Working Paper No. 24

The Quality of Urban EPI Services in Bangladesh:

Findings from the Urban Initiative's Needs Assessment Study in Zone 3 of Dhaka City

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Robert Weierbach

MCH-FP Extension Project (Urban)
Health and Population Extension Division

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MCH-FP Extension Project (Urban)

Urban FP/MCH Working Paper No. 24

The Quality of Urban EPI Services in Bangladesh:

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Foreword

I am pleased to release this publication on the assessment of health and demographic profile of the urban population of Bangladesh, as part of the research agenda of the MCH-FP Extension Project (Urban) of ICDDR.B. Over the years, the Centre has acquired unique expertise on urban development matters that ranges from research on reproductive health, child survival and environmental issues to providing technical assistance for capacity building to service delivery organizations working in urban areas.

This work has produced important findings on the health status and conditions of city dwellers, particularly the poor and those living in slums in the entire country. The research has also identified service delivery areas in which improvements need be made to enhance effectiveness. Together, these research findings form the basis in designing interventions to be applied in government and non-government settings.

In order to carry out this innovative work, the Centre has established a partnership effort known as the Urban MCH-FP Initiative, with agencies of the Government of Bangladesh and national non-government organizations, notably Concerned Women for Family Planning, a national NGO with wide experience in the delivery of MCH-FP services.

From the government side, this initiative to improve health in cities has the active support and participation of the Ministry of Local Government, Rural Development and Cooperatives, the Directorates of Health and Family Welfare of the Ministry of Health and Family Welfare and Dhaka City Corporation. The partnership receives financial and technical support from the United States Agency for International Development (USAID).

The overall goal of the partnership is to contribute to the reduction of mortality and fertility in urban areas. In practice, this joint work has already resulted in the development and design of interventions to improve access, coordination and sustainability of quality basic health services to urban dwellers with emphasis on the needs of the poor and those living in slum areas.

The Centre looks forward to continuing this collaboration and to assist in the wider dissemination and application of sustainable service delivery strategies in collaboration with providers in government, the NGOs and the private sector.

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The authors would like to express their appreciation to the residents and MCH-FP providers in Zone 3 who participated in this study. Ms. Marianne DeWier provided important assistance with the literature review. Valuable comments on earlier drafts of this paper were provided by Dr. Abdullah H. Baqui, Director of the MCH-FP Extension Project (Urban) at ICDDR,B; Dr. David Sniadak, Medical Officer-EPI for WHO/Bangladesh; Dr. T.O. Kyaw-Myint of the Health and Nutrition Section at UNICEF/Dhaka; and Dr. Yousef Tawfik, Country Representative for the BASICS Urban EPI Programme.

Glossary

ANC	Antenatal care
BASICS	Basic Support for Institutionalizing Child Survival
CWFP	Concerned Women for Family Planning
DCC	Dhaka City Corporation
DPT	Diphtheria, pertussis, and tetanus vaccine
EPI	Expanded Programme on Immunization
FP	Family Planning
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
MCH	Maternal and child health
NGO	Non-governmental organization
OPV	Oral polio vaccine
PNC	Prenatal care
TT	Tetanus toxoid vaccine

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Summary

This report assesses the quality of service inputs, service processes, and service outcomes (with the exception of coverage and effectiveness) for EPI services in Zone 3 of Dhaka City. Data for the analysis were obtained from surveys of a representative sample of households from Zone 3, from interviews with clients and providers, from observations of client-provider interactions, and from an inventory of all facilities in Zone 3 where immunizations are provided. Altogether, 20 separate dimensions of service quality have been assessed.

The results of the study indicate that, in general, the providers of immunization services were knowledgeable and friendly, and communicated well with their clients. Client satisfaction and client ratings of the quality of services were quite good. Access, defined as the percentage of the target group with at least one immunization, was 90% for childhood immunizations and 73% for maternal TT immunizations (among those women with a child aged less than one year).

Three dimensions of quality have been identified as needing particular attention:

- frequency of missed opportunities for the promotion or provision of immunizations by MCH-FP providers,
- coordination and utilization of immunization services, and
- promotion of TT immunization.

In the majority of cases, the MCH-FP providers in Zone 3 did not inquire about the immunization status of their clients at the time of service contacts. Many of the immunization sites were underutilized and were adjacent to higher volume sites. Approximately one-quarter of the women of reproductive age in Zone 3 were not aware of the importance of TT immunization for preventing tetanus during the first month of life of their newborns.

Based on these findings, three specific recommendations have been made:

- routine immunization services need stronger promotion by all of the providers of health care services in Zone 3,
- focused efforts are needed to improve the coordination, distribution, and utilization of immunization services in Zone 3, and
- focused efforts are needed to make immunization sites more accessible to slum populations, to establish new sites within slum areas (even if they are only staffed once a week), and to strengthen the follow-up of clients in need of immunization services.

Since Zone 3 appears to be reasonably representative of other Zones in Dhaka City, the findings and recommendations arising from this study are likely to be relevant for other areas of Dhaka and for other urban areas of Bangladesh as well.

In view of the rapid growth of the urban population and because of the ease of transmission of vaccine-preventable diseases in the unhygienic and crowded slums, urban EPI activities deserve to continue as a special focus of the national EPI programme

Bangladesh is a global leader in its support for and participation in EPI activities. Efforts to monitor and strengthen the quality of EPI activities will facilitate the further decline in the numbers of deaths and illnesses from vaccine-preventable diseases.

I. Introduction

In 1995, approximately 25 million people were living in the urban areas of Bangladesh, comprising 20% of Bangladesh's current total population of 120 million people (1,2). While the growth rate for the country as a whole is approximately 2% per year, the growth rate for the urban areas is 6% per year (3). The population of Dhaka City has grown from 1.7 million in 1974 to 3.4 million in 1981 to 6.8 million in 1991 (2), making it one of the fastest growing cities in the world (4). Over the next two decades, the urban population of Bangladesh is expected to double to approximately 50 million people (5,6). Maintaining a high-quality Expanded Programme on Immunization (EPI) in the face of such rapid growth will be important for minimizing the unnecessary burden of morbidity and mortality from vaccine-preventable diseases in the urban areas.

During the past decade, Bangladesh has made remarkable progress in improving its overall coverage of childhood immunizations and maternal tetanus toxoid (TT) immunizations in both rural and urban areas (7,8). As recent as the mid-1980s, the national coverage levels for childhood and maternal TT immunizations were only 2% (9), but by the mid-1990s the childhood coverage for all antigens had reached 76% and maternal TT coverage, 86% (10).

Although the country's EPI programme was established in 1979, it did not become fully operational until 1985, and a specific focus on urban EPI activities did not begin until 1989. Within Dhaka City proper, access to childhood immunization services (as measured by BCG immunization coverage) reached 92% in 1995, and the complete coverage of childhood immunizations reached 59% among children aged 12-23 months. TT coverage among women with a child aged less than one year reached 84% during the same year (11). The success of Bangladesh's national EPI programme has

been one important reason for the continuing decline of under-five mortality during the past decade.

In spite of these remarkable achievements, recent data indicate that 17% of the deaths among the children aged less than five years in Bangladesh are due to three vaccine-preventable diseases: neonatal tetanus, measles, and whooping cough (12). In the urban slums, neonatal tetanus and measles cause 19% and 5% of the infant deaths respectively, and measles causes 16% of the deaths among 1-4-year old children (13). Since immunization is one of the most cost-effective approaches to mortality reduction in children (14-16), there is every reason to continue efforts in Bangladesh to reduce the number of deaths, long-term disabilities, and acute illnesses caused by diseases which are vaccine-preventable.

This report describes the findings related to the quality of EPI services in Zone 3 of the Dhaka City Corporation which were obtained primarily during a 1994 comprehensive Needs Assessment Study of maternal and child health and family planning (MCH-FP) services. Recommendations for the improvement of the quality of EPI services in Zone 3 and implications for the national EPI policy are also discussed.

II. Conceptual Framework for Quality Assessment

Two paradigms for quality assurance of health and family planning services in developing countries have been consolidated for our analysis, namely that of Bruce (17) for family planning services and that of the Quality Assurance Project (18,19) for child survival services (Table 1). According to this conceptual framework, there are three areas of quality assessment:

- assessment of service inputs,
- assessment of service processes, and
- assessment of service outcomes.

This report analyzes all of the dimensions of quality shown in Table 1 except for coverage and effectiveness. Coverage issues have been addressed elsewhere (20). An assessment of immunization effectiveness was beyond the scope of the Needs Assessment Study.

Table 1: Framework for Assessment of the Quality of EPI Services

Assessment of service inputs	Assessment of service processes	Assessment of service outcomes
facilities	constellation of services	client satisfaction
equipment, supplies and medicines	technical quality of services	client perception of quality
training and experience of MCH-FP providers	counseling quality (including missed opportunities for promoting or providing immunizations)	client knowledge (about the purpose of vaccinations, location of immunization sites, and timing of the next dose)
immunization knowledge possessed by MCH-FP providers	quality of interpersonal relations	client attitudes (about the importance of immunizations and about plans for additional immunizations)
attitudes among MCH-FP providers (about the adequacy of training)	access	client behaviour (regarding previous immunization activities)
supervision	safety	efficiency (in the provision of immunization services)
amenities	promotion of continuity of care	coverage of immunization services within the targeted population*
		effectiveness*

* not assessed in the current repor

III. Findings from Other Studies of Quality of Immunization Services in Bangladesh

In general, the awareness among parents of the need for immunizations is high throughout Bangladesh (21,22), but knowledge of the population regarding the reasons for immunization and the immunization schedule remains limited (23,24). In particular, there is still a limited understanding among providers and parents that the major purpose of maternal TT immunization is to protect newborns against neonatal tetanus (25). Furthermore, there is a general perception in the population that vaccines provide general protection against all illnesses instead of a specific few and that there is no real difference between one immunization injection and another. Therefore, it is common for clients to think that one or two doses are sufficient (25,26). Another important misonception is the belief that measles is a good and healthy event for a child and that measles-associated complictions (such as diarrhoea, pneumonia, and malnutrition) are due to other causes since these complications do not necessarily immediately follow the episode of measles itself (26).

Studies have shown that immunization coverage levels are greater among those with a better knowledge of the immunization schedule (21, 23), and a lack of information is one of the major reasons that mothers fail to complete the immunization schedule for herself or her child (27). Lack of information was also the main reason for non-participation in the National Immunization Day campaigns (28-30).

Aside from lack of information, fear of side-effects (particularly for pregnant women receiving immunizations) has been noted as a deterrent to obtaining immunizations. Another deterrent is the traditional belief that measles is caused by Sitala, the goddess of epidemics, and neonatal tetanus is caused by an evil spirit, *bhut* (26). Since some people still believe that

measles and neonatal tetanus have spiritual causes, they are unlikely to accept the importance of immunizations for the prevention of these diseases.

