

# Quality of Immunization Services

KMA Aziz, AMR Chowdhury  
Dineke Mol, Shamim Ara Begum  
Insana Begum, Shagufta Sultana  
Fazlul Karim

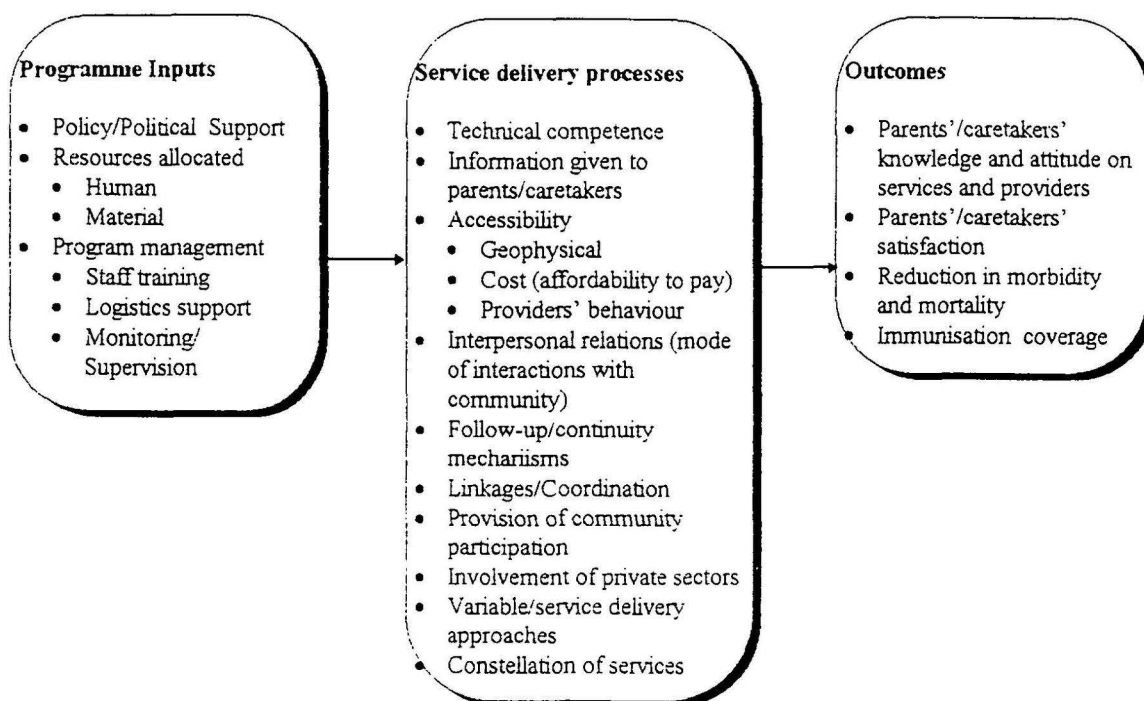
BRAC  
Research and Evaluation Division  
75, Mohakhali, Dhaka 1212  
Bangladesh

## Quality of Immunization Services

Assessment of the quality of care is a “judgment on the processes of care provided by the health practitioners” (Donabedian, 1978). The quality of care (QoC) is a relatively new concept, and has mostly been discussed in case of family planning programmes. Unfortunately, not much work has been done on its conceptual basis. One of the most elaborate work done so far was by Judith Bruce (1989) which suggested a framework of analysis for reviewing QoC in the context of family planning programmes. More recently the Bruce framework has been adapted for use in a community based tuberculosis control programme in Bangladesh (Afsana, 1995; Chowdhury et al., 1995 & Hardon, 1997). Figure 1 provides a QoC framework for immunisation programmes, which has been adapted from the work of Bruce and Afsana. There are three parts to this framework: programme effort, process of service delivery, and outcome/impacts. The middle one essentially deals with the QoC, the outcome of which depends on the first one, and results in the last one. First, we present results on the coverage of immunisation in Bhairab, an element in the last column. Afterwards, we discuss the various variables listed under the middle one including:

- Technical competence of health workers (HWs)
- Type of information provided to the villagers by HWs
- Access to services
- Interpersonal relationships
- Follow-up and continuity of care
- Linkage among different agencies providing immunisation services
- Participation of the community

