

The 'Near Miracle' Revisited

**Social Science Perspectives
of the Immunization
Programme in Bangladesh**

Editors

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665

QUALITY OF IMMUNIZATION SERVICES

Assessment of the quality of care is 'a judgement on the processes of care provided by the health practitioners (Donabedian 1978).' The quality of care is a relatively new concept, and has mostly been discussed in the context of family planning programmes. Unfortunately, not much work has been done on its conceptual basis. One of the most elaborate works done so far was by Judith Bruce (1990), who presented an analysis framework for the quality of care in family planning programmes. More recently, this framework has been adapted for use in a community based tuberculosis control programme in Bangladesh (Afsana et al. 1995; Chowdhury et al. 1995; Hardon 1997). There is a quality of care framework for immunization programmes. The framework has three parts: programme effort, process of service delivery, and outcome/impacts. The middle one essentially deals with the quality of care, the outcome of which depends on the first one, and results in the last one.

Having presented the mothers' perception of vaccination and the quality of vaccination services in the Bhairab region, we now continue with presenting our observations of the quality of care and the Hws' views of immunization.

Immunization coverage in Bhairab Thana

Table 6.1 depicts childhood immunization coverage in the study area. The children were categorized according to whether they were 'fully immunized', 'partially immunized', or 'not immunized' (for definitions see Annex 6.1). The table gives separate information for two different age groups, under 12 months and 12-23 months, in urban-rural areas. On average, 20% of children under 2 years of age were fully immunized, 43% partially immunized and 37% not immunized. These findings corroborate an earlier study in the Kishoreganj district on the subject given in Table 2.1 (Hadi et al. 1995). The percentage of children fully immunized was much more for older (12-23 months) than younger (under 12 months) children. In terms of residence, the fully immunized percentage was somewhat higher in rural (21.4) than in urban (17.9) areas; but the percentage who were not immunized was similar in the two areas. However, a more interesting result is the difference in

lected from key informants in the health system based on their perceptions) and actual (as collected directly from households) coverage. In rural areas, the actual coverage was higher in the reportedly 'low coverage' and lower in the reportedly 'high coverage' areas.

Table 6.1 Immunization status of the children in Bhairab, by age and place of residence

Residence	Immunization status (%) by age					
	<12 months (n= 387)			12-23 months (n= 453)		
	Fully immunized	Partially immunized	Not immunized	Fully immunized	Partially immunized	Not immunized
Urban	2.8	48.8	48.3	32.9	42.7	24.4
Rural	8.0	46.0	46.0	31.3	37.9	30.8
All	5.2	47.5	43.6	32.0	40.2	27.8

Source Survey

Table 6.2 gives immunization coverage status by sex of the child. The percentage fully immunized was higher among boys (21.8) than girls (17.4). While the coverage for boys in rural areas was higher than girls, such a difference was less pronounced in urban areas. Different results according to gender were also found when the data was analyzed for different antigens. As Table 6.3 shows, this difference was prominent for all antigens except BCG in the younger age group, where girls had a higher coverage than boys. For antigens, the highest coverage was reported for BCG, as around 70 percent had received the antigen by the time they were two years of age. The lowest coverage was for measles.

Table 6.2 Childhood immunization status, by place of residence and sex

sex	urban (n=424)		rural (n=416)		both areas (n=840)	
	Fully immunized	P/N immunized	Fully immunized	P/N immunized	Fully immunized	P/N immunized
girl	17.1 (34)	82.9 (165)	17.8 (38)	82.2 (176)	17.4 (72)	82.6 (341)
boy	18.7 (42)	81.3 (183)	25.2 (51)	74.8 (151)	21.8 (93)	78.2 (334)
all	17.9 (76)	82.1 (348)	21.4 (89)	78.6 (327)	19.6 (165)	80.4 (675)S

* Figures within parentheses indicate the number of children

Note P/N = Partially/Not immunized

Source Survey

Table 6.3 The antigen coverage in Bhairab, by age and sex

sex	DPT (3rd dose)		BCG		measles	
	0-11 months	12-23 months	0-11 months	12-23 months	0-11 months	12-23 months
girl	21.5 (41)	39.9 (89)	48.7 (93)	65.8 (146)	4.7 (9)	32.0 (71)
boy	22.4 (44)	45.9 (106)	49.5 (97)	76.2 (176)	6.1 (12)	41.1 (95)

