



PRE-EXPOSURE PROPHYLAXIS OF RABIES

DR. G.P. KAUSHAL

MD, DNB, FELLOW NEONATOLOGY(AIIMS)

CONSULTANT PEDIATRICS

DELHI

Vaccination against Rabies is used in two distinct situations:

- A. to protect those who are at risk of exposure to rabies, i.e. pre-exposure vaccination;

- B. to prevent the development of clinical Rabies after exposure has occurred, usually following the bite of an animal suspected of having rabies, i.e. post-exposure prophylaxis.

PRE-EXPOSURE PROPHYLAXIS

The vaccines used for pre-exposure and post-exposure vaccination are the same, but the immunization schedule differs.

Modern vaccines of cell-culture or embryonated egg origin are safer and more effective than the older vaccines.

- 1982 statement by the US Advisory Committee on Immunization Practices (ACIP) reviewed data on >1,500 vaccinees and declared, “It appears that, the 0.1-mL ID regimen is an acceptable alternative to the currently approved 1.0-mL IM regimen for preexposure prophylaxis.”

Pre-exposure rabies prophylaxis: a systematic review.

[Kessels JA](#)¹, [Recuenco S](#)², [Navarro-Vela AM](#)³, [Deray R](#)⁴, [Vigilato M](#)⁵, [Ertl H](#)⁶, [Durrheim D](#)⁷, [Rees H](#)⁸, [Nel LH](#)⁹, [Abela-Ridder B](#)¹⁰, [Briggs D](#)¹¹.

OBJECTIVE: To review the safety and immunogenicity of pre-exposure rabies prophylaxis (including accelerated schedules, co-administration with other vaccines and booster doses), its cost-effectiveness and recommendations for use, particularly in high-risk settings.

CONCLUSION:

- Pre-exposure rabies prophylaxis is safe and immunogenic and should be considered: (i) where access to postexposure prophylaxis is limited or delayed; (ii) where the risk of exposure is high and may go unrecognized; and (iii) where controlling rabies in the animal reservoir is difficult.
- Pre-exposure prophylaxis should not distract from canine vaccination efforts, provision of post-exposure prophylaxis or education to increase rabies awareness in local communities.

Rabies pre-exposure prophylaxis elicits long-lasting immunity in humans.
[Mansfield KL](#)¹, [Andrews N](#)², [Goharriz H](#)³, [Goddard T](#)³, [McElhinney LM](#)¹, [Brown KE](#)⁴, [Fooks AR](#)⁵.

[Vaccine](#). 2016 Nov 21;34(48):5959-5967. doi: 10.1016/j.vaccine.2016.09.058. Epub 2016 Oct 27

- In this study, the rabies-specific neutralising antibody responses in a cohort of rabies-vaccinated recipients over a period of twenty years have been assessed.
- RESULTS confirm that rabies vaccination can elicit a neutralizing antibody response that can remain at detectable levels for a number of years, without additional booster vaccinations.

INDICATIONS

- At risk groups like laboratory staff handling the rabies virus and infective material
- Clinicians and persons attending to human rabies cases,
- Veterinarians, animal handlers and catchers, wild life wardens,
- Travelers from rabies free areas to rabies endemic areas.
- Advisable for children living in or visiting countries or areas at risk, where they provide an easy target for rabid animals.

SCHEDULE Contd..

- The regimen is one dose of **0.1mL vaccine given by ID route Deltoid region on days 0, 7 and 21 / 28.**

SCHEDULE Contd..

- Of late in 2017, a World Health Organization (WHO) expert committee surprised many travel medicine practitioners by endorsing a 2-dose rabies pre-exposure immunization schedule.
- **DAY 0 & DAY 7 – 0.1 ml ID BOTH DELTOIDS**
- But using this new regimen will constitute an “off label” practice. PrEP induces circulating memory cells for life time and further booster doses are indicated in high risk groups.

Vaccine.2019 Aug 23;37(36):5307-5313. doi: 10.1016/j.vaccine.2019.07.055. Epub 2019 Jul 26.

A randomized open-label trial of 2-dose or 3-dose pre-exposure rabies prophylaxis among Thai children.

- **CHILDREN 2-12 YRS .**
- **RABIES NEUTRALIZING ANTIBODIES > 0.5 IU/ML**

CONCLUSIONS: Two-dose primary rabies immunization provided adequate antibody at post primary vaccination and post booster. The results support 2-dose regimen of pre-exposure rabies immunization in the pediatric population.

IAP-ACVIP

- Pre-exposure prophylaxis (Pre-EP) is recommended in the following two situations:
 - Children exposed to pets in home.
 - Children identified to have a higher risk of being bitten by dogs.

Safe with other concurrent vaccines.

BOOSTER ??

- **Persons working with live rabies virus in diagnostic laboratories, research laboratories, vaccine production laboratories, at permanent risk of exposure to rabies should have One serum sample taken every six months and booster dose when the titre falls below 0.5 IU/ml**
- **Others professions (veterinarians, animal handlers, wildlife officers etc) working in rabies endemic areas should have one serum sample taken every two years and booster dose when the titre falls below 0.5 IU/ml**
- **Routine booster vaccine doses after primary rabies vaccination are not required for the general public living in areas of risk.**

ADVANTAGES

- In case of subsequent exposure to virus through animal bite only 2 doses of anti Rabies vaccine on Day 0 (day of exposure) and day 3 are required.
- No RIG is needed.
- Notably, human RIG and equine RIG are often unavailable in developing countries, although modern cell-culture rabies vaccines are increasingly available. Thus, pre-exposure rabies immunization can facilitate adequate post-exposure rabies prophylaxis.

- Less no. of vaccine doses
- No RIG
- Less no. of visits to the health care facility for PEP.

THANK YOU