One anthropologist has noted the competency and professionalism of the government Vaccinators working with the urban slums population, particularly when contrasted to that for other government health care providers. Also, the pre-existence of a relationship of trust and confidence between a clinic and a client appears to be a strong encouragement to clients to obtain immunization services at that clinic (26).

Nationally, 45%-67% of the children aged 12-23 months of age have an immunization card (10, 31). The retention of maternal TT cards is substantially lower (10). At least in one study, health workers did not usually remind clients to guard their cards carefully (25).

The severe time constraints of urban slum women, particularly those who are employed, has been stressed in several evaluations. The inability of many of these women to obtain immunizations for their child because the services are provided only in the mornings or because of the long wait that may be involved has also been stressed (26, 32). The existence of fees for immunization services has been noted to be another deterrent to immunization utilization among urban slum women (26).

Although 88% of the immunizations given throughout Bangladesh are provided at "outreach" sites,[1] only 45% of the immunizations given in the urban areas are provided at such sites (10). In rural areas, proximity to the nearest health facility is an independent predictor of access to immunization services as is the mother's ability to move about in the community (33).

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[1]"Outreach" sites are those which are not located in permanent health facilities. Immunizations are usually provided there once a week or once a month.

Person-to-person contact is the most important source of information about immunization, both for routine services as well as for the National Immunization Days (10,22,28,30). This is true in the urban slums and is also generally true throughout the country.

Local medical and pharmaceutical shops have not promoted immunizations (26). Analysis of national data have shown that the frequency of Field Worker visits is particularly important in promoting immunization utilization among illiterate women (33).

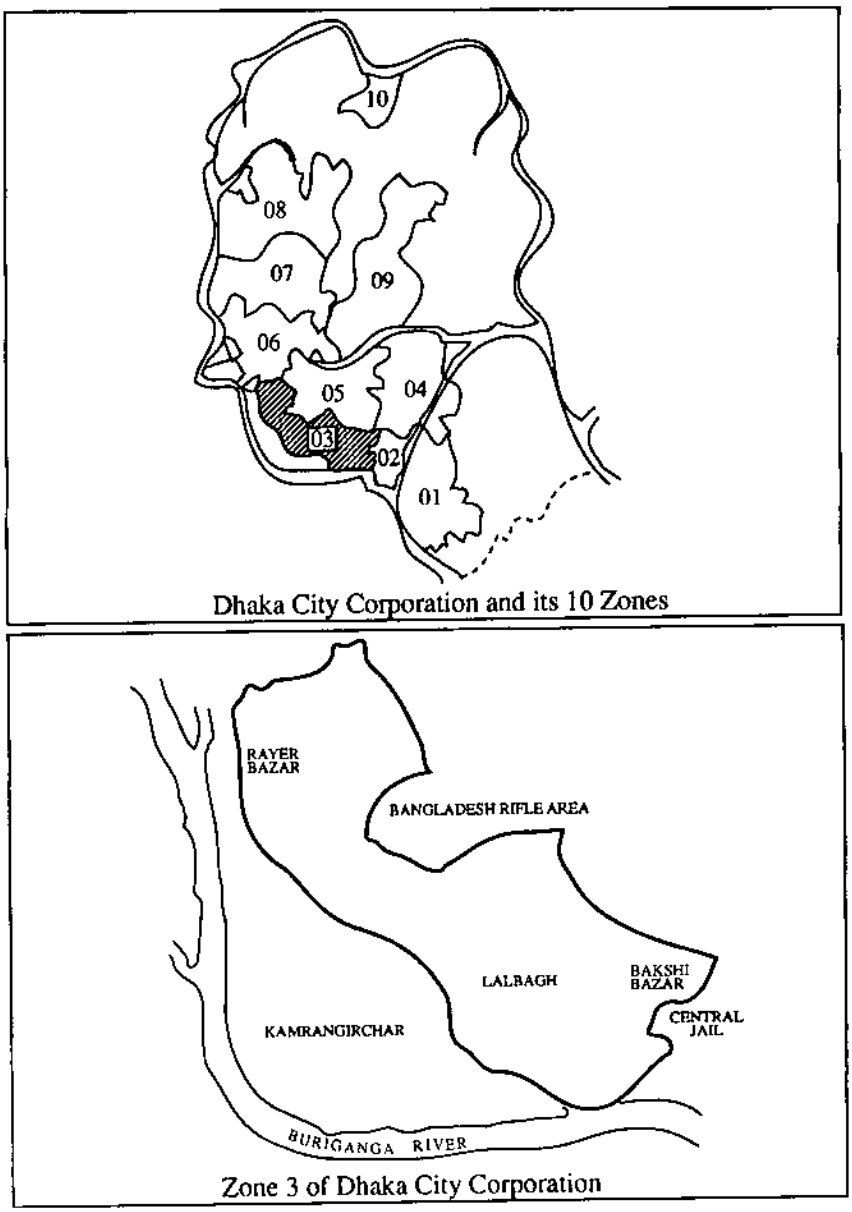
IV. Methods

The Ministry of Health and Family Welfare is the major provider of both health and family planning services in the rural areas of Bangladesh. In urban areas, however, government health services play a much smaller role in primary health care and family planning, while non-governmental organizations (NGOs) and other private providers, such as pharmacies and privately practising physicians, are the most common providers. Because of the diverse and complex nature of the organization of basic health services in the urban areas of Bangladesh, the Urban Maternal and Child Health and Family Planning Initiative (hereafter referred to as the Urban Initiative) was established in 1994 to develop, implement, and evaluate new approaches to the delivery of urban health services. The Urban Initiative is a collaborative effort of the Government of Bangladesh, the MCH-FP Extension Project (Urban) of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B), and Concerned Women for Family Planning (CWFP), a leading national NGO providing MCH-FP services. Strengthening the urban MCH-FP delivery system, including EPI services, is one of the mandates of the Urban Initiative.

During the latter half of 1994, the Urban Initiative carried out a comprehensive Needs Assessment Study concerning the MCH-FP services in Zone 3. The purpose of this study was to assist in the planning of interventions for strengthening those services. Other findings from this study have been reported elsewhere (34-36).

Zone 3 is one of 10 Zones of the Dhaka City Corporation (DCC), and is located in the Lalbagh area of the city. It has a population of approximately 400,000 persons (Fig.1). This Zone has a similar number of immunization sites per capita as the other Zones of DCC and is generally similar in socioeconomic characteristics to the other Zones as well. Although no Zone is entirely representative of Dhaka, many of the MCH-FP issues which each Zone faces are similar.

Figure 1. Map of Dhaka City Corporation and Zone 3



Most of the data included in this report were collected at the time of the 1994 Needs Assessment Study. The various approaches used for gathering information for the Needs Assessment Study included the following:

- baseline survey of Zone 3 households
- inventory of the MCH-FP clinics (EPI Centres, MCH clinics, FP clinics, dispensaries, and satellite clinics)
- observations of client-provider interactions (in both clinic and field settings)
- interviews with MCH-FP clinic providers
- interviews with MCH-FP clinic clients
- interviews with MCH-FP field workers and
- interviews with clients of field workers.

The baseline household survey, conducted between September and November of 1994, included all households in 160 randomly selected clusters from throughout Zone 3. There were 100 non-slum clusters and 60 slum clusters selected for the survey.

The following multistage areal sampling methodology was used for selecting these clusters. Prior to the survey, Zone 3 was mapped and divided into clusters, each having approximately 40 households. Each cluster was defined as being in one of four geographic areas of Zone 3 and also as being in a predominantly slum or a predominantly non-slum neighbourhood. In each of the four geographic areas, 15 slum and 25 non-slum clusters were randomly selected for inclusion in the survey. The survey respondents included 5,399 married women aged less than 50 years. Summary findings for the Zone 3 population have been weighted since the sampling probabilities varied from one strata to another.

Of the 36 clinics in Zone 3 providing MCH or FP services included in the Needs Assessment Study, only 13 actually provide immunizations. Nine of the 13 clinics are EPI Centres operated by DCC; one is a maternity hospital and clinic operated by the Ministry of Health and Family Welfare; and the other four are NGO clinics. The 36 MCH-FP clinics in Zone 3 include 28 government and eight NGO clinics. A comprehensive inventory of each clinic and its activities was obtained. At each MCH-FP clinic, at least one provider was interviewed. In several cases, the provider worked at more than one clinic. Thirteen of the 33 providers interviewed administer immunizations as part of their day-to-day job responsibilities.

At each of the 36 MCH-FP clinics in Zone 3, client-provider interactions were observed. At least four encounters were observed in 12 of the 14 clinics offering immunizations. In two clinics, the small number of clients there prohibited inclusion of the full complement of four encounters within the time available to the observers. At least four, and in some cases eight, encounters were observed at each of the other clinics. At those clinics offering both MCH and FP services, an attempt was made to observe eight encounters (four with MCH clients and four with FP clients). A total of 165 client-provider interactions were observed by field researchers. In addition, each of the 165 clients was interviewed alone afterwards as she was leaving the clinic.[2]

Each of the 57 Field Workers who provide MCH-FP services in the homes of clients in Zone 3 were also interviewed. Fifty-two of these were employed by Concerned Women for Family Planning and the remaining five by the government's Directorate of Family Planning of the Ministry of Health

[2]The term "clinic client" refers to those women attending a clinic who participated in the Needs Assessment Study. Some of these clients came to a clinic to obtain a service for her child and others came to obtain services for themselves. For the purpose of our discussion here, the term "clinic" will refer to a facility which attends to ambulatory MCH-FP clients and is operated by the government or an NGO.

and Family Welfare. The promotion of immunization services is one of the activities which field workers carry out. A field researcher accompanied each Field Worker during a typical day of home visitation activities. During that day of observation, the researcher recorded the details of two encounters for each Field Worker. At a later point during the same day, the researcher returned to the home of the client to interview her separately. A total of 114 Field Worker-client observations and 114 client interviews were completed.[3]

In addition to data from the Needs Assessment Study, some data from the July-September 1995 round of the Urban Panel Survey have also been included in this report. The Urban Panel Survey collects health and demographic information on a quarterly basis from the same cluster of households included in the baseline survey.

Statistical significance has been determined by Chi-square tests for differences in proportions between groups. When the Chi-square test results have been calculated for a two-by-two table, the Yates continuity correction was used. When the expected value for such a table is less than 5, Fisher's exact two-tailed test was employed.