Figure 7.1: Framework for assessing the quality of immunisation services



#### Immunization Coverage in Bhairab Thana

Table 7.1 gives childhood immunisation coverage in the study area. The children were categorized according to whether they were found 'fully immunised', 'partially immunised', or 'not immunised' (for definition see Annex 2.7). The table gives this information separately for two different age groups (under 12 months and 12-23 months) by urban-rural areas. On average 20% children under 2 years of age were fully immunised, 43% partially immunised and 37% not immunised. These findings corroborate an earlier study in Kishoreganj district on the subject given in Table 2.1 (Hadi et al., 1995). The percentage of children fully immunised was much more for older (12-23 months) than younger (under 12 months) children. In terms of residence, the percentage fully immunised was somewhat higher in rural (21.4) than urban (17.9) areas; but the percentage not immunised was quite similar in the two areas. A more interesting result, however, is the difference between reported (as collected 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' area (Annex 7.1).

Annex 7.2 gives immunisation coverage status by sex of child. The percentage fully immunised 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. The gender difference was also found when the data was analysed according to different antigens. As Table 7.3 shows, this difference was prominent for all antigens except BCG in the younger age group where girls had a higher coverage than boys. Antigen-wise highest coverage was reported for BCG; around 70 percent had received the antigen by the time they were two years of age. The lowest coverage was for Measles.

Appendix 7.3 gives the immunisation coverage status of women (15-45 years) for tetanus toxoid (TT). Here also the situation was found to be far from satisfactory. In the rural areas 53 percent women did not receive any dose at all; the same figure for urban areas being 37.4 percent. Only 8.3 percent of rural women and 22.8 percent of urban women received all five doses of TT. The paradox between reported and actual coverage in terms of high and low coverage was even more prominent here in rural areas.

Table 7.1: Children by age, residence and immunisation status in Bhairab

Residence	Immunisation status (%) by age					
	<12 months (n= )			12-23 months (n= )		
	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



Table 7.2: Childhood immunisation status by residence and sex

Sex	Urban		Rural		Both Areas	
	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)

Note: P/N -- Partial/Not immunised

\* Figures within parentheses indicate number of children

Table 7.3: Antigen-wise 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 number of children

### Provides' 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 7.2, 7.3, 7.4 and 7.5). In the following we discuss the knowledge and practices of the HWs as found in the study. It should be remembered that immunisation services in the rural areas are provided by the government and in the urban areas by the municipality and a local NGO. HW here includes staff of the government, municipality and the NGO. See chapter II for the number of HWs interviewed.

**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 around the age of 45 days, when other vaccines such as DPT and Polio are given as well. The HWs did not make any reference to the number of doses of 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 (Annex 7.2 for recommended dose). The supervisors did not provide any information about the quantity in each dose.

**DPT vaccine:** The HWs stated that DPT vaccine worked against 3 diseases, viz., diphtheria, whooping cough and tetanus. They said that the appropriate age of the first dose of this vaccine was 45 days. Both the HWs and their supervisors stated that the DPT vaccine was given 3 times at 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 to children under 5 years of age as drops. According to them, the newborns aged 0 to 1 year 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 3 times at an interval of one month. One Supervisor belonging to the Municipality, however, said that a child should receive 4 doses of 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 measles vaccine to children was ten months. This was a one-dose vaccine and the HWs mentioned that each dose of the vaccine contained 0.5 ml of liquid.

**TT vaccine:** The HWs stated that all women aged 15 to 45 years, and pregnant mothers received TT vaccine. The HWs could not tell the schedule of doses required by a 15 to 45 year old woman.

For pregnant women, however, they could mention the schedule of TT. Some said that the vaccine was due at the 3<sup>rd</sup> and 5<sup>th</sup> month of pregnancy, but others mentioned that the vaccine was due at the 5<sup>th</sup> and 7<sup>th</sup> month of pregnancy. According to them, vaccination is not recommended in the last two months of pregnancy. A Supervisor from Utsharga said that pregnant women in the past received two doses of TT vaccine during the first pregnancy followed by two more during the next pregnancy. Subsequently, she received another dose of TT after 5 years, in the event of no pregnancy. This schedule of TT vaccine has now changed. Women now receive two TT vaccinations at an interval of one month. Then they received a third dose after 6 months. Afterwards the women get two more doses of TT vaccination at an interval of one year. The HWs mentioned that each dose of TT vaccine contained 0.5 ml of liquid.

