National Park Service
U.S. Department of the Interior

Office of Public Health

Action Steps to Prevent Human Rabies Infections Following Animal-Human Contact in NPS

These public health action steps are designed to assist park staff in promptly responding to a bite, scratch, or physical contact between a mammal and a human (including visitors, concessioners, and employees) to prevent human rabies infection. This includes situations in which a person was in a room with a bat and may have had physical contact without being aware (e.g., while sleeping or intoxicated) or without being able to verbalize the encounter (e.g., because of age or incapacity). This does not include routine contact with a mammal that occurs as part of planned job duties, including wildlife capture or handling done by experienced personnel with established procedures and protective measures (e.g., protocol, PPE, JHA, etc.), unless a person is bitten or scratched by a mammal during those activities. If the exposure occurs in an NPS employee, there are additional considerations, including reporting, housing, payment, and workers' compensation that are not addressed in this document and may require additional follow-up after the immediate public health actions are taken.

Rabies is a viral infection of mammals that is almost always fatal in both animals and humans. Rabies is transmitted through a bite or scratch or contact of mucous membranes with saliva or brain/nervous system tissue from an infected animal. Animals most often infected with rabies include bats, raccoons, skunks, foxes, and feral cats but any mammal can get rabies. Contact with infected bats is the leading cause of human rabies deaths in the U.S. While it cannot be determined if an animal has rabies simply by looking at it (laboratory testing must occur), some signs to look for in animals are general sickness, problems swallowing, excessive drool or saliva, aggression, biting at imaginary objects (sometimes called "fly biting"), appearing tamer than expected, trouble moving or paralysis, or a bat observed on the ground.

Rabies illness and death in humans can be prevented through recognition of the risk and prompt administration of rabies post-exposure prophylaxis (PEP). PEP usually includes both immune globulin and a series of vaccine shots given after exposure to an infected animal and before symptoms of rabies develop. (The time between the exposure and the appearance of symptoms is usually weeks to months.) About 60,000 Americans receive PEP each year, which contributes to the low number of human rabies cases in the U.S. (only 1–3 cases are reported annually). Globally, however, rabies is thought to cause approximately 59,000 deaths annually. Rabies pre-exposure prophylaxis is also available and is recommended for people at higher risk, such as those who work directly with animals that are susceptible to rabies. Pre-exposure rabies vaccination does not eliminate the need for PEP after a rabies exposure; however, it can simplify and reduce the types, amounts, and costs of PEP given.

A. Working with a Person Potentially Exposed to Rabies

1) Remain calm, as this will help both you and the person who came into contact with the animal.
2) Provide appropriate first aid based on the contact. Any animal bite or scratch should be washed immediately and thoroughly with soap and water.
3) Gather contact information for the patient. This is very important! This information should be stored securely and in accordance with the Department of the Interior Privacy Program.
    - Name (and name of guardian if minor)
    - Contact information (preferably phone number, but at least email)
    - Date and time of contact
    - Where contact occurred on the body
    - Description of the circumstance and nature of contact

- Name of the tour, tour guide names, tour time if applicable
- Name of person taking report
- Confirmation that the person was provided with the "What Should I Do If I Come Into Contact With A Bat?" card, as instructed below

