

DHEC Guide for Rabies Risk Assessment and Postexposure Prophylaxis (PEP)

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Rabies Overview

Rabies is an acute viral infection resulting in encephalomyelitis that is nearly always fatal. The rabies virus proliferates in neural tissue and is found in high concentration in saliva following replication in the salivary glands. The rabies virus may be transmitted by the introduction of saliva from a rabid mammal into a wound from a bite, or a scratch from contaminated claws. Fresh saliva and neural tissue can also be infectious if introduced onto a mucous membranes or a fresh break in the skin. The rabies virus does not circulate in blood or other body fluids. Postexposure prophylaxis combining wound treatment, local infiltration of rabies immune globulin (RIG), and vaccination is uniformly effective when appropriately administered.

Reporting Animal Exposures

South Carolina State Law Mandates Reporting of Animal Bites

Animal (mammal) bites are a reportable condition in South Carolina. As mandated by State Code of Laws Section 47-5-90.

Animal (mammal) bites are an urgently reportable condition under the [SC List of Reportable Conditions](#). Reports are to be made by phone within 24 hours of a provider's attendance on the patient, or of the provider receiving a report of a bite from a patient. See [DHEC Contacts for Reporting or Medical Consultation](#). Reports of animal bites may also be faxed to DHEC using the DHEC form 1799.

Providers are required to report animal exposures to DHEC so that animal investigations can be promptly initiated. Most animal exposures do not require postexposure prophylaxis (PEP); locating the animal for quarantine or testing may prevent unnecessary PEP.

DHEC Medical Consultants Assist with Rabies Risk Assessments

Administration of rabies PEP is a medical urgency, not a medical emergency. The Advisory Committee on Immunization Practices advises that clinicians seek assistance from public health officials when needed for evaluating the risk of rabies and determining if PEP is indicated given the circumstances of the exposure. Public health officials have expertise in the epidemiology of animal rabies and the indications for PEP and public health consultation is known to reduce unnecessary rabies PEP. DHEC physicians are available for medical consultations. Refer to the [DHEC Contacts for Reporting or Medical Consultation](#) if you need assistance.

Evaluating Animal Exposures to Guide Postexposure Prophylaxis Decisions

Determining if PEP is indicated is based on a number of variables. The following criteria should be taken under consideration:

- Is the animal available for observation or rabies testing?
- Did the exposure result in an observed wound like a bite or scratch, or was there mucous membrane exposure, or a potentially unrecognized wound from a bat?
- The severity and location of the wound do not alone determine if PEP is indicated, but may dictate the urgency of treatment if needed. For example, head and neck exposures require more urgent risk assessment.
- The epidemiology of animal rabies, where the exposure occurred, and the animal species involved.
- The circumstances of the exposure, including whether or not there was an unprovoked attack and whether the animal exhibited abnormal behavior.

Table 1: Rabies postexposure prophylaxis guide — United States, 2008 (adapted from Table 3 in the Centers for Disease Control and Prevention’s Human Rabies Prevention¹, offers guidance in evaluating animal exposures and indications for postexposure prophylaxis)

Animal Type	Evaluation and disposition of animal	Postexposure prophylaxis recommendations
Dogs, cats, and ferrets	Healthy and available for 10 days observation	Persons should not begin prophylaxis unless animal develops clinical signs of rabies.*
	Rabid or suspected rabid	Immediately begin prophylaxis.
	Unknown (e.g., escaped)	Consult public health officials.
Skunks, raccoons, foxes, and most other carnivores; bats†	Regarded as rabid unless animal proven negative by laboratory tests§	Consider immediate prophylaxis.
Livestock, small rodents (rabbits and hares), large rodents (woodchucks and beavers), and other mammals	Consider individually	Consult public health officials. Bites from squirrels, hamsters, guinea pigs, gerbils, chipmunks, rats, mice, other small rodents, rabbits, and hares almost never require antirabies postexposure prophylaxis

¹Centers for Disease Control and Prevention. Human Rabies Prevention – United States, 2008. Recommendations of the Advisory Committee on Immunization Practices. <http://www.cdc.gov/mmwr/PDF/rr/rr5703.pdf>

* During the 10-day observation period, begin postexposure prophylaxis at the first sign of rabies in a dog, cat, or ferret that has bitten someone. If the animal exhibits clinical signs of rabies, it should be euthanized immediately and tested.

