

Social Science and Immunization Study

**Immunization in Bangladesh: Studying Sustainability Through Social Science
Approaches**

Literature Review for the Bangladesh Country Study

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Contents

- Introduction
- Section 1 - Sustainability in the Community
 - 1.i Terminologies
 - 1.ii Mothers' Perceptions, Beliefs and Knowledge of Immunization
 - 1.iii Attitudes of Clients to Service Providers and Quality
 - 1.iv Barriers to Immunization
 - 1.v Immunization and Gender Differences
 - 1.vi Prospects for Community Participation
 - 1.vii Immunization Coverage - High and Low Coverage
 - 1.viii Determinants of Demand for Immunization
- Section 2 - Political Sustainability
 - 2.i Commitment of Politicians, Donors and NGOs
 - 2.ii Historical Perspectives of EPI in Bangladesh
- Section 3 - Programmatic Sustainability
 - 3.i Coverage Achieved
 - 3.ii Attitudes of Providers
 - 3.iii Role of Private Practitioners
 - 3.iv Single EPI versus EPI Plus strategies
 - 3.v Reducing Missed Opportunities and Dropouts
 - 3.vi Monitoring and Surveillance Systems for EPI
- Section 4 - Financial Sustainability
 - 4.i Financing EPI in Bangladesh
 - 4.ii Cost Effectiveness of Strategies
- Summary and Conclusion
- References

Introduction

In 1985 less than 5% of Bangladesh's children were fully immunized against the six EPI diseases. Ten years later over 75% of children were fully covered. By 1996 coverage rates had declined to 54%.

This paper forms part of the Bangladesh country study ('Immunization in Bangladesh: Studying Sustainability Through Social Science Approaches') of the international Social Science and Immunization (SSI) Project. Conducted by BRAC in association with ICDDR,B, the project's objective is 'to identify mechanisms to accelerate the coverage and sustainability of immunization programs by improving understanding of the socio-cultural aspects'.

Much has been written about immunization programs. This literature review focuses primarily on articles and studies conducted in Bangladesh. Most articles reviewed are from the period after immunization efforts were intensified in 1986, although some papers written prior to the achievement of the 'near miracle' were also examined to see to what extent change had occurred. These early papers give us an idea of what the initial problems were - when immunization was neither a government nor a donor priority. They also provide a (dotted) baseline with which we can compare current achievements, as well as a reminder of what could happen if immunization efforts recede.

The review is in four main sections. The first examines the demand-side factors. These include clients' perceptions of disease, treatments and prevention, their opinion of service providers and service quality, and the different barriers to immunization. Section two looks at the importance of the commitment to Expanded Program of Immunization (EPI) from the government, donors and NGOs. It also provides a brief history of EPI in Bangladesh since a separate, more in-depth, history of vaccination in Bengal is currently underway. Section three assesses the supply-side issues associated with EPI, including coverage rates achieved, the role of the private medical and non-medical sector, problems of poor service delivery, and dropouts and missed opportunities. The fourth section looks at the financial sustainability of EPI in Bangladesh, given donor funds are not going to be available indefinitely. Also examined is the cost effectiveness of different delivery strategies (from fixed facility, outreach clinics and national campaigns) and the advantages and disadvantages of each.

The review does not attempt to cover everything written on immunization and EPI in Bangladesh. It does not intend to address all the issues (health, economic, social, political) which affect and determine public health. It does however attempt to draw out what is already known about immunization and the problems EPI is facing/might face in Bangladesh. Many of the articles reviewed reach similar conclusions: that it is a lack of awareness about the need and importance of immunization which is responsible for low demand, and that kinks in the delivery system result in missed opportunities and dropouts. Sustaining commitment to the program from politicians, policy makers and health staff has proved (and continues to be) problematic and it is this obstacle, probably more than any other, which needs to be overcome in order to guarantee the future success of EPI in Bangladesh.

The SSI study hopes to present policy makers with evidence showing the strengths and weaknesses of the current program in Bangladesh. By doing so it provides them with the opportunity to deal with those factors responsible for the problems.

Section 1 - Sustainability in the Community

1.i. - Terminologies

One of the many reasons why community demand for immunization services is so difficult to stimulate is the lack of understanding between those who supply vaccinations and those who accept or demand them. This is compounded by confusion over local terminologies and names for the diseases which immunization programs seek to eradicate and control. Each of the six EPI diseases¹ have different names and terminologies which are used widely in Bangladesh.

Blanchet (1989) made an interesting study of urban attitudes to immunization in Dhaka. She noted terminologies differ between religious and socioeconomic groups, and belief in *Sitala* (the goddess of epidemics), ghosts, spirits and the evil eye is strong among both Hindu and Muslim communities. Poverty and low levels of education, especially among women, contribute to the fatalistic nature of these beliefs. Fatalism, or the belief diseases are caused and cured by God's Will alone and not by any human intervention, accounts for why demand for immunization among certain communities is difficult to stimulate.

BRAC conducted a similar study (BRAC, 1988) prior to Blanchet's which looked at perceptions of immunizable diseases in communities of rural Bangladesh. It found terms, beliefs of causation, and treatments for disease vary between areas and communities. An interesting point to note is that people distinguish between vaccines on the basis of the administration of the vaccination:

"...if the serum is administered using a needle and a syringe, it is known as 'injection', and a common belief in the villages is that children are too delicate to be given 'injection'. 'Tika' according to the villagers is given to the children and is administered by making a split on the flesh or causing a slight wound on the flesh using instruments with pointed edges?... The villagers also mentioned that these days the vaccinators do not bring 'Tika' with them..." (BRAC, 1988).

This belief that children may be too weak to receive injections will undoubtedly affect demand. Nichter (1990) also noted a fear about people being 'too weak or too ill to withstand the shock of vaccination', was a reason for non-acceptance.

The BRAC (1988) study also found that knowledge of what immunizations can and cannot do vary, with few people able to state precisely which diseases were vaccine-preventable, when vaccinations should occur, and who should receive them. It concluded that knowledge about immunization requires enhancing, and misconceptions need to be cleared up. It also advised, well before the intensification of EPI in the early 1990s, that an immunization program "cannot be fully effective in the long term if the target population does not understand the purpose and way it operates" (BRAC, 1988).

