NEW JERSEY DEPARTMENT OF HEALTH
GUIDE TO POST-EXPOSURE RABIES PROPHYLAXIS
FOR THE HEALTH CARE PROFESSIONAL
2016

TABLE OF CONTENTS

BACKGROUND

New Jersey (NJ) is currently enzootic for the raccoon and bat variant rabies viruses. Raccoon rabies crossed the Delaware River from Pennsylvania into New Jersey in the fall of 1989 and then spread throughout the state. Rabid bats are found throughout the country including in New Jersey. Raccoons and other animals infected by raccoons, as well as bats infected with bat variant strains of the virus, present a continual threat to NJ residents and their domestic animals. Although approximately 60 - 70 percent of the terrestrial animals confirmed to be rabid through laboratory testing every year are raccoons, many other terrestrial animals, especially skunks, groundhogs, foxes, and free-roaming cats, also become infected from raccoons. The NJ Department of Health (NJDOH) estimates that approximately 2,500 people in the State receive rabies post-exposure prophylaxis (PEP) annually, due to exposure to known or suspect rabid animals.

Once people develop symptoms of rabies, treatment is almost never successful and death ensues. Fortunately, rabies PEP biologics (human rabies immune globulin and human rabies vaccine) are extremely effective in preventing rabies, if given in a timely manner following exposure to a rabid animal. This guide will review when and how to administer rabies PEP and will address frequently asked questions.

Please review this document and keep it as a reference.

Legal Requirements

a. Animal Bites

Every physician is legally required to report all animal bites (N.J.S.A. 26:4-79) and all rabies PEP administrations (N.J.S.A. 8:57-1.5) within 24 hours of initial medical treatment to the **Local Health Department (LHD)** with jurisdiction where the patient resides. The contact information for local health departments can be found under the municipal listing in the telephone book or on-line at localhealth.nj.gov

The LHD receiving the bite report can provide guidance on rabies, the guidelines for administering PEP and work with other agencies/LHDs as needed to locate, test, or confine the exposing animal involved, if indicated.

Routine animal bite reports for patients seen during nights, weekends and holidays can usually be faxed, emailed or called into local health departments on the next working day. Animal bites should not be reported to the NJDOH.

b. PEP Administration Reports

PEP administration to an exposed patient shall be reported to the local health department where the patient resides. A form to report rabies PEP to local health departments is available on-line at: http://www.state.nj.us/health/cd/forms.shtml

c. Suspect Human Rabies Cases

Suspected cases of rabies in humans are **immediately reportable** to the LHD. The contact information for local health departments can be found under the municipal listing in the telephone book or on-line at localhealth.nj.gov.

If the LHD cannot be reached, contact the NJDOH at 609-826-4872 or 609-826-5964 between 8 a.m. and 5 p.m. during workdays. For emergency situations, and only after being unable to reach the local health department, contact the NJDOH during nights weekends, and holidays at 609-392-2020.

Rationale For Initiating Post-Exposure Prophylaxis

The following section is from the Advisory Committee Immunization Practices (ACIP) Recommendations (1):

“ACIP and WHO recommend that prophylaxis for the prevention of rabies in humans exposed to rabies virus should include prompt and thorough wound cleansing followed by passive vaccination with HRIG and vaccination with cell culture rabies vaccines. Administration of rabies postexposure prophylaxis is a medical urgency, not a medical emergency. Because rabies biologics are valuable resources that are periodically in

short supply, a risk assessment weighing potential adverse consequences associated with administering postexposure prophylaxis along with their severity and likelihood versus the actual risk for the person acquiring rabies should be conducted in each situation involving a possible rabies exposure. Because the balance of benefit and harm will differ among exposed persons on the basis of the risk for infection, recommendations regarding rabies postexposure prophylaxis are dependent upon associated risks including 1) type of exposure, 2) epidemiology of animal rabies in the area where the contact occurred and species of animal involved, and 3) circumstances of the exposure incident. The reliability of this information should be assessed for each incident. The decision of whether to initiate rabies postexposure prophylaxis also depends on the availability of the exposing animal for observation or rabies testing. Because the epidemiology and pathogenesis of rabies are complex, these recommendations cannot be specific for every possible circumstance. Clinicians should seek assistance from local or state public health officials for evaluating exposures or determining the need for postexposure management in situations that are not routine. State and local officials have access to CDC rabies experts for particularly rare situations or difficult decisions."

Types of Exposure

"When an exposure has occurred, the likelihood of rabies infection varies with the nature and extent of that exposure. Under most circumstances, two categories of exposure (bite and nonbite) should be considered. The most dangerous and common route of rabies exposure is from the bite of a rabid mammal. An exposure to rabies also might occur when the virus, from saliva or other potentially infectious material (e.g., neural tissue), is introduced into fresh, open cuts in skin or onto mucous membranes (nonbite exposure). Indirect contact and activities (e.g., petting or handling an animal: contact with blood, urine, skunk spray, or feces; and saliva contact with intact skin) do not constitute exposures; therefore, postexposure prophylaxis should not be administered in these situations. Exposures to bats deserve special assessment because bats can pose a greater risk for infecting humans under certain circumstances that might be considered inconsequential from a human perspective (i.e., a minor bite or lesion). Human-to-human transmission occurs almost exclusively as a result of organ or tissue transplantation. Clinicians should contact local public health officials for assistance in determining the likelihood of a rabies exposure in a specific situation.