† Postexposure prophylaxis should be initiated as soon as possible following exposure to such wildlife unless the animal is available for testing and public health authorities are facilitating expeditious laboratory testing, or the animal has already tested negative for rabies. Other factors that might influence the urgency of decision-making regarding initiation of postexposure prophylaxis before diagnostic results are known include the species of the animal, the general appearance and behavior of the animal, whether the encounter was provoked by the presence of a human, and the severity and location of bites. Discontinue vaccine if appropriate laboratory diagnostic test (i.e., the direct fluorescent antibody test) is negative.

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

Non-Bite Exposures

Rabies from non-bite exposures is rare; however non-bite exposures as a potential for rabies transmission require assessment.

PEP should be considered in the event of the introduction of fresh saliva and/or neural tissues from a known or suspected rabid animal into an open wound, fresh scratch or abrasion, or mucous membrane. Exposure to blood, urine or other bodily fluids from a known or suspected rabid animal are not considered exposures. Rabies virus is

inactivated by desiccation, ultraviolet irradiation, and other factors like heat and sunlight and does not persist in the environment. In general, if the suspect material is dry, the virus can be considered noninfectious.

Bat Exposures

The majority of human rabies cases reported in the United States in the last few decades have been attributed to exposures to bats that were unrecognized as a risk for rabies transmission. Bat bites cause minimal trauma making identification of a wound representing a potential exposure difficult. A potential exposure to a bat requires a thorough evaluation if the bat is not available for testing. If possible, bats involved in potential human exposures should be safely collected and submitted for rabies testing. The majority of bats submitted for testing are not rabid. Timely rabies testing will eliminate the need for risk assessments and unnecessary prophylaxis.

PEP may be indicated if a potential bat exposure cannot be ruled out. Examples include, a bat being found in the same room as a person who was deeply sleeping, or an adult witnesses a bat in the room with a previously unattended child, mentally disabled, or intoxicated person. If the person can be reasonably certain a bite, scratch, or mucous membrane exposure did not occur, or the bat tested negative for rabies, postexposure prophylaxis is not necessary.

Online Rabies PEP Continuing Education Course for Providers

The Centers for Disease Control and Prevention (CDC) and the Maryland Department of Health and Mental Hygiene have developed an online continuing education (CE) course on rabies PEP for healthcare providers, epidemiologists, and veterinarians. This CE course, "Rabies Postexposure Prophylaxis (PEP) Basics: Case Illustrations of the 2010 Advisory Committee on Immunization Practices (ACIP) Guidelines", conveys 1 CE credit hour to the participant upon successful completion. The rabies PEP CE course is accessible at

<http://www.cdc.gov/rabies/resources/training/index.html> or,

<http://ideha.dhmh.maryland.gov/training/rabies/Default.aspx>.

Table 2. Rabies Postexposure Prophylaxis (PEP) Schedule and Administration Guidance¹

All PEP should begin with immediate and thorough cleansing of all wounds with soap and water. If available, a virucidal agent, such as povidine-iodine solution, should be used to irrigate the wounds.

