

Dropout Rates After First Dose in a Two Dose Measles Vaccination at an Immunization Clinic in Northern India

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In India, under the National Immunization Programme, measles immunization (with Edmonston Zagreb strain) is recommended at 9 to 12 months. However, to prevent occurrence of disease before the age of nine months in developing countries, a two dose regime for measles vaccination has been advocated. The usual recommended strategy is of giving the first dose at six months followed by a second dose at fifteen months(1). However, before such a strategy is routinely recommended, the following factors need consideration: (i) The experience with other multiple dose vaccines indicates the possibility of some drop out between the two doses; and (ii) The effectiveness of measles vaccine as a single dose at six months is only 60-65%(2) compared to 85% at nine months(3). If the drop out rates is high, then we will be left with several children immunized at six months who are still susceptible to measles at a later stage in life. Vaccine failures are undesirable and detrimental to the credibility and hence success of the

programme. The present study was conducted to evaluate the drop out rates after the first dose in a two dose measles vaccination schedule at an Immunization Clinic in Northern India.

Subjects and Methods

The Child Welfare Centre (CWC) at Ballabgarh run by the All India Institute of Medical Sciences introduced the strategy of two dose regime of measles vaccine in its immunization schedule from 1989. All the children, at the time of third dose of DPT, are asked to come at six months for measles vaccination. All the children above six months attending the OPD are immunized with measles vaccine. The vaccine is given three days in a week. If the child is less than nine months, a second dose is recommended at fifteen months. The records available in the register at immunization counter for the period August 1994 to July 1995 were studied to estimate the drop out rate between first and second dose of measles vaccine. The register separately records whether the measles vaccine given is first or a booster

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dose, based on the immunization card /history of the child.

Results

A total of 1,688 doses of measles vaccine were given at CWC during the study period (Table 1). This averages to about 10-12 doses per vaccination day. The major proportion (50.2%) of vaccine was given as the first dose of two dose regime. About one fourth of the children accepted a single dose measles vaccine at any age beyond 9 months. The drop out rate between first and second dose of measles vaccine was 59.5%. If the best estimate is used, *i.e.*, all those whose ages were not mentioned were assumed to be the second dose receivers then the drop out rate comes down to 53%.

Discussion

In the study area, a good proportion (50.2%) of children came for early vaccination of measles, *i.e.*, before nine months. This is despite the communication by the Government media that measles vaccine is to be given only at the age of nine months or more. The drop out rate between the first and second dose of measles vaccine in a clinic setting was estimated to be between 53%-59%. As the

study data came from records only, it is possible that these children could have got the second dose elsewhere.

The drop out rate between three doses of DPT for the same time period in the clinic was 10% between first and second and 20% between first and third dose. The drop out rates for measles are higher as the gap between the two visits is usually around nine months. The dropout rate between third dose and booster dose of DPT (a gap of one year) was as high as 59% which is similar to that of measles. Thus, at least half of those receiving the first measles vaccine at six months may not get the second dose, leaving a good proportion of them susceptible to measles. The dropout rates estimated from this study are for a clinic based approach. The drop out rates are likely to decrease if this strategy becomes a part of the National Immunization Schedule as the accessibility will improve. This concern about the significant decline in compliance between the first and the second dose has also been voiced by the WHO(4).

Drop out rate is just one of the factors which effect the success of the two dose schedule. Other factors like cost, logistic and operational aspects also need to be considered before a definite answer can be given.

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TABLE I- Distribution of Measles Vaccine Doses by Age at Immunization (1994-1995).

| Age (%) | Description | Number |
|---------|--------------------------------|------------|
| 6-9 | First dose of two dose regime | 847 (50.2) |
| >9* | Single dose regime | 442 (26.2) |
| >15 | Second dose of two dose regime | 343 (20.3) |
| N.M. | Age not mentioned | 56 (3.3) |
| Total | 1688 (100.0) | |

* Includes all single dose recipients irrespective of age.