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## Maine Health Alert Network (HAN) System

### PUBLIC HEALTH ADVISORY

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**To:** Health Care Providers  
**From:** Dr. Isaac Benowitz, State Epidemiologist  
**Subject:** **Elevated Animal Rabies Activity in Maine**  
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### Elevated Animal Rabies Activity in Maine

#### Summary

Maine is seeing early signs of an active animal rabies season this year. In the first five months of 2023, 30 animals tested positive for rabies in Maine compared to 11 animals in the first five months of 2022. Some regions in Cumberland County are already seeing elevated animal rabies activity compared to this same time last year, including 11 confirmed cases of rabies in raccoons and skunks tested after encounters with humans or domestic animals. The purpose of this health advisory is to alert clinicians to the increased risk of rabies exposures and provide recommendations. Individuals exposed to rabid or potentially rabid animals should be evaluated by a healthcare provider to determine if rabies post-exposure prophylaxis (PEP), is warranted. Remember, rabies is virtually 100% fatal, but also entirely preventable.

#### Background

Rabies is an acute viral infection found in humans and other mammals. Globally, about 60,000 people die each year from rabies. Most of these deaths are associated with rabid dogs. Human cases are rare in the United States (about 2–3 deaths per year) and are more often associated with rabid wildlife. The last confirmed human death from rabies in Maine was in 1937. The rabies virus is endemic among Maine wildlife. The most common animal species to test positive for rabies in Maine include raccoons, skunks, foxes, bats, and woodchucks. Between 2013–2022, Maine CDC reported an average of 58 rabid animals each year (range: 28–89 animals). During January to May 2023, 30 animals tested positive for rabies including 18 raccoons, seven skunks, three bats, one fox, and one woodchuck.

Rabies is transmitted between mammals. The virus can be found in the saliva, brain, and spinal cord of infected animals. Rabies is spread when infected animals bite or scratch another animal or person. The virus can also be spread if saliva or tissue from the brain or spinal cord gets into broken skin or the eyes,

nose, or mouth. Rabies is not spread by blood, urine, feces, dried saliva, skunk spray, porcupine quills, or petting the fur of a rabid animal.

## Symptoms

Early signs of rabies in people may include fever, headache, weakness, and discomfort. This changes quickly to cerebral dysfunction, confusion, agitation, and anxiety. People may also experience delirium, hallucinations, abnormal behavior, hydrophobia, and insomnia. It could take weeks to years for a person to show signs of rabies after being infected, but most people start showing signs within 1–3 months from a true exposure. Once people show symptoms of rabies, they will most likely die.

## Testing

Animal rabies testing is available at Maine’s Health and Environmental Testing Laboratory free of charge when an animal has contact with people or domestic animals, and the animal cannot be quarantined. Instructions for submitting animals for rabies testing can be found [online](#). Human rabies testing is only available at U.S. CDC. All human testing must be coordinated with Maine CDC. Health care providers who highly suspect human rabies infection should contact Maine CDC for consultation.

## Recommendations for Healthcare Providers

In most cases, the decision to start rabies PEP can wait until rabies is ruled out in the attacking animal.

- **Dogs, cats, and ferrets** that expose people are monitored for 10 days to rule out rabies. If a dog, cat, or ferret being monitored dies or cannot otherwise be observed, it should be tested to rule out rabies.
- **Wild animals** that expose (or potentially expose) people must be tested to rule out rabies.
- **Livestock, exotic animals, and hybrids** that expose people should be evaluated by a veterinarian to determine whether to observe or test the animal to rule out rabies.
- Exposures to **small rodents, hares, rabbits, and opossums** rarely warrant rabies PEP.

If a dog, cat, or ferret is alive after the 10-day monitoring period or an animal tests negative for rabies, rabies PEP is not recommended. If an animal tests positive for rabies, rabies PEP is recommended. If an animal bites a person and is unavailable for testing, every attempt should be made to locate the animal. If the animal cannot be found after 72 hours, rabies PEP should be initiated. Non-bite exposures from animals that are unavailable for observation/testing may warrant PEP depending on the situation. Full rabies management and control guidance is available in the [Maine Rabies Management Guidelines](#).