Vaccination status	Treatment ²				
Not previously vaccinated	Rabies PEP product	Dose	Route	Site	Schedule
	Human Rabies Immune Globulin (HRIG) ³	20 IU/kg (0.06 ml/lb) body weight. Do not administer HRIG in the same syringe as vaccine. Give no more than the recommended dose to prevent suppression of the active immune response to the vaccine.		If anatomically feasible, the full dose should be infiltrated around and into the wound(s), and any remaining volume should be administered intramuscularly (IM) in the deltoid or quadriceps at an anatomical site distant from vaccine administration. The needle should be changed after wound infiltration and prior to IM injection.	Day 0 ⁴
	Vaccine ⁵ Human diploid cell vaccine (HDCV) or purified chick embryo cell vaccine (PCECV)	1.0 mL	IM	Deltoid area ⁶	One each on days 0, 3, 7, and 14. ⁷
Previously vaccinated ⁸	Rabies PEP Product	Dose	Route	Site	Schedule
	HRIG should not be administered				

	Vaccine ⁵ Human diploid cell vaccine (HDCV) or purified chick embryo cell vaccine (PCECV)	1.0 mL	IM	Deltoid area ⁶	One each on days 0 and 3. ⁴
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¹ Consultation with a DHEC Medical Consultant is recommended for any patient that does not receive the vaccine by the recommended postexposure prophylaxis schedule. The DHEC Consultant can assist in determining the appropriate schedule for completing the series and in determining whether [Rapid Fluorescent Focus Inhibition Test \(RFFIT\) titers](#) are indicated to assess the adequacy of the immune response.

² The regimens are applicable for all age groups, including children.

³ HRIG is administered only once, at the beginning of prophylaxis, to previously unvaccinated persons. HRIG provides immediate protective antibodies until the patient mounts an active immune response to rabies vaccination. If HRIG is not administered when vaccination is begun, it can be administered up to the seventh day after the first dose of vaccine. HRIG should not be given beyond the seventh day, to prevent interference with active antibody response to the vaccine. HyperRAB (HRIG, by Talecris) and Imogam® Rabies-HT (HRIG, by Sanofil Pasteur) are supplied in 2 mL and 10 mL single dose vials, with an average 150 IU per mL. The 2 mL vial contains 300 IU and is sufficient for a child weighing 15 kg (33 pounds). The 10 mL vial contains a total of 1500 IU, which is sufficient for an adult weighing 75 kg (165 pounds).

⁴ Day 0 is the day the first dose of vaccine is administered.

⁵ Rabies Vaccine is dispensed as single dose 1.0 ml kits.

⁶ The deltoid area is the only acceptable site of vaccination for adults and older children. For younger children, the outer aspect of the thigh can be used. Vaccine should never be administered in the gluteal area.

⁷ In 2010, the Advisory Committee on Immunization Practices (ACIP) published recommendations to reduce the number of vaccine doses in the human rabies postexposure prophylaxis (PEP) series from 5 to 4. MMWR 2010:59(No. RR-2), available at: <http://www.cdc.gov/mmwr/pdf/rr/rr5902.pdf>. This recommendation is based upon studies indicating 4 vaccine doses, in combination with rabies immune globulin (RIG), elicited adequate immune response and a fifth dose did not contribute to more favorable outcomes. **For persons with immunosuppression, rabies PEP should be administered using 5 doses of vaccine on days 0, 3, 7, 14, and 28.**

⁸ Previously vaccinated is defined as any person with a history of a complete pre-exposure or postexposure vaccination regimen with HDCV, PCECV, or rabies vaccine adsorbed (RVA); or previous vaccination with any other type of rabies vaccine and a documented history of antibody response to the prior vaccination. Persons who initiated

but did not complete a rabies vaccine regimen are not considered to be “previously vaccinated.”

DHEC Contacts for Bite Reporting or Medical Consultation

During working hours, animal bites may be reported to the DHEC Bureau of Environmental Health Services Offices. DHEC physicians are available for medical consultation to assist with rabies risk assessment. Please call the number listed for the county of occurrence for assistance. On nights, weekends or holidays, call 1-888-847-0902 and the answering service will route calls to the appropriate DHEC responder.

