

Rabies Post Exposure Prophylaxis

(Updated 21-11-2019)

Signs and Symptoms¹

1. Rabies is a fatal, acute, progressive encephalomyelitis caused by neurotropic viruses from the family Rhabdoviridae, genus *Lyssavirus*. Lyssaviruses, have been found on all continents except Antarctica and Rabies virus is by far the most common sub-type which infects humans. Tens of millions of potential human exposures and tens of thousands of deaths from rabies virus occur each year.
2. The normal and most successful mode of rabies transmission is via inoculation of saliva from the bite of a rabid animal. Clinical illness in humans begins following invasion of the peripheral and then central nervous system and culminates in acute fatal encephalitis. After infection, the asymptomatic incubation period is variable, but signs and symptoms most commonly develop within several weeks to several months after exposure. Pain and paresthesia at the site of exposure are often the first symptoms of disease. The disease then progresses rapidly from a nonspecific, prodromal phase with fever and vague symptoms to an acute, progressive encephalitis. The neurologic phase may be characterized by anxiety, paresis, paralysis, and other signs of encephalitis; spasms of swallowing muscles can be stimulated by the sight, sound, or perception of water (hydrophobia); and delirium and convulsions can develop, followed rapidly by coma and death. Once clinical signs manifest, patients die quickly in the absence of intensive supportive care.
3. Prompt post-exposure prophylaxis is highly effective at preventing the development of a symptomatic rabies, therefore, underlining its importance.

Contraindications

Allergy to an indicated medication or vaccination

Management^{1, 2}

1. All post exposure prophylaxis should begin with immediate, thorough cleansing of all wounds with soap and water, povidone iodine, or other substances with virucidal activity.
2. Administration schedule for rabies vaccine and requirement for immunoglobulin depends of whether the patient has or hasn't been previously vaccinated. Direction is as per the following Table:

Table – Post Exposure Immunization for Rabies

IMMUNIZATION STATUS	VACCINE/PRODUCT ³	DOSE	NUMBER OF DOSES	SCHEDULE (DAYS) ⁴	ROUTE
Not Previously Vaccinated	HRIG	20 IU/kg body weight	1	0	Infiltrated at bite site (if possible) ⁵ ; remainder IM
	HRIG + HDCV or PCECV	1.0 mL	4 ⁶ or 5	0, 3, 7, 14 (and 28 if immuno-compromised ⁷)	IM
Previously Vaccinated ^{8, 9}	HDCV or PCECV	1.0 mL	2	0, 3	IM

Key: HRIG, human rabies immune globulin; IM, intramuscular; HDCV, human diploid cell vaccine; PCECV, purified chick embryo cell vaccine.

3. For unvaccinated patients, wounds that might require suturing should have the suturing delayed for a few days. If suturing is necessary to control bleeding or for functional or cosmetic reasons, rabies immune globulin (RIG) should be injected into all wounded tissues before suturing. The use of local anesthetic is not contraindicated in wound management.

4. Assess and monitor open wounds and consider treatment as per the *SOMT Antibiotic Trauma or Cellulitis Protocol* where appropriate.

5. A potential exposure to rabies virus warrants urgent assessment by medical authorities. Details of the exposure, resulting actions, as well as, the rationale for actions are required to be reported to D FHP IAW *CFHS Communicable Disease Control Policy 6636-58*.

Notes:

1. Adapted from 2019 recommendations published by the *Center for Disease Control's (CDC) Yellow Book for Health Information for International Travel*: Available via: <https://wwwnc.cdc.gov/travel/yellowbook/2020/travel-related-infectious-diseases/rabies>
2. IAW *CFHS Communicable Disease Control Policy 6636-58 – Rabies Prevention in the CF (Updated July '19)*. Available via: <http://cmp-cpm.mil.ca/en/health/policies-direction/policies/6636-58.page>
3. Two rabies vaccines are licensed and marketed in Canada - Imovax® Rabies, a human diploid cell vaccine, and RabAvert®, a purified chick embryo cell vaccine; as are two human rabies immune globulin (HRIG) preparations – Imogam® and HyperRAB S/D™. Two additional HRIG preparations, KamRAB™ and HyperRAB™ are approved and are expected to be marketed in Canada. (*CFHS CDCP 6636-58 – July '19*)
4. Every attempt should be made to adhere to recommended schedules; however, for most minor deviations (delays of a few days for individual doses), vaccination can be resumed as though the traveler were on schedule. When substantial deviations occur, immune status should be assessed by serologic testing 7–14 days after the final dose is administered. If HRIG is not administered as recommended at the initiation of the rabies vaccine series, it should be administered up to and including day 7 after vaccine is initiated but should not be administered after that. (*CFHS CDCP 6636-58 – July '19*)
5. After wound cleansing, as much of the dose-appropriate volume of HRIG as is anatomically feasible should be injected at the wound site(s). The intent is to put the HRIG in the areas where saliva may have contaminated wounded tissue. If the wound is small and on a distal extremity such as a finger or toe, the health care provider must use clinical judgment to decide how much HRIG to inject to avoid local tissue compression and complications. Any remaining dose should be administered intramuscularly at a site distant from the site of vaccine administration. **If the wounds are extensive, the dose-appropriate volume of HRIG must not be exceeded. If the volume is inadequate to inject all the wounds, the HRIG may be diluted 2 – 3 fold with normal saline to ensure sufficient volume is available to inject in all of the wounds.** (*From: Rabies - (CDC) Yellow Book for Health Information for International Travel - 2020*)
6. Five vaccine doses for the immunosuppressed patient. The first 4 vaccine doses are given on the same schedule as for an immunocompetent patient, and the fifth dose is given on day 28; patient follow-up should include monitoring antibody response. For more information, see: www.cdc.gov/mmwr/preview/mmwrhtml/rr5902a1.htm.
7. CDC/CFHS recommends 4 post-exposure vaccine doses, on days 0, 3, 7, and 14, unless the patient is immunocompromised in some way, in which case a fifth dose is given at day 28.
8. The following are considered as examples of pre-vaccination:
 - a. Pre-exposure immunization with HDCV or PCECV;
 - b. prior post-exposure prophylaxis with HDCV or PCECV;
 - c. previous vaccination with any other type of rabies vaccine and a documented history of positive rabies virus neutralizing antibody response to the prior vaccination.
9. HRIG is not recommended in previously vaccinated individuals.