**Immediate rabies PEP** may be warranted in certain situations. This can include attacks to the head, face, or neck, severe attacks involving multiple bites and/or scratches, or exposures to infants and toddlers. If rabies PEP is started, rabies PEP can be discontinued if rabies infection can be ruled out in the attacking animal by either observation or testing.

## Bats and Rabies

Bats are being increasingly implicated in cases of human rabies. About 70% of human rabies deaths reported in the United States are attributed to [bat exposures](#). **Every bat exposure should be evaluated by a medical professional and managed with caution.** Some people may not awake to a bat bite and some bat bites may be difficult to see with the naked eye. If someone is exposed to a bat, every effort should be made to capture and test the bat. If a bat is unavailable for testing, providers should consider rabies treatment when a person awakes to a bat in the bedroom, a bat is discovered in the vicinity of an unaccompanied or sleeping child, or a bat is discovered in a room with an adult who is intoxicated, under the influence of drugs, mentally handicapped, or who has chronic memory issues.

## Post-Exposure Prophylaxis

Rabies PEP is 100% effective if given before symptoms appear. It is available at most emergency departments across Maine. The standard schedule for most unimmunized people exposed to a rabid or potentially rabid animal includes human rabies immunoglobulin (HRIG) and a four-dose vaccine series. HRIG is given on day 0 (the day the first dose of vaccine is administered) to provide immediate antibody protection against the virus, and the vaccine series given on days 0, 3, 7, and 14 confers antibody protection after about 10 days. **Immunocompromised individuals require a fifth rabies vaccine dose on day 28.** People previously vaccinated for rabies only require two vaccine doses on days 0 and 3, and no HRIG. If HRIG is not administered when the vaccine series is started, it can be administered up to 7 days after the first vaccine dose. After day 7, HRIG is not recommended.

The importance of proper management of rabies exposures cannot be overstated. Improper administration of rabies PEP can lead to vaccine failure or an inadequate antibody response to the rabies virus. If this occurs, patients exposed to a rabid animal can succumb to the rabies infection and die. Maine CDC occasionally learns of situations where patients in Maine are given rabies treatment incorrectly or unnecessarily. In many cases, the provider did not follow established guidelines for administering rabies PEP. Situations included giving an immunocompromised person, who should get five vaccine doses, only four vaccine doses; giving a full vaccine series and/or HRIG to a person previously vaccinated for rabies; giving HRIG at incorrect dosages or at a body site not indicated for HRIG; and giving PEP to a person exposed to a small rodent, rabbit, or hare.

Maine CDC encourages all healthcare providers in Maine to familiarize themselves with the ACIP and U.S. CDC guidelines for rabies PEP administration (Appendix). Providers who have questions about how and when to administer rabies PEP should contact Maine CDC at 1-800-821-5821.

## Precautions, Contraindications, and Considerations

- **Allergies:** Persons who have a history of serious hypersensitivity to rabies vaccine should be revaccinated with caution.
- **Deviations from schedule:** Every attempt should be made to adhere to the recommended vaccination schedule. Small deviations (1–2 days) from the normal schedule are permitted, but larger deviations from the established guidelines may require consultation with Maine CDC.
  - When substantial deviations occur, immune status should be assessed by performing serologic testing 7–14 days after administration of the final dose in the series.
- **Interchangeability of vaccines:** Interchanging U.S.-licensed vaccines is acceptable but not ideal.
- **Immunosuppression:** Immunosuppressive agents should not be administered during post-exposure therapy unless essential for the treatment of other conditions. For persons with immunosuppression, rabies PEP should be administered using five doses of vaccine on days 0, 3, 7, 14, and 28.
  - When post-exposure prophylaxis is administered to an immunosuppressed person, one or more serum samples should be tested for rabies antibody to ensure that an acceptable antibody response developed 1–2 weeks after completing the series.
- **Pregnancy:** Because of the potential consequences of inadequately treated rabies exposure, and because there is no indication that fetal abnormalities are associated with rabies vaccination, pregnancy is not considered a contraindication to post-exposure prophylaxis.
- **Previous vaccination:** Previous vaccination includes people who received the rabies pre-exposure prophylaxis series or completed treatment for a past rabies exposure. Individuals who started but did not finish the full rabies PEP series are not considered fully vaccinated for rabies.
- **Serology:** Information can be found at: [www.cdc.gov/rabies/specific\\_groups/hcp/serology.html](http://www.cdc.gov/rabies/specific_groups/hcp/serology.html).
- **Uninsured and underinsured patients:** Patient assistance programs are available for certain people. Information can be found at: [www.cdc.gov/rabies/medical\\_care/programs.html](http://www.cdc.gov/rabies/medical_care/programs.html)