> **Bite exposures.** Any penetration of the skin by teeth constitutes a bite exposure. All bites, regardless of body site or evidence of gross trauma, represent a potential risk. The risk for transmission varies in part with the species of biting animal, the anatomic site of the bite, and the severity of the wound. Although risk for transmission might increase with wound severity, rabies transmission also occurs from bites by some animals (e.g., bats) that inflict rather minor injury compared with larger-bodied carnivores, resulting in lesions that are difficult to detect under certain circumstances.

Nonbite exposures. Nonbite exposures from animals very rarely cause rabies. However, occasional reports of nonbite transmission suggest that such exposures require assessment to determine if sufficient reasons exist to consider postexposure prophylaxis. The nonbite exposures of highest risk appear to be among surgical recipients of corneas, solid organs, and vascular tissue transplanted from patients who died of rabies and persons exposed to large amounts of aerosolized rabies virus. Two cases of rabies have been attributed to probable aerosol exposures in laboratories, and two cases of rabies have been attributed to possible airborne exposures in caves containing millions of free-tailed bats (*Tadarida brasiliensis*) in the Southwest. However, alternative infection routes can not be discounted. Similar airborne incidents have not occurred in approximately 25 years, probably because of elevated awareness of such risks resulting in increased use of appropriate preventive measures.

The contamination of open wounds or abrasions (including scratches) or mucous membranes with saliva or other potentially infectious material (e.g., neural tissue) from a rabid animal also constitutes a nonbite exposure. Rabies virus is inactivated by desiccation, ultraviolet irradiation, and other factors and does not persist in the environment. In general, if the suspect material is dry, the virus can be considered noninfectious. Nonbite exposures other than organ or tissue transplants have almost never been proven to cause rabies, and postexposure prophylaxis is not indicated unless the nonbite exposure met the definition of saliva or other potentially infectious material being introduced into fresh, open cuts in skin or onto mucous membranes."

In general, scratches from cats are not considered an exposure unless the wound is contaminated with saliva, e.g., a cat grooms its claws and then immediately scratches a person or is hissing and spitting while scratching a person and saliva may have gotten into the wound.

What Type of Animal Was Involved in the exposure?

1. Is the domestic animal (e.g., dog, cat, ferret, horse and livestock) available for observation?

YES - **Animal Available**

<u>IF HEALTHY</u>, DOMESTIC ANIMALS (BOTH VACCINATED AND UNVACCINATED FOR RABIES) SHOULD BE OBSERVERED FOR 10 DAYS. The local health department with jurisdiction where the involved animal is kept will arrange confinement of the animal for observation of signs of rabies. If the animal exhibits clinical signs compatible with rabies (fever, abnormal behavior, and neurologic impairment) during confinement, it should be immediately evaluated by a veterinarian and euthanized for rabies testing, based on the veterinarian's assessment. The exposed individual can start rabies post-exposure prophylaxis, prior to completion of rabies testing in high risk situations or when testing is delayed. In general, if the animal did not have signs of rabies, take up to five days to attempt to find the animal, with assistance of local animal control. If found, the domestic animal in question should be confined and observed for 10 days from the date of the exposure. If the animal is not found in five days, prophylaxis should be considered, as described below.

<u>Domestic animals showing signs of rabies at the time of the bite</u>
Signs of rabies include:

- abnormal behavior,
- elevated temperature,
- anorexia,
- unprovoked aggression,
- impaired locomotion,
- neurologic impairment, and
- paralysis

Domestic animals with signs of rabies should be evaluated immediately by a veterinarian and euthanized for testing if indicated. Begin prophylaxis of the exposed individual, if rabies is suspected; prophylaxis can be discontinued if test results are negative.

Note: There is no law mandating that the owner of a suspect rabid domestic animal must euthanize their pet for rabies testing. If the owner refuses to euthanize an ill animal, prophylaxis should be started on the exposed individual and continued as indicated. If the animal does have rabies it will usually die within 1 week and it can then be tested for rabies and the patient's prophylaxis discontinued if the animal is negative. If the animal lives 10 days following the bite, the patient's prophylaxis can be discontinued as the animal in question does not have rabies. Suspect rabid animals that expose humans should be ordered to be confined and observed for signs of rabies by the Health Officer. Once confined, the Health Officer can order the animal tested if it dies or is euthanized.

NO - **Animal Not Available**

If the animal had signs of rabies at the time of the bite (as described above), Begin prophylaxis of the exposed individual immediately.

If the animal did not have signs of rabies, take up to five days to attempt to find the animal, with assistance of local animal control. If found, the domestic animal in question should be confined and observed for 10 days from the date of the exposure. If the animal is not found in five days, prophylaxis should be considered. Although rabies in domestic animals is rare, prophylaxis is generally recommended for individuals with a bite exposure from a dog or cat, which cannot be observed or tested. The physician and patient should take into account the behavior and general health status of the animal, and the circumstances of the exposure (i.e., was the animal provoked?) when making these types of prophylaxis decisions.

Note: In New Jersey, cats have accounted for 90% of the domestic animal rabies cases since 1989. Rabies in dogs and other domestic animals, except cats, is relatively uncommon.

