# Title: A COMPARATIVE STUDY OF ESSEN, ZAGREB & IDRV SCHEDULE IN RELATION TO ANTIBODY RESPONSE

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## Keywords

## Abstract

There are many dose schedules used in the management of animal bite victims and the accepted schedule in India are modified TRC-ID schedule in IDRV and Essen schedule in intramuscular (IM) vaccination against Rabies.

Original Article:

# A Comparative Study of Essen, Zagreb & IDRV schedule in relation to antibody response

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## Introduction

There are many dose schedules used in the management of animal bite victims and the accepted schedule in India are the modified TRC-ID schedule in IDRV and the Essen schedule in intramuscular [IM] vaccination against Rabies. A 4 dose IM regimen also seems to be a very immunogenic which is known as Zagreb schedule. Each of these schedules are effective and the treating physician has got the option to treat the patient as per his or her choice. It should also be remembered that each schedule has got specific advantages.

Zagreb schedule is used in many parts of the world. This protocol is also highly effective in managing animal bite wound.

## Objectives

To compare the immunological response in different treatment schedule of anti-rabies vaccination.

## Methods

| | |
|---|---|
| Study design | Prospective study |
| No. of subjects | 15 in each group |
| Study Period | June 2007- April 2011 |
| Place of study | Kolkata, West Bengal |
| Inclusion Criteria | Patient presenting with dog and cat bites |
| Exclusion Criteria | Immuno compromised individuals any other bites |
| Treatment Schedule | Pts blood was tested for Antibody Titre (ELISA) from Day 12 to Day 42 |

## Description of the Schedule & Route of administration

- Essen : Single Vial by IM on Days 0, 3, 7, 14 and 28
- IDRV: 0.1 ml ID shots over each deltoid region (2 shots) on Days 0, 3, 7 and 28
- Zagreb: Single vial IM doses used. 2 doses, one on each deltoid on Day 0, One dose each on Day 7 and 21.
- For pre-exposure prophylaxis: 0, 7, 21/28 both Essen & IDRV

In all categories III cases RIG was administered along with vaccine.

| Zagreb Schedule | Essen | IDRV(2 site/8 site) |
|---|---|---|
| Day 0(2 doses) | Day 0(1 dose) | Day 0 (2 doses) |
| Day 3 (No Dose) | Day 3 (1 dose) | Day 3 (2 doses) |
| Day 7 (1 dose) | Day 7 (1 dose) | Day 7 (2 doses) |
| Day 14 (No Dose) | Day 14 (1 dose) | Day 14 (No dose) |
| Day 21 (1 dose) | Day 28 (1 dose) | Day 28 (2 doses) |

## Discussion

Double dose vaccination on day 0 has better antibody response (in Zagreb protocol) to other schedule and the rationality of administering Day 14 dose should be reassessed. In IDRV and Zagreb schedule the day 14 dose is skipped and the antibody

## Results

**Table showing Antibody response in different schedule**

| No. of days following Immu | Essen schedule I/U/ml * | Zagreb Schedule I/U/ml * | IDRV I/U/ml * | With RIG I/U/ml * |
|---|---|---|---|---|
| **Day 12-14** | 0.5-6.0 (3.5) | 0.6-7.0 (4.2) | 0.5-5.5 (3.2) | 0.5-5 (4.2) |
| **Day 21#/ Day 28** | 2.6-8.0 (4.8) | 4.0-10.0 (6.8) | 2.6-6.0 (5.0) | 4.0-8.0 (5.3) |
| **Day 42** | 4.0-9.0 (5.2) | 5.0-10.5 (7.0) | 4.9-7.0 (5.5) | 4.0-11.0 (6.4) |

***Values Showing Range and Mean (.)**
**#Day 21 is only for Zagreb.**

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response on day 14 has shown adequate seroprotection after administering three doses of vaccine. Moreover this study shows no significant difference in antibody response in Zagreb and IDRV schedule. It is also evident that Zagreb protocol is superior to Essen schedule and even sometimes better than IDRV also.

All treatment schedules give adequate antibody response. However Day 14 dose in Essen schedule dose not show much added benefit in producing much higher antibody level in comparison to Zagreb and IDRV schedule. More over a separate study on immunecompromised patient has to the thoroughly ascertained.

In this study it is also evident that adequate dose within day 14 (after day 0/3/7) can induce 100% sero conversion and by day 21 and day 28 may be considered as a booster dose which allows wide margin of safety in managing animal bite wound.

In Zagreb schedule, the duration of its course is completed by 21 days and hence a better compliance.

Since the dosage of Day 14 is skipped, it saves wastage of a man day.

The IDRV schedule is beneficial only in hospital set up because it is cost effective only when large number of pts is treated.

In Essen schedule the rationality of Day 14 schedule is questioned.

## Conclusion

In the light of above discussion, it is evident that the Zagreb Schedule is better as it provides better immune response, in treatment days and hence better compliance.

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