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Age for Assessment of Trivalent Oral Polio Vaccination Coverage: Is there a Need for Revision in India

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During the past decade great emphasis has been placed on immunization. It has taken the shape of the Universal Immunization Programme (UIP) in 1985 and Im-

munization Mission in 1989. The important objective is to achieve 85% coverage of eligible infants and pregnant women through intensified efforts(1). One such effort is Integrated Child Development Service (ICDS) Scheme. The managers of UIP have been evaluating the immunization coverage under one year of age. The objective of this study is to evaluate the coverage *as per the recommended age of immunization schedule* of Government of India namely 6, 10 and 14 weeks so as to know whether there is a need to bring down the age limit for coverage evaluation of trivalent oral polio vaccine (TOPV) to under 6 months for better provider and consumer compliance.

Subjects and Methods

Cross-sectional surveys were done in June, 1988 and in October 1989 in an ICDS project area of Madras city. The birth and immunization records of all the children in the project area are maintained at the ICDS centers. The study population, all children aged 0-11 months were enumerated. Data regarding immunization status of TOPV, DPT, BCG and measles vaccine was documented in a proforma from the records of individuals and/or registers in the centers by the Anganwadi workers, after they were trained to do so. Random

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checking of a sample of 5% of the records was done by the Research Officers. There were no differences between the two. The exact age of administration of TOPV and DPT and the place of vaccination were obtained in the 1989 survey. Age refers to completed months.

Results

There were 1156 and 1008 children aged 6 weeks to 11 months in 1988 and 1989, respectively, equally distributed between the two sexes. *Table I* shows the comparison of TOPV (3 doses) immunization status for 1988 and 1989 of eligible children for 3 doses of TOPV (4 to 11 months). The immunization coverage of

TOPV for eligible children was 66 and 75% under one year but only 25 and 44% under 6 months during the years 1988 and 1989, respectively. The improvement in coverage under 6 months was much better than that of under 12 months.

The measles immunization coverage was 55 and 59% in 1988 and 1989, respectively showing an absolute increase of 24% in a period of 15 months. The age of immunization of TOPV for the year 1989 is shown in *Table II*.

It is to be noted that maximum number of children, 578 (57%), have received the first dose after the age of 2 months. Using the WHO guidelines(2), for this group of children, the dropout rates, as per sche-

TABLE I—Comparison of TOPV₃ Immunization Status: 1988 and 1989

| Age (mo) | 1988 | | | 1989 | | |
|----------|-----------------------|------------|--------------------------|-----------------------|------------|--------------------------|
| | No. eligible Each mo. | Cumulative | Immunized Cumulative (%) | No. eligible Each mo. | Cumulative | Immunized Cumulative (%) |
| 4 | 86 | 86 | 17 (20) | 100 | 100 | 34 (34) |
| 5 | 64 | 150 | 37 (25) | 107 | 207 | 92 (44) |
| 6 | 105 | 255 | 95 (37) | 99 | 306 | 184 (60) |
| 7 | 123 | 378 | 180 (48) | 90 | 396 | 239 (60) |
| 8 | 138 | 516 | 290 (56) | 64 | 460 | 293 (64) |
| 9 | 126 | 642 | 382 (59) | 62 | 522 | 352 (67) |
| 10 | 126 | 768 | 478 (62) | 128 | 650 | 467 (72) |
| 11 | 122 | 890 | 583 (66) | 120 | 770 | 580 (75) |

TABLE II—Age of Vaccination of TOPV: 1989 (n = 1008; 6 weeks to 11 months old)

| TOPV dose | Age in months at which TOPV was given | | | | | | | | | | | Total |
|-----------|---------------------------------------|------------|------------|------------|-----|----|----|----|---|----|----|-------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | |
| I | 74 | <u>578</u> | 165 | 49 | 21 | 8 | 2 | 1 | 2 | — | — | 900 |
| II | — | 52 | <u>454</u> | 145 | 61 | 24 | 17 | 7 | 1 | 2 | 2 | 763 |
| III | — | — | 36 | <u>320</u> | 112 | 62 | 28 | 18 | 8 | 4 | 1 | 589 |

dule, between I and II, II and III and I and III are 21, 29 and 45%, respectively.

Discussion

Before the UIP coverage evaluation there was no uniformity as to the age in the assessment of immunization coverage. In the published data on immunization coverage from different places in India the age ranged from 2 to 12 years(3-9). The method adopted in our study is different from that of UIP, in that it covered all children aged 6 weeks to 11 months in a defined geographical area. Emphasis is placed on *the evaluation of immunization coverage as per the scheduled age.*

Among vaccine preventable diseases our main concern presently is poliomyelitis and measles, which continue to contribute to high morbidity and mortality. The TOPV immunization coverage in this ICDS project area has been satisfactory. Though the program aims to have full coverage under 1 year, only 65.5 and 75.3% coverage were obtained for TOPV (and DPT) in 1988 and 1989, respectively. There were still 108 out of 1008 (10.7%) children who had not received the first dose even at the age of 11 months. Our data shows improved coverage for TOPV compared to the recent survey(3).

The message that first dose of TOPV (and DPT) should be started at 6 weeks (42 days) of life has not reached the consumers in spite of the schedule being in vogue for more than five years. Our data shows only 7% have had this benefit. The 1989 coverage survey shows that only 44% had received 3 doses of TOPV under the age of 6 months. At the Institute of Child Health, a sentinel center for poliomyelitis, in 1988-89, 35% of polio cases of Madras city area were between 6 and 11 months of

whom 74% were unimmunized or partially immunized. If we assume the efficacy of TOPV₃ to be 80% then 21% of the polio cases could have been prevented had the immunization been completed by the 4th or 5th month of age.

UIP stresses the vaccination coverage for TOPV under one year among 12-23 months old. We have made an attempt to stress that in due course, coverage evaluation has to be modified to the targetted population 6-25 weeks among 6-11 months old, in order to prevent poliomyelitis that occurs in the age group of 6-11 months (21% of the total polio cases).

We conclude that completion of immunization before 6 months of age could have prevented 21% of poliomyelitis. We recommend that attempts should be made to increase the immunization coverage and reduce postponement and dropout rate: (i) Clinicians and para-clinical workers should intensify health education and should impart knowledge to the parents about the importance and need for immunization at the appropriate age, commencing at 6 weeks and completing before 6 months of age. (ii) The commonest reason for postponement/dropout in immunization is minor illnesses like cold, cough, etc. which are considered as contraindications. The managers of the programme have to take intensive measures to educate the health care providers—clinicians and para-clinical workers—and consumers, the public that the minor illnesses are not contraindications for immunization.

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Hepatic Hemangioendothelioma and Neonatal Hepatitis

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Infantile hemangioendothelioma is an uncommon vascular tumor of the liver(1). Many authors have described a triad of hepatomegaly, congestive heart failure (CHF) and cutaneous hemangioma(2-5). But occurrence of jaundice has been very rarely encountered with hemangiomata of the liver(4). During neonatal period when hepatic hemangioendothelioma is associated with jaundice, it poses a great problem in diagnosis. So far 21 cases of hemangioendothelioma with jaundice have been reported(4). We describe a 2-month-old infant who had hemangioendothelioma and neonatal hepatitis. Clinically his presentation simulated neonatal hepatitis. The rare association of hepatic hemangioendothelioma with neonatal hepatitis without cutaneous hemangioma and CHF prompted us to document this case.

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