¹The six disease targeted by the Expanded Program of Immunization (EPI) are Measles, Pertussis, Diphtheria, Tetanus, Tuberculosis (TB) and Poliomyelitis.

²This could be in reference to the practice of variolation. Variolation has a long history in Bengal, and an interesting study of its history and the history of traditional medicines in the area is by Bala (1991), 'Imperialism and Medicine in Bengal - A Sociological Perspective'. See also Greenough (1980), 'Variolation and Vaccination in South Asia, c.1700-1865: A Preliminary Note', *Social Science and Medicine* 14D: 345-347.

In Bangladesh the six EPI diseases have local names, some of which will be mentioned here. The main sources where details about the different names can be found are Blanchet (1989) and BRAC (1988). Other studies also mention specific names for diseases, and these will be clarified when necessary. Tetanus is widely recognized and known to be fatal if not treated immediately. It is commonly referred to as '*Dhonosh-tonkor*' and '*Chora Churni*'. The second name translates to 'the evil spirit who steals babies away from their mothers', and reflects the fatalism endemic among certain groups. Another name used is '*Kichuni*', which applies specifically to newborns who die in the first two weeks after birth. Rahman et al. (1982b) note that tetanus is also referred to as '*Alga*' and '*Takuria*', which are names for evil spirits believed to be the cause.

Measles is commonly known as '*Ham*'. Other names include '*Lunti*', '*Bhapi*', '*Bhapra*', '*Keshra*', '*Phera*', '*Rokkha*' and '*Mashi-Pishi*', although some of these refer to diseases which are not Measles, but which produce Measles-like symptoms (Blanchet, 1989).

Tuberculosis (TB) is known as '*Jokkha*', although it is also called '*Raj Rog*' (a reference to the type of food required for treatment, where one is said to need the food normally fed to a king - rich and nutritious) and '*Khoi-Kash*' (after the wasting cough which afflicts sufferers). Acceptance of it being fatal is evident from the common phrase '*Jar hoi Jokkha, tar nei rokkha*' (there is no saving those who are attacked by '*Jokkha*').

Poliomyelitis is referred to as '*Lula Batash*' or '*Langra Lula*', with the belief that 'bad air' causes the disease. It is believed the 'will of God' is the main determinant as to whether or not a particular person will be struck down (BRAC, 1988).

Whooping Cough (Pertussis) is commonly termed '*Meyadi Kash*' or '*Hukum Kash*'. It is distinguished from a regular cough by the fact it persists for a much longer duration and requires special treatment. People tend not to know much about the specifics of the disease.

Diphtheria has no specific name in Bengali, but is referred to by its symptoms: '*Galaphash*' (slip-knot round the neck) and '*Galaha*' (necklace). The causes are not widely known, and as a result there is very little understanding as to how a vaccine might work against it. It is recognized as being fatal, and Fakirs, Kabiraj³ and doctors are consulted after home 'remedies' fail (BRAC, 1988; Blanchet, 1989; Watch Report number 21, December 1995).

1.ii - Mothers' Perceptions, Beliefs and Knowledge of Immunization

Mothers' perceptions of disease, its causes and treatment, and the nature of immunization are important to consider and a number of studies have been conducted specifically on Bangladesh. Most are urban-based, looking at the reasons for low coverage in slum areas but some examine more general, country-wide perspectives. Beliefs are culturally conditioned values or ideas which reflect the particular 'world view' of an individual. Perceptions depend on the vantage point (geographic or socioeconomic) of an individual or community and expanding those perceptions

³Kabiraj are practitioners of traditional healing and Ayurvedic medicine. Fakirs are Muslim ascetics who provide spiritual 'cures' using incantations, prayers and charms. See Ashraf, Chowdhury and Streefland (1982), 'Health, Disease and Health-Care in Rural Bangladesh', *Social Science and Medicine* 16:2041-2054 for a more detailed discussion on the role, use and importance of Fakirs, Kabiraj and unqualified allopathic doctors in Bangladesh.

requires a change of vantage point. Knowledge is accumulated as a result of education and information. This distinction is important since health education to impart knowledge and raise awareness may be one of the best ways to induce changes in cultural beliefs and practices. Health education attempts to influence people to do something they are not doing now, or to make them stop or change what they are doing (Akin, 1985). In effect it helps raise the vantage point of a society. Educated mothers are more likely to seek preventive care for themselves and their children, rather than relying on curative services. Education can be provided regardless of the literacy level of the parents, and evidence of this is in the way mothers who were taught about ORS by BRAC health workers are able to remember how to make solutions (Chowdhury and Cash, 1996). Pragmatic people will be able to use experience instead of formal education as a device for encouraging the adoption of new practices (Akin, 1985).

Laston et al. (1993) made an interesting study of immunization beliefs and coverage in Dhaka's urban slums. It examines a number of subjects including mothers' perceptions of Measles, Polio, and Tetanus; ways to recognize, treat and prevent infection; and their knowledge of doses and sources of immunization. It concludes the main reason for non-immunization is a lack of knowledge. Low levels of maternal education contribute to the low utilization of immunization services as does low socioeconomic status and distance from health facility.

Blanchet (1989) also looked at urban slums in Dhaka, although her study is more comprehensive. It deals with mothers' perceptions of all six EPI diseases (Laston et al. only covered Measles, Tetanus and Polio) and looks at how mothers' education, occupation, religion, marital status and length of residence in an urban area affect the uptake of immunization. The perceived causes and different methods of treatment of disease are noted. Medical, Institutional, Cognitive and Structural Pluralism⁴ are all discussed to explain why mothers choose certain treatments for their children. Mothers are shown to classify illness into three categories: those needing a doctor, those needing a Fakir or Kabiraj, and those which can be treated at home. Tetanus is the mostly widely known EPI disease. Causation is usually attributed to spirit possession, and 'it is only recently that doctors' remedies (or vaccination) are beginning to be seen as potentially capable of combating the disease' (Blanchet, 1989). Measles is believed to be caused by *Sitala*⁵, the goddess of epidemics, and treatment involves well known and elaborate prescriptions. It is not an illness for which doctors or Fakirs are sought, with treatment occurring at home. Interestingly it is believed Measles has certain benefits for children, and Measles-related complications (diarrhoea, malnutrition and pneumonia) are due to other causes (Blanchet, 1989; Aaby, 1995; Desgrees du Lou and Pison, 1994).