* Figures within parentheses indicate the number of children

Source: Survey

The immunization coverage status of women (15-45 years) for tetanus toxoid (TT) was found to be far from satisfactory. In the rural areas, 53 percent of the women did not receive any dose at all; the same figure for urban areas was 37.4 percent. Only 8.3 percent of rural women and 22.8 percent of urban women received all five doses of TT. The difference between reported and actual coverage in terms of high and low coverage was even more prominent here than in rural areas.

Providers' knowledge and practices

Knowledge on dose and age

The National EPI Programme has specific guidelines for the health workers on different aspects of vaccination (Annex 6.2, 6.3, 6.4 and 6.5). In the following, we discuss the knowledge and practices of the Hws. It should be remembered that immunization services in the rural areas are provided by the government and in the urban areas by the municipality and a local NGO. Hence, Hws include staff of the government, the municipality and the NGO.

BCG vaccine

According to Hws and their supervisors, the age of BCG vaccine administration is from birth to 3 months. The children are brought to the vaccination centres at about the age of 45 days, when other vaccines such as DPT and polio are also given. The Hws did not make any reference to the number of doses of the BCG vaccine, but according to their supervisors, this was a one-dose vaccine. Several Hws stated that each dose of BCG vaccine contained 0.25 ml of liquid, which is five-fold higher than the recommended dose. According to

recommended dose). The supervisors did not provide any information about the quantity in each dose.

DPT vaccine

The Hws stated that the DPT vaccine worked against 3 diseases: diphtheria, whooping cough and tetanus. They said that the appropriate age for the first dose of this vaccine was 45 days. Both the Hws and their supervisors stated that the DPT vaccine was given 3 times, with an interval of one month. The Hws said that each DPT dose contained 0.5 ml of liquid; the supervisors did not make any statement on the quantity.

Polio vaccine

The Hws and supervisors stated that the polio vaccine was given as drops, to children under five years of age. According to them, children aged 0 to 1 year old received the polio vaccine in the routine EPI sessions. The Hws stated that children received the polio vaccine orally, at the same time they got the injected vaccines. The Hws stated that every dose of polio vaccine contained two drops of liquid. Children received it three times with an interval of one month. However, one supervisor belonging to the municipality said that a child should receive four doses of the polio vaccine. The Hws stated that one drop of polio vaccine contained 0.5 ml of liquid.

Measles vaccine

The Hws and their supervisors stated that the appropriate age for administering the measles vaccine to children was ten months. This was a one-dose vaccine and the Hws stated that each dose of the vaccine contained 0.5 ml of liquid.

Tetanus Toxoid vaccine

The Hws said that all women aged 15 to 45 years, and pregnant mothers received TT vaccine. The Hws did not know the schedule of when a 15 to 45 year old woman should be given the vaccine. However, for pregnant women they stated when the TT vaccine should be given. Some said that the vaccine was due on the 3rd and 5th month of pregnancy, but others said that the vaccine was due on the 5th and 7th month of pregnancy. According to them, vaccination is not recommended in the last two months of pregnancy. A supervisor from Utsharga said that in the past pregnant women received two doses of the TT vaccine during the first pregnancy, followed by two more during the next pregnancy. Subsequently, she received another dose of TT after 5 years, if she was not pregnant. This schedule of TT vaccination has now changed. Women

now receive two TT vaccinations, with an interval of one month. Then they receive a third dose after six months. Later, the women get two more doses of the TT vaccination, with an interval of one year. The Hws mentioned that each dose of the TT vaccine should contain 0.5 ml of liquid.

Knowledge of which area of the body to vaccinate

Hws had good knowledge of the vaccination procedures. Most of them specified the exact vaccination points of the body. The providers used the local term for sub-cutaneous (*camrar nice o mangser upare*) and the local term for Inter-dermal (*camrar madhye*).