V. Findings

A. Assessments of Service Inputs

1. Facilities

In Zone 3, there are 36 MCH-FP clinics providing at least one type of MCH-FP service to ambulatory clients. Fourteen of these clinics provide immunization services. The nine DCC EPI Centres provide only

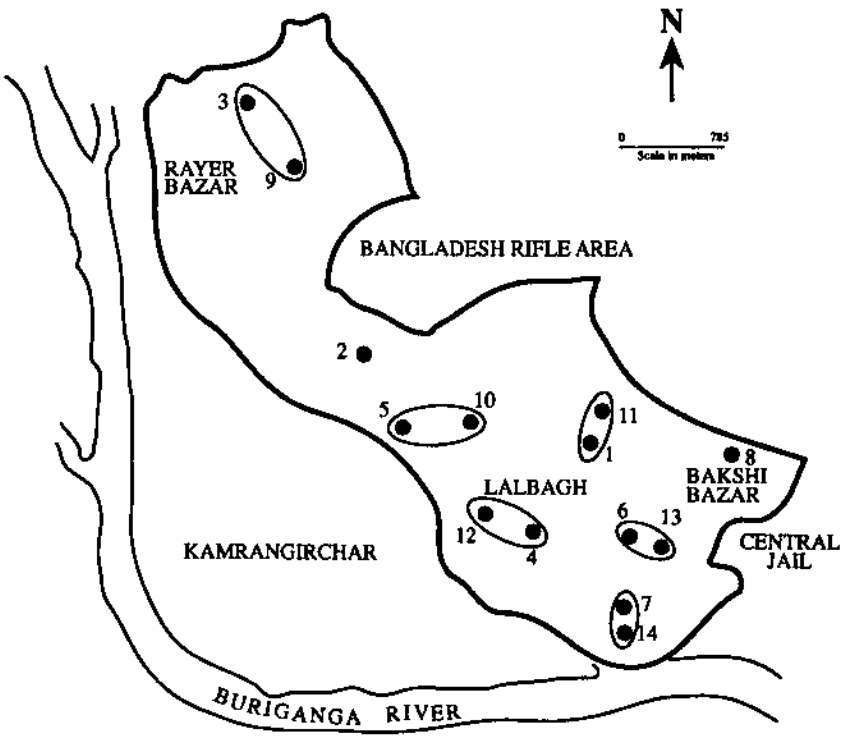
[3]The term "field worker client" refers to those women receiving a Field Worker visit who participated in the Needs Assessment Study.

immunizations and no other services. There is a government maternity centre (Azimpur Maternity Centre) which provides, in addition to immunizations, curative services, family planning, antenatal and postnatal care (ANC/PNC), and obstetrical delivery care. The four NGO clinics which provide immunizations also provide curative services, family planning, and ANC/PNC. The MCH-FP clinics in Zone 3 which do not provide EPI services provide curative MCH services exclusively (n=7), family planning and ANC/PNC services exclusively (n=8), or some combination of these non-EPI services (n=7). Most government MCH-FP clinics in Zone 3 that do not provide immunization services are located near a DCC EPI Centre.

The 14 MCH-FP clinics in Zone 3 which provide immunization services include nine DCC EPI Centres as well as three CWFP main clinics, one CWFP satellite clinic, and the Azimpur Maternity Centre. According to the baseline survey of Zone 3 households, 89% of childhood immunizations and 90% of maternal TT immunizations received by the Zone 3 population were from one of these Zone 3 MCH-FP clinics.

Fig. 2 describes the location of immunization sites in Zone 3. Of note is the concentration of immunization sites in the southern portion of the zone and the close proximity of many of the sites. Twelve of the 14 immunization sites are located close to another site, in a pair-wise arrangement (see the circled groups of sites in Fig. 2). The distances between the two sites which make up each of the six pairs of immunization sites, as measured by their distance apart on a map, are all less than 0.5 km.

Figure 2. Immunization Sites in Zone 3



Legend:

1. Azimpur Maternity Centre
2. DCC EPI Centre (Hazaribagh Park)
3. CWFP Rayer Bazar Clinic
4. CWFP Lalbagh Clinic
5. DCC EPI Centre
6. DCC EPI Centre (Shayesta Khan Kalyan Kendra)
7. DCC EPI Centre (Islambagh Community Centre)
8. CWFP Bakshi Bazar Clinic
9. DCC EPI Centre (Tannery More)
10. DCC EPI Centre (Lalbagh Crescent Club)
11. DCC EPI Centre (Palashi Barak)
12. DCC EPI Centre (Amigola Park)
13. DCC EPI Centre (Chawkbazar Shishu Hospital)
14. CWFP Satellite Clinic (Islambagh)

2. Equipment, Supplies and Medicines

On the morning of an immunization day, one member of the immunization staff at each NGO clinic goes to that NGO's central office to obtain vaccines for that day's use. Similarly, one member of the staff at each of the DCC EPI Centres obtains supplies from a central office in Dhaka. Since the Azimpur Maternity Centre has a refrigerator, the immunization clinic there does not have to restock on a daily basis.

Only two of the 14 clinics reported problems with vaccine supply for childhood immunizations during the previous six months, and only two reported problems in obtaining TT vaccines during the same period. Further information about these problems is not available.

Each of the 13 "regular"[4] immunization sites has an EPI steam sterilizer and an adequate supply of EPI syringes, needles, forceps, and cotton. All but one of these 13 "regular" sites have ice packs, and all but two have vaccine carriers. Only one site, the immunization clinic at the Azimpur Maternity Centre, has a refrigerator.

3. Training and Experience of MCH-FP Providers

At each immunization site at least one person who provides immunizations was interviewed. Thirteen clinic staff members who provided immunizations were interviewed, including two Vaccinators who worked at more than one site and two Vaccinators who worked at the same site. Those interviewed included three Paramedics, two Family Welfare Visitors, and eight Vaccinators.

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[4]The fourteenth immunization site is the Islambagh CWFP Satellite Clinic, which provides immunizations only one day a month.

All but one of the 13 immunization providers indicated that they had received training on immunizations, and all but three indicated that they had received on-the-job training on immunizations as well. On an average, each of the 13 providers had 16.1 years of experience in working with their respective organizations.

4. Immunization Knowledge Possessed by MCH-FP Providers

The knowledge among providers in the clinics regarding the official immunization schedule recommended by the government was assessed.[5] Ninety-two percent (12/13) of the immunization providers gave the correct schedule for the complete set of childhood immunizations (BCG, DPT polio, and measles). Ten of the 13 providers (77%) were able to give the correct schedule for maternal TT immunization.[6]

If MCH-FP providers who do not give immunizations are to be able to promote immunizations among their clients, they need to know the immunization schedule recommended by the government and why immunizations are given. Among the 20 clinic staff members who participated in the Needs Assessment Study who do not administer immunizations, 75% or more were able to recall the recommended schedules for BCG, DPT, and measles immunizations, but only 15-20% were able to recall the recommended schedule for either polio or maternal TT. It appears that most of these providers did not know that an OPV dose should be given along with

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[5]See the Appendix for a description of the schedule.

[6]For TT immunizations, if the health worker indicated that two TT doses are necessary, the health worker needed to describe correctly the schedule of the Ministry for those two doses in order for the response to be classified as correct. If the health worker indicated that five doses were required, the Ministry's schedule for all of those five doses had to be correctly described in order for the response to be classified as correct.

the measles immunization. There also appeared to be confusion among them regarding the TT dose schedule since the policy of the government for maternal TT immunizations had recently changed from two to five doses at the time of the study.

The 57 Field Workers in Zone 3 come into contact with large numbers of mothers and children during their daily schedule of home visitation. These Field Workers were asked about their knowledge of the schedule of immunizations. Sixty-eight percent (39/57) of the Field Workers gave a correct answer for the complete childhood schedule (BCG, DPT, polio, and measles), and 82% were able to give the correct dosage and schedule for maternal TT immunization.[7]

When the clinic staff members who give immunizations were asked why a pregnant woman should obtain a TT immunization during her pregnancy, all 13 said (spontaneously) "to prevent herself and her child from developing tetanus." Ninety percent of the 20 clinic providers who do not administer immunizations also responded similarly to the same question. The 57 Field Workers were also asked the same question. Eighteen percent said that there was no need for TT immunization during pregnancy. In addition, 81% said that TT provides personal protection against tetanus, but none mentioned (spontaneously) that it provides the newborns with protection against tetanus during the first month of life.

5. Attitudes Among MCH-FP Providers (about the adequacy of training)

Providers were asked if they felt that in general their training was adequate for their current duties and in what particular areas they felt a need for additional training. Eleven of the 13 clinic providers who give

[7]The criteria used for assessing the Field Workers' knowledge of the TT schedule were the same as those used with MCH-FP providers in the clinics.

immunizations felt that their training was adequate in general (for all of the services they provide).[8] Of the 20 clinic providers who do not provide immunizations, only three expressed a need for additional training in immunizations. Only eight of the 57 Field Workers also expressed a similar need.

6. Supervision

All 13 clinic staff who give immunizations reported that a supervisor visited regularly. Data regarding the supervisory practices at the nine DCC EPI Centres were examined in detail.[9] According to the clinic staff members who were interviewed, the supervisor observes service delivery practices at all nine sites and examines records at six sites. However, only five of the Vaccinators reported that the supervisor enquired about service delivery problems and none reported that the supervisor made any suggestions for improvement. In addition, according to the Vaccinators none of the supervisors praised good work or reprimanded unsatisfactory work.

7. Amenities

The DCC EPI Centres remain open on Saturdays through Wednesdays, and the Azimpur Maternity Centre is open on Saturdays through Thursdays.

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[8]The question on which these findings are based is as follows: "Do you think that the training you have received is adequate to perform your duties?" Thus, the response pertains to all of the activities carried out by the provider. Eight of the 13 clinic staff who give immunizations work at a DCC EPI Centre and do not provide any services beyond immunizations. The other five immunization providers give many other types of services in their day-to-day activities, including FP, ANC/PNC, care for women's illnesses, and care for children's illnesses. Therefore, their responses pertain to a broad array of services beyond just immunizations.

[9]We have not included an analysis of supervisory practices at the other five clinics where immunizations are carried out because of the many different types of MCH-FP services provided there.

The CWFP main clinics offer vaccinations one day a week, and the CWFP satellite clinic at Islambagh offers vaccinations one day a month. None of the immunization sites remain open on Fridays. The DCC EPI Centres generally open at 9 a.m. and close at 1 p.m., and the Azimpur Maternity Centre opens at 10 a.m. and closes at 2 p.m. The CWFP main clinics open at 8 a.m. and close at 1 p.m., while the Islambagh CWFP Satellite Clinic opens at 10 a.m. and closes at 3 p.m.

Seven of the nine DCC EPI Centres have 10 or fewer seats, while all of the other immunization sites have 12-30 seats. Seven of the nine DCC EPI Centres and all of the other four regular immunization sites have functioning toilets. The Islambagh CWFP Satellite Clinic does not have a functioning toilet. All of the busier immunization sites have a system for ensuring that clients are seen on a "first-come, first-served" basis. All sites have a waiting area which is protected against both rain and sun. Only four of the 14 EPI sites have a separate examining room (or a separate area for counseling and consultation which is curtained off).