2. Is the bat, raccoon, skunk, fox or groundhog/woodchuck available for laboratory testing?

YES -The animal should be euthanized and tested for rabies. If the test is positive administer rabies post-exposure prophylaxis. If testing of the animal is delayed more than 3 days, consider initiating PEP prior to completion of testing. In the case of bites to the face, neck or fingers from bats, raccoons, skunks, foxes or groundhogs showing clinical signs of rabies, PEP should be initiated as soon as possible. Prophylaxis can be discontinued if laboratory test results are negative.

NO - Bats, raccoons, skunks, foxes, groundhogs/woodchucks, and other carnivorous wildlife that cannot be tested, should be considered rabid. Initiate PEP to exposed persons as soon as possible.

With regard to bat situations, post-exposure prophylaxis should be considered when direct contact between a human and a bat has occurred, unless the exposed person can be certain a bite, scratch or mucous membrane exposure did not occur. In instances in which a bat is found indoors and there is no history of bat-human contact, the likely effectiveness of post-exposure prophylaxis must be balanced against the low risk such exposures appear to present. In this setting, PEP can be considered for persons who were in the same room as the bat and 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 a previously unattended child, mentally disabled person, or intoxicated person) and the bat is unavailable for testing. PEP would not be recommended for other household members.

3. Is the suspect animal a healthy rodent (other than a groundhog) or lagomorph (e.g., rabbit) that has lived in an indoor cage all of its life?

YES - No post-exposure prophylaxis or testing is needed.

NO - Rodents are not reservoirs of rabies and the disease has never been found in New Jersey squirrels, chipmunks, moles, voles, rats or mice. Bites and exposures to these animals are extremely low risk. Post-exposure prophylaxis or animal specimen testing in the case of bites from wild or pet rodents and lagomorphs is rarely necessary but should be considered in situations of unprovoked attacks by animals that exhibit aggressive behavior or obvious neurologic illness.

Squirrels commonly bite when they come into contact with people; capturing the squirrel for testing or initiating post-exposure prophylaxis is not recommended unless the biting squirrel exhibited aggressive behavior or obvious neurologic illness.

In the current New Jersey rabies enzootic, a significant number of groundhogs/woodchucks have been found to be rabid. For this reason, groundhogs are treated as high-risk animals (Section 4, above), despite the fact that they are rodents.

From 1989 – 2013 there have been 9 domestic rabbits documented to have been infected with rabies. All were housed in outdoor cages with wire floors and 8 of the 9 cases had a documented wound on the paw that was most likely a bite from a rabid animal. Rabies has not been identified in New Jersey wild rabbits.

4. Was the suspect animal a type not listed above?

All other mammals not listed above are also susceptible to rabies. Bites from primates and other wild and exotic animals need to be evaluated on an individual basis. Please contact your local health department for assistance in determining the appropriate course of action in these situations.

Rabies is a disease of mammals only, therefore bites by reptiles, amphibians, fish, and birds carry no risk of rabies transmission.

Animal Rabies Testing

Contact the Local Health Department (LHD) with jurisdiction for information about laboratory testing of animals. Specific procedures are in place for submitting animal specimens for rabies testing at the NJDOH Rabies Laboratory: http://www.state.nj.us/health/cd/documents/faq/specimentophel.pdf. If testing of the animal is delayed (i.e., over weekends and holidays) in high-risk situations, the treating physician may choose to initiate post-exposure prophylaxis prior to completion of

testing. In the event the test is negative, PEP can be discontinued.

The Rabies Post-Exposure Prophylaxis Protocol

Rabies post-exposure prophylaxis should begin with immediate cleansing of all wounds with water and soap as soon as possible after the bite or scratch. If available, a virucidal agent such as povidone-iodine solution should be used to irrigate the wounds.

In general, post-exposure prophylaxis should be initiated as soon as possible after a decision is made to treat but it should also be given even if long delays have occurred since exposure, as prophylaxis may still be effective.

1. High risk situations: In cases of bites to the fingers, face or neck from high-risk animals (i.e., bats, raccoons, skunks, foxes or groundhogs showing clinical signs of rabies), prophylaxis should be initiated immediately. Post-exposure prophylaxis can always be stopped if the animal is tested and determined to be free of rabies. PEP should be started if the animal is asymptomatic but testing will not be able to be completed on a timely basis (often the case with weekend exposures). All bites from suspect rabid animals to immunosuppressed individuals should be treated immediately.

2. Other exposure situations: Generally, delays of several days are acceptable while waiting for an animal to be located and tested, up to five days pending search for a healthy-appearing dog or cat, or up to 10 days if a healthy dog or cat is being confined and observed for signs of rabies.

For Previously Unvaccinated Immunocompetent Persons: A complete course of one dose of human rabies immune globulin (HRIG) and **four** 1-ml doses of vaccine, as described below, is necessary for adequate PEP:

1. HRIG - Administer intramuscularly (IM) once on day 0, the day PEP is initiated. If not available initially, HRIG can be administered up to 7 days after the first dose of vaccine. The dose is 20 IU/KG, without any upper limit. HRIG is currently available in two and ten milliliter (ml) vials with a concentration of 150 IU per ml. At this concentration, the dose is 0.133 ml/kg or 0.06 ml/lb of body weight. Always check the package to be sure that there have been no changes in the concentration. If anatomically feasible, the full dose should be infiltrated into and around the wound(s) and any remaining volume administered intramuscularly into an anatomical site distant from where the vaccine is administered (e.g., the thigh). Do not give more than the recommended amount of HRIG since this may affect the immune response. **HRIG should not be administered in the same syringe or the same anatomical site as vaccine**.

