

Rabies Investigation for Local Health Departments

Tuesday, June 29, 2021

11am-12pm

NJ Department of Health-Communicable Disease Service



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- Today's webinar is being recorded and will be posted to the NJDOH-CDS Rabies webpage.

The screenshot shows the NJ Health website's Communicable Disease Service page. The navigation bar includes links for Home, Diseases & Health Topics A-Z List, Disease Reporting, Immunization Requirements, Education & Training, Statistics, Reports & Publications, and Forms. The 'Diseases & Health Topics A-Z List' is expanded, showing 'Rabies' circled in red. Other visible links include 'About Us', 'Your Health', 'Healthcare Facilities & Services', 'Public Health', and 'Chief State Medical Examiner'.

Rabies

Report Confirmed or Suspect Cases Immediately to the Local Health Department.

Rabies is an infectious disease caused by the rabies virus. Animals infected with rabies display strange behavior such as aggression, and signs of neurologic impairment including vocalization, circling, and paralysis.

People who are bitten by, or have had contact with saliva from an animal should notify the local health department (LHD) having jurisdiction where the animal is located and seek medical care. A directory of LHDs is posted online at www.localhealth.nj.gov. LHDs can be also contacted through police departments in the event of an emergency. LHD staff will consult with the persons bitten or exposed to rabies and will make recommendations regarding rabies prophylaxis to their health care provider. If the suspect rabid animal is available, LHDs may also arrange for testing or

Disease Reporting

- [Communicable Disease Manual Chapter](#)
- [Report of Rabies Post-Exposure Treatment \(CDC-2 Form\)](#)
- [Animal Rabies Exposure Report Worksheet](#)
- [Human Rabies Investigation Worksheet](#)

Resources & References

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Continuing Education Credits

- Credits offered for this webinar:
 - 1.0 Public Health and Nursing
- Credits provided to those who attend the webinar “live”
 - Must be registered on NJLMN and complete evaluation to earn credits.
 - NOTE: Those viewing the recorded webinar are not eligible to receive continuing education credits. Sorry!
 - Posted webinars are available for 12 months after original air date.

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Have a Question During the Presentation?

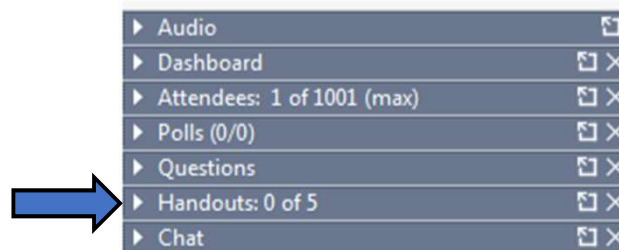
- All attendee lines are muted. Please use the “Question” box to ask a question.
 - Questions will be answered at the end of the webinar, time permitting.



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Presenter Slides

- Slides may be accessed in the “Handouts” box during “live” webinars.
- Slides will be posted on the disease webpage, after the webinar



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How Do I Get My Credits?

- Anyone seeking credits **MUST** be registered on NJLMN.
- A link to the evaluation will sent to the e-mail address used to register on NJLMN after the webinar.
 - Please add NJLMN@njlinics.net to your address book/safe sender list to ensure that you get the email
 - Those seeking continuing education credits **MUST** complete the evaluation.
- Evaluation link closes **7** days after it is sent.
 - Once evaluation closes, certificates are emailed to the address listed in NJLMN (for Nurses) and attendance verified in NJLMN (for PH and Nurses). **Credits are not automatically awarded when the evaluation is completed.**
 - Individuals who do not complete the evaluation will not receive credits. No exceptions.

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LINCS Accounts/Emails

- If you work for a NJ Local or State Health Department, you can sign up to get a NJLINCS email.
- Sign-up on the NJ Health Services Portal at njlincs.net

The screenshot shows the NJ Health Services Portal interface. On the left is a navigation menu with sections: Sites, Tools, and Helpful Links. Under 'Tools', the 'Request New Account' link is circled in red, with a red arrow pointing to it from the text on the left. The main content area has a 'Welcome' message and a 'COVID-19 Information Hub' banner. Below that is an 'Available Services' section with several service tiles: Health Alert Network, Training and Exercise Unit, EMS Certification, Learning Management Network, EMS Licensing, and MCCC Program & NJ Health Care Coalition.