B. Assessment of Service Processes

1. Constellation of Services

The DCC EPI Centres provide immunization services five days a week. The members of the staff of these Centres work six days a week, however. On the sixth day, the members of the staff are supposed to carry out home visits to encourage clients to come to their clinic for immunization. The same Vaccinator who staffs the DCC EPI Centre at Nabarun Sangha also staffs the Lalbagh Crescent Club site (the pair composed of sites 5 and 10 in the centre of Zone 3 as shown in Fig. 2, page 13). In this case, the Vaccinator works at Nabarun Sangha on Sundays through Tuesdays and at the Lalbagh Crescent Club on Wednesdays.

The CWFP main clinics provide immunization services one day a week, while the Islambagh CWFP Satellite Clinic provides immunization services one day a month. The Azimpur Maternity Centre provides immunization services six days a week. Childhood immunizations are given there every other day, with maternal TT immunizations being given on the alternate days.

Both childhood immunizations and maternal TT immunizations are provided at each of the 14 immunization sites in Zone 3. In 13 of the 14 clinics a sign was visible announcing that childhood vaccinations were provided in the clinic. Four clinics providing TT immunizations (all of which are DCC EPI Centres) did not have a sign announcing that TT immunizations are provided there. A poster promoting immunization activities was visible in only half (7/14) of the clinics providing immunizations and in only 18% (4/22) of the clinics where immunizations are not provided. In only one clinic (Azimpur Maternity Centre), health talks covering a variety of topics (including immunizations) were given to clients.

The Needs Assessment Study included observations of the process of immunization promotion and provision by MCH-FP providers as well as interviews with the providers about their immunization promotion activities. For the 165 observed encounters between MCH-FP clinic providers and their clients, there were 108 encounters in which the client had a child with her; in 33 of these encounters, the child received an immunization. Thirty-one children were brought specifically for an immunization, and all 31 were immunized. Two additional children, who were brought due to illness, also received an immunization during that visit. All of the mothers of the 33 children receiving an immunization had a child immunization card at the time of leaving the clinic. Information was not obtained regarding the number who had a card at the time of their arrival.

The Needs Assessment Study also included observations of 13 clinic encounters in which the client received a maternal TT immunization. All 13 clients were pregnant and had come specifically for a TT immunization. All 13 TT clients possessed a client TT card at the time of leaving the clinic. Five of them came to a clinic where other prenatal services beyond TT immunization were provided, but almost no prenatal services were provided to them.[10] During the observed encounter, only one of these 13 pregnant clients receiving a TT immunization was actually referred to another facility for prenatal care services.

The 57 Field Workers were asked about the immunization promotion activities which they carried out at the time of home visits. Sixty-five percent spontaneously said that they promoted immunization of the newborn when they visited a woman who had recently given birth, and 95% said that they "always" checked the child's immunization card if the woman she is visiting had a child aged less than one year. If the child needed an immunization, the Field Workers said that in all cases they reminded the mother when and where to go to obtain the immunization.

The Field Workers were asked what advice they usually give to a woman during the postpartum period. Sixty-five percent (37/57) spontaneously said that they advise, among other things, the mother to have her child immunized. The Field Workers were also asked what they usually did when they encountered a pregnant woman during a routine home visit. All 57 said (spontaneously) that, among other things, they check to make sure she had obtained her TT immunizations.

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[10]A history of the current pregnancy was obtained for only one client, determination of blood pressure was carried out for only one client, and measurement of blood haemoglobin was recommended for only one client. No other prenatal services were provided to these five clients.

These findings for the Field Workers are based on reports, not actual observations. Actual observations of the Field Workers' interactions with their clients who had a child aged less than one year, however, revealed that in only 55% of the cases did the Field Worker review the child's EPI card or discuss the importance of immunizations. In six of the seven observed encounters with a client identified as having a newly detected pregnancy, the Field Worker discussed the importance of TT immunization.

At the time of the July-September 1995 round of the Urban Panel Survey, clients were asked to show the interviewer their client-retained immunization card. Of the 1,374 women interviewed who had a child aged less than two years, 61% had an immunization card for the child with them at home. Of the 4,694 married women of reproductive age interviewed who had ever been pregnant, only 9% had a maternal TT card with them at home as did only 23% of the 707 women with a child aged less than one year. It is not possible to determine from the information available whether the client received a card and later lost it or whether she never received a card.

There is no ongoing routine monitoring of the immunization coverage levels, measles outbreaks or vaccine-preventable deaths in Zone 3. The 57 Field Workers in Zone 3 (most of whom are employed by CWFP) collect information on childhood deaths at the time of routine home visits, but this information is not routinely analyzed or passed on to government health authorities for follow-up investigation.

2. Technical Quality of Services

For each of the 33 children who received a vaccination at the time of a clinic visit, the administration of the immunization itself was observed. Vials of vaccine were noted to be kept on ice during the session at each of the 12 clinics where these 33 children were immunized. Only 48% (16/33) of the

mothers of children obtaining an immunization received an explanation from the provider about potential side-effects.

TT vaccine vials were also kept on ice at each of the clinics where the administration of TT immunizations was observed. Observations regarding the explanation of side-effects to TT clients were not recorded.

Reusable syringes and needles were used for 97% of the 33 child immunizations observed. Sterilization of needles and syringes was observed at eight sites.[11] In all cases, a steam sterilizer was used, and in all cases the sterilization process continued for at least 20 minutes.

3. Counseling Quality (including missed opportunties for promoting or providing immunizations)

The MCH-FP providers in the clinics did not check the immunization status of 89% of the children of clients coming for some reason other than for immunization (Table 2).[12] Of the six children whose immunization status was checked, three were in need of an immunization, and two of these received an immunization at the time of the clinic visit. In addition to these six children, in only two cases did the mother herself spontaneously ask the provider about her child's immunization status. Thus, in only 11% (8/73) of the cases in which a child came with his/her mother to an MCH-FP clinic for some reason other than to be immunized was the child's immunization status reviewed. If we assume that the need for additional immunizations of the 65 "unchecked" children is similar to that for other children aged 12-23 months

[11]At the other six EPI sites, the syringes and needles had been sterilized elsewhere and then brought to the site to be used.

[12]The age of many of these children was not specified, so it is not possible to limit this analysis to children aged less than one year.

in Zone 3,[13] the incidence of missed opportunities for immunization promotion is 44% among the children coming to an MCH clinic for some reason other than immunization. That is to say, if the immunization status of all of these children was reviewed, almost one-half would be found to be in need of one or more additional immunizations.

During home visits, the Field Workers failed to check the immunization status of children aged less than one year in 45% of the observed interactions, a considerably lower rate than the 89% rate observed in the clinics (Table 2). In 44% of the 18 cases in which the Field Worker checked the child's immunization status, the child did not have a card. Of the 10 children aged less than one year who had an immunization card, six had received those immunizations which were appropriate for the age of the infant. There were 22 children aged less than one year identified by the Field Worker as being in need of an immunization. The Field Worker referred 77% of their mothers to an immunization site and told 59% when to go for the immunization.

Virtually in all cases in which a woman came to an MCH-FP clinic for some reason other than for immunization, the provider failed to inquire about the client's TT immunization status (Table 2). Of the 152 clinic clients who did not obtain a TT immunization at the time of that visit, 88% stated (at the time of a post-encounter interview) that they had obtained fewer than five TT doses. Since the provider inquired about the client's immunization status in only 1% of the cases, this suggests a missed opportunity incidence of 87%.[14]

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[13]The overall immunization coverage among 12-23-month-old children in Zone 3 is 51% according to Urban Panel Survey data.

[14]The coverage rate of five TT immunizations among women of reproductive age in Zone 3 is 11% according to Urban Panel Survey data. Thus, these data also suggest that the incidence of missed opportunities for maternal TT immunization among women coming to a clinic for some reason other than TT immunization would be 88% as well.

In seven observed home visits in which the Field Worker identified a new pregnancy, the worker discussed the importance of TT immunization in six cases. In only 3% of the additional 107 observed Field Worker-client interactions did the Field Worker review the client's TT immunization status and advise the client to obtain a TT immunization (Table 2).

Table 2: Review of Client Immunization Status by MCH-FP Service Providers

Target group	Number in target group	Percentage of cases in which the provider did NOT inquire about the client's immunization status
Children who were brought to an MCH-FP clinic for some reason other than immunization	73	89
Children who were brought to an MCH-FP clinic for acute illness care	48	87
Children who were brought to an MCH-FP clinic to "give company" to the mother	19	95
Children who were brought to an MCH-FP clinic where immunizations provided but did not receive an immunization	18	89
Children aged less than one year who were visited at home by a Field Worker	33	45
Women of reproductive age who came to an MCH-FP clinic for some reason other than for TT immunization	152	99
Pregnant women who were visited at home by Field Workers	7	14
Non-pregnant women who were visited at home by Field Workers	107	97

4. Quality of Interpersonal Relations

Overall, 94% (43/46) of all the immunization clients rate the clinics they attended as friendly. Observations of the interactions between these clients and the providers of vaccinations indicate that in 78% (36/46) of the cases the researcher considered that the provider gave the client a "respectful and/or friendly greeting."

All 46 immunization clients said that they could understand the clinic staff member when he/she was "explaining things" to them, and 83% (38/46) of the immunization clients said that they received "enough" explanation "for their liking." Observations of these same encounters indicate that in 91% (42/46) of the cases, the researcher judged that the provider had responded adequately to the client's questions.

5. Access

Access to immunization services is commonly measured as the percentage of the target population obtaining at least one immunization. According to this definition, access to immunization services in Zone 3 is favourable. Seventy-three percent (482/660) of children aged 0-11 months had obtained a BCG immunization, and 90% of the 1,374 children aged 0-23 months had received at least one vaccination. Seventy-three percent (627/862) of mothers with a child aged less than one year had obtained at least one TT immunization, and 68% of the 4,964 married women of reproductive age who had even been pregnant had received at least one TT dose in the past. Access is significantly lower ($p = .01$) for children living in slum clusters (68%) compared children in non-slum clusters (77%), but there is no statistically significant difference between access to maternal TT immunization in the slum and in the non-slum clusters (70% versus 74%).

Information from the baseline survey indicates that 6% of the married women aged less than 50 years had obtained either a TT immunization for themselves or an immunization for their child during the previous six months. Slum women are just as likely to have obtained immunization services as non-slum women.

Women obtaining an immunization were also asked where they obtained the service. These results are shown in Table 3. Eighty percent or more of the women obtained their last immunization from a Zone 3 clinic, except for those non-slum women who obtained TT immunizations. This group was more likely than the other three groups of women shown in Table 3 to have obtained their last immunization from a private physician or private clinic.