No clear definitions for Diphtheria, Pertussis or Polio were found since 'symptoms are not easily identified and perceived causes are obscure and mysterious' (Blanchet, 1989). Tuberculosis (TB) is believed to be mainly a disease for adults and symptoms are not often recognized in children.

⁴Medical Pluralism is the utilization of a range of different types of healers and services (traditional and allopathic) either concurrently or consecutively to meet health needs. Every medical/health system, as a result of perceived inefficiencies/inadequacies, can breed discontent making people seek alternate therapies and sources of care/cure.

⁵*Sitala* has traditionally been the goddess of Small Pox in South Asia. It is Blanchet (1989) who refers to her as the 'goddess of epidemics' since people still refer to her when talking about outbreaks of Measles and other Pox-like diseases.

Treatment is first sought from Fakirs and later from doctors when the patient has reached a more severe stage of the disease.

The Blanchet study makes a number of interesting points about perceptions of vaccination. Men tend to worry more about fever as a side-effect after vaccination, and sometimes 'felt vaccination was unduly interfering with Allah's design, and therefore considered the intervention unislamic' (Blanchet, 1989). She notes objections on religious grounds tended to be voiced from 'better educated and, we may assume, economically more secure group', and rarely from the bustee dwellers, rickshaw pullers and small peddlers⁶. Women in the study area, most of whom were illiterate, had 'little comprehension that each of the vaccines has a separate action', and believed since all injections were similar in nature, they would reinforce each other. There was no understanding of the need to complete a course of injections to be fully immunized.

BRAC's 1988 study looks at perceptions in two districts of rural Bangladesh. Each of the EPI diseases is discussed, with the various local names, symptoms and treatments. The study found knowledge of the causes of disease was poor, except perhaps for Tetanus and is particularly useful since it catalogues the different types of treatment used by people and Fakirs to deal with the six diseases. Treatments include the restriction or provision of certain types of food, the use of herbs, oils and leaf extracts, the wearing of necklaces and amulets for protection against evil spirits, drinking of sanctified water, uttering of charms and incantations, and use of homeopathic and allopathic remedies. With regard to immunization, the study found people believed they prevented disease, with some believing they had curative powers. Ninety-five percent of respondents (from a sample size of 201) said immunizations had 'no serious adverse effects', but there were nominal side effects such as fever, swelling at the site of injection and pain. The study concluded awareness of immunization is still too low, and needs to be enhanced.

A study by Worldview International Foundation (WIF, 1988) looks at perceptions of disease and immunization. It is very comprehensive and looks at the knowledge and perceptions not only of mothers, but also husbands, in-laws, doctors in-charge of EPI, health assistants (HAs), traditional birth attendants (TBAs), Imams, school teachers and rural medical practitioners ('Gram Dakters'). In an effort to avoid duplication, WIF avoided studying 'BRAC operational areas' where similar studies were being conducted. It had a special interest in evaluating the communication initiatives used to promote immunization. Findings are presented in summary form, and are useful for gaining a basic understanding of the main issues associated with immunization in Bangladesh.

It is suggested the attitudes of rural people to disease, its causes and treatment are dominated by traditional beliefs, 'although the efficacy of modern medicine is also accepted by most' (WIF, 1988). Mothers and secondary respondents who opposed immunization did so because they associated it with family planning measures and adverse side-effects⁷. Knowledge of immunization was found to be poor, although a majority of mothers felt immunizations were a

⁶If any ailment is considered to be predominantly of a spiritual nature, biomedical treatment - whether by allopathic or traditional herbalist - will be secondary' (Heggenhougen and Shore, 1986).

⁷Faye-Schrater (1995) discusses the problems of people associating immunization programs with family planning programs. Injected contraceptives have been known to cause miscarriages and have negative side-effects. Women are therefore wary of injections given when they are pregnant. For studies on Bangladesh see UBINIG (1991), 'Clients are refused removal in NORPLANT trial in Bangladesh', *Issues Reprod. Gen. Eng.* 4(45) 1991.

protective measure. Most people said HWs were the main sources of information, but 'substantial numbers of people' had been given negative information about immunization, which contributed to high drop-out rates. Some health workers interviewed reported supplies of EPI materials 'other than vaccine' to be inadequate. Shortages of needles and syringes may lead to re-use of disposable syringes (a practice in some government hospitals - Daily Star 10/6/97) by vaccinators, so causing concern about other health problems (e.g. potential spread of Hepatitis B, and AIDS).

Another study surveys the knowledge, attitude and practices (KAP) of fathers with regard to immunization. EPI (1992) notes fathers' knowledge of their child's immunization status was extremely low, and messages they received were often confusing (i.e. correct age of immunization for children etc.). The study found fathers felt responsible for getting medical care for their children, but many believed looking after the child was "woman's work". Ill health was sometimes attributed to the will of God, although there was a strong belief in Ayurvedic cures and medicines. Taking children for immunization was considered the wife's responsibility, although fathers did discuss immunization and 'instructed' them to take the children. The study concluded with the following recommendation: 'Almost all fathers did not perceive difficulty in ensuring their children are vaccinated. The one respondent who did perceive difficulty mentioned time constraints. Messages directed at fathers should therefore emphasize the benefits of immunization to the father in terms of time and money saved for curative treatment.' (EPI, 1992).