#### ***Knowledge on body location of vaccination***

HWs had good knowledge of the vaccination procedures. Most of them exactly specified the vaccination points of the body. The providers used the local term for sub-cutaneous (*camrar nice o mangser upare*) and the local term for intra-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 at an interval of one month simultaneously with the DPT vaccine. Deep muscle was the site for pushing a DPT vaccination that was injected in 3 doses. The first dose injected in the left thigh, second dose in the right thigh and the third again in the left thigh. Measles vaccine was given under the skin and over the flesh of the right thigh. The few HWs who could not exactly specify the point of injecting the vaccine stated 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 on dilution methods, and syringes***

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 8 to 9 children and one vial of 20 doses for 18 to 19

children. These indicated that wastage of some quantity of vaccine 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 quantity 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 those in a vaccine carrier to insure the cold chain. 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 maintained that if only one or two children came for measles vaccine they were not refused since they might not return again to receive it. So they had to open the vial for one or two children.

The session observation 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 client. Table 7.4 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 7.4 : 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
Ramsankarpur (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
Total		1130	33

**The method of 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 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 gets ready for injection.

Annex 7.5 shows the actual guideline for the dilution process.

**Syringes:** 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 (multi-use) syringes. The HWs received clear instructions on the prescribed aseptic procedure for reusable syringes (Annex 7.6). 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 multi-use syringes back to the THC where a designated person disposed them.

The HWs never used 'the one time use' (disposable) syringe so there was no need to dispose the syringe immediately after use. Disposable syringe was used when someone brought it on his/her own. In all the sessions that we observed, the HWs used multi-use syringes. The HWs stated that after every use they sterilized the syringes before the next use by using the sterilization box. According to them, in doing this, they followed the recommended aseptic procedures. The researchers could not observe the sterilization procedure as the HWs had done this before or after the session.

#### ***Cold chain procedure***

There is a guideline for the maintenance of cold chain (see Annex 7.3). All the HWs were familiar with the cold chain, but their knowledge was confined to the carrying procedure of

vaccines to the EPI sessions. The EPI Technician mentioned the full procedure of storing and carrying the vaccines from District to Thana and to the field EPI sessions including the required temperature levels. For Polio and BCG, according to him, the necessary temperature was  $-15^{\circ}\text{C}$  to  $-25^{\circ}\text{C}$  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 cold chain was an important factor. They stated that the required temperature level was 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 icepacks. However, strip thermometers were never found in use 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 for avoiding 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. From EPI Headquarters they brought the vaccines in a big cold box. In the box they kept the ice cubes by 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.

In 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 *verandah* of a house, inside the club room, schools or courtyards. All of the sessions were held in sun-protected places.

### ***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 individual HW's 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 vaccination according to the records shown in the registration books. When they calculated the EPI coverage for reporting to the THC they 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 Municipality maintained registration books for every session based on the number of births recorded. In rural areas, two HAs said that they spent three days in a week for GR (geographical reconnaissance) during January and February of each year. When they go door to door during their GR work, they recorded the identity of women, pregnant mothers and newborn children.

The Supervisors maintained that if any client had dropped out they could easily identify them in registration books. After the session, they traced the dropouts, if any. It was observed in urban vaccination sessions that the HWs did not try to identify any dropout at the end of the session. The situation was slightly better in rural areas; after finishing the session Health Assistants (HAs) compared information with the register book to identify the missing clients.

The HW in neither urban nor rural areas acknowledged the existence of dropouts. In the interview the Supervisors and HWs stated that they had no dropouts in their areas. In their own survey the researchers found many dropouts; the percentage of dropouts between BCG and DPT3 in the urban areas was found to be 53 percent and in the rural areas 47 percent.

#### ***Mechanism of competence development of HWs***

The educational levels of HWs in urban area were 9 to 10 years of schooling and their length of field experience was among 7-19 years. The Utsharga started its immunisation programme before the Municipality and hence the workers of Utsharga had a longer work experience.

Most workers 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, none from urban or rural area received any refreshers training on vaccination.

In the rural area, all the 6 THC workers who were interviewed had at least 10 years of schooling. They were working in their field for a minimum of eleven months and maximum of eight and a half years. Three received full EPI training while the others received only classroom orientation at the THC. The duration of training was not the same for all workers.