2. Human rabies vaccine - Administer 1.0 ml of human diploid cell vaccine (HDCV) or purified chick embryo cell culture (PCEC) vaccine IM on **days 0, 3, 7, and 14** into the deltoid muscle in children and adults. In infants and small children it may be preferable to give the vaccine in the midlateral aspect of the thigh. All doses must be given.

This protocol should not be modified. If doses are missed or delayed, resume the PEP schedule where it was left off. Rabies vaccine and HRIG should never be given together at the same body site. Vaccine should never be given in the buttocks. Routine testing of healthy patients completing PEP is not necessary to document seroconversion.

Persons With Altered Immunocompetence (either due to illness, medication, or therapy – as described in the resource linked in the paragraph below) should receive a fifth dose of rabies vaccine 28 days after the receiving the first rabies vaccine dose (Day 0) of the PEP protocol with the understanding that the immune response still might be inadequate. Immunosuppressive agents should not be administered during rabies PEP unless essential for the treatment of other conditions. One or more serum samples should be tested to document seroconversion beginning 1-2 weeks after receiving the last dose of vaccine (completion of PEP) for testing utilizing the rapid fluorescent focus inhibition test (RFFIT). Laboratories performing this assay are listed on page 13 of this document. Titers of at least a 1:5 serum dilution are considered seroconversion. A patient who fails to seroconvert after the fifth dose should be managed in consultation with their physician and the NJDOH, Infectious and Zoonotic Disease Program (IZDP).

A discussion on the conditions that may alter immunocompetence can be found in the "Altered Immunocompetence" section of the ACIP General Recommendations on Immunization document available at:
http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5515a1.htm

For Previously Vaccinated Persons:

1. Previously vaccinated persons are defined as those who have received either:
   a. the full three dose pre-exposure series of HDCV, rabies virus adsorbed (RVA) or PCEC;
   b. the full post-exposure prophylaxis with HDCV, RVA or PCEC; or
   c. has had a previous vaccination with any other type of rabies vaccine and had a documented history of antibody response to the previous vaccination

   Previously vaccinated people may not have documentation of past vaccination available when they present for PEP. This should not preclude administering the protocol for previously vaccinated individuals as described below, especially when the patient is in an occupation where pre-exposure prophylaxis is required or recommended (e.g., veterinarian, animal control officer, veterinary technician,

wildlife worker).

2. PEP for previously vaccinated persons consists of only two doses of vaccine given on days 0 and 3. **HRIG should not be administered to previously vaccinated persons**.

3. Persons receiving the 4-dose PEP protocol will be managed as a previously vaccinated person in the event of future rabies exposures.

4. Persons who have received rabies immunizations other than that described above should contact their local health department for guidance.

Adverse Events Associated With Post-Exposure Prophylaxis

Studies of the use of human rabies vaccine reported local reactions (e.g., pain at the injection site, redness, swelling, and induration) among approximately 2/3 of recipients. Local reactions were more common than systemic reactions. Most local reactions were mild and resolved spontaneously within a few days. Local pain at the injection site was the most frequently reported adverse reaction occurring. Mild systemic reactions (e.g., fever, headache, dizziness, and gastrointestinal symptoms) were reported in approximately 1/3 of recipients.

Rare, individual case reports of neurologic adverse events following rabies vaccination have been reported, but in none of the cases has causality been established. Five cases of neurologic illness resembling Guillain-Barré syndrome occurring after treatment with HDCV or PCEC have been identified. One case of acute neurologic syndrome involving seizure activity was reported following the administration of HDCV and human RIG. Other central and peripheral nervous system disorders have been temporally associated with HDCV vaccine.

The following discussion of adverse reactions to PEP is from the ACIP Recommendations (1):

“Once initiated, rabies prophylaxis should not be interrupted or discontinued because of local or mild systemic adverse reactions to rabies vaccine. Usually, such reactions can be successfully managed with anti-inflammatory and antipyretic agents, such as ibuprofen or acetaminophen.

When a person with a history of serious hypersensitivity to rabies vaccine must be revaccinated, antihistamines can be administered. Epinephrine should be readily available to counteract anaphylactic reactions, and the person should be observed carefully immediately after vaccination.

Although serious systemic, anaphylactic, or neuroparalytic reactions are rare during and after the administration of rabies vaccines, such reactions pose a serious dilemma for the patient and the attending physician. A patient's risk of acquiring rabies must be carefully considered before deciding to discontinue vaccination. Advice and assistance on the management of serious adverse reactions for persons receiving rabies vaccines may be sought from the state or local health department or CDC.