Table 3: Location of Sites Where Women in Zone 3 Obtained Their Last Immunization

	Percentage of Clients Obtaining Service					
	Child immunization (weighted)			Maternal tetanus immunization (weighted)		
Location	Slum (n=451)	Non-slum (n=614)	Total (n=1,065)	Slum (n=70)	Non-slum (n=163)	Total (n=233)
Zone 3 clinic	86	83	85	80	60	68
Clinic or health centre outside of Zone 3	14	14	14	14	19	17
Private physician or clinic	0	4	2	6	21	15
Total	100	100	100	100	100	100

Note: The slum/non-slum percentage distribution for source of maternal tetanus immunization is statistically significant (p=.007)

The DCC EPI Centres are the most frequently utilized type of health facility for childhood immunizations among Zone 3 clients (Table 4). Forty-eight percent of all childhood immunizations are obtained from one of these Centres. The CWFP clinics and the Azimpur Maternity Centre each provide 12-13% of the childhood immunizations. The Azimpur Maternity Centre is the

largest provider of maternal TT immunizations, followed by private physicians/clinics and DCC EPI Centres. Further analysis of the data from Table 4 also reveals that 77% of all childhood immunizations and 68% of all maternal TT immunizations received by the residents of Zone 3 are obtained at the government clinics.[15] Private providers, both NGOs and private practitioners, provide the remainder.

Table 4: Specific Source of Child and Maternal Immunizations During Previous Six Months

Location	Percentage of total childhood immunizations obtained by Zone 3 clients (weighted, n = 1,065)	Percentage of total maternal TT immunizations obtained by Zone 3 clients (weighted, n = 226)
Dhaka City Corporation EPI Centres	48	14
Azimpur Maternity Centre	12	40
Concerned Women for Family Planning Clinics	13	4
Zone 3 government clinic (dispensary or family planning clinic)	7	4
Other NGOs in Zone 3	5	1
Private physician or private clinic	2	16
Clinic outside of Zone 3 (in Dhaka City)	7	8
Other (hospital, family planning clinic, clinic outside of Dhaka City, private clinic, pharmacist, compounder)	12	12
Total	100	100

[15]This analysis assumes that the relatively few clients who obtained their last immunization at a clinic outside of Zone 3 were equally likely to have attended either a government or a private clinic, and that the relatively few clients obtaining immunizations at the "other" locations were also equally likely to have obtained them from either a government or a private provider.

Table 5: Number of Immunization Clients Reported During the Previous Month (Fall of 1994)

Immunization Site	No. of clients reported	No. of immunization sessions reported to have been held during a 4-week period	Average No. of clients per session
"High-performing" Clinics			
Azimpur Maternity Centre	843	24	35
DCC EPI Centre (Hazaribagh Park)	716	20	36
CWFP Rayer Bazar Clinic	582	4	146
CWFP Lalbagh Clinic	567	4	142
DCC EPI Centre (Nabarun Sangha)	433	16	27
DCC EPI Centre (Shayesta Khan Kalyan Kendra)	374	20	19
DCC EPI Centre (Islambagh Community Centre)	349	20	18
"Low-performing" Clinics			
CWFP Bakshi Bazar Clinic	266	4	67
DCC EPI Centre (Tannery More)	155	20	8
DCC EPI Centre (Lalbagh Crescent Club)	104	4	26
DCC EPI Centre (Palashi Barak)	102	20	5
DCC EPI Centre (Amigola Park)	86	20	4
DCC EPI Centre (Chawkbazar Shishu Hospital)	55	20	3
CWFP Satellite Clinic (Islambagh)	49	1	49

The number of immunization clients reported by each clinic during the most recent complete month prior to the survey in late 1994 is shown in Table 5. There is a wide range in the number of clients seen, with the Azimpur Maternity Centre reporting the largest number of clients overall and the Islambagh CWFP Satellite Clinic reporting the fewest. Taking into account the

number of vaccination sessions held each month, the four CWFP clinics have the highest number of clients per session, ranging from 49 to 146 clients per session (see the last column of Table 5). Although the Azimpur Maternity Centre reported the largest number of clients per month overall, it saw an average of 35 clients per session, far fewer than the 146 clients seen per session at the Rayer Bazar CWFP Clinic. The busiest DCC EPI Centre (near Kahil Sardar) reported 36 clients per session. However, all the other EPI Centres reported an average of 22 or fewer clients per session, and five EPI Centres averaged less than eight clients per session.

In the interviews with 46 clients who came to a clinic for an immunization, 88% said that they had come to the closest clinic which provides similar services near their home. None of the clinics reported that clients were required to pay for immunization services received. However, 39% of the 46 clinic clients in the Needs Assessment Study who obtained an immunization at the time of a visit reported that they paid something for the services they received. Of those attending a DCC EPI Centre (where only immunization are provided), 21% (7/33) reported that they paid Tk. 2-Tk. 10 for the service. Among those clinic clients attending a CWFP clinic who obtained an immunization, there were four whose child received an immunization and no other service. These clinic clients all paid Tk. 5-Tk. 20 for their service. There were also five clinic clients obtaining a TT immunization at a CWFP facility, and all five of these paid Tk. 5-Tk. 20 for their service.[16]

[16]Three of these five received a minor additional service as well, such as measurement of blood pressure, nutritional advice, or advice about medication. The policy of CWFP is to request voluntary payment for all services, including immunizations. There is no "official" charge for an initial or subsequent registration for an immunization, for an immunization card, or for the immunization itself. However, there is a small fee for additional services, such as Tk 10 for an antenatal visit.

6. Safety

As mentioned under the section on Technical Quality of Services, observations of the eight clinic sites at which sterilization of equipment was observed indicated that proper procedures were being followed. Information was not collected on procedures for disposal of those needles and syringes which are no longer usable nor was information collected regarding the use of precautions against injuries produced by used needles.

7. Promotion of Continuity of Care

In every observed interaction in which a child received an immunization and a further follow-up immunization was still indicated (n = 30), the provider told the client when to return. At the time of leaving the clinic, only one of these 30 mothers said that she did not know when to return for the next immunization. During 12 of the 13 encounters in which a woman received a TT immunization, the provider told the client when to return for the next immunization. At the time of leaving the clinic only one of these 13 women said that she did not know when to return for her next TT immunization.

C. Assessment of Service Outcomes

1. Client Satisfaction

All the clients who came to a clinic for any reason and who were included in the Needs Assessment Study were asked "Do you feel that you received the services that you wanted during today's consultation?" Ninety-eight percent (45/46) of the immunization clients were satisfied with their service.

2. Client Perception of Quality

Ninety-six percent (44/46) of the clients who came for an immunization said that they would recommend that clinic (where they received the immunization) to a friend for a similar service.

3. Client Knowledge (about the purpose of vaccinations, location of immunization sites, and timing of the next dose)

The 33 clinic clients whose child received an immunization and the 66 clients of field workers with a child aged less than five years who had previously taken their child for at least one immunization were asked why vaccinations are given (Table 6). Over half of the respondents mentioned the prevention of a disease which is, in fact, not vaccine-preventable. The most commonly mentioned vaccine-preventable disease was measles, but only one-third of the respondents mentioned this.

Table 6: Reasons Mentioned by Mothers for Immunizing Their Child*

Reason	Percentage of mothers (n = 99)†
Prevent measles	35
Prevent tuberculosis	30
Prevent tetanus	25
Prevent polio	19
Prevent diphtheria	16
Prevent whooping cough	4
Prevent diseases which mothers erroneously think are amenable to immunization	54

* Responses were unprompted

† More than one response was possible, hence the total is greater than 100%; these 99 mothers include 33 women who brought their child for immunization at a clinic and 66 mothers who had an immunized child and who had been visited at home by a field worker.

Among the 22 clients of Field Workers with a child aged less than one year needing an additional immunization, 41% gave an inadequate or incorrect answer regarding the timing of the next dose. These mothers said either that they did not know when the next dose was due or that it would not be due until the child is five years of age.

The 13 women receiving a TT immunization at the time of a clinic visit were asked what are the reasons for receiving a TT immunization (Table 7). Only two-thirds of the mothers spontaneously indicated that the prevention of neonatal tetanus is a reason for obtaining TT immunization. Among the Field Workers' clients who had obtained a TT immunization in the past, only 57% spontaneously mentioned that the prevention of neonatal tetanus is a reason for obtaining a TT immunization, and one-quarter did not know the purpose of TT immunization.

Table 7: Reasons Given by Immunized Clients for Receiving a Tetanus Immunization

Reason	Percentage of women who had previously received a TT immunization* (n=123)
Prevent child from developing tetanus	57
Prevent mother from developing tetanus	72
Other/don't know	23

*These 123 women include 111 visited by a Field Worker who had previously received a TT immunization as well as 13 women coming to a clinic for TT immunization. Column percentages exceed 100% because multiple responses were possible.

There were 17 clients with a child aged less than one year who came to a clinic where childhood immunizations are offerred but the child did not receive an immunization at the time of that visit.[17] Eighteen percent of their mothers did not know that childhood immunizations were offerred at the clinic. Of the 74 women who attended a clinic where TT immunizations are provided but who did not obtain a TT immunization, 23% did not know that TT immunizations were provided there.

Of the 33 mothers of children who received an immunization at the time of an observed encounter at an MCH-FP clinic, only one said that she did not know when to come for the next immunization. Of the 23 mothers bringing a child to a clinic who did not receive an immunization at that visit but who said they planned to vaccinate that child in the future, only 2% said they did not know when the next shot was due. Of 13 clients receiving a TT immunization, only one said that she did not know when to come for the next dose.

4. Client Attitudes (about the importance of immunizations and about plans for additional immunizations)

Of the 73 clinic clients participating in the Needs Assessment Study who brought a child with them for their clinic visit and that child did not receive a vaccination at that visit, two-thirds (64%) were not planning to have their child vaccinated in the future. Of the 47 women who had no further plans to have their child vaccinated, 66% said the child had completed all of its doses. However, 28% of these 47 women said the child was beyond one year of age and, therefore, was ineligible for immunization. Only one of the 47 mothers said that vaccinations are not important.

[17]The data do not permit us to determine if the child actually was in need of an immunization or not.

The 152 clinic clients not receiving a TT immunization were asked about their immunization status and their plans for obtaining TT immunization in the future. Exactly half (76) indicated that they had obtained two TT immunizations in the past. Sixty percent (91/152) indicated that they intended to obtain another TT immunization in the future. The most common reason cited by the 61 women who had no plans for further immunization was that they did not expect to become pregnant again (cited by 53% of the 61 women). An additional 30% (18/61) said that they had obtained all the necessary doses and hence did not need any further vaccinations. However, only 50% of these 18 women said that they had obtained two or more TT immunizations, and only 17% had received five or more.

Table 8: Reasons Given by Ever-pregnant Women of Reproductive Age for Never Having Obtained a TT Immunization

Reason	Percentage of respondents		
	Age 30 years or less (n = 384)	Age greater than 30 years (n = 840)	Total (n = 1224)
Lack of information about the importance of TT immunizations*	38	53	46
Feels there is no need	21	28	27
Afraid of TT (during pregnancy)	22	8	13
Does not know where to go	5	2	3
No specific reason/doesn't remember/other	14	9	10
Total†	100	100	100

* includes the following responses:
(1) does not know whether or when TT immunization is necessary, and
(2) does not know about TT immunization/no information
†The distribution of responses between the two age groups differs significantly ($p < .001$)

Of the 91 women who had plans to obtain a TT immunization in the future, 56% planned to obtain it at the time of their next pregnancy. Of the 1,179 ever-pregnant women of reproductive age participating in the Urban Panel Survey and who had never obtained a TT immunization, far and away the most frequently cited reason for never obtaining a TT immunization was a lack of information about the importance of TT immunizations (Table 8). Women aged 30 years and younger, as compared to older women, were much more likely to cite fear of TT injection during pregnancy as a reason for never having obtained a TT immunization (22% versus 8%) and much less likely to cite a lack of information about the importance of TT immunizations (38% versus 53%) as a reason.