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.

#### ***Users' perception about technical competence of HWs***

At the end of a session, the attending mothers were asked about the technical competence of vaccinators. The mothers expressed their general satisfaction with the technical competence of the vaccinators. A mother from Atkapara said, "*They (vaccinators) are doing just fine.*"

Mothers of fully and partially immunised children had no complaint against the competency of the vaccinators. One of the partially immunised child's mother in the rural area did not like the procedure of injecting the vaccine. This mother, however, felt that although the vaccination was a very hurting course of action, there was no alternative way of giving the vaccine. The mothers did not make any remarks on the competence of the providers. The researchers could not ask the mothers of non-immunised children regarding the technical competence of providers as they did not turn up at the centre.

#### ***Information given on the purpose of vaccination***

The session observation and follow-up of the vaccinators' social mobilisation activity showed that in the urban area the HWs sometimes mentioned the name of the vaccines and the VPDs. In one rural vaccination session only 2 out of 5 clients received some information. In another case the HW mentioned 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 client about the vaccine preventable diseases along with their corresponding vaccine. Two



vaccinators of the Municipality stated that they showed the clients the poster with signs of the VPDs. Two HWs, one each from urban and rural areas, however, felt that there was no need to inform the people about the VPDs as they already knew about those. One thana level supervisor expressed a similar view.

***Information given on the next vaccination session***

In the urban areas, the HWs informed the clients about the place and time of next vaccination session in only one session (out of 5). It was done in three sessions in rural areas (out of 4). In a rural vaccination session the HW advised a pregnant woman to revisit after two months. All the HWs of both areas mentioned during interviews that they informed the clients about the time and place of next vaccination session during household visits and vaccination session. One HW in urban area said:

During the vaccination session every woman has to be reminded about the next session. It is necessary because the women generally remain very busy with household chores and may forget the date.

***Information given about side effects and contra-indications***

In three out of four sessions observed in urban areas the HWs were found to inform the mothers about side-effects. They informed them that fever could follow BCG vaccination and ulcer could set in at the BCG vaccination point. They also told them that such side-effects were also the indications that the vaccine was working properly in the body and advised them not to be worried about in such situations. In all sessions the HWs also advised the clients that they should not feed their children within half an hour after receiving the Polio drop.

The HWs of rural Purbakanda and Kalikaprasad did not tell the clients about the side-effects. The HWs of Bashgari and Atkapara told this only to those clients who came for the first time. They advised the clients not to rub any oil on the site of the BCG vaccination.

The HWs said that they were aware about contra-indications and accordingly advised the mothers during the household visit. They stated that they did not give any vaccination if the child was suffering from any severe illness such as high fever, diarrhoea, measles or breathing problem. They also thought that children with vomiting and fever should not be given Polio. They instructed the clients to return after recovery from the illnesses. The researchers, however, did not find any evidence that the HWs were adhering to the above in any vaccination sessions of either urban or rural areas.

#### ***Information given on vaccination schedule and birth registration***

During the interview two HWs of Utsharga mentioned that they advised the mothers to get their children vaccinated between birth and one year of age. Another HW said that they drew the attention of the conscious and literate mothers to read the card properly.

One HA of a rural area mentioned that during the household visit they apprised the clients on the usefulness of birth registration. Another HA admitted that they did not tell the clients about birth registration. The vaccinators of the Municipality mentioned that during household visits and vaccination sessions they advised the mothers to register their newborns within three months of birth. This claim, however, was not substantiated by the researchers' independent observations.

#### ***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. Of those, 232 or 9.8% did not take place. The THFPO and AHIs of THC mentioned the following reasons for missed sessions: (i) government holiday; (ii) inclement weather; and (iii) civil disturbance such as strike or 'hartal'. It was added that if the workers were sick, then vaccination sessions did not take place.

#### ***Condition of the place of vaccination session***

There were three fixed centres and two outreach centres in the urban study area. All the fixed centres were located by the side of the main street of Bhairab town. 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 brick made 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 room of the vaccination session at Purbakanda had bamboo walls and door. It had a tin roof and 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 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 Ramsangkarpur, which was difficult to reach from three adjacent villages, viz., Moheshpur, Purbakanda and Jelepura. Between Ramshangkarpur and these villages, there was a canal that remained navigable during the rainy season. People needed to cross the canal by country-boat that made it less accessible for females (also see Chapter IX for a case study).