ANIMAL BITE REPORTS / MEDICAL CONSULTATION				
	During Working Hours			Nights/Weekends/ Holidays
County of Occurrence	Animal Bite Reports		Medical Consultation for Rabies PEP	All calls (Bite Reports and Medical Consultation)
	Phone	Fax	Phone**	
ABBEVILLE	864-227-5915	864-942-3680	864-372-3269	1-888-847-0902
AIKEN	803-642-1637	803-643-4027	803-576-2900	
ALLENDALE	803-642-1637	803-643-4027	843-953-0038	
ANDERSON	864-260-5585	864-222-3923	864-372-3269	
BAMBERG	803-533-5490	803-268-5784	843-953-0038	
BARNWELL	803-642-1637	803-643-4027	803-576-2900	
BEAUFORT	843-846-1030	843-846-0604	843-953-0038	
BERKELEY	843-202-7020	843-202-7050	843-953-0038	
CALHOUN	803-533-5490	803-268-5784	843-953-0038	
CHARLESTON	843-202-7020	843-202-7050	843-953-0038	
CHEROKEE	864-596-3327	864-596-3920	864-372-3269	
CHESTER	803-285-7461	803-285-5594	803-576-2900	
CHESTERFIELD	843-661-4825	843-661-4858	843-661-4830	
CLARENDON	803-778-6548	803-934-2938	843-661-4830	
COLLETON	843-846-1030	843-846-0604	843-953-0038	

DARLINGTON	843-661-4825	843-661-4858	843-661-4830
DILLON	843-661-4825	843-661-4858	843-661-4830
DORCHESTER	843-202-7020	843-202-7050	843-953-0038
EDGEFIELD	803-642-1637	803-643-4027	803-576-2900
FAIRFIELD	803-896-0620	803-896-0617	803-576-2900
FLORENCE	843-661-4825	843-661-4858	843-661-4830
GEORGETOWN	843-915-8801	843-365-0099	843-661-4830
GREENVILLE	864-372-3273	864-282-4371	864-372-3269
GREENWOOD	864-227-5915	864-942-3680	864-372-3269
HAMPTON	843-846-1030	843-846-0604	843-953-0038
HORRY	843-915-8801	843-365-0099	843-661-4830
JASPER	843-846-1030	843-846-0604	843-953-0038
KERSHAW	803-778-6548	803-934-2938	803-576-2900
LANCASTER	803-285-7461	803-285-5594	803-576-2900
LAURENS	864-227-5915	864-942-3680	864-372-3269
LEE	803-778-6548	803-934-2938	843-661-4830
LEXINGTON	803-896-0620	803-896-0617	803-576-2900
MARION	843-661-4825	843-661-4858	843-661-4830
MARLBORO	843-661-4825	843-661-4858	843-661-4830
MCCORMICK	864-227-5915	864-942-3680	864-372-3269
NEWBERRY	803-896-0620	803-896-0617	803-576-2900
OCONEE	864-638-4185	864-638-4186	864-372-3269
ORANGEBURG	803-533-5490	803-268-5784	843-953-0038
PICKENS	864-372-3273	864-282-4371	864-372-3269
RICHLAND	803-896-0620	803-896-0617	803-576-2900
SALUDA	864-227-5915	864-942-3680	803-576-2900
SPARTANBURG	864-596-3327	864-596-3920	864-372-3269

SUMTER	803-778-6548	803-934-2938	843-661-4830
UNION	864-596-3327	864-596-3920	864-372-3269
WILLIAMSBURG	843-915-8801	843-365-0099	843-661-4830
YORK	803-285-7461	803-285-5594	803-576-2900
**If you do not receive a response from the county medical consultation number during working hours, call the Division of Acute Disease Epidemiology: 803-898-0861 (8:30 a.m. – 5:00 p.m., M-F)			

For additional information or for medical consultation, contact your [DHEC Region Medical Consultant](#), or the DHEC Division of Acute Disease Epidemiology by phone at (803) 898-0861 M-F 8:30 a.m. – 5:00 p.m. After working hours, call the statewide emergency answering service at (888) 847-0902 and ask for the DHEC doctor on call.

Serologic Testing by Rapid Fluorescent Focus Inhibition Test (RFFIT)

Every attempt should be made to adhere to the recommended vaccination schedules. Once vaccination is initiated, delays of a few days for individual doses are unimportant, but the effect of longer lapses is unknown. For most minor deviations from the schedule, vaccination can be resumed as though the patient were on schedule. When substantial deviations from the schedule occur, immune status should be assessed by performing serologic testing 7 – 14 days after administration of the final dose in the series.