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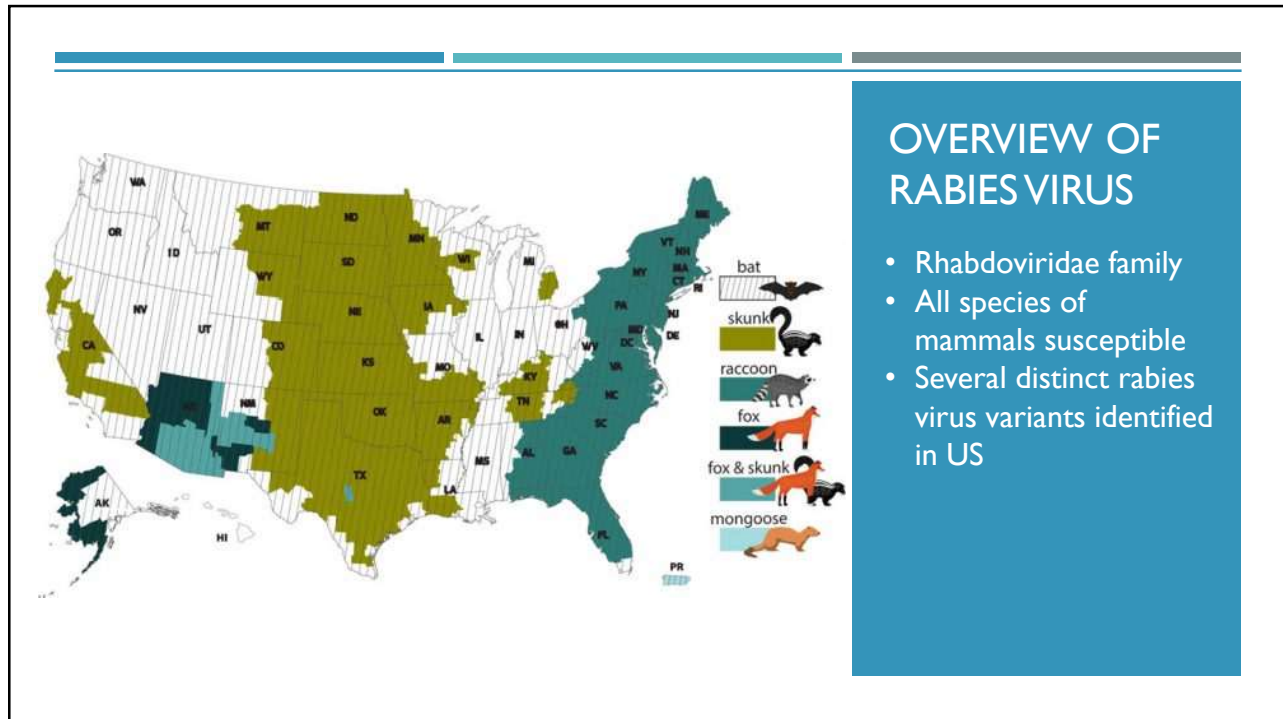
ANIMAL RABIES INVESTIGATIONS FOR LOCAL HEALTH DEPARTMENTS