Khanom and Salahuddin (1983) although dated discusses the impact of an education program on the immunization behaviour of parents. They found knowledge of immunization was initially very low but 'improved further with education'. The fact this study was conducted in 1983, prior to the mass social mobilization and awareness raising campaigns of the late 1980s, raises questions as to the extent to which public knowledge has improved especially since more recent studies continue to find knowledge levels low (Watch Report, 1995 number 21; Perry et al., 1997). The education of women has been shown to have positive multiplier effects, not just for immunization, but on all aspects of development (Streatfield et al., 1990; Khanom and Salahuddin, 1983; Raman-Kutty, 1989). The use of education programs to improve knowledge of immunization and health care for both sexes is crucial for both sustainability and increasing coverage. With provisions for greater education and information being made by NGOs like CARE, BASICS and BRAC country-wide it is hoped knowledge not just of immunization but also of other health issues will improve. Without it community demand will continue to be low (Watch Report, 1995 number 21).

1.iii - Attitudes of Clients To Service Providers and Quality

In situations where stimulating demand is difficult to achieve, it is important to do everything to maintain it. This section will discuss the attitudes of clients to health workers and vaccinators, and then look at some suggestions to improve staff-client relations.

Almost every article written on immunization in Bangladesh mentions the vital role Health Workers (HWs), both government and NGO, play in informing, motivating, registering and convincing mothers to attend immunization sessions. The country has a tradition of using HWs, Traditional Birth Attendants (TBAs), and Family Welfare Assistants (FWAs) for the delivery of health and family planning services, Mother and Child health care (MCH) and immunizations (Talukdar et al., 1991). BRAC HWs visit the houses of mothers telling them about EPI, and how their children can

be protected by immunizations. They also tell them about other interventions, like ORT and family planning (BRAC, 1989).

However, a number of problems in the provider-client relationship have been found. UBINIG (1989) conducted a study on illness behaviour in six villages in Bangladesh, and assessed client perceptions of the treatment they received at health centres. There was a high level of dissatisfaction with the way doctors treated patients, the selling of free medicines and the irregularity of opening hours. The study points out an important fact that perceptions about health care facilities and providers are built on a set of simple factors: the regularity of opening hours, the availability of staff, staff attitude and behaviour and the availability of drugs. These 'simple factors' are applicable to EPI in Bangladesh, and there have been studies which show that problems with staff attitude, availability, timing of immunization sessions and vaccine availability have all contributed to lowering attendance.

Blanchet (1989) mentions class differences between doctors and clients⁹. Mothers were spoken down to or shouted at by doctors, which humiliated and intimidated them⁹. The result of this was mothers did not return to complete the course of injections for the child, nor did they bring their other children. The doctors in this case had failed to understand the importance of establishing a trust and rapport with clients.

Wolffers (1986), discussing Primary Health Care (PHC) and problems with its implementation in Bangladesh, points out a major problem for vaccination programs is motivating people. He claims 'they fear the injections are a secret way of contraception', and there are instances where this has occurred¹⁰. HWs and FP workers working under pressure to meet quotas have been known to coerce people into being sterilized, misinforming them about the type of injection they are receiving. This has led in some areas to HWs being viewed as 'agents of social control' (Nichter, 1990), and immunization is resisted as a protest against the State. Non-acceptance, Nichter concludes, is driven by a suspicion that immunization is linked to family planning, by a lack of trust in the skills (and sometimes intentions) of the vaccinator, and by a fear that certain people are too weak 'to withstand the shock of vaccination'.

Streefland (1995) mentions staff 'talking down' to clients, and showing a lack of respect. Staff attitude may be affected by the socioeconomic status of the client, and Zettyn et al. (1992) make

⁹Doctors and patients view ill-health in different ways. Their perspectives are based on very different premises, employ a different system of proof, and assess the efficacy of treatment differently. Each has strengths and weaknesses, and the problem is how to ensure effective communication between them in the clinical encounter between doctor and patient (Hellman, 1994).

⁹An observer at an immunization session in rural Bangladesh noted it took the vaccinator repeated attempts to correctly administer the BCG vaccine. The vaccinator on two occasions pushed the needle too far, puncturing the skin and caused the child great pain (and terrified those children waiting their turn, no doubt!). Neither the mother nor the child were offered any reassurance or sympathy by the vaccinator, who barked at the mother to hold the child still. Other mothers watching the session were clearly nervous including the observer, who wasn't even going to be immunized.

¹⁰'New vaccines which inhibit pregnancy and promise a dramatic impact on population growth will raise strong temptations for the compulsory immunization of women. Lower-level health care workers in government service are at particular risk from ethical dilemmas of this sort because while professional norms enjoin them to obtain the client's consent, bureaucratic pressures oblige them to meet mandated quotas' from Social Science and Immunization: Proposal for a Comparative Research Project in Asia, Europe and America, 1993.

this point. Heggenhougen (1995) believes patient satisfaction with the quality of health services, their perception of staff attitude toward them, and time spent waiting determines whether they use immunization services.

The behaviour of health personnel will not be the same across the country and an individual's training, education, and outlook will affect their treatment of clients. This does not excuse the talking down to or mistreating of clients, and one possible solution may be to provide better training on interpersonal skills. EPI (1993) found workers frustrated with the training module on interpersonal communication and claimed it was difficult to use and understand. It suggested NGOs, with experience in dealing with people in a less formal manner, be used to improve the interpersonal skills of vaccinators, doctors and government workers.

Some studies have found clients satisfied with the service and attitude of health staff. The respondents in the WIF (1988) study found HW behaviour satisfactory, and 'no complaints were voiced'. Perry et al. (1996a) assessed the quality of MCH-FP services by field workers (FWs), and observed that they greeted clients respectfully, and 'responded adequately to the clients' questions'. However 'less than half (49%) of respondents felt FW visits were useful or helpful' (44% said they were not helpful) whereas 95% of FWs felt their supervisory visits were helpful.

Hughart et al. (1991) in a study of the Urban Volunteer Program (UVP) showed the provision of information on immunization and other health interventions is more effective if the parties involved share similar characteristics. This would help avoid the problem of class differences between vaccinator and client mentioned by Blanchet (1989). Bhuiya et al. (1995) found HWs were important factors in increasing immunization acceptance among women with little or no education. They helped with the 'demystification' of vaccination, 'facilitating conceptual accommodation by helping local people locate the new in relation to the known' (Nichter, 1990).