Similarly, the place of the vaccination session of Atkapara was not easily accessible from one of the corners of Shreemotirchar village. This was especially so in rainy season because of another canal. A corner of Bashgari village also remained isolated for 4 months in the rainy season.

The clients 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 whose economic status was high went to the centre by rickshaw.

#### *Type of facilities at the vaccination session*

At the vaccination sessions the sitting arrangement varied widely. In some places it was adequate, in others it was either insufficient or non-existent. Sitting arrangements of most fixed sessions were considerably good. At all vaccination sessions the HWs always sat on chairs while the clients

sat on wooden benches, stools or chairs. In the outreach sessions these are provided by the community members.

#### *Place of waiting for vaccination*

The Thana health sub-centre that was located in the main bazaar of Bhairab had a spacious tin shed with a *verandah*. In the Municipal Maternity Hospital the vaccination session was organized in a room with a *verandah* that was located in 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 *verandah* of a former Chairman. This house stood on the main road of the village. In the rural areas, most vaccination sessions took place in the *verandah* of either a clubroom or someone's house.

#### *Waiting time at the vaccination session*

In the session at Utsharga office, some of the clients waited between half an hour to one hour because of much rush and late arrival of vaccines. Others, however, waited as low as 5 to 10 minutes as they turned up at the end of the session. A similar scene was experienced in most other centres. In Ramsankarpur, however, none of the clients had to wait more than 10 minutes.

A different kind of problem was seen in the rural areas. In Kalikaprasad, the clients had to wait for a long time as there was no queue. Some clients expressed their dissatisfaction as a few who had arrived later than them, received the vaccination earlier. Apart from this the waiting time was remarkably short, 5 to 10 minutes. The researchers observed that in such situations the providers contacted the clients when they had completed full preparations. They conveyed the 'call for vaccination' (*tikar dak*) through home visits or miking from mosque only after they received the supply of vaccines. It was felt that such a management system resulted in quick delivery of service to the clients.

### *Availability of materials for immunization sessions*

Providers of rural and urban areas mentioned the essential items for a vaccination session. These included: vaccines, vaccine carrier, needles, syringes, sterilization box, immunisation card register books pen, timer, *moni* flag, cotton, chair and table. Two HWs from THC mentioned that they received vaccines too late which delayed the vaccination session. It was mentioned that sometimes the THC sent vaccines through porters. In other situations, the HWs brought vaccines themselves. The availability of various materials was investigated in 9 vaccination sessions, 5 in urban and 4 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 each in urban and 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 phenomenon over the previous few months. They used TT cards instead but it proved difficult as they were entirely different. One rural centre (Atkapara) had no vaccination card even for TT.

Syringes and Needles: Syringes and needles were available in all vaccination sessions. It was, however, 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 table cloth with *moni* mark was placed on the table in all the sessions of urban and rural areas.

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

Registers: The providers used 2 register books and tally sheets in each of the urban and rural vaccination centres.

### *Strategy for hard-to-reach areas*

In Bhairab the researchers found 6 hard-to-reach areas in terms of accessibility, equally divided between urban and rural areas. They observed that in the hard-to-reach session sites mothers needed additional social mobilisation efforts by HWs on the day of vaccination. In rainy season, however, the providers took an extra effort to vaccinate at the door steps of those who had not arrived at the session. One HA mentioned 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 for conveying information about vaccination sessions.

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

### *Cases of missed opportunities*

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

- i) In the Kalikaprasad session organized by Utsharga, some women left after waiting for some time for the vaccinators. One of them came back afterwards but the vaccinators did not provide the service as they had shortage of vaccine.
- ii) In the vaccination session at Utsharga office a woman came for TT vaccine at 10' O clock but the HWs had already prepared their report. So they did not give a vaccination to that client.
- iii) In a Purbakanda session organized by THC, a mother arrived before the starting of the session. The HA told her to come back half an hour later. The mother took her child and left. After 5 minutes other HAs reached there and started the session but the mother did not return.

iv) In Ramsankarpur session, some mothers came when HWs were closing the session. The HWs told the mothers that the session was over for the day.

