

**GUIDELINE FOR ANIMAL BITE MANAGEMENT
&
FREQUENTLY ASKED QUESTIONS**

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ANIMAL BITE MANAGEMENT AND POST EXPOSURE PROPHYLAXIS OF RABIES

Decision to treat:

- ✓ Rabies is endemic in India; so management of animal bites is essential
- ✓ Suspect all animal bites, even scratches
- ✓ Treat as per merit of the bite
- ✓ Post Exposure Prophylaxis (PEP) should be started as soon as possible after the bite. Start treatment and observe the animal for 10 days (applicable only for dog and cat)
- ✓ If the animal (dog and cat) remains healthy throughout the observation then modify the Post-Exposure Prophylaxis (PEP) to Pre-Exposure Prophylaxis (PrEP).

Guide for Post-Exposure Prophylaxis (PEP)

Category	Type of contact	Recommended Post Exposure Prophylaxis
I	Touching or feeding animals Licks on intact skin	None, if reliable case history is available.
II	Nibbling of uncovered skin Minor scratches or abrasions without bleeding	1. Wound management 2. Administer anti-rabies vaccine immediately 3. Convert Post Exposure Prophylaxis to Pre Exposure Prophylaxis if dog/cat remains healthy throughout the observation period of 10 days or if it is killed humanely and found to be negative for Rabies by appropriate laboratory techniques.
III	Single or multiple transdermal bites or scratches. Contamination of mucous membrane with saliva (i.e. licks) Licks on broken skin	1. Wound Management 2. Administer rabies immunoglobulin 3. Administer anti-rabies vaccine immediately Stop treatment if dog/cat remains healthy throughout an observation period of 10 days or if it is killed humanely and found to be negative for rabies by appropriate laboratory techniques.

NB: All animal bites in forest or in the wild should be treated as Category III exposures.

Animals transmitting rabies in India

A. Domestic: Dogs and cats

B. Peridomestic:

- ✓ Large ruminants (cows and buffaloes)
- ✓ Small ruminants (sheep and goat)
- ✓ Mammals like pigs, donkeys, horses, camels etc.

C. Wild:

- ✓ Foxes and jackals, monkeys, mongoose, bear etc.

Not reported:

- ✓ Bird, squirrel, bats*, rodents* (* See below.)

*Bites by **Bats** or **Rodents** do not ordinarily necessitate rabies vaccination. However, in unusual circumstances cases may be considered for vaccination in consultation with an expert in the field of rabies. (Example: exposure to domestic rodents does not require PEP but if the rodent is wild then the bite victim may be considered for PEP in consultation with the expert). A mouse is usually a domestic rodent, but for a large size rat it is difficult to determine whether it is domestic or wild. Vaccination may be necessary in case of bite by such rats).

Principles of treatment:

- A. Wound management**
- B. Passive immunization (inj. of immunoglobulin/anti-sera)**
- C. Active immunization i.e. inj. of anti-rabies vaccine (ARV)**

General Considerations in rabies PEP (Post-Exposure Prophylaxis)

- ✓ If rabies immunoglobulin (RIG) is not available on first visit, its use can be delayed by a maximum of 7 days from the date of first dose of vaccine.
- ✓ **Pregnancy** and **infancy** are never contraindications to PEP.
- ✓ If the patient comes even months after having been bitten, he/she should be dealt with in the same manner as if the bite has occurred recently.
- ✓ PEP is not required in case of consumption of milk of a rabid animal no matter the milk is boiled or raw. No such incident has been reported where exposure to milk of a rabid animal has caused rabies. Although it is not desirable to consume milk from an infected animal, it is to be kept in mind that rabies virus is not excreted in milk (of a rabid mammal) in concentration sufficient to cause infection. Moreover, boiling of milk destroys rabies virus.
- ✓ Consumption/handling of raw meat of a rabid animal requires PEP. Cooking kills rabies virus.