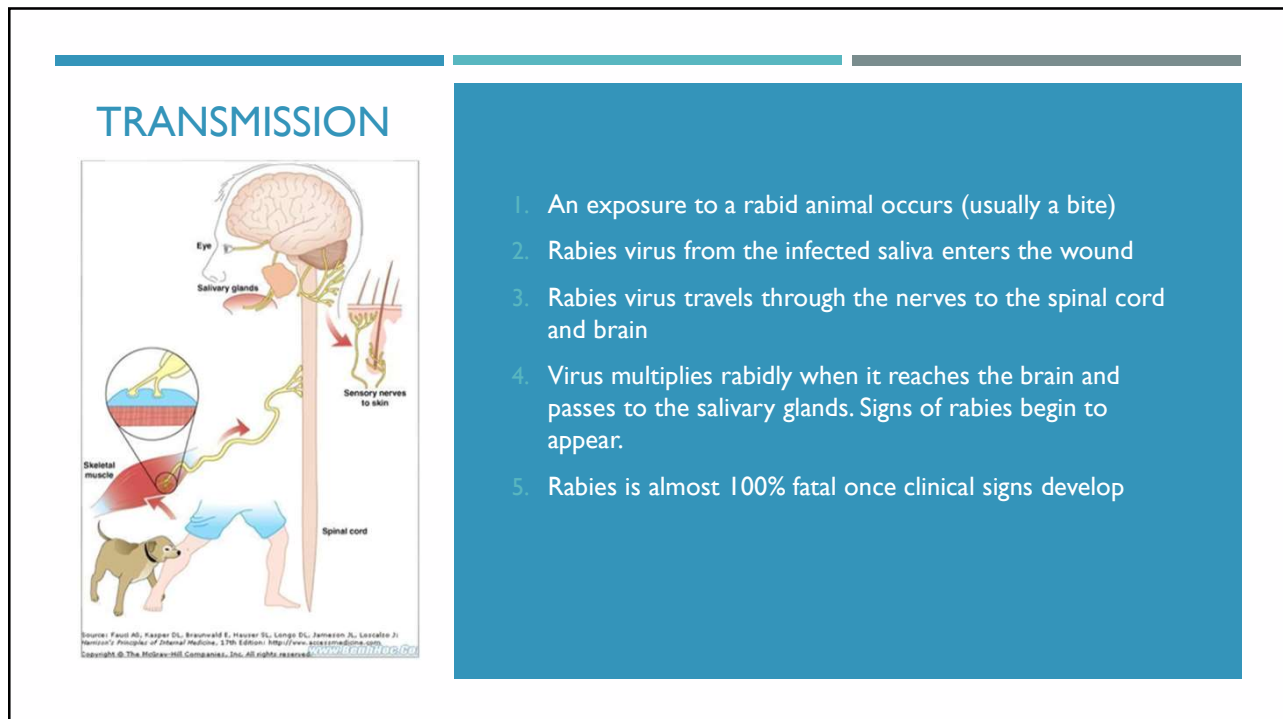
DARBY MCDERMOTT, DVM, MPH
 NJ STATE PUBLIC HEALTH VETERINARIAN
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 609-826-4872 | DARBY.MCDERMOTT@DOH.NJ.GOV



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SIGNS AND SYMPTOMS

HUMANS

- Anxiety
- Confusion
- Agitation
- Delirium
- Abnormal behavior
- Hallucinations
- Hydrophobia
- Insomnia

ANIMALS

- Vary based on species
- Ataxia
- Weakness
- Seizures
- Difficulty breathing
- Difficulty swallowing
- Excessive salivation
- Abnormal behavior
- Paralysis
- Death

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ANIMAL RABIES CASES: SUMMARY OF RABIES SPECIMENS TESTED AND POSITIVE CASES BY YEAR IN NJ

Year	Specimens Tested	Terrestrial Cases	Bat Cases	Total Cases
2018	2810	163	36	199
2019	2370	214	32	246
2020	2477	190	67	257
2021*	382	30	2	32

Cats have accounted for 91% of the domestic animal cases in New Jersey since 1989. For the last 5 years, there has been an average of 20 cats infected with rabies annually.

<https://www.nj.gov/health/cd/statistics/rabies-stats/>

*Data as of March 31, 2021

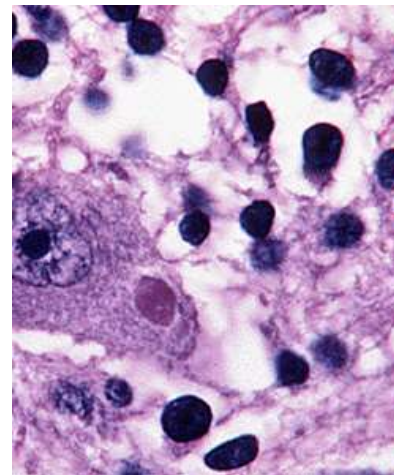
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HUMAN EXPOSURES TO SUSPECT OR CONFIRMED RABID ANIMALS

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WHAT CONSTITUTES AN EXPOSURE?