According to Hws, BCG vaccine was given into the skin on the left hand. They stated that the children received polio vaccine orally, with an interval of one month, which coincided with the DPT vaccine. Deep muscle was the site for a DPT vaccination and this was injected in three doses. The first dose was injected into the left thigh, the second dose into the right thigh and the third again into the left thigh. Measles vaccine was given under the skin and over the flesh of the right thigh. The few Hws who could not specify the exact point of injecting the vaccine said that skin was the location of BCG and measles vaccines. Interviews with supervisors and EPI session observations indicated that the Hws practiced what they had told the researchers.

Knowledge of dilution methods, syringes and the cold-chain

Vials

The Hws mentioned that there were different sizes of vials for different vaccines. There were two sizes of vials, one with ten doses and the other with twenty doses. The Hws stated that they used one vial of 10 doses for vaccinating eight to nine children and one vial of 20 doses for 18 to 19 children. This indicated that a lot of vaccine wastage always occurred. Sometimes, the Hws had to open one vial for one or two children and had to waste the rest. The Hws pumped out the air if it entered into the syringe. Wastage of small quantities of vaccines also occurred through this process. Wastage of vaccines occurred following the application of prescribed procedures at the time of vaccination.

The Hws returned the used and unused vials to the Thana Health Complex (THC), by putting them in a vaccine carrier to insure the cold-chain was maintained. The Hws said that 10 to 12 percent was the accepted amount of wastage by the EPI. In every session, the Hws had a target for each vaccine that was less than the amount of vaccine supplied by the THC. In most of the sessions, the THC sent one vial of each type of vaccine. The Hws mentioned that

they opened a vial even for one or two children. They pointed out, that if only one or two children came for a measles vaccination they were not refused, because they might never come back again.

The observations showed that in some sessions very few children turned up, but the Hws opened the vial for them. If they had the vaccines, they hardly said 'no' to any patient. Table 6.4 shows the use and wastage of different vaccines, as observed in a rural and an urban session. It shows that two-thirds of the vaccines were wasted.

Table 6.4 Number of clients vaccinated from vials opened in two EPI sessions

Name of the session	Name of the vaccine	No. of doses in the vial	No. of persons vaccinated from the vial
Ramshankarpur (urban)	DPT	10 doses	4 people
	BCG	20 doses	3 people
	polio	10 doses	4 people
	measles	10 doses	2 people
	TT	10 doses	3 people
Bashgari (rural)	DPT	10 doses	7 people
	BCG	20 doses	4 people
	polio	10 x 2 doses	(no information)
	measles	10 doses	2 people
	TT	10 doses	4 people
	BCG	20 doses	4 people
Total		1130	33

Dilution of BCG and measles vaccine

All the Hws, except one from the urban and one from the rural areas, named the BCG and measles vaccines as the ones that required dilution. In the sessions that were observed, the Hws were found to dilute the measles and BCG vaccines. One Hw described the process of dilution in the following way: *'BCG and measles vaccines are supplied in a powdered form. We prepare the vaccines by mixing the powder with distilled water. There are big syringes and needles for this purpose. We siphon the distilled water out from the vial and transfer it into another vial that contains the powder. Then the vial is shaken and it is ready for the injection.'*

Annex 6.5 shows the actual guideline for the dilution process.

The THC supplied the syringes and needles for EPI. There were different types of syringes for different purposes. For EPI, the THC supplied only the reusable syringes. The Hws received clear instructions on the prescribed aseptic procedure for reusable syringes (Annex 6.6). They changed the needles when those became blunt and bent and/or the piston of the syringe became blocked. The Hws sent the used and rejected reusable syringes back to the THC, where a designated person disposed of them.

The Hws never used 'the one time use' (disposable) syringe, so there was no need to dispose the syringe immediately after use. In all the sessions that we observed, the Hws used reusable syringes. The Hws said that after every patient they sterilized the syringes, before the next patient arrived, by using the sterilization box. According to them, by doing this they were following the recommended aseptic procedures. The researchers did not observe the sterilization procedure, as the Hws had done this before or after the vaccination session.