All clinically significant adverse events occurring following administration of rabies biologics should be reported to the Vaccine Adverse Event Reporting System (VAERS), even if causal relation to vaccination is not certain. Although VAERS is subject to limitations common to passive surveillance systems, including underreporting and reporting bias, it is a valuable tool for characterizing the safety profile of vaccines and identifying risk factors for rare serious adverse reactions to vaccines. VAERS reporting forms and information are available electronically (https://vaers.hhs.gov/index) or by telephone via a 24-hour toll-free telephone number, 800-822-7967. Web-based reporting is available and providers are encouraged to report electronically to promote better timeliness and quality of safety data. Clinically significant adverse events following HRIG administration should be reported to the Food and Drug Administration's MedWatch. Reports can be submitted electronically to http://www.fda.gov/MedWatch."

Procuring Rabies Biologics

All hospitals with an emergency department should stock rabies biologics in their pharmacies and be prepared to provide rabies PEP. Physicians are strongly urged to consider administering rabies PEP to their patients on an outpatient basis whenever possible to reduce costs. Travel medicine clinics usually stock rabies vaccine and may administer it to patients that have begun PEP in consultation with a physician in an emergency department or other setting.

Human rabies vaccines and immune globulin are readily available through pharmaceutical vendors, hospital pharmacies, or directly from these manufacturers:

Human Rabies Vaccines

- RabAvert (PCEC)
  Novartis Vaccines and Diagnostics
  Telephone number (800) 244-7668
  https://www.novartisvaccinesdirect.com/Rabavert/RabavertAbout

- IMOVAX Rabies (HDCV)
  Sanofi Pasteur
  Telephone number (800) 822-2463 (800 VACCINE)
  http://www.sanofi.us/l/us/en/layout.jsp?scat=7F5145B6-D866-4B5C-AC94-0B574746B8A44

Human Rabies Immune Globulin (HRIG)

- IMOGAM RABIES-HT
  Sanofi Pasteur
  Telephone number (800) 822-2463 (800 VACCINE)
  http://www.sanofi.us/l/us/en/layout.jsp?scat=7F5145B6-D866-4B5C-AC94-0B574746B8A4

- HyperRaB S/D
  Grifols Therapeutics (formerly Talecris)
  Telephone number (800) 243-4153 or (888) 325-8579, option 3
  http://www.grifolsusa.com/en/web/eeuu/bioscience/-/product/hyperrabb_s_d_rabies_immune-globulin

Please contact the local health department, if problems arise in securing the appropriate rabies biologics in a timely manner.

Pre-Exposure Rabies Vaccination

It is recommended that veterinarians, veterinary technicians, students attending veterinary school, animal control officers, shelter workers, persons preparing rabies specimens, persons working closely with high risk wildlife species, and certain persons travelling to high risk destinations around the world consider receiving pre-exposure rabies vaccinations. If possible, immunosuppressed patients should postpone rabies pre-exposure vaccination until the immunocompromising condition is resolved.

Pre-exposure vaccination consists of the administration of 1.0 ml human rabies diploid cell vaccine (HDCV) or purified chick embryo cell culture (PCEC) intramuscularly on days 0, 7, and 21 or 28. A guidance document is available on the NJDOH website: http://www.state.nj.us/health/cd/documents/appendixiv_rabies.pdf

Note: Persons who have received the complete post-exposure prophylaxis series are considered previously vaccinated for any future exposures.

Although antibody levels do not define a person's immune status, they are a marker of continuing immune response. To ensure the continuity of an immune response, titers should be checked periodically, with booster doses administered as needed. Persons in the frequent-risk category (rabies lab workers, animal control and wildlife workers, and veterinarians and their staff in rabies enzootic areas) should have a serum sample tested every 2 years to determine if an adequate antibody level persists. If their antibody titer is below the 1:5 serum dilution by rapid fluorescent focus inhibition test (RFFIT), a booster dose of vaccine should be given.

Post-Exposure Prophylaxis for Previously Vaccinated Persons

Any person with a history of pre-exposure vaccination with HDCV, RVA, or PCEC; prior post-exposure prophylaxis with HDCV, RVA, or PCEC; or previous vaccination with any other type of rabies vaccine and a documented history of antibody response to the prior vaccination are considered vaccinated and would only need 2 booster vaccinations, 3 days apart. HRIG should not be administered to previously vaccinated persons.

Laboratories Conducting RFFIT Antibody Serology

- Kansas State Veterinary Diagnostic Laboratory,
  http://www.ksvdl.org/rabies-laboratory/
  Telephone: (785) 532-4483

- Atlanta Health Associates, Inc.,
  http://www.atlantahealth.net/
  Telephone: (800) 717-5612

Out-of-state Animal Bite Situations

Raccoon rabies is enzootic in the south, the mid-Atlantic, and the New England regions. All bites from high-risk animals (i.e., raccoon, skunk, fox, or groundhog) occurring in these states should be considered rabies exposures and prophylaxis initiated as soon as possible. Bat rabies is enzootic throughout North America and all bat exposures should be treated as soon as possible.

If the biting animal is a cat, dog, or livestock animal, which is available for observation, this can be arranged through NJDOH in cooperation with local officials in the involved state. If the animal is not available, information on the incidence of rabies in the state where the exposure occurred and other factors will need to be taken into account. Please contact local health department for assistance with these cases.