A. Wound management:

- ✓ Wash the wound immediately (as early as possible) under running tap water for at least 10 minutes.
- ✓ Use soap or detergent to wash the wound (if soap is not available then use water only to wash the wound).
- ✓ After thorough washing and drying the wound apply disinfectant – e.g. povidone iodine, spirit etc.
- ✓ Don't apply irritants viz. chilli, soil, oils, turmeric, lime, salt, plant juice etc.
- ✓ Don't touch the wound with bare hands.
- ✓ Wound washing must be performed even if the patient reports late.
- ✓ Postpone suturing if possible; if suturing is at all necessary, it should be performed after cleaning and infiltrating RIG at the depth of wound and only minimum number of loose suture should be applied.
- ✓ Don't cauterize.
- ✓ Administer systemic antimicrobial and tetanus toxoid if necessary (follow usual norm of wound management in this regard).

B. Passive immunization (immunoglobulin/anti-sera):

Human Rabies Immunoglobulin (HRIG): 20 IU/kg body wt, maximum 1500 IU
Equine Rabies Immunoglobulin (ERIG) : 40 IU/kg body wt, maximum 3000 IU

Either of the above is to be used where indicated – i.e. all Category III bites and also Category II bites in case of immune-compromised persons.

- ✓ **Local infiltration of rabies immunoglobulin:** RIG should be infiltrated in the depth and around each of the wounds to inactivate the locally present rabies viruses.
- ✓ Infiltrate as much as possible in the depth and around the wounds; remaining quantity, if any, is to be administered intramuscularly at a site away from the site where vaccine is administered.
- ✓ If RIG is insufficient (by volume) for infiltration into all the wounds, dilute it with sterile normal saline (up to twice or thrice the volume).
- ✓ Infiltrate into all Category III wounds.

C. Vaccination:

❖ **Route of inoculation:** Intramuscular or Intradermal.

❖ **Site of inoculation:** Deltoid muscle or anterolateral part of thigh. Not recommended in gluteal region, since there is chance of low absorption due to presence of fatty tissue.

Post exposure Vaccine schedule:

The vaccination schedule may be either of the following. However, in healthcare institutions, the latter (Intradermal Regimen) is more cost effective and is mandatory in State Government set-ups except in documented exceptional cases.

i. Essen Intramuscular Regimen:

- ✓ Standard intramuscular regimen.
- ✓ One dose (0.5ml or 1ml) each into deltoid on day 0, 3, 7, 14 and 28.
- ✓ Locally infiltrate anti-rabies immunoglobulin on day 0 as described under Passive Immunization.
- ✓ In IM route of ARV, switching between brands does not make any difference.

ii. Intradermal Regimen (approved in India)

❖ **2 site regimen (Updated Thai regimen)**

Dose : 0.1 ml

Site : Upper arm over each deltoid/ antero- lateral aspect of thigh

Schedule: 2- 2- 2- 0- 2

Day 0 - 2 sites

Day 3 - 2 sites

Day 7 - 2 sites

Day 14 - **No Dose**

Day 28 - 2 sites

❖ **General guideline for use of IDRV:**

- ✓ Rabies vaccines containing an adjuvant should not be used intradermally.
- ✓ Out of the different types of cell culture vaccines, PVRV (purified vero cell rabies vaccine) and PCECV (purified chick embryo cell vaccine) are suitable for intradermal administration if the brand is approved by DCGI, Govt. of India (2006).
- ✓ Intradermal injections must be administered by staff trained in this technique.
- ✓ Vaccine when given intradermally should raise a visible and palpable “bleb” in the skin.
- ✓ If the ID dose is inadvertently given subcutaneously or intra-muscularly or in the event of spillage, a new dose should be given intradermally at a nearby site.

- ✓ **Animal bite victims on chloroquine therapy (for cure or prophylaxis of malaria) and immune-suppressed persons should be given ARV by intramuscular route.**
- ❖ **Points to remember for PEP:**
 - ✓ Day 0 is the day of 1st dose of vaccine given, not the day of bite.
 - ✓ Never inject the vaccine in gluteal region.
 - ✓ Reconstituted vaccine to be used immediately. However, in unforeseen delay the vaccine vial should be stored at 2-8°C after reconstitution and should be used within 6-8 hrs of reconstitution.
 - ✓ Dose is same for all age groups.
 - ✓ Switching between IM and ID regimen is not recommended by WHO.
 - ✓ If the bite is by a dog or cat and the animal is alive & healthy till 10 days after bite or it is humanely killed and its brain is found to be negative for rabies in the lab, vaccination may be stopped after the 3rd dose (dose of day 7).