The cold-chain procedure

There is a guideline for the maintenance of the cold-chain (see Annex 6.3). All the Hws were familiar with the cold-chain, but their knowledge was confined to the procedure of carrying vaccines to the EPI sessions. The EPI technician described the full procedure of storing and carrying the vaccines from district to *thana* and then to the field EPI sessions, including the required temperature levels. According to him, for polio and BCG the necessary temperature was -15°C to -25°C and the rest (DPT, TT and measles) $+2^{\circ}\text{C}$ to $+8^{\circ}\text{C}$. According to the Hws, temperature affected the potency of vaccines and hence the cold-chain was an important factor. They stated that the required temperature level was the same for all the vaccines and it was $+2^{\circ}\text{C}$ to $+8^{\circ}\text{C}$.

To maintain the temperature in the carrier, Hws used ice packs. However, strip thermometers were never used for checking the temperature in the carrier. The Hws kept the BCG and polio vaccines in the lower part of the carrier, just beside the ice bag. They wrapped the other vaccine vials with paper, to avoid too much cold while transporting the vaccines to the EPI centre.

In the THC, the Hws kept the BCG and polio vaccines in the deep freezer, and DPT, TT and measles vaccines in the ice lined refrigerator. They brought the vaccines in a big cold box from EPI headquarters. In the box, they kept ice cubes at the side and in the bottom. They kept the BCG and polio vaccines in the lower part and then laid down one layer of hard paper, on which they kept the DPT, TT and measles vaccines.

During the session, the Hws protected the vials and the carriers from the sun and rain. The EPI sessions took place at different locations, such as the

veranda of a house, inside the clubroom, schools or courtyards. All of the sessions were held in places where they were protected against the sun.

The mechanism of the development of HWs' competence

The educational levels of HWs in urban areas consisted of 9 to 10 years of schooling and their length of field experience was 7 to 19 years. The Utsharga started its immunization programme before the municipality and hence the workers of Utsharga had more work experience. Most HWs received training on EPI, the duration of which was not the same for all. The training institutions were also different. Except for one HW of Utsharga, no HWs received any refresher courses about vaccination. The HWs from rural and urban areas mentioned that the training was helpful in their work. They also stated that the refresher courses would improve their skills.

Information given during vaccination sessions

On the purpose of vaccination

The session observation and follow-up of the vaccinators' social mobilization activity showed that in urban areas, HWs sometimes told patients the name of the vaccines and VPDs. In one rural vaccination session only two out of five patients received some information. In another case, the HW stated the names of the vaccines and corresponding diseases, only when a father asked about it.

During interviews, most of the HWs in both urban and rural areas, said that they informed every patient about the VPDs as well as the corresponding vaccine. Two municipality vaccinators stated that they showed the patients the poster with signs of the VPDs. However, two HWs, one from urban and one from rural areas, felt that there was no need to inform the people about the VPDs, as they already knew about them. One *thana* level supervisor expressed a similar view.

About the next vaccination session

In the urban areas, the HWs informed the patients in only one session out of five, about the time and place of the next vaccination session. In a rural vaccination session, the HW advised a pregnant woman to revisit after two months. All the HWs of both areas mentioned that they informed the mothers about the time and place of next the vaccination session, during household visits and vaccination sessions. One HW in an urban area said: '*during the vac-*

Conditions of the vaccination sessions

Regularity in holding vaccination sessions

In Bhairab *thana* there was a total of 2,363 planned vaccination sessions (rural 1,763 and urban 600) for 1997. 232 or 9.8% of those did not take place out of those. The THFPO and AHIS of the THC mentioned the following reasons for missed sessions: government holidays, inclement weather, and civil disturbance such as strike or hartal. It was added that if the Hws were sick, vaccination sessions did not take place.

Condition of the vaccination centres

There were three fixed centres and two outreach centres in the urban study area. The side of the main street of Bhairab town located all the fixed centres. One centre was in a NGO clinic, one in the municipality hospital and the other in the *thana* health sub-centre. The session at the *thana* health sub-centre took place only once a week and consequently the room on most vaccination days remained dirty with dust. Similarly, one outreach session, that was located at the main road of a village, remained dirty.

