

Rabies Prevention and Post-Deployment Assessments: Information for Providers and Public Health Personnel

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This information is intended to assist providers to appropriately screen, risk assess and provide treatment for persons who report potential rabies risk exposures after a delay. All providers who conduct post-deployment health assessments must understand and apply the training and guidance contained in this document.

BACKGROUND

A U.S. Army Soldier died of rabies on 31 August 2011. Laboratory results indicate the Soldier was infected from contact with a dog while deployed in Afghanistan.

During the public health investigation of this case, members of the Soldier's unit reported they had also received dog bites in Afghanistan, had not reported the bites to medical providers, and had not received rabies post-exposure prophylaxis (PEP). Medical record reviews in Afghanistan identified other individuals who presented for care but did not receive the recommended PEP. As a result of these discoveries, the Army Surgeon General ordered a public health response to identify, notify, and treat all Service Members, civilians, contractors and other personnel who had sustained rabies risk exposures during deployment.

Between 22 August 2011 and 20 April 2012, 8899 individuals from all Services, as well as deployed civilians and contractor personnel, were contacted. Twenty-nine individuals were provided post-exposure prophylaxis (PEP) as a result of contact with Soldier who died. Between 1 March 2010 and 1 September 2011, a total of 8577 individuals either had theater medical encounters for a potential rabies-risk encounter or indicated concern about an animal bite on a post-deployment health assessment. Over 300 additional individuals were contacted as a result of hotline calls, unit recalls, and Soldier redeployment medical processing referrals. Overall, 262 (3%) individuals had exposures that required rabies prevention treatment that was not provided at the time of the event.

Supplemental actions in support of the public health investigation included reinforcing General Order #1B, which forbids the adoption of (whether as pet or mascot), caring for, or feeding of any type of domestic or wild animal during deployment; education campaigns targeting Service members and leaders on the risk of rabies outside the United States; and revisions to the post-deployment health assessment forms to specifically assess rabies-risk exposures. The entire Army post-deployment health assessment process was assessed and improvements were made to ensure all reported concerns and exposures are addressed and documented during the encounter.

Despite these efforts, Service members who have sustained otherwise unreported and untreated potential rabies risk exposures during deployment continue to be identified on post-deployment health assessments.

KEY FACTS FOR PROVIDERS

- Rabies is a viral infection that can be transmitted to humans through the saliva of infected animals, either through bites or if the saliva of an infected animal contacts broken skin, eyes or mouth.
- Although rabies is not transmitted through touching, petting, or contact that does not involve saliva to broken skin, eyes or mouth, it is still important to stress to patients that all potential risk contact should be evaluated by a provider.
- Animals present in deployment settings are not vaccinated against rabies as pets are in the United States. Dogs are the most common source of human infections in developing countries.
- A person cannot tell if an animal has rabies. Despite the common belief that rabid animals are easily identified by foaming at the mouth and aggressive behavior, infected animals may appear calm and not look sick or act strange.
- The incubation period for rabies depends on the time it takes the virus to reach the central nervous system (CNS) and consequently varies with virus inoculum, the distance of exposure site to CNS and other factors that are not yet well understood.
- Rabies is preventable. Yet once the signs and symptoms of rabies develop, the disease is almost always fatal. Early treatment of exposures prevents nearly all disease, but even late treatment prior to symptom onset may increase survival.
- Macaque monkeys can transmit Simian Herpes B virus (SHBV). Although rare, SHBV causes a highly fatal encephalomyelitis in humans. Consequently, bites from these monkeys require additional preventive treatment measures.
- For more information on rabies, deployment and prevention, see the training slides in Appendix C of this document. They are also available at:
<http://phc.amedd.army.mil/topics/discond/aid/Pages/Rabies.aspx>.

GUIDELINES FOR EVALUATION AND TREATMENT

A potential rabies risk exposure is a bite that broke the skin, a scratch that bled or wet animal saliva contact with mucous membranes or broken skin as a result of contact with warm-blooded animals, such as dogs, cats, bats, foxes, skunks, raccoons, mongooses, and jackals. Rats and mice very rarely transmit rabies and do not typically require rabies prophylaxis. Bats

in sleeping quarters also present risk exposures even if the person is not sure if they were bitten (i.e., while sleeping, as bat teeth are very small, very sharp, and may not leave noticeable injuries).