### ***Cases of side-effects and action taken***

The researchers identified some cases of side-effects. One HW from Utsharga said:

So far I know one suffered from this (side-effect). After several days of receiving the tika, its site had swelled. After the vaccinated child was brought to the HW she took her to the hospital. In the hospital the child had an operation and was cured.

One fully immunised child's mother described her experience of side-effects. She stated that after receiving the second dose of DPT the injected place became infected. Fibrosis and nodule formed in the injected place. The whole leg had swelled and the baby suffered almost three months due to this. When it became severe the mother contacted the Utsharga people who gave some medicines. When the baby did not improve, the mother took her to the THC where the doctor did a surgical operation on the infected place. For this the parents spent Tk. 500. In spite of these, the mother did not stop the remaining vaccinations and completed the full course.

### ***Staff behaviour***

All HWs said that they used the local dialect while communicating with their clients. The HWs were found to be in a hurry with their work during the sessions, whence there could only be a limited contact between HW and clients. The researchers observed that sometimes the whole situation was very chaotic and disorganized making it difficult to talk through eye-to-eye contact. At the sessions the mothers hardly asked any question. The male attendants who also included fathers asked more questions than the females.

A somewhat 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 those telling her that all mothers received vaccination with sterilized re-usable syringes. The

HWs continued that if they use those (disposable) syringes other mothers could take it otherwise. It was discovered later that the vaccinator did not know how to use a disposable syringe.

In the second 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 the matter 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 gave them vaccination before others who had arrived earlier. One woman who came for service sat in the Supervisor's room as she lived in the same building as the Supervisor. She (supervisor) herself gave the vaccination to this client.

A vaccinator of the Municipality said, *"At the time of vaccinating we take the child in our lap and the mother remains at a distance. We hand him/her over to the mother when it starts crying."* The researchers also observed at the session that they (vaccinators) fondle the children when they start crying. *"Usually they (children) are not frightened. When the needle punctures the skin then they cry out of pain. I try to soothe the kids by touching on the head or on the body,"* informed another HW. 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 satisfaction at the vaccination session***

The researchers recorded two complaints made by clients against the providers.

At Kalikaprasad session, a HW wanted to give a tetanus injection to a woman before her turn who had a cut in her parts. Some women protested this as she had broken the queue. Ultimately the provider did not give her any vaccination. In Kalikaprasad session some mothers expressed their anger when the rules of providing service on a *first come first serve* basis had been violated. The session was chaotic and disorganized. The HAs spent no time in explaining things as they remained too busy in making preparations for vaccination.



### *Sex segregation and availability of immunization services*

In the urban sessions it was the female (mother, grandmother, sister-in-law of mother and aunts) who brought the children for immunizations. In rural areas, however, some males also brought the children. Maybe the rule of '*pardah*' (seclusion of women from strangers) in rural areas puts a formidable problem in regard to the movement of women. Another cause could be the conservative rural society in which females feel shy to communicate with male HWs, particularly in the absence of privacy at the vaccination site. In the Kalikaprasad session, one male and one female HWs were present. The researchers observed that one pregnant woman who came to receive the tetanus injection was taking her blouse off, 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* located a little away from the public, but that still had little privacy.

### *The procedure of fulfilling the vaccination coverage*

According to EPI rules, providers give a vaccination card to each client who can easily identify from this card how many doses the client received and how many remains. The providers have registration books that they use to retrieve information on each client. The cards and registration books contained the names of vaccination, number of doses and dates of 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. The information provided by HWs was thus crucial. If the clients are informed properly, then they remember well and complete all doses of vaccination. Theoretically, the dropouts can be identified retrospectively from the information kept in the registration book. What is important, however, is to identify them and follow them up.

The HWs said that after each session they checked with the registers whether any clients dropped out or not. The Supervisors of Utsharga said that their HWs went door to door for follow-ups to identify individuals who had taken vaccination and 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 number vaccinated with the register book after finishing the session to identify if any client had dropped out or not.

The HWs in urban and rural areas were reluctant to acknowledge the existence of any dropout. 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 is no dropout. If any one drops out then she/he comes again next time as a result of our motivation."* A HW of Utsharga said, *"Generally I do not find any dropout."* Another HW of Utsharga said, *"There is no dropout that deserves to be mentioned."* Two other HWs of Utsharga said, *"There are dropouts of children due to deaths or migrations."* One Supervisor of THC boastfully said, *"There is no occasion when we failed to achieve the target."* The researchers conducted an independent survey to know the 'actual' dropout picture. It revealed many dropouts between BCG and DPT3 in both urban (53%) and rural (47%) areas.