All rural sessions took place at outreach locations. The wall and floor of the house of the vaccination session of Atkapara were made of brick and the roof was made of corrugated tin. The room was very narrow and not more than two mothers could enter at a time. The vaccination session room at Purbakanda had bamboo walls and doors. It had a tin roof and an earthen floor. When anybody walked into it, the dust from the floor polluted the air. The session of Bashgari took place in a room that had tin walls and roof, with an earthen floor.

Accessibility of the vaccination session

The places of vaccination sessions in most villages were easily accessible by rickshaw or on foot, except the one at Ramshankarpur, which was difficult to reach from three adjacent villages, Moheshpur, Purbakanda and Jelepura. Between Ramshankarpur and these villages, people needed to cross a canal by country-boat and this made it less accessible for females. Similarly, the site of the Atkapara vaccination session was not easily accessible from one of the corners of the Shreemotirchar village. This was especially so in the rainy season. A corner of the Bashgari village also remained isolated for four months in the rainy season.

The mothers complained that males could walk long distances, but not the females. So they needed money to hire transport, which the poor cannot afford. In the urban areas, most mothers with a good economic status, went to the centre by rickshaw.

Type of facilities

At the vaccination sessions, the sitting arrangements varied widely. In some places it was adequate, in others it was either insufficient or non-existent. Sitting arrangements of most fixed sessions were reasonable. At all vaccination sessions the HWs always sat on chairs while the patients sat on wooden benches, stools or chairs. In the outreach sessions the community members provided these.

The *thana* health sub-centre, that was located in the main bazaar of Bhairab, had a spacious tin shed with a *veranda*. In the Municipal Maternity Hospital the vaccination session was organized in a room with a veranda, that was located on the ground floor. The Utsharga clinic was held in a two-storied building, but the session took place in its portico. One urban outreach session took place under a big mango tree in front of a primary school. Another outreach session took place in the veranda of a former Chairman, whose house stood on the main road of the village. In rural areas, most vaccination sessions took place in the veranda of either a clubroom or someone's house.

Waiting time

In the session at the Utsharga office, some of the clients waited between half an hour to one hour, because of the late arrival of vaccines. However, others waited as little as five to ten minutes, because they turned up at the end of the session. A similar scene was experienced in most other centres. However, in Ramshankarpur none of the mothers had to wait more than ten minutes.

A different kind of problem was observed in the rural areas. In Kalikaprased, the patients had to wait for a long time, as there was no queue. Some clients expressed their dissatisfaction as a few who had arrived later, received the vaccination earlier. Apart from this, the waiting time was remarkably short, five to ten minutes. The researchers observed that in such situations the providers contacted the mothers when they had completed full preparations. They conveyed the 'call for vaccination' (*tikar dak*) through home visits or from the mosque, only after they had received the supply of vaccines. It was felt that such a management system resulted in quick delivery of the service to the patients.

Availability of materials

Providers of rural and urban areas listed the essential items for a vaccination session, these included: vaccines, vaccine carrier, needles, syringes, sterilization box, the immunization cards, register books, pens, timer, *moni* flag, cotton, chairs and tables. Two HWs from THC said that they received the vaccines too late, which delayed the vaccination session. It was observed that some-

times the THC sent vaccines through porters. In other situations, the Hws brought vaccines themselves. The availability of various materials was investigated in nine vaccination sessions, five in urban and four in rural areas. The following gives an account of the availability.

Vaccines: Except for DPT all other vaccines were available in all the sessions; DPT was in short supply in two sessions, one in urban and one in rural areas.

EPI card: EPI cards for children were not available in any of the sessions. The Hws informed the researchers that this was a common occurrence over the last few months. They used TT cards instead, but it proved difficult as they were entirely different. One rural centre (Atkapara) had even no TT card.

Syringes and needles: Syringes and needles were available in all vaccination sessions. However, it was observed that the needles were not always sharp or smooth.

IEC materials: All fixed centres in urban areas had printed posters. Three rural sessions had *moni*-flags displayed in front of them. A yellow tablecloth with *moni* mark was placed on the table in all the sessions of urban and rural areas.

Cold-chain materials: The providers used vaccine carriers with ice packs, in all the urban and rural vaccination sessions.

Registers: The providers used two registration books and tally sheets, in each of the urban and rural vaccination centres.