When discussing the conduct and behaviour of health providers one must remember there are many different levels in the hierarchy of the health system. Distinctions should be made between doctors, vaccinators, HWs (government and NGO), supervisors, FWV, TBAs etc. This is important because community-level workers work hard to build a rapport and trust with the people and it is their efforts which are largely responsible for people attending immunization sessions. Doctors and vaccinators, whose aim is to immunize as many clients as possible, may in their haste mistreat people, show disrespect or cause offense. They need to be made aware of the effort which has gone into getting the people to the clinic, and of the importance and implications of their actions. A moment of rude behaviour by a vaccinator may undo weeks of effort by a HW.

Morley (1996) recommends a number of steps to improve staff-client relations. A friendly welcome or greeting from staff, using appropriate body language (smiling, for example) will put mothers at ease. Communication between staff and client is important, and explanations should be provided in terms easily understood. The provision of comfortable seating is also important, if mothers have to wait for a long time. Prompt attention by staff will encourage mothers to participate in other activities being held (group discussions, education sessions etc.). These simple measures improve the quality of service and help build client satisfaction and 'consumer loyalty' making future attendance more likely. If HWs and vaccinators treat parents as partners, helping them to identify problems and selecting appropriate treatments for their children, then they will be more

willing to return. None of the recommendations involve substantial costs, and can be implemented with a little effort from staff.

1.iv - Barriers To Immunization

Coverage rates for fully immunized children aged between 12-23 months reached as high as 84% in 1994 (EPI, 1995a). By 1995 this figure had dropped to 76%. Figures for 1996/7¹¹ are as yet unpublished but one hopes they will show an increase. The barriers clients face when trying to get immunized are important since they are the reason why dropout rates are high and coverage is falling.

The reasons why clients choose to immunize their children will depend on the individual. These reasons have been the focus of much study in Bangladesh due to a history of low utilization of health services. Heggenhougen and Clements (1987) - in a paper not specifically on Bangladesh - discuss the factors affecting acceptability of immunizations, dividing them into supply side and demand side factors. The supply side factors include the character of the health and immunization services being provided (quality of service, dissemination of information, vaccine potency, accessibility and availability of immunization sessions etc.). Demand side factors are more varied, and include socioeconomic, demographic, cultural, geographical and religious characteristics of the target population.

Most studies on Bangladesh conclude that it is a lack of knowledge and information on immunization (location, time, necessity, side-effects) which is the primary reason for non-acceptance and low coverage. Khanom and Salahuddin (1983), prior to the committed implementation of EPI in Bangladesh, found the main reasons for non-acceptance included ignorance about immunization, non-availability of vaccinators and vaccines, poor communication systems, fear of side-effects, and a lack of confidence in the skills of the vaccinator. Rahman et al. (1982) divided the reasons for non-acceptance of TT vaccine into program and client-related. The main program-related factor was the failure of HWs to inform mothers about immunization (communication breakdown). Client-related factors included objections to immunization from husbands and mothers-in-law, fears the injection would hurt the foetus, a 'dislike' of immunization, and a lack of awareness of the need for immunization.

WIF (1988) examined reasons for dropouts from EPI. Mothers interviewed claimed fears of side-effects¹² following vaccinations, rumours of secret family planning schemes, familial objections (husbands and mothers-in-law), preoccupation with work, distance from EPI site and weak motivational work by HWs made them reluctant to receive immunizations. Of those mothers who did visit EPI sites, the absence of vaccinators, vaccines, and female workers resulted in a failure to receive immunization - 'missed opportunities'. Blanchet (1989) also noted the absence of female HWs at EPI sites discouraged women from attending.

BRAC (1989) found clients were unaware of the need to complete a course of injections and of the site/time of sessions. A fear of side-effects was also noted, especially since clients had not

¹¹Preliminary figures from a NIPORT survey indicate that coverage for children aged 12-23 months may have fallen to as low as 54%. The report is due to be published in September 1997.

¹²Common side-effects reported after vaccination include fever, inflammation and pain around the site of the injection, temporary paralysis, dysentery, menstrual problems and vomiting.

- * As field workers distribute pills inside the home nobody can notice it, one can maintain privacy (*Mohilara bari bari aysha bori dya jai, keo dekte pay na, gopon thake*).
- * The pill is easily available and one can stop using it at any time (*Bori shohoje pawa jai, ar jokhon tokhon bandho kora jai*).
- * The pill definitely is the best method otherwise the government would not have distributed it house to house (*Bori shob cheye valo babostha, naile sharkar bari bari dya beraito na*).
- * The pill causes less side effects in comparison to other methods (*Anno babosthar cheye borite shamoshya kom*).

However, some men were not in favour of the pill, because they thought that the pill causes many physical problems like vomiting, giddiness, weakness, etc. Some complained that women frequently forget to take the pill.

An interesting point was revealed from the discussion that most men believed women need to take good food like milk, egg, etc. while taking the pill. They thought the physical problems that the women suffer after taking the pill are because their husbands can not provide them with nutritious foods.

A few respondents spoke in favour of injection and IUD. The perceived advantage of these methods were its long time protection. Most *Garos* ethnic men preferred herbal methods. They said some of their women tried modern methods but faced many physical problems. Moreover, their women have used herbal methods for several years. Some of the *Garos* men mentioned about the rhythm method, which they have learned from World Vision, an NGO working among them.

What are the perceived causes regarding low male contraceptive use?

All men agreed that male contraceptive use is low in their area in comparison to female contraceptive. Different reasons were believed to be responsible for low use of male contraceptives. The major are as follows:

Lack of information

The majority of the men said that they did not have much information about male methods (*Purusher podhyoti shomporkey valomoto jani na*). It is interesting to note that there were quite a number of men who could not mention the name of a single male method. Surprisingly there were men who had mentioned the name of condom but having never seen it. They thought it to be a female method, which women take like a pill (*Shunchi mohilara condom khaey*). Men complained that female family planning workers talk only with women, they have no one in particular to discuss about family planning.