Informational Resources

1. 2008 Recommendations of the Advisory Committee Immunization Practices (ACIP) for the prevention of rabies: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5703a1.htm

2. March 19, 2010, CDC Morbidity and Mortality Weekly Report Use of a Reduced (4-dose) Vaccine Schedule for Postexposure prophylaxis to Prevent Human Rabies: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm

3. CDC rabies post-exposure prophylaxis: http://www.cdc.gov/rabies/medical_care/index.html

4. CDC precautions or contraindications for rabies vaccination: http://www.cdc.gov/rabies/specific_groups/doctors/vaccination_precautions.html

5. ACIP General Recommendations on Immunization: http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5515a1.htm

6. NJDOH Infectious and Zoonotic Disease Program rabies information: http://www.state.nj.us/health/cd/documents/faq/rabies.pdf

Acronyms

ACIP	Advisory Committee Immunization Practices
HDCV	Human Diploid Cell Vaccine
HRIG	Human Rabies Immune Globulin
IM	Intramuscularly
IU	International Unit
IZDP	Infectious and Zoonotic Disease Program
Kg	Kilogram
LHD	Local Health Department
NJDOH	New Jersey Department of Health
PCEC	Purified Chick Embryo Cell Culture
PEP	Post-Exposure Prophylaxis
RFFIT	Rapid Fluorescent Focus Inhibition Test
RVA	Rabies Vaccine Adsorbed
VAERS	Vaccine Adverse Event Reporting System
WHO	World Health Organization

Guide to Rabies Postexposure Prophylaxis (PEP)

Bats

WHAT IS A BAT EXPOSURE?

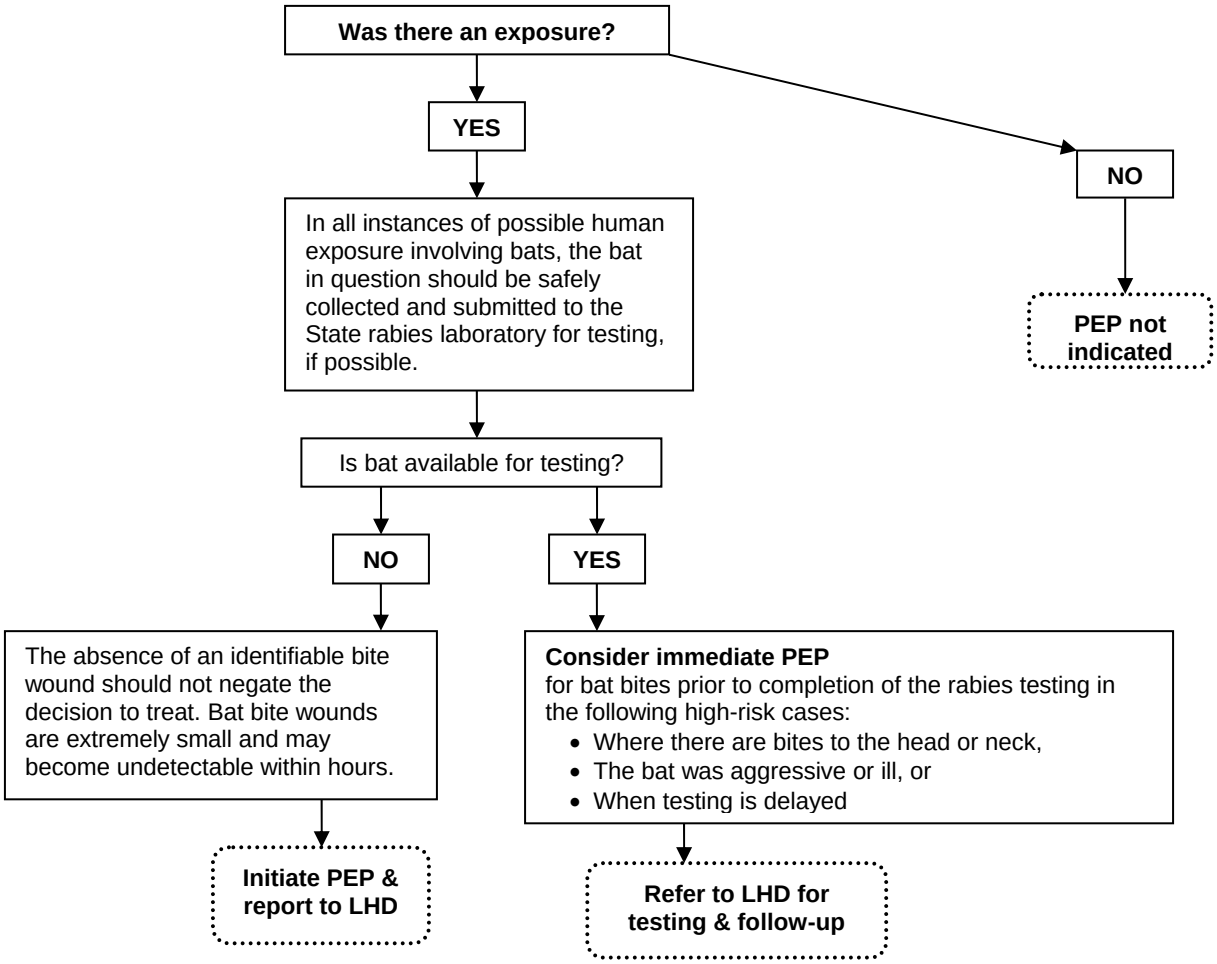
An exposure is a bite (any penetration of the skin by teeth) OR saliva or brain/spinal cord tissue introduced into an open wound, abrasion, or scratch in the skin (those that have bled in the past 24 hours), or into mucous membranes (eyes), from a known or suspect rabid animal. Note: Only mammals carry rabies

Transmission of rabies virus can occur from minor or unrecognized bites from bats. In all instances of potential human exposures involving bats, the bat in question should be safely collected, if possible, and submitted for rabies testing.