Strategy for hard-to-reach areas¹

In Bhairab the researchers found six hard-to-reach areas, equally divided between urban and rural areas. They observed that in the hard-to-reach session sites, mothers needed additional social mobilization efforts by Hws on the day of vaccination. However, in the rainy season the providers took an extra effort to vaccinate near the homes of those who had not arrived at the session. One Hw said that sometimes they had to go to such areas by country-boat. Sometimes, they even had to fold their *lungis* (local dress worn by men instead of trousers) upwards to cross the canal to convey information about vaccination sessions.

The supervisor of the municipality said that in hard-to-reach areas they tried to administer vaccines at home if required, as the people did not want to attend the vaccination session. The supervisor of Utsharga said that there was no extra budget for the hard-to-reach areas. Still, they provided extra workers for such areas (see Chapter 8 for a discussion of EPI in the Chittagong Hill Tracts and the Tea Estates).

Cases of missed opportunities

The researchers identified some cases of missed opportunities² at the vaccination sessions:

- In the Kalipur session organized by Utsharga, some women left after waiting for some time for the vaccinators. One of them came back later, but the vaccinators did not provide the service due to vaccine shortage.
- In the vaccination session at the Utsharga office, a woman came for a TT vaccine at ten-o'clock but the Hws had already prepared their report. So they did not vaccinate her.
- In a Purbakanda session organized by THC, a mother arrived before the start of the session. The HA told her to come back half an hour later. The mother took her child and left. Five minutes later, other Hws arrived and started the session, but the mother did not return.
- In a Ramshankarpur session, some mothers came when Hws were closing the session. The Hws told the mothers that the session was over for the day.

Staff behaviour

All Hws said they used the local dialect to communicate with patients. The Hws were found to hurry their work during the sessions, so there could only be a limited contact between Hws and patients. The researchers observed that sometimes the whole situation was very chaotic and disorganized, making it difficult to talk with eye-to-eye contact. At the sessions, the mothers hardly asked any question. Male patients, including fathers, asked more questions than the females.

Different behaviour of the staff was observed in the urban sessions. The Hws (municipality) behaved differently with different people. In one case, a Hindu woman brought two disposable syringes for her child. When she gave the syringes to the vaccinators they declined to accept them, telling her that all mothers received vaccination with sterilized reusable syringes. The Hws continued that if they used those (disposable) syringes other mothers could be offended. It was later discovered that the vaccinator did not know how to use a disposable syringe. In another case, a Hw gave a syringe and a measles vaccine vial to the porter, just before closing the session. The porter and the Hw then went to a house on the other side of the road. To explain this, the other vaccinator said that they went to vaccinate a child in that house. The house owner was a rich man and the parents did not want to come to the session. In a fixed centre organized by Utsharga, the health worker gave more attention to

educated and well-to-do people. They also vaccinated them before others that had arrived earlier. One woman, who came for the service, sat in the supervisor's room as she lived in the same building as the supervisor. She (the supervisor) herself gave the vaccination to this patient.

A vaccinator of the municipality said: *'at the time of vaccinating we put the child onto our lap and the mother remains at a distance. We hand the child over to the mother when it starts crying.'* *'Usually the children are not frightened. When the needle punctures the skin, then they cry out of pain. I try to comfort the children by touching them on the head or on the body,'* informed another HW. The researchers also observed at the session that the vaccinators try to comfort the children when they start crying. At Bashgari in rural Bhairab, the HW tried to pacify a child by touching its head, when it started crying after receiving the injection.

User dissatisfaction with the vaccination session

The researchers recorded two complaints made by clients against the providers. At a Kalipur session, a HW wanted to give a tetanus injection to a woman who had cut herself, before it was her turn. Some women protested that she had jumped the queue. The result was that the provider did not vaccinate her. At another session, some mothers expressed their anger when the rules of providing the service, on a 'first come first serve' basis, had been violated. The session was chaotic and disorganized. The HWs spent no time in explaining things, as they remained too busy in making preparations for the vaccinations.