It is women's responsibility

Some men believed that family planning was women's responsibility. One of the respondent said,

"It is women who become pregnant, so she should take the measure to prevent it"
(*Meye manusher pete bachcha ashey, tai meyerai bachha bondho korar babostha nebe*)

Some respondents said that family planning was a matter of shame and that's why men do not want to get involved in it (*Paribar parikalpana lojjar bishoy purushera eishober vitor thaktey chai na*). So the responsibility goes to the women. Some other men believed that family planning was a matter of privacy. So if a man use contraceptive methods every one will notice it, while nobody knows whether a woman in the village using it or not.

Yet some men said, since their wives had willingly taken the responsibility, why should they take the burden (*Boura jokhon nijerai babostha nichey tokhon amra ar nimu kan?*).

Male methods are not appropriate

Considerable number of men expressed their dissatisfaction with the existing male methods. The most frequently mentioned complain about the condom was that it hampered sexual pleasure for the men (*—tripti pawa jai na*). This view was expressed by

men who had once used condoms and had discontinued it, and also by men who had never used it but had heard this rumor from others.

Some of the respondents said they tried condoms once or twice but it burst out, so they discontinued it. One respondent said, he once used a condom but it had caused an abscess in his wife's vagina. Another interesting belief was expressed by a local elite who said,

"The condom is used by some poor illiterate man, I do not think any educated elite of our village use it." (*Gorib murkho era condom babohar korey, kono shikhyito vodro lok amar money hoi na oita babohar korey*).

Regarding vasectomy some generalized negative notions were found among men. "Having a vasectomy makes the man physically weak and incapable of doing hard work", this was a wide spread belief among the men. One agricultural laborer stated that, land lords did not want to hire vasectomised laborers, since they would not be able to do hard work. (*Operation koreyle grihosto kam ditey chay na vabe ei beta kam kortey parbo na*).

Some of the respondents said, men suffered from different diseases after the operation. They said, they saw people die after having vasectomy. They had given examples where even after an operation of the husband the wife became pregnant. For these reasons men are generally not interested in vasectomy. The experiences of condom users and vasectomy clients are discussed later in the case history chapter.

A few respondents said that the reason behind low male contraceptive use was that the contraceptive choice for men was limited. They mentioned men had only 2 or 3 options while women had 7 or 8 methods to choose (*mohilader jonno sath atta podhoti achey, purusher podhoti matro duita ki tinta*).

A very few respondents mentioned about *ajol* (withdrawal) method. Those who mentioned it were from a older age group. According to them *ajol* was not practiced in the area then.

What is the experience of male method users?

Contraceptives Acceptors Rate in Sherpur at the time of the data collection was 64%, of which the male method acceptors were only 3.5%. Who are these exceptions? To explore

charging for EPI services may affect demand adversely. There are of course sections of the population more able to pay than others and ways should be developed to make them contribute. For the majority however, charging for services is likely to act as a disincentive to participate, although Perry et al. (1996a) found clients were being charged 5 to 20 Taka for immunization cards at certain clinics. This appears to be standard practice at a number of NGO-run health centres.

There are a number of problems which arise when health programs seek to recover costs at the community level. Fee-for-drug systems may result in the over-prescription and over-consumption of drugs, while fee-for-diagnosis systems 'may encourage multiple prescription by health workers' (Hanson and McPake, 1993). More simple pricing systems like a flat-rate charged per visit may allow for some cross-subsidization between those needing expensive and inexpensive treatments, but at the same time they may result in a fall in utilization by those who are less frequently ill. Pre-payment systems carry a lower incentive for over-prescription, but they may encourage over-use by those who are covered by the scheme - 'moral hazard'- or the participation only of those who are more likely to require health services - 'adverse selection' (ibid.).

Bhuya et al. (1997) review the experiences of a number of health programs which were designed to have CP as their central component. They note 'CP thus far in Bangladesh was involved in membership to local committees, but their role is limited since the control of the program in terms of resources, planning, implementation, monitoring and evaluation was always held by the staff of the implementing agency, be it government or NGO'. Communities are unlikely to contribute to a service of low quality, or to one which has been imposed on them from above without sufficient explanation. Programs which seek to involve the community should use existing networks, developed by NGOs and other programs, rather than attempting to build new ones - unless of course there are problems with the existing ones.

BRAC's research division evaluated the extent of CP in a MCH setting in rural Bangladesh (Chowdhury et al., 1995) and found all of the usual problems associated with CP in health programs. The study points out 'although increased representation of the poor and women was made, this did not increase their real participation and say' and this is likely to be a problem with most efforts which attempt to increase the level of CP, but only as an afterthought.

1.vii - Immunization Coverage: High and Low Coverage

Immunization coverage in Bangladesh is not uniform. Differences exist within and between rural and urban areas. Jamil et al. (1996) found coverage rates (for fully immunized children between 12-23 months) as high as 70% in some urban areas, and as low as 58% in rural areas. Urban areas have particular problems (pockets of very low coverage in poorer, slum areas), which need special attention since urban-specific strategies are rarely implemented.

Bangladesh's urban population is currently around 26.3 million, constituting between 21.5% and 23% of the total population. It is growing by 6% each year, more than twice the national rate. Over half the urban population is categorized as 'poor'¹³, and a recent UNICEF report estimates

¹³The World Bank divides poverty into two categories: 'poor' and 'hard-core poor'. The 'poor' are those who earn less than TK. 2600 per month, for an average family size of six. The 'hard-core poor' earn less than Tk. 1724 per month.

that by the year 2000, there will be 16 million poor and 9 million hard-core poor in urban Bangladesh (UNICEF, 1993).

Dhaka alone has over 8 million people, 30% (2.5 million) of whom live in slums. Four million live below the poverty line. Slums are characterized by extreme poverty, overcrowding (with population densities between 300 to 600 people per acre). There are few sanitation or sewage facilities and a clear lack of clean or potable water. Add to this endemic malnutrition (80% of the children of the urban poor are said to be 'chronically malnourished', 15% are 'severely malnourished' [BASICS, 1996b]) which increases vulnerability to disease, as well as a lack of access to basic health care facilities and we have the perfect breeding ground for disease. Transmission (particularly of measles) is rapid due to the high population densities. Infant mortality in slum areas is 138 per 1000 live births - the national figure is 91/1000 (BASICS, 1996b) - with over half of infant deaths occurring from a select few preventable diseases - Tetanus, Measles, respiratory infections and diarrhoea.