- A **bite** (penetration of the skin by teeth) from a potentially rabid animal
- Scratches, abrasions, open wounds (bleeding within 24 hrs.), or mucous membranes (eyes) **contaminated with saliva or other potentially infectious material (brain or spinal cord)** from a potentially rabid animal (non-bite)
- Rabies infective tissues and secretions:
 - Brain
 - Spinal Cord
 - Salivary glands
 - Saliva



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LEGAL REPORTING REQUIREMENTS

- N.J.S.A. 26:4-78: Requires reporting of animals affected or of being affected by rabies to the local health authority, or animals bitten by an animal known or suspected to be affected by rabies
- N.J.S.A. 26:4-79 through 81: Required reporting of animal bites to local health authority by:
 - Physicians, within 12 hours of attendance of patient
 - Parent/guardian of a child bitten within 12 hours when no physician attends
 - Adult bitten within 12 hours when no physician attends
- N.J.A.C. 8:57-1.5: Physicians are required to report rabies PEP administrations within 24 hours of initial medical treatment to local health department (CDC-2 forms)

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ROLE OF LOCAL HEALTH DEPARTMENTS IN INVESTIGATIONS OF HUMAN EXPOSURES

- Receive reports of confirmed or possible exposures
- Investigate exposure
- Determine if testing is necessary and if animal is available; coordinate testing at NJDOH Rabies Laboratory
- Educate exposed individual on rabies
- Advise exposed individual on recommended PEP protocols and to seek care from HCP if indicated
- Receive CDC-2 forms; send completed forms to DOH

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HUMAN EXPOSURE TO DOGS, CATS, OR FERRETS

- **Confine and observe the animal for signs of rabies for 10 days**
- If animal begins exhibiting clinical signs compatible with rabies → immediate evaluation by veterinarian, euthanize and test for rabies
- If animal is unavailable for observation:
 - Attempt to locate animal. If found, confine and observe animal for 10 days from date of exposure
 - Consider if animal had signs consistent with rabies at time of human exposure
 - If no signs of rabies at time of exposure, take up to 5 days to attempt to find the animal. If not found, rabies PEP generally recommended

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HUMAN EXPOSURE TO LIVESTOCK



- Notify New Jersey Department of Agriculture of livestock that may have exposed people to rabies
 - 609-671-6400
- Notify Department of Health
 - 609-826-4872
- Healthy livestock animals that expose a person should be confined and observed for 10 days

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LEGAL AUTHORITY TO CONFINE ANIMALS AND ORDER TESTING

N.J.S.A. 26:4-82: “The local board, within its jurisdiction, may serve notice upon the owner or person in charge of a dog, cat or other animal which has attacked or bitten a person, to confine the animal at the expense of the owner or person in charge of it upon the premises of the owner or person in charge or at some other place designated in the notice, for at least ten days after the animal has attacked or bitten a person.”

N.J.S.A. 26:4-85: “An animal confined under the order of the local board shall not be released until a certificate of release has been issued by the board”

N.J.S.A. 26:4-86: Local board shall be permitted to examine an animal at any time within the 10 days to determine whether animal shows symptoms of rabies. If animal dies or is euthanized during this period, the local board may order lab examination for rabies to be performed.

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DOMESTIC ANIMALS

WHEN TO TEST

- ANIMAL DIES OR IS EUTHANIZED DURING 10 DAY CONFINEMENT PERIOD
- ANIMAL DEVELOPS CLINICAL SIGNS CONSISTENT WITH RABIES

WHEN PEP IS INDICATED

- ANIMAL TESTS POSITIVE FOR RABIES
- ANIMAL CANNOT BE FOUND TO BE CONFINED AND OBSERVED FOR 10 DAYS
- ANIMAL DID NOT COMPLETE 10 DAY CONFINEMENT AND NEGATIVE TEST WAS NOT OBTAINED

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HUMAN EXPOSURES TO RODENTS AND LAGOMORPHS (RABBITS)

Healthy rodent (**except groundhogs**) or lagomorph that has lived in an indoor cage entire life:

No PEP or testing needed

Squirrels, chipmunks, voles, rats, mice:
Extremely low risk

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RODENTS* / LAGOMORPHS

WHEN TO TEST

- ANIMAL SHOWED SIGNS OF NEUROLOGIC IMPAIRMENT OR ATTACK WAS UNPROVOKED

WHEN PEP IS INDICATED

-ANIMAL TESTS POSITIVE FOR RABIES
-ANIMAL UNAVAILABLE FOR TESTING AND SHOWED SIGNS OF NEUROLOGIC IMPAIRMENT OR ATTACK WAS UNPROVOKED

