

## **A Process Evaluation of Pulse Polio Immunization**

**Jotna Sokhey, Stephen Atwood\*, Jon Andrus<sup>+</sup>, K. Suresh\* and K. Banerjee**

On 9 December 1995 and 20 January 1996, the Government of India (GOI) initiated the first round of its polio eradication strategy; two single-day mass immunizations of children less than three years old with oral polio vaccine (OPV). This Pulse Polio Immunization (PPI) strategy represented a massive logistical and community mobilization initiative, which was planned over a period of approximately six months.

In order to provide a critique of the first day of the PPI (9 December) that could lead to improvement on Day 2 (20 January), the Ministry of Health and Family Welfare (MCH Section), UNICEF and WHO designed a rapid qualitative evaluation of the day by independent observers spread throughout the country. In addition to providing timely information for mid-course correction in Round 1, the group was also experimenting with a new, rapid and inexpensive method of data collection using a modified mail-in survey.

### **Methodology**

A three-part instrument was developed in New Delhi. Part 1 interviewed the principal

---

*From the MCH Section, Ministry of Health and Family Welfare, Government of India, Nirman Bhawan, New Delhi 110 001; \*Health Section, United Nations Children's Fund, India Country Office, UNICEF House, 73, Lodi Estate, New Delhi 110 003; and \*South East Asia Regional Office, World Health Organization, World Health House, Indraprastha Estate, New Delhi 110 002.*

*Reprint requests: Dr. K. Suresh, Project Officer, Health Section, United Nations Children's Fund, India Country Office, UNICEF House, 73, Lodi Estate, New Delhi 110 003.*

coordinator at each immunization post (IP); Part 2 was for recording the observations of the surveyor; and Part 3 was a protocol for exit interviews of four participants in the program. Each part of the instrument was designed to take less than five minutes to complete giving a total maximum time of 30 minutes for a full observation of one Immunization Post (IP) to be completed. It was anticipated that each volunteer would visit one IP.

Two thousand protocols were printed and distributed through regular mail service to volunteers from different professional fields throughout the country. Initially, volunteers were identified as government officials, faculty members of various medical schools including Departments of Community Medicine and Pediatrics, Rotarians, Medical staff, Delhi-based WHO/UNICEF staff, UNICEF field staff and members of other supporting donor agencies. The total number of protocols distributed cannot be determined, as some volunteers independently photocopied the forms and distributed them to colleagues. All volunteers were asked in an accompanying letter to fill in each of the protocols and return them to a common address in the Ministry of Health and Family Welfare (MOHFW).

Analysis of returned protocols was begun by UNICEF office staff (four staff for three days), and later finalized by 11 medical students (three days each) from 2 medical colleges<sup>1</sup>. Under the guidance of Dr. K.

---

<sup>1</sup>*Six students from Rohtak Medical College, Rohtak, Haryana, and three students from Lady Hardinge Medical College, New Delhi.*

Suresh results were collated and verbatim responses recorded. As the protocol was designed to record primarily qualitative data, it was not coded for quantitative (computerized) analysis. This was \* in part because the size of the response was not anticipated.

**Results**

A total of 1070 forms were returned denoting the observations of the same number of IPs. The total cost of the evaluation was Rs. 17000. Of the 1070 forms received, some were incomplete in all responses; therefore, the denominator was not constant for different variables. The salient findings are summarized below.

*Distribution of Immunization Posts Visited*

A total of 1070 IPs in 25 out of the 31 states and UTs (including all major states) spread over 167 districts were visited by observers (Table I). Of the 1070 posts visited, 54% were urban, 28% rural, 13% urban slum, 2% transit points and the remaining were resettlement colonies and tribal areas. In about 3% of the forms, the type of booth visited was not clearly indicated.

*Respondents*

The observers (n=930) included medical college faculty (22%), government officers from Health and other departments (33%), Rotarians (8%), UNICEF/WHO staff (23%), and NGOs and others (14%). Some respondents visited more than one IP.

*Immunization Post Staffing and Skills*

Of a total of 735 PPI coordinators interviewed, 33% were medical doctors, 27% were health and other government staff, 2% teachers, 38% NGOs and others. A number of forms indicated the name of the person only, without the designation, making it difficult to categorize with specificity. Hence, the proportion of

'others' appears to be high As against the suggested personnel of at least four persons per PPI booth, more than 85% had four or more persons, suggesting that adequate numbers of personnel were deployed. The personnel included health staff (27%), teachers (17%), NGO (10%), Anganwadi workers (11%), students (13%), community volunteers (13%) and others (9%).