Gender and immunization services

In the urban sessions, women (mother, grandmother, and sister-in-law of mother and aunts) brought the children for immunization. However, in rural areas some males also brought the children. Maybe the rule of *purdah* (seclusion of women from strangers) in rural areas causes a big problem for women to leave their homes. Another cause could be that because of the conservative rural society, females feel embarrassed to communicate with male HWs, particularly in the absence of privacy at the vaccination site. At a Kalikaprased session, one male and one female HW were present. The researchers observed that one pregnant woman who came to receive the tetanus injection, needed to remove her blouse, and was looking for a place where she could do that

more privately. She asked for a female Hw, who took her to the other side of the *verandah* which was located a little away from the public, but that still had little privacy.

Drop-outs

Registration system and dropouts

Each session had its own target, in terms of the number of children to be vaccinated. The Hws determined the target through household visits. The quality of this target depended on an individual Hws' devotion to duty. The THC and the municipality also received independent targets from their respective headquarters. The latter target was based on the latest census data. In the sessions the Hws maintained two registration books, one for children and the other for women and pregnant mothers. The clients received vaccinations according to the records shown in the registration books. When they calculated the EPI coverage for reporting to the THC, the Hws did it by using the census figures. If the full coverage was not achieved, they made 'extra drives' to attain this.

Utsharga workers did not get any target from their office. One vaccinator of the municipality said that they went house-to-house to list births. Both Utsharga and the municipality maintained registration books for every session, based on the number of births recorded. In rural Bhairab, two Hws said that they spent three days a week, during January and February of each year, for geographical reconnaissance. When they went door to door for this work, they recorded the details of all women, pregnant mothers and newborn children.

Identification of drop-outs

According to EPI rules, providers give a vaccination card to each client so they could easily identify how many doses the patient had received and how many remain. The providers have registration books that they use to retrieve information on each client. The cards and registration books contained the names of vaccinations, number of doses and dates of the specific vaccination given. Since most of the mothers were illiterate, they were not able to read the vaccination card and had to depend on their memory. Therefore, the information provided by Hws was crucial. If the patients were properly informed, then they remembered everything and completed all doses of vaccination. Theoretically, the dropouts could be identified retrospectively from the information kept in the registration book. However, what is important is to identify them and follow them up.

The Hws said that after each session they checked with the registers whether any patients had dropped out. The supervisors of Utsharga said, that their Hws went door to door for follow-ups to identify individuals who had been vaccinated and those who had not. Contrary to this, the Hws did not try to identify the dropouts at the end of the session in urban vaccination sessions. In rural areas, it was found that Hws checked the information of the number vaccinated with the registration book, after finishing the session, to identify if any patients had dropped out.

The Hws in urban and rural areas were reluctant to acknowledge the existence of any dropouts. They considered dropouts, as an indication of 'weakness' in their performance and thus did not want to share it with outsiders. One HW said: *'Usually there are no dropouts. If any one drops out, then she/he comes again next time because of our motivation.'* A HW of Utsharga said: *'Generally I do not find any dropouts.'* Another HW of Utsharga said: *'There are no dropouts that are worth mentioning.'* Two other Hws of Utsharga said: *'Children drop out because of death or migration.'* One supervisor of THC boasted: *'There has not been an occasion when we have failed to achieve the target.'* The researchers conducted an independent survey to estimate the 'actual' number of dropouts. It revealed many dropouts between BCG and DPT3, in both urban (53%) and rural (47%) areas.

Reasons for dropouts

The THFO was quite straightforward about dropouts: *'One reason is the lack of motivation. Perhaps, we did not motivate people effectively or the workers did not visit them. The workers may be reluctant to visit them. Our experience shows that the mothers who realise the usefulness of immunization continue it. They receive tika for their children. Therefore, it may be our fault that we cannot motivate people. On the other hand, we cannot blame only our workers. There are mothers who do not get vaccinated in spite of knowing about it, because of a lack of detailed information.'* One AHI of the Bhairab THC said: *'Children experience a fever after having tika and the needle hurts the baby. For these reasons, mothers do not bring their children for tika.'* Another such manager added: *'Mothers are frightened of tika as the children get a fever after receiving it.'*

Two Hws of the THC said that a reason for dropouts was the absence of mothers and children from home on the day of vaccination or when they (Hws) visited the households. Another reason was found to be the weather: *'During the rainy season, less patients attend,'* said another HW. Some believed that their involvement with family planning may have had a bearing on drop out: *'Since we are also involved in family planning work, some mothers believe that vaccination will make the children sterile,'* said a HW of the THC. There

were also other explanations like: *'Sometimes the mothers are busy with their housework and cannot make time to come to the session.'* Some Hws also blamed the illiteracy of mothers for not being motivated enough to complete the immunization schedule.