*Does not include groundhogs

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HUMAN EXPOSURES TO OTHER WILD MAMMALS

- Raccoons, skunks, foxes, groundhogs, and other wildlife may excrete rabies virus while asymptomatic for extended periods and cannot be observed. These animals should always be tested if there is an exposure.
- If the animal is not available for testing, PEP is recommended.
- Notify NJ DEP, Division of Fish and Wildlife for medium risk suspect rabid animals prior to submission for testing: Beaver, Opossum, Otter, Coyote, Bear, Deer
 - 1-877-WARNDEP or contact Dr. Nicole Lewis at 908-735-6398

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WHEN TO TEST

- EXPOSURE OCCURRED AND ANIMAL IS AVAILABLE FOR TESTING

WHEN PEP IS INDICATED

-ANIMAL TESTS POSITIVE FOR RABIES
 -UNSATISFACTORY TEST RESULT
 -EXPOSURE OCCURRED AND ANIMAL IS UNAVAILABLE FOR TESTING

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BAT VARIANT RABIES

- Over 75% of the human rabies cases acquired in the U.S. are from bat exposures (bites)
- A history of a definite bat bite was documented in only ~5% of the bat cases; ~60% had bat contact but no known bite or scratch
- Persons bitten by bats either did not realize they were bitten or did not consider the bites serious enough to seek medical care
- Only about <10% of the bats submitted for testing are confirmed positive for rabies

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BAT VARIANT RABIES

- Bite wounds from bats are extremely small and may be nearly undetectable within hours



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EXPOSURES TO BATS

- Any known **bite**
- **Direct contact** with a bat, and a bite or other exposure cannot be excluded
- May be considered when a bat is **in the same room** as a person who might be unaware or cannot communicate that a bite or direct contact occurred, such as:
 - Deeply sleeping person who awakens to find a bat in the room
 - An adult witnessing a bat in the room with a previously unattended small child, mentally disabled, or intoxicated person
 - **PEP is not recommended for other persons in the house who were not in the room with the bat.**