Only 5% (215 out of 4000+ observed) of the children were observed being given more than 2 drops of OPV. Under dosage

**TABLE I-Districts and PPI Booths Visited by Observers**

Sl.No.	State	Districts visited	Posts visited
1.	Kerala	7	28
2.	Andhra Pradesh	10	61
3.	Karnataka	7	47
4.	Chandigarh	3	29
5.	Madhya Pradesh	7	55
6.	Bihar	10	23
7.	Tamil Nadu	19	241
8.	Jammu & Kashmir	4	7
9.	Uttar Pradesh	14	86
10.	Rajasthan	11	108
11.	Himachal Pradesh	6	22
12.	Gujarat	11	56
13.	West Bengal	11	66
14.	Delhi	1	60
15.	Haryana	10	33
16.	Orissa	11	39
17.	Dadra & Nagar Haveli	1	7
18.	Assam	2	8
19.	Pondicherry	1	6
20.	Maharashtra	11	48
21.	Punjab	4	30
22.	Meghalaya	2	5
23.	Goa	2	2
24.	Manipur	1	2
25.	Lakshadweep	1	1
Total		167	1070

was recorded for only 12 children. Lack of accuracy in dosage was felt mainly to be due to the difficulty in handling the vaccine vial cap by newly trained personnel.

The record maintenance was done using pre-printed tally sheets (34%), names being written (33%), ticked in enumeration list (27%) and the remaining by other means. Multiple record maintenance was also reported in around 400 booths.

#### *Vaccines and Cold Chain*

In general, the vaccine supply was recorded as adequate. In approximately 8% of booths a shortage of vaccine was noted, and in about 5% of the booths, delayed arrival of vaccine was reported. Qualitative reports indicated that wherever a shortage was observed, arrangements were made from the nearest store. Example of one state, Orissa, giving vaccine to the neighboring state of Bihar is considered worth mentioning as it cut across normal procedures.

Vaccines were carried to 87% of IPs in cold chain equipment such as vaccine carriers and day carriers. In 13% of the booths visited (mainly urban), vaccines were received in thermocol boxes or thermos flask, if vaccine carriers were not available. Thirty seven out of 1033 booths (3.6%) recorded for this variable did not have frozen ice in the vaccine carriers at the time of the visit, mainly in the late afternoon sessions. The problem appeared to be more in Rajasthan (13%) and Uttar Pradesh (7%).

#### *Communication and Outreach*

Only 25 out of the 1033 booths visited were reported to be not easily identifiable. All the PPI booths visited had communication material, the commonest being banners (37%), posters (33%), stickers (13%), flags (8%) and others (9%). The sources of information regarding the

PPI were Television (21%), health staff (19.5%), radio (11%), posters, hoardings etc. (9%), relatives (10%), loud speakers (9%), Anganwadi workers (5%), and teachers (6%), and students and others volunteers (9.5%). Other IEC activities were also reported like rallies of school children, house-to-house distribution of communication material and announcement by loud speakers.

About 15% of the PPI post coordinators were aware of the areas of their communities from where children might not visit and reported having taken or planned suitable action to cover these areas. Among the most commonly identified "difficult to reach" were children from Scheduled Caste/Scheduled Tribe colonies and higher income residential areas, parents advised by the family physicians that their children may not require vaccination, and those preferring to go to their private doctors. The majority of booths, however, did not report areas where coverage would be of concern.

Community members and observers remarked positively on the involvement of all governmental and non-governmental sectors contributing together. Many examples were given of health staff, Anganwadi workers, teachers, Rotarians, and other NGOs working together.

#### *Recipients*

All but negligible number (0.2%) children visiting the booths were immunized. Those not immunized were reported to be because of being over age, shortage of vaccine, or history of fever. In less than 3% (n=33) of IPs, the age of the children was not being checked. This problem was reported in 9 out of 85 booths visited in Uttar Pradesh and 4 out of 39 in Orissa. About 16% (605 out of 3716) of the children observed being immunized were over three years of age.