- **Vaccine shortages:** Information can be found at: [www.cdc.gov/rabies/resources/availability.html](http://www.cdc.gov/rabies/resources/availability.html).

### **Reporting**

- Rabies disease (human and animal) and rabies PEP administration are all reportable conditions in Maine. All suspect cases and positive laboratory reports should be reported to Maine CDC by phone to 1-800-821-5821 or by fax to 1-800-293-7534. Rabies PEP should be reported using the [Rabies PEP Reporting Form](#).

### **Additional information:**

- Maine CDC rabies website: [www.maine.gov/dhhs/rabies](http://www.maine.gov/dhhs/rabies)
- Maine CDC rabies PEP reporting form: [www.maine.gov/dhhs/mecdc/infectious-disease/epi/disease-reporting/documents/rabies-pep-reporting-form.pdf](http://www.maine.gov/dhhs/mecdc/infectious-disease/epi/disease-reporting/documents/rabies-pep-reporting-form.pdf)
- HETL rabies website: [www.maine.gov/dhhs/rabies/lab](http://www.maine.gov/dhhs/rabies/lab)
- ACIP recommendations: [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/rabies.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/rabies.html)
- AVMA rabies surveillance 2021 report: <https://doi.org/10.2460/javma.23.02.0081>
- Maine CDC Disease Reporting and Consultation Line: **1-800-821-5821** (available 24/7)

## Appendix: Human Post-Exposure Prophylaxis Schedule

Vaccination status	Intervention	Regimen*
Not previously vaccinated	Wound cleaning	All PEP should begin with immediate thorough cleansing of all wounds with soap and water. If available, a viricidal agent (e.g., povidone-iodine solution) should be used to irrigate the wounds.
	Human rabies immune globulin (HRIG)	Administer only once on day 0, the day prophylaxis is initiated. If not available initially, HRIG can be given as soon as possible through the 7th day of treatment. One dose could mean multiple injections as it is administered by body weight. Administer 20 IU/kg body weight. HRIG is currently available in 2mL and 10mL vials with a concentration of 150 IU/mL. <b>At this concentration, the dose is 0.133 mL/kg or 0.06 mL/lb of body weight.</b> If anatomically feasible, the full dose should be infiltrated in and around the wound(s), and any remaining volume should be administered intramuscularly (IM) at an anatomic site distant from vaccine administration. HRIG should not be administered in the same syringe as vaccine. <b>Because HRIG might partially suppress active production of rabies virus antibody, no more than the recommended dose should be administered.</b>
	Vaccine	Human diploid cell vaccine (HDCV) or purified chick embryo cell vaccine (PCECV) 1.0 mL, IM (deltoid area†) 4 doses: 1 each on days 0 <sup>§</sup> , 3, 7, and 14 <sup>¶</sup>
Previously vaccinated**	Wound cleaning	See wound cleaning section above.
	HRIG	<b>HRIG should NOT be administered.</b>
	Vaccine	HDCV or PCECV 1.0 mL, IM (deltoid area†) 2 doses: 1 each on day 0 <sup>§</sup> and day 3

\* These regimens are applicable for persons in all age groups, including children.

†The deltoid is the only acceptable site of vaccination for adults and older children. For younger children, the outer aspect of the thigh may be used. Vaccine should never be administered in the gluteal area.

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

¶ For persons with immunosuppression, rabies PEP should be administered using 5 doses of vaccine given on days 0, 3, 7, 14, and 28.

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

Advisory Committee on Immunization Practices (2010). Use of a Reduced (4-Dose) Vaccine Schedule for Postexposure Prophylaxis to Prevent Human Rabies: Recommendations of the Advisory Committee on Immunization Practices, *MMWR*, 59(RR02), 1-9. <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm>.