Management in immune- compromised patients:

- ✓ Thorough wound washing and antisepsis as described above.
- ✓ Local infiltration of RIG.
- ✓ Complete course of ARV by IM route in **Category II and III** exposures.
- ✓ If facilities are available, anti-rabies antibody estimation should be done 14 days after the completion of course of vaccine to assess the need of additional doses of vaccine.

Guide for Pre-Exposure Prophylaxis (PrEP):

- 3-dose series intramuscular (0.5 ml/1 ml) or intradermal regimen(0.1ml x 2 sites) at day 0, 7 and 28.
- Persons at high risk of exposure should get serum antibody level measured every 6 months and take a booster dose if the level falls below 0.5 IU/ltr. Routine booster doses are not recommended for general people.

Management of re-exposed cases after a full PEP or PrEP:

In case of re-exposure after a full course (Pre/Post-exposure) IM or ID vaccination, irrespective of category of exposure or time since previous vaccination -

- ✓ Doses only on day 0 and 3 (these actually serve as booster doses).
- ✓ Either intramuscular (0.5 ml/1 ml) or intra-dermal injection (0.1ml at 1 site)
- ✓ No RIG needed.
- ✓ Proper wound toilet should be done.
- ✓ If previous vaccination was incomplete/partial, treat as a fresh case.

Re-exposure following PEP with nerve tissue vaccine (NTV)-

- ✓ Treat as a fresh unvaccinated case.

Deviation from recommended PEP/PrEP vaccination schedule:

- Every effort should be made to adhere to the recommended PEP/PrEP schedule, especially for the first 2 days of treatment.
- Deviation of a few days will not necessitate fresh vaccination from the beginning of the course.
- For most minor delay or interruptions, the vaccination schedule can be shifted and resumed as though the patient were on schedule.[See FAQ for example].

FREQUENTLY ASKED QUESTIONS ABOUT ANIMAL BITE & RABIES

1. Why is observation of 10 days recommended in dog or cat, but not in bite by any other animal?

Ans: The observation period of 10 days is valid only for dogs and cats due to the fact that if the biting dog or cat has rabies virus in its saliva when it did the biting, research shows that it should die or show clinical signs of rabies within 10 days of bite.

If the biter is any other mammals other than dog or cat, research has not well defined the time frame from when shedding of virus starts until obvious clinical signs develop.

2. A monkey bite patient received the first two doses of ARV on time (on days 0 and 3) and also RIG on day 0. Then he defaulted for the third dose of ARV (day 7). However, the patient comes back on day 9. What should be done?

Ans: In this case, day 0 and 3 inj. were given and inj. due on day 7 could not be given as the patient did not turn up. When he comes back on day 9, the two remaining doses of vaccine must be given as close to the original dates of the schedule as possible i.e. the pending 3rd dose on day 9 itself and the fourth dose on day 28 as usual.

The first two doses of ARV are the most important. For the 3rd or 4th doses two or three days deviation may be accepted (although not recommended). So the running schedule can be resumed if a patient comes back a few days late.

3. A boy bitten by a cat received the first three doses of ARV in time (Day-0, Day-3 and day 7). In between 3rd and 4th shot of vaccine the boy got scratched again by a monkey drawing blood. What should be done?

Ans: No need to repeat the vaccine schedule. Just complete the usual vaccination up to 4th dose as per schedule. As first 3 doses of vaccination would be enough to produce antibodies, immunoglobulin is not needed for the latter incident.

4. If for some reason, IDRV (intradermal rabies vaccine) cannot be given in deltoid region, what are the alternative sites?