### Community Education

Nearly 15% of the people accompanying the child were not aware of the name of the vaccine received while 20% were not aware of the next PPI day. Most of the people interviewed (89%) knew the purpose of drops being given (*i.e.*, polio prevention/ eradication, prevent disabilities). However, some of the comments revealed a lack of complete understanding of the purpose of the immunization! "prevent tetanus", "no disease will occur in future", "prevent tuberculosis", "useful for the body,", "my child will never have cough and cold again", "will not get malaria", *etc.*

### Suggestions for Improvement

The following suggestions for improvement emanated from Observers and IP coordinators: (i) Declare the PPI day as a national holiday to facilitate bringing children to the booth; (ii) To Open more PPI booths in highly congested areas, as well as sparsely populated areas; (iii) Use Cable Television as a medium for IEC awareness to capture the upper-middle class and upper class; (iv) Orient, inform, and involve more private practitioners; (v) Vaccines should be received well in advance to minimize anxiety; (vi) Make provision for proper cold chain equipment (avoiding thermocol boxes); (vii) Improve the quality of the nozzle and lid-material of the vaccine vial to facilitate dropping the vaccines; (viii) Improve physical facilities at the IP (seating arrangements, proper shelter to prevent vaccines from getting exposed to the sun, drinking water, *etc.*); (ix) Better facilities to the people working at PPI booths (transport, working lunch and compensatory day off for working on a holiday); and (x) Increase the quantity of hand bills, stickers and other communication material to distribute to every household. Similar suggestions from

parents included: (i) More advanced intimation about the PPI in low socioeconomic sectors; (ii) Provide a mobile PPI centre to cover the low socioeconomic area; (iii) Provide adequate drinking water near PPI post; (iv) Offer an incentive to children (milk, toffees, biscuits *etc.*); (v) Use the same logo every year; not only for polio but for other preventable diseases as well; (vi) Print the dates of the PPI days on the ration card; and (vii) Avoid making children wait for the sake of inaugural functions, visit of dignitaries, delayed vaccines, *etc.*

### Discussion

Clearly, the PPI day on 9 December represented a remarkable achievement of community mobilization, logistical support, and community participation. These data suggest that the vaccine supply appeared adequate; only 5% children received more than 2 drops of OPV; posts were easily identifiable; and virtually none of the children were turned away. However, of concern 20% of the parents or guardians did not know of the dates of second round of the PPI.

The importance of television as a means of communication was reported, although the preponderance of surveys done in urban centers where access to televisions is greater than in rural areas may in part explain this. Communication by individuals also was underscored as an important means of social mobilization.

An important finding of the survey was the lack of understanding of some family members of the reason for polio immunization and their unrealistic expectations of its effect. This could become important for subsequent immunization days, as unrealized expectations may lead to disenchantment with the program and a reduction in community participation. The response

could be improved by an increase in the educational nature of the materials provided to the community. The data from this survey suggests that sufficient staff is present at each IP to make this possible.

The use of this low-cost survey method proved effective in providing decision makers with timely information necessary to revise subsequent PPI days and to confirm that a massive public health programme was effectively managed. Despite the non-random sampling, information was collected from a sufficient number of respondents to allow for patterns of strengths and shortcomings to be detected, and conclusions to be drawn for subsequent actions. The survey was not intended to replace a coverage survey nor an ongoing system of surveillance for Acute Flaccid Paralysis (AFP) which should constitute the ultimate evaluation of any such polio eradication programme. Both of these are being taken up by the Government. The purpose was to get, from as many different

perspectives as possible, a composite picture of the PPI process. In this regard, its purpose was not unlike the triangulation exercises used in Participatory Rural Appraisal.

The specific nature of some observations indicate that the data should be used as close to the point of collection as possible, not necessarily for determination of National policy, although some of the innovative ideas deserve application on a wide scale. The simplicity of the survey method, however, should encourage localities to do this exercise on their own.

The rapid low-cost and easy to implement and qualitative evaluatory process also provided an indication that the country had the capacity to utilize more than 150 million doses of OPV on a single day. Other more statistically valid surveys are contemplated. Surveillance of AFP has also started to document the impact of PPI on the incidence of poliomyelitis.

---

## NOTES AND NEWS

---

### 8TH NATIONAL PEDIATRIC PULMONOLOGY CONFERENCE

This event is being organized under the joint auspices of "IAP Respiratory Chapter", Department of Pediatrics, T.N. Medical College and B.Y.L. Charitable Hospital, Bombay and Bombay Branch of IAP on 28th-29th September 1996 at B.Y.L Nair Charitable Hospital Auditorium, College building. Deliberations on practical issues will include asthma, allergy, ARI, tuberculosis as well as case discussions, free paper sessions, chest radiology HRCT Scan and critical case issues. Free papers on respiratory topics for the same are invited. The delegate fees are Rs. 300/-; Rs. 250/- for Respiratory Chapter Members and Rs. 150/- for Postgraduates. For further details, please contact: Dr. Keya Lahiri, Organizing Secretary, Professor of Pediatrics, TNMC and B.Y.L. Nair Children's Hospital, A.L. Nair Road, Bombay-400 008. Tel: (Res) 6125799 (O) 3081490 Ext. 139.