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WHEN TO TEST

- EXPOSURE (OR POSSIBLE EXPOSURE) OCCURRED AND ANIMAL IS AVAILABLE FOR TESTING

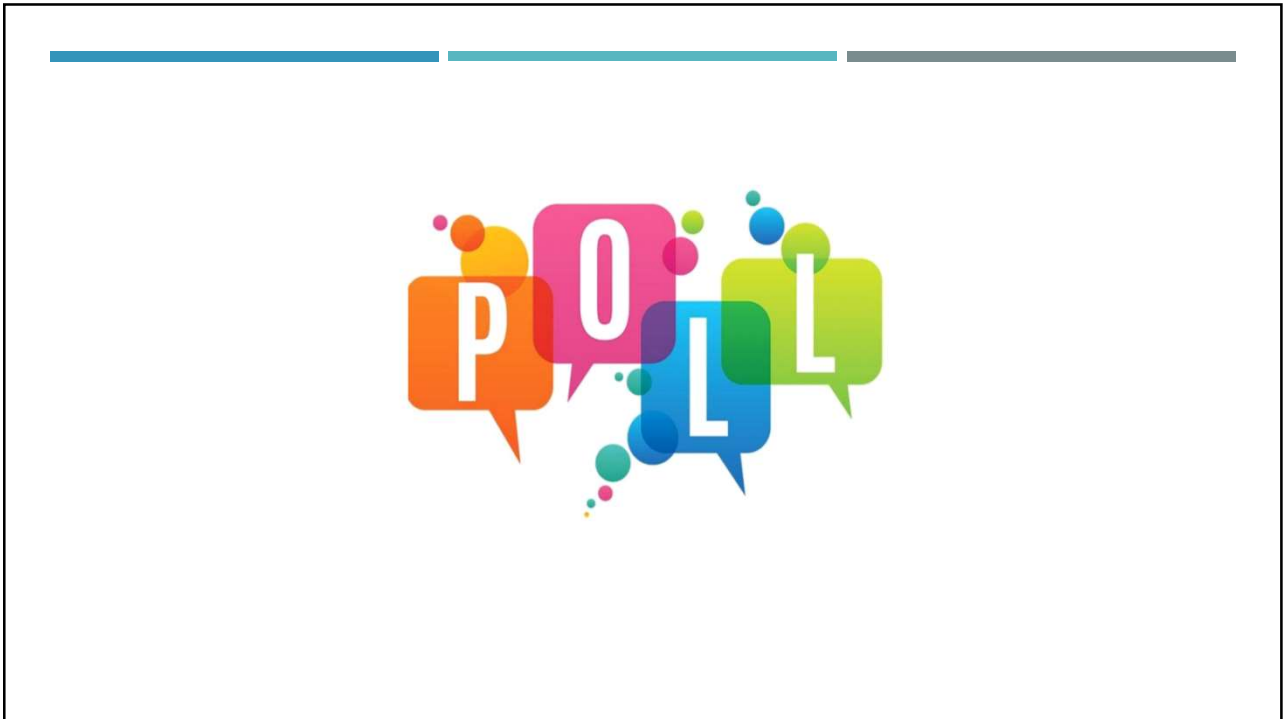
WHEN PEP IS INDICATED

-ANIMAL TESTS POSITIVE FOR RABIES
 -UNSATISFACTORY TEST RESULT
 -EXPOSURE OCCURRED OR EXPOSURE IS POSSIBLE AND ANIMAL IS UNAVAILABLE FOR TESTING

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RABIES POST-EXPOSURE PROPHYLAXIS (PEP) PROTOCOL

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RABIES POST-EXPOSURE PROPHYLAXIS (PEP)

- Rabies PEP has been 100% effective preventing rabies in humans if administered correctly and timely
- LHDs provide guidance and recommendations on PEP
- 24/7 LHD availability is required for emergencies/after-hour calls
- NJDOH staff are available to assist LHDs

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RABIES PEP PROTOCOL PREVIOUSLY UNVACCINATED IMMUNOCOMPETENT PERSONS

Human Rabies Immune Globulin (HRIG)

- Day 0 (when treatment is initiated)
- HRIG - dosage: 20 IU/KG (0.133 ml/Kg)
- Infiltrate as much as possible into and around the wound(s)
- Remaining HRIG administered intramuscularly at an anatomical site distant from the vaccine (not gluteal region)

Human rabies vaccine – 4 doses

- Days 0, 3, 7, and 14
- 1 ml administered intramuscularly in the upper arm (deltoid)
- The schedule should be followed exactly and all doses must be given
- Vaccine should never be given in the gluteal region

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RABIES PEP PROTOCOL PERSONS WITH ALTERED IMMUNOCOMPETENCE

- A complete course of PEP is recommended as described previously, with a fifth dose of rabies vaccine 28 days after receiving the first rabies vaccine dose (Day 0).
- 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 (RFFIT) test.

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RABIES PEP PROTOCOL PREVIOUSLY VACCINATED PERSONS

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

- 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.

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OVERVIEW OF LHD INVESTIGATION TO HUMAN EXPOSURES

1	Did an exposure occur?
2	What type of animal caused the exposure?
3	Is a 10 day observation and confinement appropriate (domestic animal) and possible?
4	Is testing necessary and able to be performed?
5	Provide exposed persons with education about rabies and recommend PEP when appropriate
6	Follow up with exposed persons to ensure PEP was obtained when needed; receive CDC-2 form from physician and send copy to NJDOH

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RABIES EXPOSURES IN DOMESTIC COMPANION ANIMALS

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SUSPECT AND CONFIRMED RABID ANIMALS

SUSPECT:

- Any bat, raccoon, skunk, fox, or groundhog unless found negative through laboratory testing
- Other wildlife and domestic animals showing clinical signs of rabies unless found negative through laboratory testing
- Any animal submitted for rabies laboratory testing but is deemed unsatisfactory for testing

KNOWN RABID:

- Animal is confirmed rabid through laboratory testing

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EXPOSURE CATEGORIES

Exposure Category 1: Visible bite wound(s) known to have been sustained from a known or suspect rabid animal.

Exposure Category 2: Situations in which saliva or central nervous system tissue from a known or suspect rabid animal is likely to have had direct contact with mucous membranes (eyes) or a break in the skin of the animal.

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

Exposure Category 4: Situations when an animal may have been near a known or suspect rabid animal, but direct contact was not witnessed.