PEP should be considered when direct contact between a human and a rabid bat, or a bat that cannot be tested, has occurred, unless the exposed person can be certain a bite, scratch, or mucous membrane exposure did not occur. Because bat bites may be very small and heal rapidly, they are more difficult to recognize than bites inflicted by larger mammals and PEP may be appropriate in the absence of a demonstrable bite. In instances in which a bat is found indoors and there is no history of bat-human contact, the likely effectiveness of PEP must be balanced against the extremely low risk such exposures present. PEP may be considered for persons who were in the same room as a bat and 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 a previously unattended child, mentally disabled person, or intoxicated person) and rabies cannot be ruled out by testing the bat.

PEP is not recommended for other persons present in the household during the incident.

All rabies exposures must be REPORTED to the local health department where the patient resides.



Guide to Rabies Postexposure Prophylaxis (PEP)

Domestic Animals*

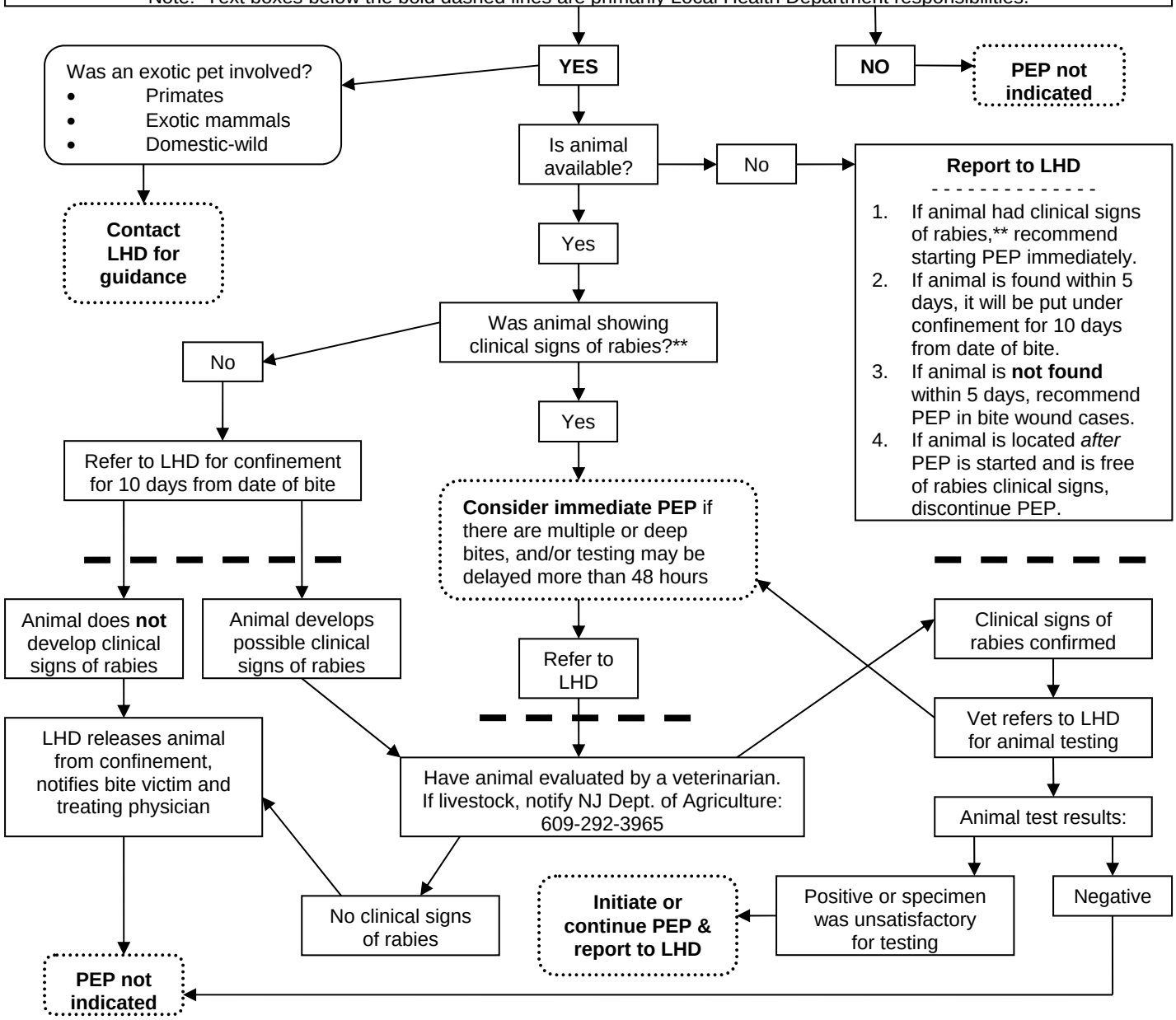
* Domestic animals are defined as a population of animals that have had their behavior altered as a result of being under human control for many generations and live in close proximity with people (i.e., domesticated). Domestic species include pets (e.g., dogs, cats - including feral/free-roaming cats, ferrets, and caged rabbits and rodents) and livestock (e.g., horses, cattle, sheep, goats and pigs).