How to reduce dropouts

The THFPO said: *'Social mobilization is the key to address dropouts.'* Two AHIS of THC said that they tried to persuade mothers to receive the rest of the vaccines. A Utsharga supervisor said, *'We try to convince the mothers at the time of follow-up. With an interval of two months, the field worker is responsible to follow-up every dropout case. During this follow-up, the patients are motivated to attend the next vaccination session.'* Two Hws of Utsharga and two vaccinators from the municipality all said that they went house-to-house and tried to motivate the mothers. *'We provide free treatment and medicine for side effects, so mothers feel happy and they are no longer afraid of adverse side effects.'* said a HW of Utsharga. It appeared from discussions with the village elite, that there was a need to inform the people about usefulness of vaccination and to go door-to-door regularly for motivation. They said: *'There is a need to increase the rate of literacy, and then people will be aware of vaccination.'*

Hws of both areas mentioned that they go door to door and motivate the mothers to help solve the problem of dropouts. Hws of rural areas said that they mobilized elderly people of the villages in favour of EPI. The Hws of urban areas felt the need for providing free medicine and treatment to deal with side effects, as this would instill confidence in the mothers. The Hws of urban and rural areas said that they motivated people by visiting households, to ensure their attendance to the immunization sessions on the fixed dates. However, in reality not much of this was observed during the field-work. Providers did not take any initiative to bring dropout patients to vaccination sessions in urban areas. But, in a rural session at Purbakanda we learned that the HW went to the houses two to three times, during the session period, to inform those people who had not yet turned up. The attending mothers were also requested to inform the mothers who had not yet come for vaccination.

Co-ordination among different agencies

In the areas covered by the Bhairab municipality, the municipality provided the immunization service itself with Utsharga, a local NGO. The municipality divided the working areas between them and Utsharga and organized meet-

ings about twice a year. The THC supplied vaccines, materials and the initial training. This information came from a Supervisor of the municipality. One HW of Utsharga confirmed that once a year the municipality and Utsharga staff sat together in a meeting to review the EPI work.

We found that *Matrisadan* (the maternity centre run by the municipality) and the Utsharga offices were situated within a 100-meter distance of each other. They independently arranged routine EPI sessions at their offices, which were labeled as fixed centres. The people could choose between centres, as no fixed command area existed for those two fixed centres. Because of this overlap, anybody from within the Bhairab municipality could take services from either of the fixed centres.

Community participation

According to Hws, there was no need for the community to participate in vaccination sessions by contributing furniture, or other materials in case of fixed centres. But all Hws stated, that if they (Hws) arranged outreach sessions, then they always informed the respective house-owner a day earlier. They always got local people to co-operate in getting a supply of furniture and a place to hold the vaccination sessions. During the sessions the community did not seem very much involved in its management. The volunteers from the community did not participate in the routine EPI session in any given role, although they had an assignment during NIDs. All Hws said that the community helped in preparing the premises of the session and also cleaned up the place after the session. The Ramshankarpur session took place in an open field and there the villagers helped the Hws to fetch and return the chairs and tables. The Atkapara session took place in the local clubroom. The Hws opened the door themselves and started the vaccination using the club's chairs and tables.

On the question of financial reimbursement, each HW and supervisor said that the villagers never demanded money for providing space, furniture or preparation of vaccination sessions. They provided soap, water and gave the Hws snacks and betel leaf. When the sessions were held in public places, such as a clubroom (Atkapara) or school (Ramshankarpur), Hws did not pay money to anyone. In urban areas, the researchers observed one thing that was different from rural areas. EPI sessions organized by Utsharga, the Hws collected money from mothers for the *tika* card. They informed the researchers that this was a step towards cost recovery for immunization. On the question of vaccination cost, a ward commissioner of the municipality