5. Client Behaviour (regarding previous immunization activities)

Of the 33 children of clinic clients who obtained an immunization during the observed clinic visit, 94% (31/33) had received an immunization previously. There were no children aged over 12 months in this group of 33 children. Of the 73 other clinic clients who brought a child with them, 80% said that the child had received at least one vaccination previously. The vaccination coverage among the 33 children brought to a clinic for immunization could not be adequately assessed since the exact age of the child was not obtained. Twenty-seven of the 33 children undergoing immunization were aged less than nine months, so a more precise knowledge of the child's age would have been required before determining if the child's vaccination status was appropriate for the child's age.

Among the 13 clinic clients who obtained a TT immunization, 69% had received a TT immunization previously. Seventy-eight percent (129/165) of all clinic clients participating in the Needs Assessment Study said that they had received at least one TT immunization in the past. Of these 129 women, 75% (97) said that their last TT immunization was during the last pregnancy. Sixty-eight percent (112/165) of the clinic clients indicated that they had received

two or more TT immunizations in the past, while 22% (36/165) had never received a single TT immunization. A review of the immunization cards of the 13 clinic clients receiving a TT immunization revealed that only one respondent had received five doses of TT and 69% had received two or more TT immunizations (including the immunization received on the day of observation).

6. Efficiency (in the provision of immunization services)

The staffing for immunization sessions varies from site to another. The DCC EPI Centres are staffed exclusively by Vaccinators with no other support staff. One-half of the DCC EPI Centres have two Vaccinators and the other half have one. The CWFP Clinics are all staffed by a Paramedic and a Health Worker and also have an *ayah* (cleaner), a secretary, and field staff encouraging referrals to the clinic during home visits. The Azimpur Maternity Centre's immunization clinic is staffed by two Family Welfare Visitors.

Although there is a tendency for the higher performing DCC EPI Centres to have two Vaccinators rather than one, this is not uniformly true. The EPI Centres at Nabarun Sangha and Lalbagh Crescent, which are staffed by the same Vaccinator, had 537 clients in the month under review. This is 43% more clients than the next busiest DCC EPI Centre (Sayesta Khan Kalyan Kendra) which had 374 clients and two Vaccinators. The DCC EPI Centre at Palashi Barak has two vaccinators, but together they vaccinated only 102 patients during the month under review.

A rough index of efficiency can be created by dividing the number of clients per session by the number of health staff working at the clinic. We have chosen to include in the calculation of the efficiency index only those staff who actually provide services to the clients (that is, Health Workers, Vaccinators, Paramedics, and Family Welfare Visitors). The results of this

calculation are shown in Table 9. The average number of clients per worker for each immunization session ranges from 3 to 73. All four CWFP clinics providing immunization services have by far the highest efficiency index of all immunization clinics in Zone 3, with 33-73 clients per worker per session. Six of the nine DCC EPI Centres, on the other hand, see less than 10 clients per worker per session.

Table 9: Efficiency of Immunization Services Provided in Zone 3 by Site

Immunization site	Average no. of clients per session	No. of health workers providing services	Average no. of clients per worker per session
CWFP Rayer Bazar Clinic	146	2	73
CWFP Lalbagh Clinic	142	2	71
CWFP Bakshi Bazar Clinic	67	2	33
CWFP Satellite Clinic (Islambagh)	49	2	25
DCC EPI Centre (Nabarun Sangha)	27	1	27
DCC EPI Centre (Lalbagh Crescent Club)	26	1	26
DCC EPI Centre (Hazaribagh Park)	36	2	18
Azimpur Maternity Centre	35	2	18
DCC EPI Centre (Shayesta Khan Kalyan Kendra)	19	2	9
DCC EPI Centre (Islambagh Community Centre)	18	2	9
DCC EPI Centre (Tannery More)	8	1	8
DCC EPI Centre (Lalbagh Cresent Club)	4	1	4
DCC EPI Centre (Chawkbazar Shishu Hospital)	3	1	3
DCC EPI Centre (Palashi Barak)	5	2	3

This efficiency index reflects local EPI programme characteristics rather than simply the speed or efficiency of the Vaccinator(s) at the site. The index does not enable us to determine what the optimal level of efficiency is. It might be that those clinics with very high values for the index may have suboptimal efficiency if, in fact, clients are having to wait a long time for their immunization.

As we have mentioned several times already, there is a wide range in the overall number of immunization clients served per month, in the average number of clients per session, and in the average number of clients per session per worker at the various immunization sites in Zone 3. Table 10 compares the overall number of clients for each of the geographically adjacent pairs of immunization sites which were shown on the map of the project area in Fig. 2 on page 13.

Comparing the overall monthly volume of immunization clients at each immunization site (shown in Table 5, page 29) by the location of the site (shown in Fig. 2, page 13), several observations can be made. First of all, the busiest free-standing clinic (in terms of total number of immunization clients seen per month) is the DCC EPI Centre at Hazaribagh Park (site #2 on the map in Fig. 2). This immunization site is relatively far away from the other immunization sites in Zone 3 and has no "partner" clinic. Thus, it does not form one of the six pairs of immunization sites. The Bakshi Bazar CWFP Clinic is not paired with another site either, but it is relatively close to a number of other immunization sites in the southeastern portion of Zone 3.

Table 10: Indices of Immunization Service Utilization for Adjacent Pairs of Immunization Sites in Zone 3

Pair*	Immunization site	No. of clients in previous month	No. of location site in Fig. 2*
1	CWFP Rayer Bazar Clinic	582	3
	DCC EPI Centre (Tannery More)	155	9
2	DCC EPI Centre/Nawabgonj	433	5
	DCC EPI Centre/Lalbagh Crescent	104	10
3	Lalbagh CWFP Clinic	567	4
	DCC EPI Centre/Lalbagh Community Centre	86	12
4	Azimpur Maternity Centre	843	1
	DCC EPI Centre/Palashi Barak	102	11
5	DCC EPI Centre/Sayesta Khan	374	6
	DCC EPI Centre/Chawkbazar Shishu Hospital	55	13
6	DCC EPI Centre/Islambagh	349	7
	Islambagh CWFP Satellite Clinic	49	14

*See Fig. 2, page 13, for the geographic location of the pairs

Each of the six pairs of immunization clinics shown on the map in Fig. 2 consists of two clinics which both provide immunization services and which are located within 0.5 km of the other. Five of these six pairs consist of a high-performing and a low-performing clinic. A high-performing clinic is defined as one with a monthly volume of over 300 immunization clients, while a low-performing clinic is defined as one with a volume of less than 300 clients per month (see Table 5 on page 29). In each of the five pairs of adjacent clinics

which are composed of a high-performing and a low-performing clinic, the low-performing clinic happens to be a DCC EPI Centre. In two of the six pairs, both clinics in the pair are operated by DCC. As mentioned previously, the two DCC EPI Centres which comprise the second pair of clinics (Nabarun Sangha and Lalbagh Crescent) are staffed by the same Vaccinator, and the low-performing clinic in the pair is essentially a satellite of the high-performing clinic.

VI. DISCUSSION

A. Dimensions of EPI Activities of Notably High Quality

A number of aspects of immunization services in Zone 3 appear to be of high quality. By and large, the facilities, equipment, vaccines, and other supplies are adequate. This is no small feat for a country with limited resources and such a large population. The immunization providers in Zone 3 appear to be well-trained, experienced, and knowledgeable about their work. On the basis of the limited observations available, appropriate sterilization procedures are being followed, and the cold chain requirements are being met.

Immunization clients rate the friendliness and the communication skills of the members of the staff at the clinic where they received their immunization to be quite good. Client satisfaction with immunization services is quite high as is the client perception of the quality of service. At the time of immunization, clients are given an immunization card if they did not come to the clinic with one. Clients who need an additional immunization told when to return for the next dose.

Overall access to childhood and maternal immunization services, defined as the percentage of the target population with at least one immunization, is good. There is still a significant slum/non-slum difference

in access for childhood immunization, however. The explanation for why a significant slum/non-slum difference exists for access to childhood immunization but not for access to maternal TT immunization needs further investigation.

B. Dimensions of Quality in Particular Need of Attention

The findings of this study suggest the following three areas as priorities for improvement: (1) the rate of missed opportunities for the promotion or provision of immunization services, (2) the coordination and utilization of immunization services, and (3) knowledge about why TT immunization is important and what the TT immunization schedule is.

1. Frequency of Missed Opportunities for Promotion or Provision of Immunizations by MCH-FP Providers

Numerous findings of this study indicate that the rate of missed opportunities for promoting or providing immunizations is quite high. For example, only 13% of the 48 children coming to a clinic for treatment of an illness had their immunization status checked during the visit, and only 1% of women coming to an MCH-FP clinic for a service other than a TT immunization were asked about their TT immunization status. A conservative estimate of the rate of missed opportunties at the MCH-FP clinics for promotion of immunization is 43% among the children coming to a clinic; for women coming to a clinic, the rate of missed opportunities for maternal TT immunization is 87%.

During Field Worker encounters with clients in their homes, the rate of missed opportunities for the promotion of childhood immunization is 45%; for the promotion of TT immunization it is 97%. Thus, there is substantial room for improvement in Field Worker counseling as well.

2. Coordination and Utilization of Immunization Services

All but two of the 14 immunization sites in Zone 3 are clustered into geographically adjacent pairs. There are six pairs of immunization sites in which one site is within half a kilometer of the other site. In five of these six pairs there is a much higher utilization of immunization services in one partner site than in the other. It would be interesting and informative to understand how and why this situation has developed.

While the utilization and efficiency of immunization services at some sites may be so high that the client waiting time and client satisfaction are affected, the utilization and efficiency at other sites appears to be quite low. There is a need for a redistribution of personnel and services in such a way that access and utilization can be maximized and the underused staff members can be more productive. These changes will require improving the coordination of services. As a result of the formation of Zonal Coordination Committees by the Dhaka City Health Department with the assistance of the MCH-FP Extension Project (Urban) at ICDDR,B, some of these problems are now beginning to be addressed.

The average number of immunization clients per Vaccinator per session ranged from 3 to 73, with almost half of the immunization sites providing services to fewer than 10 clients per Vaccinator per session.