4) Provide the person with the "What Should I Do If I Come into Contact With A Bat?" card (see Section K: Resources) and explain what the card is. It can be used for contact with animals other than bats. Let the person know that their animal-human contact could expose them to rabies, and although the risk might be low, we take any potential exposure very seriously, because rabies is nearly always fatal but very preventable with appropriate medical care.
5) Ensure that all people with physical contact or potential physical contact receive a risk assessment for rabies post-exposure prophylaxis as soon as possible (within 24–36 hours of exposure). Risk assessments will include information on the animal the person was exposed to, the circumstances of the exposure, the type and location of exposure, the appearance/behavior of the animal, whether the exposure was provoked, whether the animal is available for testing, and information about the prevalence of rabies in the geographic area where the exposure occurred. This will inform whether PEP is needed and how quickly it should be given. Rabies is considered a medical urgency but not an emergency.
    a. Direct anyone with physical injury to seek medical care immediately, where they can receive a risk assessment and PEP as appropriate. In addition to PEP, they may need wound cleaning/care, antibiotics, and a tetanus shot.
    b. Ensure that those with physical contact (e.g., touching an animal) or potential physical contact (e.g., sleeping in a room with a bat) but without a physical injury (and thus not automatically directed to seek immediate medical care) also receive a rabies risk assessment from a health care provider or public health authority to help determine whether post- exposure prophylaxis is needed (See Section C below).

B. Capturing the Animal for Testing

Testing the animal will help medical providers know whether post-exposure prophylaxis is needed.

- If at all possible, ensure safe capture of the animal. For bats, consult the NPS Guidance for Safely Handling Bats. Rabies testing is done using the brain of the animal being tested, so capture and euthanasia need to be done in a manner that does not damage the head and brain.
- Practice safe work practices at all times! Ensure that Safe Work Practices to Avoid Zoonotic Disease from Wildlife is followed. Personal protective equipment, such as leather gloves that prevent bites or scratches should be worn at a minimum. For a bat, for example, leather gloves, long sleeves, long pants, close-toed shoes, and a wide-brimmed hat are recommended. Latex gloves, which can be discarded after use, should also be worn over leather gloves. If available, NPS personnel that have received and are up-to-date with the rabies pre-exposure prophylaxis series based on CDC recommendations should collect the animal.
- Submit the animal for testing based on guidance in Section E below.
- Let the patient know that the animal will be submitted for testing, and the results will inform the rabies treatment. In high-risk cases, medical providers and public health practitioners may recommend starting post-exposure prophylaxis before test results come back. In other cases, they may recommend waiting for test results.

C. Notifying Public Health and Other Authorities

The following people should be notified:

- The local/state health department. They can conduct a rabies risk assessment and help direct the exposed person to healthcare as needed.
- The National Park Service Office of Public Health (see Section J: Contact Information). They can provide guidance and assist with rabies risk assessments as well.
- The park safety manager or collateral duty safety contact for employee/work-related incidents and for reporting the exposure or injury into SMIS.
- Park supervisor and leadership
- Facilities management, Integrated Pest Management staff and Natural Resources staff if there is concern that bats or other animals are living in or entering building spaces used by humans, particularly spaces used for sleeping or eating.
- Interpretation and communications staff if any public messaging or outreach is planned.
- Others, depending on the situation. For example, the concessioner organizations may need to be contacted if the person exposed is a concessions employee.

Personally identifiable information (PII) should only be shared with those who need to know and in accordance with the Department of the Interior Privacy Program. When notifying, consider sending two emails – one with PII sent to only those who must have this information and one to a broader group of people with PII removed.

D. Sample Notification Email

Hello all,

This morning we have had a bat-human contact on one of our tours. The following is from XX's description of the contact:

As they [the visitor] was going downhill they put their left hand up and touched the wall. There was a bat roosting there. Their fingers brushed over its back.

The visitor's contact info is as follows:

NAME: xxxxxxxxxxxxxxxxxxx PHONE#: xxxxxxxxxxxxxxxxxxxx EMAIL: xxxxxxxxxxxxxxx LOCATION:
TOUR:
DATE:
AREA OF CONTACT:
INSTRUCTED TO CLEAN CONTACT AREA: YES or NO INFO CARD PROVIDED:
PARK RANGER:

The bat is not in hand, so we are not able to have it tested.