### ***Reasons of dropout***

When inquired about the reason of dropping out from the immunisation schedule, the THFPO was quite straightforward:

One reason is lack of motivation. Perhaps we could 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 come to know the usefulness of immunisation comply with it. They receive tika for their children. Therefore, it may be our lacking that we cannot motivate people. On the other hand, we cannot blame our workers alone. There are mothers who do not become vaccinated in spite of knowing about it because of lack of awareness.

One AHI of Bhairab THC said, *"Children experience fever after taking tika and the needle hurts the baby. For these reasons mothers do not bring their children for tika."* Another AHI added, *"Mothers are frightened about tika as the children get fever after receiving it."*

Two HAs of the THC said that a reason for dropout 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 rainy season the attendance of clients is less,"* said another HW. Some believed that their involvement with family planning may have had a bearing on this.

*"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 household work 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 immunisation schedule.

### ***How to reduce dropouts***

The THFPO said, *"Social mobilization is the key to address dropouts."* Two AHIIs of THC said that they try to persuade mothers to receive the rest of the vaccines. A Supervisor of Utsharga said, *"We try to convince the mothers at the time of follow-up. At an interval of 2 months the field worker is responsible to follow-up every dropout case. During this follow-up the clients are motivated to attend the next vaccination session."*

Two HW of Utsharga and two Vaccinators from the Municipality 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 more afraid of any risk due to side-effects,"* said a HW of Utsharga.

It appeared from discussions with village elites 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 about vaccination."*

HWs of both areas mentioned that they go door to door and motivate the mothers as a step in solving the problem of dropouts. HWs of rural areas mentioned they mobilised elderly people of the villages in favour of EPI. The HWs of urban area felt the need for providing free medicine and treatment to deal with side-effects to instill confidence of mothers. The HWs of urban and rural areas said that they motivated people to ensure attendance in the immunisation sessions on the fixed dates by visiting households. In reality, however, very little of it was observed during this study period.

It was revealed that providers did not take any initiative to bring dropout clients to vaccination sessions in urban areas. It appeared from a rural session of Purbakanda that the Health Assistant went to the houses two to three times during the session period to inform those people who had not turned up yet. The attending mothers were also requested to inform the mothers who did not come for vaccination as yet.

### *Coordination among different agencies*

In the areas covered by the Bhairab Municipality, the immunisation services were provided by the Municipality itself and Utsharga, a local NGO. The Municipality divides the working areas and organized meetings about twice a year between them and Utsharga. They had a coordination committee at higher level to guide them. The THC played a crucial role as it supplied them vaccines, materials and initial training. These informations 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 conducted by them.

One vaccinator from the Municipality said that women received information on immunisation at the satellite clinic for family planning that took place in the same venue of the EPI session but on different days. In the rural areas, however, only the government runs the EPI programme. There, the HWs select volunteers and make contact with NGOs for successful implementation of the programme. The FWAs belonging to the Family Planning wing were responsible for certain duties in EPI programme too (such as social mobilisation at assistance in session management). Yet they were not found to perform their responsibilities on EPI. The Concerned Women for Family Planning (CWFP), an NGO, had a fixed centre at their office located outside the research area. People from the villages of Sripur, Gazaria and Kalikaprasad (Kalikaprasad is in the research area) went there. Those who missed normal sessions went to the CWFP session. CWFP provided EPI services in its weekly Sunday session. They filled in immunisation cards for every vaccinated client without registering the name in any book. The government providers in the rural area said that the CWFP staff did not work in collaboration with any other organisations or THC.

We found that *Matrisadan* (the maternity centre run by the Municipality) and Utsharga offices were situated within a 100-meter distance. They independently arranged routine EPI session at their offices labeled as fixed centres. Flexibility of choice by the people was possible, as no fixed command area existed for those two fixed centres. Because of this overlap, anybody from within Bhairab Municipality could take services from either of the fixed centres.