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Exposure Category	Vaccination Status and Response	
<p>Category 1 (visible bite from known or suspect rabid animal)</p> <p>OR</p> <p>Category 2 (direct contact with known or suspect rabid animal; no visible wounds)</p>	<p>Currently Vaccinated</p> <ul style="list-style-type: none"> ▪ Notify the local health department ▪ Veterinarian administers rabies vaccine immediately ▪ Veterinarian issues the Rabies Advisory Notice ▪ The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days 	

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Exposure Category	Vaccination Status and Response	
	Currently Vaccinated	Never Vaccinated
Category 1 (visible bite from known or suspect rabid animal) OR Category 2 (direct contact with known or suspect rabid animal; no visible wounds)	<ul style="list-style-type: none"> ▪ Notify the local health department ▪ Veterinarian administers rabies vaccine immediately ▪ Veterinarian issues the Rabies Advisory Notice ▪ The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days 	<ul style="list-style-type: none"> ▪ Recommend euthanasia. If owner declines, report rabies exposure to the local health department. ▪ Veterinarian issues the Rabies Advisory Notice ▪ Veterinarian administers rabies vaccine before confinement begins. ▪ Health Officer issues notice to strictly quarantine the exposed animal for 4 months.

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Exposure Category	Vaccination Status and Response	
	Currently Vaccinated	Never Vaccinated
Category 1 (visible bite from known or suspect rabid animal) OR Category 2 (direct contact with known or suspect rabid animal; no visible wounds)	<ul style="list-style-type: none"> ▪ Notify the local health department ▪ Veterinarian administers rabies vaccine immediately ▪ Veterinarian issues the Rabies Advisory Notice ▪ The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days 	<ul style="list-style-type: none"> ▪ Recommend euthanasia. If owner declines, report rabies exposure to the local health department. ▪ Veterinarian issues the Rabies Advisory Notice ▪ Veterinarian administers rabies vaccine before confinement begins. ▪ Health Officer issues notice to strictly quarantine the exposed animal for 4 months.
	<p style="text-align: center;">Previously Vaccinated with Documentation</p> <ul style="list-style-type: none"> ▪ Notify the local health department ▪ Veterinarian administers rabies vaccine immediately ▪ Veterinarian issues the Rabies Advisory Notice ▪ The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days 	

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Exposure Category	Vaccination Status and Response	
	Currently Vaccinated	Never Vaccinated
Category 1 (visible bite from known or suspect rabid animal) OR Category 2 (direct contact with known or suspect rabid animal; no visible wounds)	<ul style="list-style-type: none"> ▪ Notify the local health department ▪ Veterinarian administers rabies vaccine immediately ▪ Veterinarian issues the Rabies Advisory Notice ▪ The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days 	<ul style="list-style-type: none"> ▪ Recommend euthanasia. If owner declines, report rabies exposure to the local health department. ▪ Veterinarian issues the Rabies Advisory Notice ▪ Veterinarian administers rabies vaccine before confinement begins. ▪ Health Officer issues notice to strictly quarantine the exposed animal for 4 months.
	Previously Vaccinated with Documentation	Previously Vaccinated WITHOUT Documentation
	<ul style="list-style-type: none"> • Notify the local health department ▪ Veterinarian administers rabies vaccine immediately ▪ Veterinarian issues the Rabies Advisory Notice ▪ The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days 	<ul style="list-style-type: none"> • Treat animal as if never vaccinated (above) OR veterinarian may request that Health Officer assist with the Prospective Serological Monitoring protocol ▪ Notify the local health department. ▪ Veterinarian issues the Rabies Advisory Notice ▪ Health Officer issues notice to strictly quarantine the exposed animal until serology results are interpreted

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PROSPECTIVE SEROLOGICAL MONITORING PROTOCOL	
<ul style="list-style-type: none"> ▪ Applies to dogs and cats that may have been previously vaccinated (no proof) ▪ Initiation of protocol: Animal is seen immediately after exposure by a veterinarian who immediately notifies LHD ▪ Day 0: <ul style="list-style-type: none"> ▪ Collect 2ml serum, label according to lab instructions, and refrigerate ▪ Administer rabies vaccination- <u>AFTER</u> collecting serum sample! ▪ Schedule follow-up appointment for 5-7 days later ▪ Day 5: <ul style="list-style-type: none"> ▪ Collect second serum sample ▪ Submit paired serum specimens to approved rabies laboratory (RFIT) 	<p style="text-align: center;"><u>Determination of Vaccination Status</u></p> <ul style="list-style-type: none"> ○ Dog or cat would remain under strict quarantine until test results are reported in 3-4 weeks. ○ Rise in titer between paired samples is indicative of past vaccination ○ Confinement is then reduced to a 45-day observation. ○ If no rise in titer: 4-month strict confinement
<p style="text-align: center;">Guidance document: Management of Domestic Animal Exposures: http://www.state.nj.us/health/cd/rabies/documents/appxIII_animal_confine.pdf</p>	