Most studies on problems for urban immunization focus primarily on the capital city Dhaka, although urban Khulna, Chittagong and Rajshahi have also been examined. The table below shows the trend in coverage in Dhaka city since 1990, and similar statistics are available for other urban areas.

Table 1: Coverage Differentials in Dhaka 1990-1995

Antigen	1990 DCC*		1993 DCC		1995 Zone 3-DCC	
	Slum	All DCC	Slum	All DCC	Slum	Non-slum
BCG	73%	85%	88%	92%	82%	95%
DPT 3	60%	83%	63%	81%	56%	82%
Measles	55%	72%	58%	72%	51%	70%

Source: BASICS (1996b)

*Dhaka City Corporation

Slum areas lag behind non-slum areas creating pockets of low coverage which make the task of eradicating and controlling disease more difficult. In recent years coverage in the slum areas of Dhaka have been below the national average which is raising concern. This is also the case in other urban areas, and it is for this reason urban-specific policies and strategies need to be designed and implemented.

There are also significant regional differences in coverage. Children in Khulna and Barisal divisions are more likely to be fully immunized than children from the Dhaka or Chittagong divisions. A recent survey found 81% of children in Khulna were fully immunized, 73% in Barisal, 65% in Rajshahi, 54% in Chittagong, and 49% in Dhaka (Jamil et al., 1996).

Atkinson and Cheyne (1994) in a very interesting study of immunization in urban areas refer to a survey conducted in Dhaka in 1992. They found 'immunization coverage in slum areas was much lower for all vaccines and was comparable with the lowest coverage rates in rural areas'. They suggest a number of strategies which would be appropriate for urban areas and warn against the use of a single strategy for both urban and rural areas.

Why then are coverage rates so low for slums areas? The primary reason has to be the extreme poverty in which people live. These areas are of no political or economic importance to politicians or policy makers and so are neglected by urban planners. As a result of this neglect and their rather makeshift nature, slum communities lack proper housing, sanitation and water facilities. Atkinson and Cheyne (1994) discuss the main reasons for low immunization among slum populations. They note the technical aspects of service delivery (cold chain maintenance, vaccine efficacy etc.) are similar for both urban and rural areas (although one would argue service delivery to rural areas would be more difficult, due to the size of area to be covered). There are reasons for low immunization common to both rural and urban areas, and they include clients' fear of side-effects, contraindications, staff reluctance to open new vials for single children and staff attitude toward clients.

Urban-specific reasons for non-immunization are related to the socioeconomic and environmental conditions. Slum areas have high levels of illiteracy among both men and women. Mothers are often unaware of the need, importance and availability of immunization¹⁴. Distance from EPI sites is important, since slum dwellers cannot afford either the time or money to return repeatedly for immunization. Distance is important when the mobility¹⁵ of women is restricted, and this is true for both urban and rural areas (Bhuiya et al., 1995). Retention of immunization cards tends to be poor, which makes monitoring the immunization status of children and mothers problematic (EPI, 1995). An important point made by Atkinson and Cheyne (1994) is that knowledge of immunization does not guarantee uptake. Mothers need to be motivated to attend immunization sessions, and in cities like Dhaka this is done by FHW and Urban Volunteers (Hughart et al., 1992). NGO and government workers use house to house visits to motivate mothers, and all forms of media including radio, TV, newspapers, posters and leaflets are employed to promote EPI. One questions the efficacy of this given few slum dwellers can read, fewer have access to a radio and hardly any have a TV. Field Workers and word-of-mouth between relatives and friends continue to be the main sources of information in slum areas (BASICS, 1996b; Laston et al., 1993; EPI, 1995, Bhuiya et al., 1995).

High dropout rates contribute to low coverage and the problem is most acute in slum areas. A recent study by ICDDR, B found rates of drop out for BCG to Measles were 41% for slum households and 25% for non-slum households. It noted 'slum/non-slum differences in child coverage encountered in earlier surveys in Dhaka are persisting and perhaps even widening' (Perry et al., 1997). The migratory status of many in slum residents contributes to the problem since it makes it difficult for HWs to keep track of eligible children and mothers. As a result they will continue to be missed, and will remain vulnerable to infection.

The cost of travelling to EPI sites, time spent waiting, the fear of side-effects and poor treatment by staff all contribute to dropouts. In a study of NIDs held in Dhaka, Quaiyum et al. (1996) found the main reasons among slum dwellers for non-participation in both NIDs were time constraints, a lack of awareness of the need to take part in both days and lack of access to EPI sites. 'Reasons

¹⁴A lack of knowledge was the main reason for non-involvement in EPI and National Immunization Days held in 1995 and 1996. See Quaiyum et al. (1996); (EPI, 1995a); Bhuiya et al. (1995); Watch Report Number 21, December 1995.

¹⁵Although an interesting point is made by Blanchet (1989) who found mothers in a slum area of Dhaka were 'relatively mobile', and able to work. She does acknowledge 'purdah' imposed on women affected coverage adversely.

related to the organization, timing and location of the outreach sites appear to have been....twice as critical for the slum population' (ibid.)

The locations of immunization sites in urban areas are important, since slum populations may have problems gaining access to a particular site. Alternatively they may prefer sites in a particular location within easy reach. Laston et al. (1993) found the vast majority of women who immunize their children do so at centres run by NGOs (32%). A government hospital was also used by a significant proportion of slum women (20.4%). Most interesting is the fact that less than 3% of women reported immunizing their children through the Urban Volunteer Program, ICDDR, B hospital or the EPI centre in Mohakhali. Only 1.3% had used a private clinic. Over 36% of children were not immunized.