3. Promotion of TT Immunization

One-third of the ever-pregnant women of reproductive age in Zone 3 never had had a TT immunization, and three-quarters of these women indicated that they were not aware of the importance of TT immunization. Another 13% of the never-vaccinated women said that they were afraid of taking it during their pregnancy, including 22% of the never-vaccinated women aged 30 years or less. TT immunizations are given mainly to pregnant

women, but routine prenatal care is neither being provided nor are referrals for prenatal care being made at that same visit.

The confusion among the service providers concerning who should receive a TT immunization is understandable since the national policy has recently changed. In the mid-1980s, pregnant women only were designated as the target group for maternal TT immunization. However, all women of reproductive age have been designated recently as the current target group for TT immunization.

C. Other Areas Demonstrating a Need for Improving Quality Improvement

1. Access to Immunization Services

None of the immunization clinics in Zone 3 are open during the late afternoon or evening, and immunizations are availalable on Saturdays at nine of the 14 immunization sites. Therefore, immunization services are not accessible to mothers who work during the regular work week.[18]

One of the 14 immunization sites did not have a sign out front indicating to clients that childhood immunizations were provided there, and four did not have a sign announcing maternal TT immunizations. Inside the 14 immunization sites, only half had a poster promoting immunizations, and only one-fifth of the 22 MCH-FP clinics where immunizations are not provided had a poster promoting immunization.

[18]Baseline survey data for Zone 3 indicate that 22% of the married women of reproductive age work for money, including 31% of the slum women (37).

2. Knowledge of the Immunization Schedule Among Providers Who Do Not Give Immunizations

MCH-FP clinic providers in Zone 3 who do not provide immunizations have an incomplete understanding of the recommended immunization schedule. Although the Field Workers in Zone 3 have a good knowledge of the schedule for both childhood and maternal TT immunizations, they do not appear to appreciate the important fact that the main purpose of maternal TT immunization is to prevent tetanus of the newborn child during the neonatal period.

3. Understanding Among Mothers Concerning the Purpose of Childhood Immunization

Mothers have a limited knowledge of the actual diseases against which their child had been immunized: approximately half of the mothers thought their child had been immunized against a disease which is not, in fact, preventable through immunization. In addition, there is a widespread misperception among these mothers (and perhaps among the providers too) that children aged over one year are not eligible for vaccination and should not be vaccinated.

4. Prevalence of Client-retained Immunization Cards

Even though all of the 46 clients receiving an immunization at the time of a clinic observation had a client-retained immunization card upon leaving the clinic, more than one-quarter of the children aged less than two years in Zone 3 do not have an immunization card, and almost nine out of 10 married women of reproductive age who had ever been pregnant do not have a TT card.

5. Fees Charged for Immunization Services

The policy of all clinics which provide immunization services is to provide them free of charge.[19] However, 39% of the clients reported that they paid something at the time of the visit when they obtained an immunization.

6. Lost Opportunities for Prenatal Care

All of the women in this study who were observed to have received a TT immunization were pregnant at the time of immunization. Most of them received a TT immunization at a clinic where prenatal care is not provided, but only one client was actually referred to another clinic for prenatal care services. Even in the clinics where other prenatal care services beyond TT immunization are provided, such services are not generally provided at the time of TT immunization.

D. Strengths and Limitations of the Study

This study has many methodological strengths, most notably the number of dimensions of quality that have been assessed and the multiple approaches to data collection employed, including the observation of client-provider interactions. Nonetheless, certain limitations should be borne in mind. First of all, the findings may not be entirely applicable to other urban areas of Bangladesh. While Zone 3 may not be completely representative of other urban areas in Bangladesh, neither is any other Zone in Dhaka City. In our view, the recommendations derived from this analysis are very likely to be appropriate, at least as a starting point, for other parts of Dhaka and other urban areas of Bangladesh as well.

[19]The largest NGO provider in Zone 3 encourages voluntary financial contributions for immunization services, however.

Secondly, the number of observations of clients actually receiving an immunization is quite limited (only 46) and may not be entirely representative of the overall process of immunization provision. Even though the findings related to these 46 observations constitute only a small part of the overall quality assessment, they should be interpreted with this limitation in mind.

Thirdly, most of the data on which this report is based were obtained as part of a comprehensive Needs Assessment Study of the MCH-FP services in Zone 3. Since a broad array of services was being assessed in the Needs Assessment Study, it was not possible to explore in greater detail those quality dimensions which relate specifically to EPI services.

VII. Recommendations

1. Routine Immunization Services Need Stronger Promotion, Particularly by the Providers of Health Care Services in Zone 3.

Efforts should be made to encourage all providers of health and family planning services in Zone 3 (including those in the private for-profit sector as well as Field Workers) to inquire about the immunization status of their clients and to promote immunizations among those whose immunization status is incomplete. To be able to do this effectively, the providers need to know the dosage schedule for both childhood and maternal TT immunizations. They also need to understand why these immunizations are given, and what their value is for clients. And finally, clients need to have immunization cards so that they and their providers can be clear about what immunizations have actually been received and what immunizations are still needed.

Particular attention needs to be given to ensuring that the providers of services at the MCH-FP clinics promote immunization services among all those women and children who visit their facilities, even if they have not actually come for an immunization. The MCH-FP clinic providers should

review the immunization status of children accompanying their mother for a clinic visit even if the purpose of the visit is for the mother to obtain a service for herself and not the child. The MCH-FP clinic providers should also review the immunization status of all mothers who visit the clinic, including those who have brought their children for a service. More prominent signs in front of the immunization sites, as well as routine health talks which promote and explain immunizations to all clinic clients, would assist in raising awareness about immunizations in the Zone 3 population.

All MCH-FP providers (both clinic staff and Field Workers) should routinely review the client-retained immunization cards (for both children and mothers) at every encounter. Such a practice would have the additional benefit of communicating the importance of these cards to mothers, thereby encouraging retention of the cards. Immunization providers should continue their current practice of giving an immunization card to those receiving an immunization who did not bring a card with them.

The enthusiasm engendered by the National Immunization Days (for polio eradication and vitamin A distribution) and by the current special efforts to promote measles and tetanus immunizations in the slum areas can be harnessed to promote the importance of maintaining ongoing high levels of childhood and maternal immunization coverages in the community. In particular, the improvement of TT coverage among women of reproductive age will require that such immunizations be promoted vigorously, not just among pregnant women (as has been the case in the past) but also among all women of reproductive age and particularly among young women who have not begun or not completed their childbearing. Since younger women not uncommonly express fear about the safety of immunizations which are administered to them while they are pregnant, the promotion of TT immunization among non-pregnant women should allay this concern and perhaps lead to greater willingness of women to obtain immunizations.

2. Efforts to Improve Access, Coverage, and Efficiency in Zone 3 Are Still Needed.

The findings from this assessment of the quality of EPI services in Zone 3 suggest that an important strategy to improve overall quality would be to improve the coordination, distribution, and utilization of existing immunization services, thereby improving the overall coverage. Services need to be more evenly distributed throughout the Zone 3 population, and new outreach sites need to be developed where access and coverage are most limited. A subsequent report on the coverage of services will describe these pockets (20).

In view of the limited resources available for primary health care (particularly among the urban poor), a high priority should be placed on using more effectively those resources which are currently available and on concentrating those resources in the areas of greatest need. With respect to immunization services, we find that some of the existing manpower resources are considerably underused. At the lowest-performing half of the immunization sites, on an average five times fewer clients per worker per session are immunized than at the highest-performing sites (8 versus 39). By working toward increasing the efficiency of the lowest performing half of immunization workers in Zone 3, the overall volume of immunization services could be expanded substantially, thereby improving coverage.

It is, however, important that the goal of increasing site productivity be balanced with other programme goals. It is quite possible, for instance, that some of the immunization services in Zone 3 are too efficiently provided and, because of the heavy workload, long waits and client dissatisfaction have resulted. Thus, the need is for appropriate utilization, but not overutilization, of ongoing immunization services.

With the formation of a Zonal Coordination Committee for Zone 3, some early progress has been made recently regarding collaboration between the government and the private providers of immunization services. At the time of home visits from Field Workers, referrals of clients to lower volume but still readily accessible sites could be another valuable strategy for increasing utilization at these sites.

Strategies need to be developed to promote complete coverage with five TT immunizations among all women of reproductive age. Since the current coverage is only 11%, broad-based efforts at increasing coverage are now needed, with a particular focus on all adolescent and young women since they are at the greatest risk of having a child with neonatal tetanus.

3. Efforts Should Be Made to Improve the Accessibility of Immunization Sites and to Strengthen Follow-up of Clients in Need of Additional Immunization Services.

In Dhaka City there is, on an average, one immunization site for every 20,000 persons while in the rural areas there is one immunization site for every 1,000 persons. In Zone 3, with a population of approximately 400,000 persons and 14 immunization sites, there is one site for every 28,500 persons. The northern half of Zone 3 has only three immunization sites compared to 11 in the southern half. These findings suggest that new immunization sites are needed in the sections of Zone 3 where coverage is the lowest and where the sites are farthest away. Even if these new sites functioned only one day a week, they could still make a strong contribution to improving access to services in the low-coverage areas.

One of the distinguishing characteristics of urban areas (in contrast to rural areas) is their heterogeneity in terms of socioeconomic and health status. Priority locations in Zone 3 for new outreach immunization sites and for

home-based promotion and follow-up should be those geographic areas where coverage is lowest and also where immunization sites are not nearby. Improvements in the availability of services require increasing not only the proximity of immunization facilities to the households of clients but also providing immunization services during the evenings and on weekends. This should be feasible for at least one or two sites within Zone 3. All of these improvements would reduce the cost (in terms of time and transport expense) and improve the accessibility services.

Improvements in follow-up will require targeted home visits to promote the needed immunizations. In the most difficult cases, it may be necessary to arrange for someone to accompany the client to the immunization site. In special circumstances, such as during a measles epidemic or when a geographic cluster of neonatal death cases has been identified, it may be advantageous to actually provide the needed immunizations in the homes of those clients who do not respond to other promotional efforts.

The number of immunization sites could be readily expanded without increasing the number of Vaccinators by simply providing immunizations on certain days in newly selected locations and by reducing the number of days per week that less productive sites are open. By establishing new immunization sites which are open one day per week, for example, in areas of low coverage, ease of access to services could be improved considerably.

Finally, the government Vaccinators could replace the day each week which is currently dedicated to home visitation with a day for providing services at carefully selected new outreach sites where access to EPI services is more difficult and where coverage is lower. This could be assessed on a trial basis with a limited number of Vaccinators. The current policy is for the Vaccinators to spend one of six days every week in the community promoting immunizations, but the 57 Field Workers who periodically visit households

with a woman of reproductive age are already doing this with good results. Of course, targetting Field Worker visits to those in need of immunization services could further enhance the effectiveness of these visits for immunization promotion.