Persons who had no medical evaluation or incomplete/undocumented evaluation or postexposure prophylaxis (PEP) following the exposure incident should be evaluated, *regardless of the time interval since exposure*. In addition, individuals who are not completely confident they received appropriate and completely documented care should also be evaluated. There is no prescribed time period after an exposure where prophylaxis should not be considered. The decision to treat should be based on the circumstances of the exposure, consideration of the patient's situation and risk of future exposures as well as provider judgment. An algorithm is provided below to assist with decision-making.

Although the vast majority(>99%) of persons who develop rabies disease will do so within a year after a risk exposure, there have been reports of individuals presenting with rabies disease up to six years or more after their last known risk exposure. Persons presenting for care for risk exposures that occurred over 18 months prior to presentation should still be evaluated. The decision to treat should be based on an assessment of the exposure and the patient's situation, including their risk of future exposures, and will require provider judgment. For instance, for a Soldier with a clear history of a high-risk exposure (e.g., feral dog bite) while downrange, it would be prudent to provide PEP regardless of time since the exposure, while lower risk exposures (e.g., licks, scratches) require additional information and discussion with the patient to inform a treatment decision.

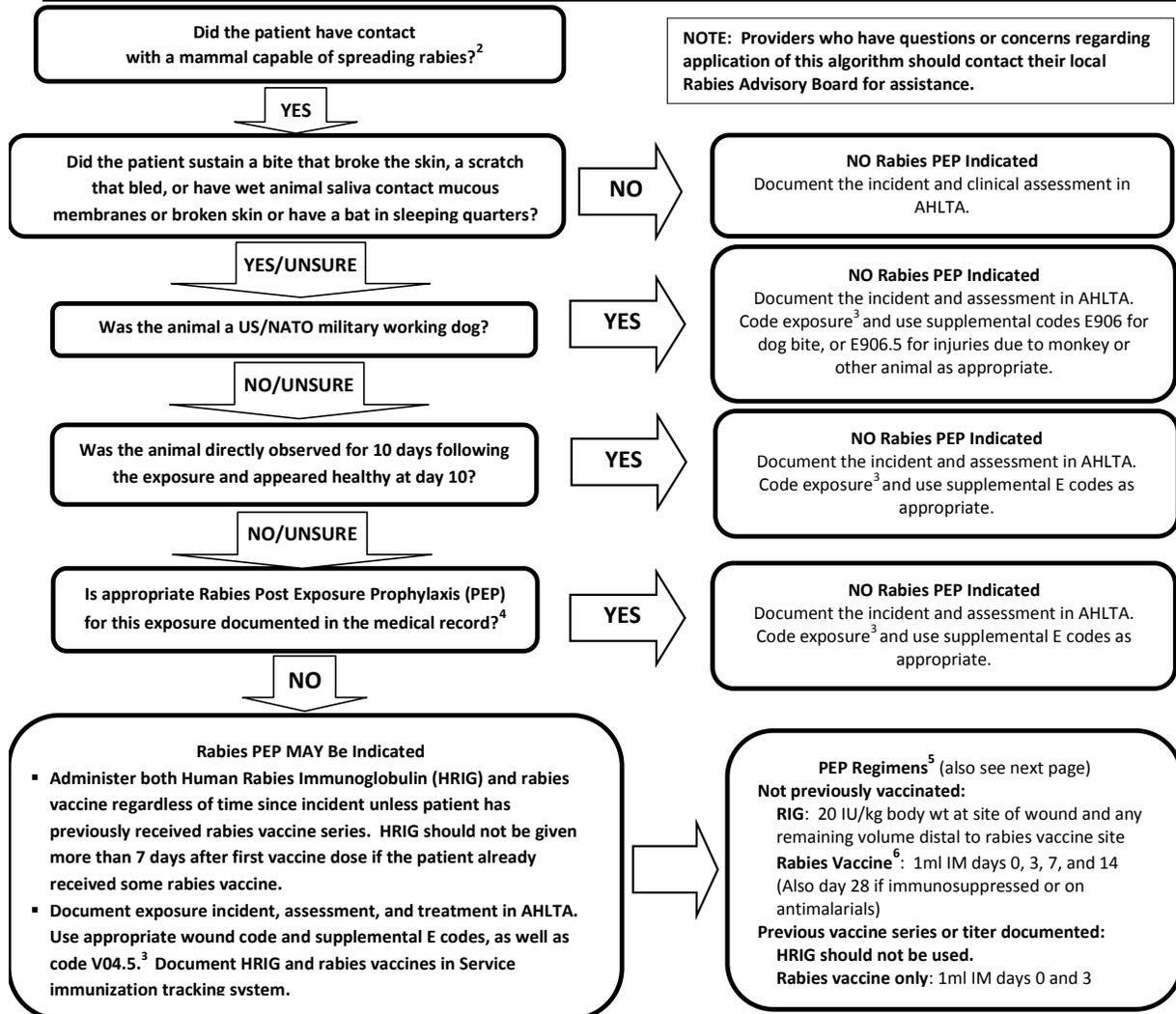
Detailed reviews of rabies exposure evaluations and PEP are provided in guidance from the US Centers for Disease Control and Prevention, but these guidelines are intended to be applied to exposures in the United States. Providers must be cautious in applying these guidelines too strictly to Soldiers who sustain exposures in higher risk countries. Although bats are the most common source of human rabies in the US today, dogs are responsible for over 90% of the estimated 55,000 rabies deaths that occur annually around the world.