#### ***Coordination between curative health and immunization services***

At the fixed EPI session in the *Matrisadan*, no doctor or Medical Assistant was present for consultation by the mothers. When interviewed afterwards, the Medical Assistant who was responsible for general health services of pregnant mothers could not say much about the EPI programme of the centre. At the fixed session in Utsharga office, the mothers could consult the EPI Supervisor (Health Visitor) if they wanted to, but EPI programme and satellite clinics were not. Utsharga arranged the routine EPI sessions and satellite clinics separately.

In the rural areas the FWAs hardly worked with HAs. The researchers found a house at Atkapara marked as an outreach centre. The FP providers informed them that the EPI session and satellite clinic took place on separate days. On the day of the visit by the researchers only the satellite clinic\* was in operation.

The government THC supplied vaccines and necessary materials all over Bhairab Thana for the EPI programme. The THFPO (Thana Health and Family Planning Officer) who had recently (at the time of the research work) been transferred to Bhairab Thana could not give much information. The EPI Technician informed the researchers that they never monitored the Municipality's work. The Municipality and other organisations involved in EPI reported their performances to THC.

#### ***Community Participation***

In urban study area there were three fixed centres (two run by the Municipality, and one run by the Utsharga). In each fixed centre, they had their own venue, furniture, and seating arrangement

---

\* Satellite clinics are outreach centres organized by government Health and Family Planning staff to provide MCH services at the village level.

for the clients. So according to HWs there was no need for the community to participate in vaccination sessions in terms of contributing furniture, or other materials.

Most of the Supervisors and all HWs stated that if they (HWs) arranged outreach sessions then they always informed the respective house-owner a day earlier. They always got cooperation from local people in getting supply of furniture and provision of a place to hold vaccination sessions.

During the session the community did not seem much involved in its management. The volunteers from the community did not participate in the routine EPI session in any given role, though they had assignment during NIDs (see chapter viii).

All HWs said that the community helped in preparing the premises of the session in case this was necessary and also cleaned up the place after the session. The Ramsankarpur session took place in an open field and there the villagers helped the HWs in bringing and returning the chairs and tables.

Every session at an outreach centre needed some contribution in turns of logistics from the local administration or community bodies, especially when places such as a school or a club room served as location. The Atkapara session took place in the local club room. The HWs opened the door themselves and started the vaccination using the chairs and tables of the club.

One HW from Kalikaprasad said, *"We inform the schools to help us, and the children are informed to bring their brothers and sisters for immunization."*

At Purbakanda the providers announced the news of the session through a microphone belonging to the local mosque. The mosque committee did not object to such use.

On the question of cost-recovery every HWs and Supervisor mentioned that the villagers never demanded money for providing space, furniture or preparation of vaccination sessions. They provided soap, water and entertained the HWs with snacks and betel leaf (*pan*). When the sessions

were held in public places such as club room (Atkapara) or school (Ramsankarpur), HWs did not pay money to anyone.

In urban areas the researchers observed one thing that was different from rural areas. In the urban routine 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 immunisation.

On the question of vaccination cost a ward commissioner of the Municipality stated confidently: *"We bear our expenditure for immunization from Bhairab Municipality budget. This (EPI) programme receives the highest priority in the work of the Municipality."*

### **Perceptions about the quality of services**

#### Quality of services

Both male and female vaccinators worked in the study area. The study points out that some mothers would prefer a female vaccinator. In such case the mothers would feel free to direct questions to the vaccinators: *'In this regard I think, a female is suitable for female clients and a male is suitable for male clients.'* Another mother further elaborated the situation: *'Although I do not like a male vaccinator vaccinating a woman, still I do not have any choice. I have to have vaccination from them.'* Another mother, however, showed an indifferent attitude in this regard: *'we went for vaccination and when it was done we came back, nothing to do with the gender of the vaccinators.'*

Nearly all mothers of non-immunised children in the rural areas, however, stated that they would have been more comfortable with female vaccinators. About the gender of the vaccinators some other interesting issues were also reflected from the study. In respect to female preference, the mother of a non-immunised child from Kalikaprashad stated, *'Women are more caring, they cannot hurt the child.'* Conversely, a woman from Ramshangkarpur said, *'It is better if a man does it, because the women push the needle very hardly.'* The mother of a fully immunised child of Kalikaprashad made a difference between male and female vaccinators considering the way they actually give vaccination. She said, *'Males push the needle in straight direction. while female sets this in down position. Males push all of a sudden and that is very much frightening.'*