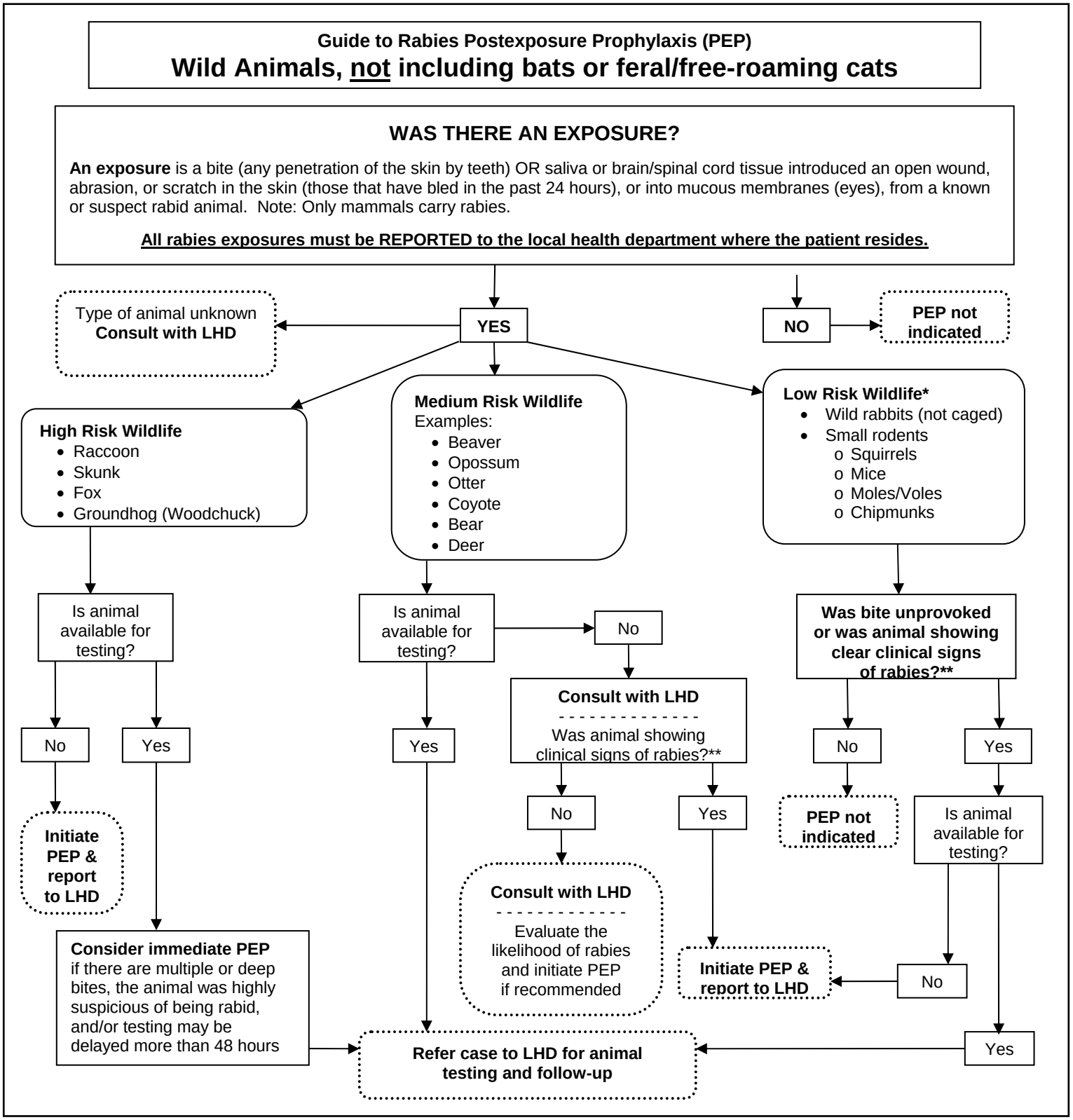
WAS THERE AN EXPOSURE?

An exposure is a bite (any penetration of the skin by teeth) OR saliva or brain/spinal cord tissue introduced into an open wound, abrasion, or scratch in the skin (those that have bled in the past 24 hours), or into mucous membranes (eyes), from a known or suspect rabid animal. Note: Only mammals carry rabies.

All rabies exposures must be REPORTED to the local health department where the patient resides.

Note: Text boxes below the bold dashed lines are primarily Local Health Department responsibilities.





***Rabbits and small rodents** such as squirrels and mice are rarely found to be infected with rabies and have not been known to cause human rabies in the United States. PEP or testing of animals in the case of bites from small rodents and lagomorphs (rabbits) is not necessary unless that animal has clear clinical signs of rabies.

** **Clinical signs of rabies** include bizarre and/or aggressive behavior, such as extreme viciousness that may be expressed by biting tires or other objects. Other clinical signs of rabies include neurologic impairment such as difficulty swallowing, strange vocalization, stumbling, circling, self-mutilation, or paralysis.