemiologist or State Public Health Veterinarian at 404-657-2588;
6. Collect 1-2 mL of serum;

7. Label and keep the serum specimen refrigerated until the second specimen is collected. Serum held for more than 7 days may need to be frozen. Follow the instructions provided by the laboratory that will be performing the tests;
8. Administer a USDA-licensed rabies vaccine labeled for use in that species; and
9. Schedule a follow up appointment to ensure the pet will return in 5-7 days, preferably on Day 6. The timing of the follow up blood draw is critical; any deviation may result in termination of the PSM protocol, and a strict 4-month quarantine or euthanasia will be implemented.

On Day 5 or 6 (but no later than day 7):

10. Collect a second serum specimen (1-2 mL), preferably on Day 6.
    A. Label and store the specimen appropriately according to the instructions from the laboratory where it will be submitted;
    B. Submit the paired serum specimens to an approved Rabies Laboratory for Rapid Fluorescent Focus Inhibition Test (RFFIT) testing with the appropriate forms completed and carefully following shipping instructions provided by the laboratory; and
    C. Contact the DPH Epidemiology Division to document the 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:

- Kansas State University Rabies Laboratory (KSU-RL)
- Auburn University Serology-Virology Laboratory
- Atlanta Health Associates

The Centers for Disease Control and Prevention (CDC) may occasionally provide testing services by special arrangement only, this must be coordinated through the state health department and is only indicated in rare situations. 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. Veterinarians can also order appropriate titer testing through some commercial animal diagnostic laboratories who partner with the above approved laboratories to perform serum testing. Prior to sample submission, call your commercial laboratory to confirm serum testing is performed by an approved laboratory.

The submission form for the appropriate laboratory must be complete, accurate, and accompany **properly labeled 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 is dependent upon the laboratory and its current testing volume. The submitting veterinarian is responsible for immediately contacting the DPH Epidemiology Division with the results to finalize recommendations for the animal.

The dog or cat shall remain in strict quarantine during the testing process unless and until otherwise approved by DPH staff.

Interpretation of the results will be done by the Rabies Epidemiologist and the State Public Health Veterinarian/Deputy State Public Health Veterinarian. Interpretation will be done in conjunction with the laboratory performing the testing. 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) 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 override the authority of public health staff to order continued strict quarantine of the animal if it determines such actions to be in the best interest of public health. These recommendations do not supersede any applicable state laws and regulations or local ordinances.

FREQUENTLY ASKED QUESTIONS FOR ANIMALS APPROVED FOR PROGRESSIVE SEROLOGICAL MONITORING (PSM):

1. **What if the dog or cat did not receive care immediately (within 96 hours) after the exposure, are they still eligible for PSM?**
   Such cases should be discussed with the DPH Epidemiology Division 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 a dog or cat under PSM 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 under PSM?**
   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 under PSM 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.

   Considerable variability exists as to any individual's response to vaccination and the DPH Epidemiology Division should consult the laboratory for help in interpreting results that fall outside these guidelines.

   If an appropriate 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 a response, the vaccine is considered the initial dose and the animal should be boostered in one year, consistent with the vaccine label.

5. **Where can I find the appropriate submission forms and shipping instructions?**
   - Auburn University Serology-Virology Laboratory: https://www.vetmed.auburn.edu/academic-departments/dept-of-pathobiology/diagnostic-services/serology-virology/
   - Kansas State University Rabies Laboratory: http://www.ksvdl.org/rabies-laboratory/rffit-test/rffit-submission-forms.html
   - Atlanta Health Associates: https://atlantahealth.net/

6. **Can this protocol be used for animals other than dogs or cats, such as ferrets?**
   No. At this time, data regarding anamnestic responses following revaccination with rabies vaccine are available only for dogs and cats.

REFERENCES

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National Association of State Public Health Veterinarians (NASPHV) Compendium of Animal Rabies Prevention and Control 2016. https://www.nasphv.org/Documents/NASPHVRabiesCompendium.pdf

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GEORGIA DEPARTMENT OF PUBLIC HEALTH