E. Submitting an animal for testing

If an animal is available, it should be submitted to the rabies lab for testing in the state where the exposure occurred. If the state lab is unable to test or if there are questions about testing, please contact the NPS

Wildlife Diagnostic Service (NPSDiagnostics@nps.gov) for assistance. The test results will help guide the treatment decision for the person who has come in contact with the animal. The testing should occur as soon as possible. Parks should pre-emptively identify the correct contacts at the health department and the required protocol to submit an animal for rabies testing as quickly as possible.

F. Bats in Buildings

Other situations that might qualify as an exposure 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., due to deep sleeping or intoxication) or a person who could not verbalize that contact occurred (e.g., a child or a person with a disability). These situations should be considered potential physical contacts and undergo a rabies risk assessment. Additional information on this situation is available in the Bats in Buildings Flowchart.

G. Mass Bat Exposures

"Mass bat exposures" occur when multiple people are simultaneously exposed to a bat or bat colony or situations in one single private room in which multiple people have stayed and potentially been exposed over time. These situations are often complex, as potential exposures need to be considered not just for the notifying individual, but for all people who may have stayed in the same living space over different time periods. In the case of a bat colony in a building, bats with known human contact should be tested, but euthanasia and testing of all bats in general is not recommended and will not provide useful information.

Instead, in these cases, all bat exposures are considered potential rabies exposures and individuals that slept in a room that bats could have accessed should be provided a rabies risk assessment. Any potential mass bat exposure should be reported immediately to the NPS Office of Public Health and Wildlife Health Branch (see Section J below). Investigations of mass bat exposures are interdisciplinary in nature and will likely involve multiple divisions within the park as well as local/state health departments and the CDC.

H. Post-Exposure Prophylaxis

Rabies post-exposure prophylaxis usually consists of four doses of rabies vaccine given over a two-week period and one dose of rabies immune globulin given on the first day. A longer series may be recommended to those who are immunocompromised. A simpler regimen (without immune globulin and with fewer vaccine shots) may be recommended to those who have previously been vaccinated. People seeking medical care for post-exposure prophylaxis should be aware that rabies immune globulin is most likely to be available in a hospital emergency department. For more information, please refer to CDC guidance on postexposure prophylaxis.

I. Pre-Exposure Prophylaxis (Vaccination)

The CDC recommends that people at higher risk of exposure receive rabies pre-exposure prophylaxis. These recommendations are based on identified risk categories and include guidance on providing booster doses and checking antibody levels (titers) Pre-exposure rabies vaccination does not eliminate the need for medical evaluation and post-exposure prophylaxis after a rabies exposure; however, it can simplify and reduce the types, amounts, and costs of post-exposure prophylaxis given. For more information, please refer to CDC guidance on pre-exposure prophylaxis.

J. Contact Information

- State Health Department: (To be filled out by park)
- County/City Health Department: (To be filled out by park)
- National Park Service Office of Public Health
    i. General public health inbox: publichealthprogram@nps.gov
    ii. CAPT Danielle Buttke, DVM, PhD, MPH, DACVPM, One Health Coordinator (danielle_buttke@nps.gov; 970-631-5084)

iii. LCDR George Carroll, REHS/RS, MPH, Deputy Epidemiology Branch Chief (Acting) (george_carroll@nps.gov; 209-347-7470)
iv. Regional Public Health Consultant: (To be filled out by park)

- National Park Wildlife Health Branch
    i. Inbox for wildlife disease investigations: NPSDiagnostics@nps.gov
- National Park Staff
    i. Safety Officer (To be filled out by park)
    ii. Superintendent (To be filled out by park)

K. Resources

- Bat Contact Card (available on the NPS Bats & People internal webpage)
- Safe Work Practices to Avoid Zoonotic Disease from Wildlife
- Bats in Buildings Flow Chart (available on NPS Rabies webpage)
- Bats and Rabies Poster (available on the NPS Bats & People internal webpage)
- Guidance for Safely Handling Bats (available on the NPS Bats & People internal webpage)
- NPS Rabies webpage
- NPS Bats & People internal webpage
- CDC Rabies webpage

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