Ans: The two doses of ID injection have to be given at two sites that do not share the same lymphatic drainage. So, deltoid region of the two arms are all right. However, if deltoid region cannot be used for some reason, ID inj. can be given in suprascapular region or anterolateral aspect of thigh.

5. Is it permissible to change the vaccine type during the course of vaccination with ARV?

Ans: It is desirable that the same type of modern rabies vaccine is used through the full course of vaccination with ARV. However, when completion of PEP with the same vaccine is not possible, switching may be done. It does not necessitate fresh starting of the course. [Note that only the purified vero cell vaccines and chick-embryo vaccines that are approved by Govt. of India are recommended for ID route vaccination].

Please also note that a course of vaccine should be either ID or IM. Switching from IM to ID or reverse, in the middle of the course, is not advisable.

6. Where is IM regimen of ARV particularly recommended i.e. ID regimen is contraindicated?

Ans: In immune-compromised persons, ID route is not recommended for PEP. IM regimen is to be used in such persons. The same is true for persons who are on chloroquine for treatment or prophylaxis of malaria.

7. Why is RIG considered as life-saving?

Ans: Administration of Anti-Rabies Vaccine stimulates production of neutralizing antibodies by the patient's immune system. Protective levels of antibodies (of more than 0.5 IU/ml of serum) appear as late as 7 to 14 days after the initial doses of vaccine (window period). Therefore, in case of shorter incubation period the patients are vulnerable to develop rabies during this window period of 7 to 14 days. RIGs are readymade anti-rabies antibodies and provide immediate passive immunity to rabies.

8. A boy bitten by a dog, has come to a PHC-OPD 3 days after the bite. Is wound washing necessary at this stage?

Ans: Yes. Since the rabies virus can persist and even multiply at the site of bite for a long time, wound washing must be performed even if the patient reports late.

9. A man, complaining of scratches by a monkey drawing blood, comes to the OPD 4 days after the incident. The M.O. examines the wound and decides to give anti-rabies vaccine. Should he also be given RIG although it is 4 days late?

Ans: Yes. RIG should be given at the first opportunity (but not beyond 7 days of initiation of ARV).

10. An animal bite patient presented at BPHC on the day of bite itself and has been given ARV inj on the day of bite. The second dose of ARV has also been given on Day-3. But RIG was not available at that time and would become available after Day-5. Can it be administered on Day-6 to that patient?

Ans: Yes. it can be administered up to the seventh day after the administration of the first dose of ARV, but not beyond that. Although it is recommended that RIG be administered on day 0 itself (i.e. the day of first dose of ARV), it is not essentially required that RIG and first ARV are given on the same day.

11. Why RIG should not be administered after seventh day of first vaccination?

Ans: Beyond the seventh day (after 3 doses of ARV have been administered), RIG is not indicated since an antibody response to ARV would have occurred by that time and administration of RIG at this stage can suppress the immune response of the patient to the ARV received.

12. Can RIG alone be administered if inj. ARV is not available at that time?

Ans: If the category of bite deserves administration of RIG (as per treatment protocol), the same should be given as early as possible even if inj. ARV is not available at that time. However, inj. ARV should follow at the earliest opportunity.

13. Splash of animal saliva in eye or on lips: What to do?

- ✓ Contact of cornea or conjunctiva with animal saliva constitutes Category III exposure.
- ✓ Thorough rinsing with water is to be done immediately.
- ✓ Thereafter RIG is to be instilled as drops in the eye in normal dilution (as is used for injection).
- ✓ If animal saliva falls on lips, the saliva is to be washed away thoroughly with water and mouth is to be rinsed well.
- ✓ Then the lips may be rinsed with RIG in normal dilution.

14. What is the purpose of Pre Exposure Prophylaxis (PrEP)? Who should take PrEP?

Ans: Purpose of PrEP is to pre-immunize the persons who are at high risk of getting infection so that they can get protection against rabies exposure.

High risk group includes:

- Veterinarians
- Laboratory staff handling the virus and infected materials
- Clinicians and persons attending to human rabies cases
- Animal handlers and catchers, wildlife workers
- Quarantine officers and
- Travelers from rabies free areas to rabies endemic areas.