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Exposure Category	Vaccination Status and Response	
Category 3 (bite wounds of unknown origin) OR Category 4 (possible contact with, or in the vicinity of, a known or suspect rabid animal; no visible wounds)	Currently or Previously Vaccinated with Documentation	
	<ul style="list-style-type: none"> ▪ Veterinarian administers rabies vaccine ▪ Veterinarian issues the Rabies Advisory Notice ▪ The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days 	

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Exposure Category	Vaccination Status and Response	
Category 3 (bite wounds of unknown origin) OR Category 4 (possible contact with, or in the vicinity of, a known or suspect rabid animal; no visible wounds)	Currently or Previously Vaccinated with Documentation	No Documentation of Current or Past Vaccination
	<ul style="list-style-type: none"> ▪ Veterinarian administers rabies vaccine ▪ Veterinarian issues owner a Rabies Advisory Notice ▪ The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 45 days 	<ul style="list-style-type: none"> ▪ Veterinarian administers rabies vaccine ▪ Veterinarian issues the Rabies Advisory Notice ▪ The exposed animal should be kept under the owner's control and be observed by the owner for signs of rabies for 4 months

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GUIDANCE FOR FERRETS

- Category 1 or 2 exposures:
 - Currently vaccinated ferrets: booster and observed for 45 days, provide Rabies Advisory Notice
 - Unvaccinated ferrets : euthanasia or vaccinate and observe for 6 months in strict quarantine.
 - Ferrets that are overdue for a rabies booster vaccination: Situations should be evaluated by the Health Officer on a case-by-case basis

Notify New Jersey Division of Fish and Wildlife,
Exotic and Nongame Permits Office at 908-735-5450
or email EXOTICPERMITS@dep.nj.gov

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FAQ: DOMESTIC ANIMAL EXPOSURES

- Situation : A seemingly healthy dog bites another dog
 - What needs to happen?
 - Assess if either animal was displaying clinical signs of rabies.
 - Fights between dogs and cats are not usually considered rabies exposures unless one of the animals was also displaying clinical signs of rabies or is found positive through testing.

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SUMMARY OF DOMESTIC ANIMAL CONFINEMENT PERIODS

10 days- When a dog, cat, or ferret bites a human

45 days- When a previously immunized dog or cat is vaccinated against rabies after it is bitten or exposed to a rabid or suspect rabid animal

4 months- When a dog or cat not immunized against rabies is bitten or exposed to a rabid or suspect rabid animal

6 months- When a ferret not immunized against rabies is bitten or exposed to a rabid or suspect rabid animal

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SCENARIO

- A 6 month old puppy was playing out in the yard. The owners heard a scuffle and saw the puppy in contact with a raccoon. The raccoon then ran away from the puppy. They examined the puppy and did not find any wounds on him. The puppy was vaccinated for rabies when he was 14 weeks old. What type of exposure is this?
 - a. Category 1
 - b. Category 2
 - c. Category 3
 - d. Category 4
 - e. No exposure

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RESOURCES

- NJDOH Communicable Disease Service- Rabies website: <https://www.nj.gov/health/cd/topics/rabies.shtml>
 - “New Jersey Guide to Rabies Post-Exposure Prophylaxis”
 - Management of Domestic Animal Rabies Exposures
 - Laboratory Testing and Guidance: Instructions for packaging and transport of rabies specimens to the NJDOH Rabies Laboratory
- CDC Rabies website: <https://www.cdc.gov/rabies/index.html>
- ACIP Recommendations: <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5703a1.htm>
- NASPHV Rabies Compendium: <http://www.nasphv.org/Documents/NASPHVRabiesCompendium.pdf>

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QUESTIONS?

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