VIII. Implications of the Findings for the Urban and National EPI Programme

By the year 2000, the Government of Bangladesh proposes to eradicate polio, to reduce the number of deaths from neonatal tetanus to one per 100,000 births, and to reduce measles mortality by 95% and measles cases by 90%. To achieve this, coverage levels of at least 90% will need to be consistently sustained (38). Key strategies for achieving these goals include encouraging prompt registration of children at birth (to provide BCG and OPV immunizations and to inform the mother about the immunization schedule for the child), reduction of the rate of missed opportunities, continuation of community mobilization efforts, and development of special outreach efforts for underserved populations. Building strong community awareness regarding the after-effects of measles on a child's health has also been proposed as a key strategy.

Other specific approaches recommended in the government's immunization programme are, first, to establish an effective disease-surveillance programme for polio, neonatal tetanus, and measles; then to identify high-risk areas; and finally to intensify vaccination efforts in these areas. One additional strategy specifically for reducing deaths due to measles which has been recommended is to conduct quarterly catch-up campaigns in the low-coverage areas. Additional strategies specifically for reducing mortality due to neonatal tetanus include promoting TT immunizations among women participating in the National Immunization Day who have not yet received five TT immunizations, providing TT immunizations at the workplace for

female garment workers, and encouraging safe-delivery practices (38). Both measles and neonatal tetanus are each responsible for approximately 20,000 deaths annually in Bangladesh (39), so continued efforts against these two diseases are still very important.

Urban populations are in dynamic transition. Mechanisms will need to be developed to ensure that those urban neighbourhoods experiencing rapid growth have ready access to immunization services and that existing immunization services are optimally utilized. The resources available for urban immunization activities, both in terms of manpower and funds, will need to expand to accomodate the rapidly growing urban population.

Now that the coverage levels are beginning to reach high levels, the next logical step in the maturation of the EPI programme is to begin to develop surveillance systems. These surveillance systems are necessary for identifying vaccine-preventable deaths and morbidity and for using this information to focus efforts on areas of low coverage and on areas where polio, measles and neonatal tetanus cases are concentrated. The risk of vaccine-preventable diseases in urban pockets of low coverage is further accentuated by the poverty, undernutrition, lack of access to curative services, crowding, and poor hygiene which is present in these areas (40).

Urban EPI activities should continue as a special focus of the national EPI programme. This continuing need for a special focus is based on a number of considerations. First of all, a continued rapid growth of the urban population is expected over the next decade, particularly in the slum areas. Secondly, the rate of transmission of communicable vaccine-preventable diseases (measles in particular) is facilitated by the close proximity of people in the crowded and densely populated urban areas. Thirdly, illiterate slum women must overcome major obstacles to obtain the full complement of immunizations for themselves and their children.

Bangladesh is a global leader in its support for and participation in EPI activities. The unprecedented success of the National Immunization Days in Bangladesh for polio eradication and vitamin A distribution, reaching 97% of the target children in 1996 (39), indicates the high level of trust and confidence which the Bangladeshi people have in the national EPI programme and the capacity of the governmental and private sectors to work together toward the achievement of common goals (29). The potential exists for further improvements in the quality of EPI activities at minimal cost. Such improvements will further enhance the effectiveness of the EPI programme during the coming decade.

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Appendix

Government of Bangladesh Immunization Dose Schedule (1995)

Name of vaccine	Youngest age at which the first dose should be provided	Age at which the vaccine series should be completed	Number of doses required	Minimum length of time between doses
BCG	immediately after birth	1 year	1	not applicable
DPT	6 weeks	1 year	3	4 weeks
OPV	6 weeks	1 year	4*	4 weeks
Measles	in the beginning of 10th month of life	1 year	1	not applicable
TT (for pregnant women)	at the 4th month of the pregnancy	at least 1 month prior to delivery	2	4 weeks
TT (for non-pregnant women)	15 years	as soon as possible	5	TT2- 4 weeks after 1st dose TT3- 6 months after 2nd dose TT4- 1 year after 3rd dose TT5- 1 year after 4th dose

* The 4th dose OPV should be given with measles immunization

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1 Paljor N, Baqui AH, Lerman C, Silimperi DR. **Reaching the Urban Poor-the Case of the Urban Volunteers in Dhaka, Bangaldesh.** September 1994.

2 Baqui AH, Jamil K, Jahangir NM, Nahar Q, Paljor N, Silimperi DR. **Urban Surveillance System: Dhaka Methods and Procedure.** September 1994.

3 Jamil K, Baqui AH, Paljor N, **Knowledge and Practice of Contraception in Dhaka Urban Slums: A Baseline Survey.** May 1993.

4 Baqui AH, Paljor N, Silimperi DR. **The Prevention and Treatment of Diarrhoea in Dhaka Slums.** May 1993.

5 Laston SL, Baqui AH, Paljor N, Silimperi DR. **Immunization Beliefs and Coverage in Dhaka Urban Slums.** May 1993.

6 Baqui AH, Paljor N, Nahar Q, Silimperi DR. **Infant and Child Feeding Practices in Dhaka Slums.** May 1993.

7 Chowdhury N, Mohiuddin QN, Momtaz S, Ghosh KR, Lili FB, Leena MM. **Violence in the Slums of Dhaka City.** May 1993.

8 Baqui AH, Paljor N, Lerman C, Silimperi DR. **Mothers' Management of Diarrhoea: Do Urban Volunteers of Dhaka Have an Impact?** May 1993.

9 Salway S, Jamil K, Nahar Q (editors). **Issues for Family Planning in the Urban Slums of Dhaka, Bangladesh: Opinions and Perceptions of Field-Level Workers.** May 1993.

10 Fronczak N, Amin S, Laston SL, Baqui AH. **An Evaluation of Community-Based Nutrition Rehabilitation Centers.** May 1993.

11 Arifeen SE, Mahbub AQM (Editors), Baqui AH, Islam N, Jahangir, NM, Mahbub AQM, Paljor N, Siddiqi SM (Contributors). **A Survey of Slums in Dhaka Metropolitan Area, 1991.** October 1993.

12 Fronczak N, Amin S, Nahar Q. **Health Facility Survey in Selected Dhaka Slums.** October 1993.

13 Laston SL, Baqui AH, Paljor N. **Urban Volunteer Service in the Slum of Dhaka: Community and Volunteer Perceptions.** October 1993.

14 Baqui AH, Arifeen SE, Amin S, Black RE. **Levels and Correlates of Maternal Nutritional Status and Consequences for Child Survival in Urban Bangladesh.** October 1993.

15 Salway S, Jamil K, Nahar Q, Nurani S. **Perceptions of Pregnancy Risk and Contraceptive Use in the Postpartum Period Among Women in Dhaka Slums.** November 1993.

16 Jamil K, Streatfield K, Salway S. **Modes of Family Planning Service Delivery in the Slums of Dhaka: Effects on Contraceptive Use.** October 1995

17 Salway S, Nahar Q, Ishaque Md. **Alternative Ways to Feed Infants: Knowledge and Views of Men and Women in the Slums of Dhaka City.** May 1996.

18 Salway S, Nahar Q, Ishaque Md. **Women, Men and Infant Feeding in the Slums of Dhaka City: Exploring Sources of Information and Influence.** May 1996.

19 Quaiyum MA, Tunon C, Baqui AH, Quayyum Z, Khatun J. **The Impact of National Immunization Days on Polio- related Knowledge and Practice of Urban Women in Bangladesh.** May 1996.

20 Perry HB , Begum S, Begum A, Kane TT, Quaiyum MA, Baqui AH. **Assessment of Quality of the MCH-FP Services Provided by Field Workers in Zone 3 of Dhaka City and Strategies for Improvement.** May 1996.

21 Mookherji S, Kane TT, Arifeen SE, Baqui AH. **The Role of Pharmacies in Providing Family Planning and Health Services to Residents of Dhaka, Bangladesh.** May 1996.

22. Thwin AA, Jahan SA. **Rapid Appraisal of Urban Health Needs and Priorities.** October 1996.

23. Jahan SA, Thwin AA, Tunon C, Nasreen S. **Urban Men and Their Participation in Modern Contraception.** October 1996.

MCH-FP Extension Work at the Centre

An important lesson learned from the Matlab MCH-FP project is that a high CPR is attainable in a poor socioeconomic setting. The MCH-FP Extension Project (Rural) began in 1982 in two rural areas with funding from USAID to examine how elements of the Matlab programme could be transferred to Bangladesh's national family planning programme. In its first years, the Extension Project set out to replicate workplans, record-keeping and supervision, within the resource constraints of the government programme.

During 1986-89, the Centre helped the national programme to plan and implement recruitment and training, and ensure the integrity of the hiring process for an effective expansion of the work force of governmental Family Welfare Assistants. Other successful programme strategies scaled up or in the process of being scaled up to the national programme include doorstep delivery of injectable contraceptives, management action to improve quality of care, a management information system, and developing strategies to deal with problems encountered in collaborative work with local area family planning officials. In 1994, this project started family planning initiatives in Chittagong, the lowest performing division in the country.

In 1994, the Centre began an MCH-FP Extension Project (Urban) in Dhaka (based on its decade long experience in urban health) to provide a coordinated, cost-effective and replicable system of delivering MCH-FP services for Dhaka urban population. This important event marked an expansion of the Centre's capacity to test interventions in both urban and rural settings. The urban and rural extension projects have both generated a wealth of research data and published papers.

The Centre and USAID, in consultation with the government through the project's National Steering Committees, concluded an agreement for new rural and urban Extension Projects for the period 1993-97. Salient features include:

- To improve management, quality of care and sustainability of the MCH-FP programmes
- Field sites to use as "policy laboratories"
- Close collaboration with central and field level government officers
- Intensive data collection and analysis to assess the impact
- Technical assistance to GoB and NGO partners in the application of research findings to strengthen MCH-FP services.

The Division

The reconstituted Health and Population Extension Division (HPED) has the primary mandate to conduct operations research to scale up the research findings, provide technical assistance to NGOs and GoB to strengthen the national health and family planning programme.

The Division has a long history of accomplishments in applied research which focuses on the application of simple, effective, appropriate and accessible health and family planning technologies to improve the health and well-being of the underserved and population-in-need. There are several projects in the Division which specialize in operations research in health, family planning, environmental health and epidemic control measures which cuts across several Divisions and disciplines in the Centre. The MCH-FP Extension Project (Rural), of course, is the Centre's established operations research project but the recent addition of its urban counterpart - MCH-FP Extension Project (Urban), as well as Environmental Health and Epidemic Control Programmes have enriched the Division with a strong group of diverse expertise and disciplines to enlarge and consolidate its operations research activities. There are several distinctive characteristics of these endeavors in relation to health services and policy research. First, the public health research activities of these Projects focus on improving programme performances which has policy implications at the national level and lessons for international audience. Secondly, these Projects incorporate the full cycle of conducting applied programmatic and policy relevant research in actual GoB and NGO service delivery infrastructures; dissemination of research findings to the highest levels of policy makers as well as recipients of the services at the community level; application of research findings to improve programme performance through systematic provision of technical assistance; and scaling-up of applicable findings from pilot phase to the national programme at Thana, Ward, District and Zonal levels both in the urban and rural settings.

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