The following algorithm provides guidance for determining what exposures should be considered for treatment with PEP. It is not intended for treatment of acute exposures. The algorithm is primarily intended to apply to deployments to countries with Intermediate or High Rabies Risk as assessed by NCMI. For the latest country-specific rabies risk assessment by NCMI, go to the NCMI Homepage at the following link: <https://www.intelink.gov/ncmi/index.php>. The rabies risk assessment is found in the Infectious Disease Risk Assessment, which can be linked to from each country's NCMI page.

Evaluation & Treatment of Potential Deployment-Related Rabies Exposures (SEP2012.v2)

NOTE: Applies to deployments to countries with Intermediate or High Rabies Risk as assessed by NCMII

IMPORTANT: THIS ALGORITHM SHOULD NOT BE USED TO EVALUATE ACUTE BITES OR EXPOSURES¹



- For acute bites and exposures, refer to <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5703a1.htm> and <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm>. These guidelines apply to the US. Do not apply them too strictly to persons who sustain exposures in countries with higher rabies risk.
- Dogs, cats, bats, raccoons, skunks, ferrets, and wild terrestrial carnivores. Rodents are not reservoirs of rabies virus. Small rodents (e.g., squirrels, chipmunks, rats, mice, hamsters, guinea pigs, and gerbils) and lagomorphs (including rabbits and hares) are rarely infected with rabies and have not been known to transmit rabies to humans.
- Use codes 870.0-897.7 (wound, open) or 910-919 (superficial injury codes) with the appropriate supplemental code: E906 for dog bite or E906.5 for injuries due to monkey or other animal. Include code V04.5 for animal bite requiring rabies vaccination.
- See protocols on next page.
- If the vaccine series was interrupted for more than a few days or not completed, providers should complete the series and then assess immune status by performing serologic testing 7–14 days after administration of the final dose in the series. If drawing a titer is not practical or feasible, restart the vaccine series (but do NOT administer HRIG).
- Purified Chick Embryo Cell Vaccine (PCECV) should not be given to individuals with egg allergies. Human Diploid Cell Vaccine (HDCV) is safe in egg-allergic individuals.

Rabies postexposure prophylaxis (PEP) schedule — United States, 2010

Vaccination status	Intervention	Regimen*
Not previously vaccinated	Wound cleansing	All PEP should begin with immediate thorough cleansing of all wounds w available, a virucidal agent (e.g., povidine-iodine solution) should be use wounds.
	Human rabies immune globulin (HRIG)	Administer 20 IU/kg body weight. If anatomically feasible, the full dose should be infiltrated around and into the wound(s), and any remaining volume should be administered at an anatomical site (intramuscular [IM]) distant from vaccine administration. Also, HRIG should not be administered in the same syringe as vaccine. Because RIG might partially suppress active production of rabies virus antibody, no more than the recommended dose should be administered.
	Vaccine	Human diploid cell vaccine (HDCV) or purified chick embryo cell vaccine (PCECV) 1.0 mL, IM (deltoid area†), 1 each on days 0,§ 3, 7 and 14. A fifth dose on Day 28 is required if patient is immunosuppressed or on antimalarials
Previously vaccinated**	Wound cleansing	All PEP should begin with immediate 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.
	HRIG	HRIG should not be administered.
	Vaccine	HDCV or PCECV 1.0 mL, IM (deltoid area †), 1 each on days 0§ and 3.

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

† The deltoid area 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 dose 1 of vaccine is administered.

** 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.

Source: <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm>