

**GUIDELINES
ON
INTRADERMAL RABIES VACCINATION
(IDRV)**



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1. Details of TCV (Tissue Culture Vaccine)

Vaccines to be applied by intradermal route of administration should meet WHO requirements for production and control related to vaccines for intramuscular use, including an NIH test potency of at least 2.5 IU per single (intramuscular) dose.

The principles that allow intradermal vaccination are the better response to an equal volume of antigen when placed in contact with the langerhans cells of the epidermis and the use of multiple sites of vaccination to obtain maximum drainage of the antigen presenting cells to the lymph nodes.

The Thai CDC recommends for IDR use with PVRV (0.5ml vials) with a potency of minimum 0.5 IU per ID dose, For PCECV and HDCV (1ml vial) minimum of 0.7 IU potency per ID dose (0.1 ml or 0.2ml).

Vaccines that can be used through intra-dermal route for Post-Exposure Prophylaxis against Rabies as approved by WHO/ICMR studies are as follows:

- Purified Vero Cell rabies vaccine (PVRV) produced by Aventis Pasteur (Sanofi- Pasteur), India, Pvt. Ltd, marketed by Ranbaxy (VERORAB).
- Purified Chick Embryo Cell rabies vaccine (PCEC) produced by Chiron Vaccines Pvt. Ltd. (RABIPUR)
- Purified Vero Cell Rabies vaccines (PVRV) produced by Human Biological Institute, Ooty, Chennai, (Abhayrab).
- Purified Vero Cell Rabies vaccines (PVRV) produced by Pasture Institute of India, Coornoor, Tamil Nadu.

2. The sites where intra-dermal will be given

The regimen approved by the WHO/DCGI is Updated Thai Red Cross Regimen (“2-2-2-0-2”).

The usual sites of administration are on two different lymphatic drainage sites (usually the left & right upper arm i.e. **deltoid region of each arm**) on days of 0, 3, 7 & 28.

In case a bite site in on the arm, the vaccine can be given by ID route on either thighs or both supra-scapular areas.

3. Dosage and age group

0.1 ml (4 units of an Insulin Syringe) on each ID site in all age groups.

Method of administration

One dose of vaccine, in a volume of 0.1ml is to be injected through intra-dermal route. The skin has to be first made sterile and the site of administration to be stretched. The needle with its bevelled-end facing upward should be pierced in the stretched skin up to 5 mm. Then the vaccine is to be slowly injected. A perfect ID administration will lead to formation of an elevated wheal of about 5mm in diameter with peau-de-orange appearance i.e. a visible & palpable “bleb” in the skin.

In the event that a dose of vaccine is inadvertently given subcutaneous or intramuscularly, a new dose should be administered intradermally at near by side.

If a dose is given subcutaneously then there is a possibility of poor immune response due to low antigenic load.

4. The types of disposable syringes & needles to be used

IDRV is best given with the use of **insulin syringes with needle (26G)** attached to the syringe. Each insulin syringe has a mark of 40 units, which is **equivalent to 1 ml volume. So for 4 units the volume becomes 0.1ml.** Therefore 8 units of the vaccines make up for 0.2ml where in 0.1ml (4units) can be injected intra-dermally per site of vaccination. Preferably separate syringe and needles must be use for each vaccine and adequate Bio-medical waste management measures must be adhered to.

5. Sterilization procedure and cold chain to be maintained

The Intra-dermal Vaccination process must be carried out under standard aseptic procedure. As the syringes are available in sterilized pack, hand-washing & other aseptic precautions are to be ensured.

Cold-chain maintenance: The TCV's against Rabies are freeze dried and have to be reconstituted by the diluent supplied by the same manufacturer. The reconstituted vaccine must be used as soon as possible. The IDRV administration of TCV's can be given to more than one person and at times even some amount of vaccine may be left in the vial which can be given to another person but the reconstituted vaccine has to be kept under cold chain (+2 to +8 degree C). It may be kept as such and used within one session (**4-6 hours after reconstitution**) as with other freeze dried vaccines as BCG and Measles. Though some authors (10, 11) have shown the efficacy of the reconstituted vaccine even after more than 24 hours, but for practical purposes **it should be used between 4 to 6 hours**. So to prevent wastage of vaccine, at least 2 PET cases (for 0.5ml volume vaccine) must be present before a vial is reconstituted.

6. Type of patients and bite where Inj. A.R.V. will be given

All animal bite cases with Category II & III exposure (as per WHO Classifications).

Administration of Rabies Immuno-globulin (RIG) should be done along with Vaccine in all Category III exposures.

Table 1: WHO Guide for post-exposure treatment against Rabies

Category	Type of contact with a suspected or confirmed rabid domestic / wild animal unavailable for observation.	Recommended treatment.
I	Touching or feeding or animal licks on intact skin.	None, if reliable case history is available.
II	Nibbling of uncovered skin, Minor scratches or abrasions without bleeding. Licks on broken skin.	Administer vaccine immediately. Stop treatment if animal remains healthy throughout an observation period of 10 days or if animal is killed humanely and found to be negative for rabies by appropriate laboratory techniques.

III	Single or multiple transdermal bites or scratches. Contact of mucous membrane with saliva (i.e licks)	Administer rabies immunoglobulin and vaccine immediately. Stop treatment if animal remains healthy through out an observation period of 10 days or if animal is killed humanely and found to be negative for rabies by appropriate laboratory techniques.
	a. Exposure to rodents, rabbits and hares seldom , if ever requires specific anti-rabies treatment.	
	b. If an apparently healthy dog or cat in or from a low risk area is placed under observation, the situation may warrant delaying initiation of treatment.	
	c. This observation period applies only to dogs and cats. Except in the case of threatened or endangered species, other domestic and wild animals suspected as rabid should be killed humanely and their tissues examined using appropriate laboratory techniques.	

7. Precautions, Dos and Don'ts

DO's	Don'ts
Vaccine handling and administration	
<ul style="list-style-type: none"> Only trained person should give ID injection. Use 1ml AD syringe with 25 or 27 gauge needle. Wash hand before handling the vaccine. Check the level for type of vaccine and expiry. For each dose use one syringe & needle. Inject vaccine at correct site, parallel to skin into the dermis, see for the BLEB. Explain the dose schedule to the patient and tell when to come next. Proper disposal of needle and syringe using hub cutter. 	<ul style="list-style-type: none"> Do not allow untrained person to give ID injection. Do not use the vaccine without label. Do not leave the needle inside the vial. Do not touch or massage the vaccination site.

Recording and Reporting	
<ul style="list-style-type: none"> Record the category of exposure and type of TCARV administered. 	
Vaccination Schedule	
<p>Irrespective of age and weight of patient the ID dose and dosage schedule is same.</p> <p>Days: 0- 3 – 7 – 14 – 28</p> <p>Dose: 2 - 2 - 2 – 0 – 2 (sites)</p>	

Cold Chain	
<ul style="list-style-type: none"> Vaccine vials to be stored in +2 to +8 degree centigrade. The time of reconstitution to be mentioned on the vial. Reconstitute with the diluents provided with the specific vaccine. Make sure the diluents are stored at +2 to +8 degree centigrade. After reconstitution use the vaccine immediately. If not then store it in +2 to +8 degree centigrade and use within 6-8 hours of time. 	

Vaccine should be **strictly administered intra-dermally** and if it is given subcutaneously then re-vaccination of the dose should be done. However, this will not occur if Hands on training is imparted to the vaccinators before implementation.

The vaccines should be counselled to **abstain from alcohol consumption during the course of vaccination.**

8. Adverse reactions if any and its management

IDRV is quite safe & effective. Minor side-effects as redness, pain & local pruritus may occur at the site of injection. These are very mild and usually do-not need any medication. Systemic side-effects as fever & myalgia also can occur which can be managed **symptomatically with oral anti-histamines or paracetamol.**

If a dose is given subcutaneously then there is a possibility of poor immune response due to low antigenic load.

9. Basic informations about Rabies

Rabies is a zoonotic disease caused by Lyssa virus and **transmitted to man mainly by bite of a rabid animal.** This disease is endemic through out the world. **About 20, 000 deaths occur due to the disease every year in India. It is 100% fatal but can be made 100% preventable.**

Anti Rabies treatment is based on local wound care and administration of appropriate rabies biologicals as rabies immunoglobulin and vaccine. Cell culture vaccines are used against Rabies after the WHO's recommendation to withdraw nerve tissue vaccine (NTV) for human use since 1983. **Seventeen Million animal bite cases are reported annually (2004).** The use of tissue culture vaccine as post exposure treatment (PET) by Essen regimen entails a great burden on the Government exchequer. WHO has recommended the intra-dermal Rabies Vaccine (IDRV) as a cost effective form of PET (3). The use of IDRV has been proved to be effective resulting in antibody titre of more than 0.5 IU/ml, which is the sero-protective level. The Drug Controller General of India (DCGI) has also suggested this route of vaccine administration for PET in our country.

The principles that allow intra-dermal vaccination are the better response to an equal volume of antigen when placed in contact with the **langerhans cells of the epidermis** and the **use of multiple sites of vaccination to obtain maximum drainage of the antigen presenting cells to the lymph nodes.**

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