Per ACIP guidance, the Rapid Fluorescent Focus Inhibition Test (RFFIT) gives an indicator of adaptive immune response to rabies vaccination. Complete virus neutralization at a 1:5 serum dilution by the RFFIT is an indicator of an adequate immune response.

The medical plan for patients who are not vaccinated on schedule, do not demonstrate an adequate antibody response when tested, or are immunocompromised is best managed on a case-by-case basis incorporating consultation between the patient's private provider, a DHEC Medical Consultant and the CDC Rabies Section Consultant.

DHEC does not provide the RFFIT. The following laboratories perform RFFIT:

- **Atlanta Health Associates:**
Call 1-770-205-9091 or toll free at 1-800-717- 5612, or visit www.atlantahealth.net.
- **Kansas State University:**
Call (785) 532-4483. This university laboratory may run STAT titers upon request <http://www.vet.k-state.edu/depts/dmp/service/rabies/index.htm>

CDC performs serologic testing with a more rapid turn-around-time than private labs, but CDC testing is only available through the request of the state health department.

Manufacturers and Distributors of Rabies Biologics

Ordering rabies biologics will be simpler for health care providers that have established accounts with vaccine suppliers. Contacts for vaccine manufactures and distributors are provided below to assist in locating rabies biologics. Contact the DHEC Immunization Division at 803-898-0460 for assistance in ordering rabies PEP biologics if needed.

Human diploid cell vaccine

Imovax® Rabies

Contact Sanofi Pasteur at 1-800-VACCINE (1-800-822-2463) to place an order

Website: <http://www.vaccineshoppe.com>

Purified chick embryo cell vaccine

RabAvert®

Contact Novartis Vaccines and Diagnostics at 1-800-244-7668 to place an order

Website: <https://www.novartisvaccinesdirect.com>

Vaccine Distributors

- ASD Healthcare – 1-800-746-6273
- BDI Pharma – 1-800-948-9834. This national distributor is based in Columbia, For orders in the Columbia area call: 803-732-1018, www.bdipharma.com
- Besse Medical – 1-800-543-2111
- Cardinal – 1-800-964-5227
- FFF Enterprises – 1-800-843-7477
- General Injectables & Vaccines, Inc. (GIV) – 1-800-521-7468
- Henry Schein, Inc – 1-800-772-4346
- Insource, Inc – 1-800-366-3829
- McKesson Medical-Surgical – 1-800-9509229

Rabies immune globulin

Imogam® Rabies-HT

Contact Sanofi Pasteur at 1-800-VACCINE (1-800-822-2463) to place an order

Website: <http://www.vaccineshoppe.com>

HyperRab™

Talecris Biotherapeutics

Phone: 1-800-243-4153

Website: <http://www.talecris-pi.info>

BDI Pharma – 1-800-948-9834

Patient Assistance Programs for Low-Income/Uninsured

Patient assistance programs are available through Sanofi Pasteur and Novartis for individuals that meet certain income eligibility criteria. Sanofi Pasteur's Patient

Assistance Program is administered by the Franklin Group. The Novartis program is administered by RX for Hope. For information about patient assistance programs and application forms, please refer to the following contact numbers and links:

- **Sanofi Pasteur Inc. Patient Assistance Program**
Contact Customer Service at 1-800-VACCINE, or
The Franklin Group at 1-866-801-5655
<http://www.needymeds.org/papforms/sanofi0312.pdf>
- **Novartis Patient Assistance Program**
Contact RX for Hope at 1-800-244-7668
<https://www.rxhope.com/PAP/info/PAPList.aspx?drugid=319&fieldType=drugid>

Rabies Vaccine Information Sheet for Patients

- <http://www.cdc.gov/vaccines/pubs/vis/downloads/vis-rabies.pdf>

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