Perry et al. (1996b) describe a very different situation. They found EPI centres being run by Dhaka City Corporation (DCC) were the most popular sites for child and maternal immunization, with 86% of slum children (and 83% of non-slum children) being immunized at a 'Zone 3 clinic'¹⁶. Eighty percent of slum maternal tetanus toxoid immunizations (60% for non-slum recipients) were received from a Zone 3 clinic.

EPI (1995) does not divide its findings into slum and non-slum categories. Its urban findings for sources of vaccination show outreach facilities account for 45% of vaccinations (in this case BCG), health centres 25%, NGOs 19%, hospitals 9% and private practices only 2%. The further expansion of EPI services to the urban poor will serve as an entry point for reaching mothers and children with other basic services. Mapping slum areas, taking stock of community health resources, improving the referral system, strengthening co-ordinating role of community leaders and involving the community as volunteers will all be necessary for the continued success of EPI (BASICS, 1996b).

1.viii - Determinants of Demand for Immunization

Immunization programs rely on widespread coverage for success. To sustain them they require clients to demand services, and to demand improvements to those services when quality is lacking. Thus, if sustainability is dependent on demand, then the factors which influence demand are important and need to be addressed. In many developing countries - including Bangladesh - medical services reach only a minority of the population, and will therefore be more concerned with meeting demand, rather than creating it (UNICEF, 1985).

Even though meeting existing demand for basic health services continues to be a problem¹⁷, EPI in Bangladesh had to stimulate it since people knew so little about it. There was considerable success in stimulating demand for immunization between 1986 and 1993 as the mass mobilization effort swept across the country. The increase in coverage rates reflects this, although in recent years promotional activities have been scaled down resulting in falling coverage. Does this reflect a decline in demand or a faltering delivery system?

¹⁶A Zone 3 Clinic was any EPI centre run either by DCC, NGOs like Concerned Women for Family Planning, or private clinics located in Zone 3.

¹⁷Given international donor support for the MCH-FP services in Bangladesh will not keep pace with the continuing rapid growth in the need and demand for MCH-FP services, the need to maximize program impact while at the same time minimizing program cost is now becoming even more urgent' (Perry et al., 1996a)

Just as there are different forms of participation, there are different types of demand. Rifkin (1991) points this out in her discussion of community participation in MCH/FP programs. Some forms of participation involve the community to a greater extent than others. Demand similarly has been categorized into two forms: active and passive.

Active demand 'entails adherence to vaccination programs by an informed public which perceives the benefits and need for specific vaccinations'(Nichter, 1995). It involves communities knowing exactly why immunizations are necessary, where and when they are available and who should receive them. Scope for misunderstanding is reduced by a process of sensitization and demystification, where health providers inform¹⁸ and encourage people to get involved with health matters, including immunization. Active demand is a necessary component of sustainability since it involves the community voicing its needs and wants and allows planners to provide services to meet them.

Demand in the form of 'passive acceptance' is where communities are not involved in planning or implementing programs, and play only the role of recipient. Passive demand/reciency 'denotes compliance by a public which yields to the recommendations and social pressure, if not prodding, of health workers and community leaders' (ibid.). There is no involvement by the community in the planning, organization and running of the service¹⁹, which is provided in a 'top-down' manner by the government or NGO.

Basic economic theory tells us consumer demand is affected by a set of price and non-price determinants. Price determinants include the price/cost of the good or service in question and the price/cost of alternatives. Non-price determinants are more varied, and include the income of consumers, the quality of the good/service, the availability and quality of substitutes, social and cultural norms or beliefs/tastes, the expectations of consumers of the good/service based on information available, and the accessibility and availability of the good/service.

If we look first at the price-related determinants of demand. EPI in Bangladesh is supposed to be provided free of charge. This does not mean clients face no costs when using health and EPI services. People will face the cost of travelling to the EPI/health centre, they will have to undergo a loss of income by taking time off work and waiting for the service, and they may even be charged for the service when they get to the EPI site. The opportunity cost of using a 'free'

¹⁸Nichter (1995) discusses the importance of vaccinators giving accurate information instead of vague and general messages. Studies have shown when mothers were asked what vaccinations would do for them and their children, they replied vaccinators and HWs told them they would produce 'healthy children', and 'prevent sickness'. Nichter points out these general messages have three ramifications: first, they foster unrealistic expectations about vaccines, making people think they protect against illnesses for which they are not designed; second, is the problem of negative side-effects. Mothers may be reluctant to take their children for further vaccinations if previous vaccinations caused their child to be sick: 'perceptions of compatibility led a mother to weigh the ascribed benefits of future vaccinations against the state of ill health experienced by her child'; the final ramification involves the concerns of those sections of the population who feel excluded from immunization programs. Men and older children may object to being excluded from a service which is being promoted as 'good for health' and may cause problems. General messages which vaccinators and HWs provide mothers for reasons of convenience can prove counterproductive.

¹⁹For an interesting discussion of the different types of community participation see Rifkin (1990, Community Participation in MCH/FP Programmes, WHO, Geneva.

service may in fact be too high, and can act as a disincentive for consumers (Akin, 1985). A number of studies mention economic and financial restraints as being the primary reason for low demand. Zeitlyn et al. (1992) note low income is one of the factors most closely associated with mothers' failure to receive a second dose of TT. Hughart et al. (1992) point out the importance of paying the transport costs of the volunteers who register and motivate mothers to bring their children for immunization. Bhuiya et al. (1995) and Heggenhougen (1995) both point out the importance of cost and socioeconomic status of parents to meet these costs. If complete coverage requires repeated trips to the EPI centre (Rahman and Islam, 1993) families will have to meet high costs when immunizing their children, even if the vaccines themselves are provided free. It is for this reason that outreach centres, which take immunization to the people, have proved so popular (Jamil et al., 1996). Indeed, the government is trying to combine other MCH/FP services with EPI satellite and outreach sites in an effort to take health services to the people (Khuda et al., 1997).

With regard to the availability and price of substitutes. 'Medical Pluralism' is alive and well in Bangladesh (Blanchet, 1989; Heggenhougen, 1995; Ahmed and Wahed, 1996). Some studies have observed a significant proportion of the population, both urban and rural, utilize 'modern health care facilities' (Rahman and Bhuiyan, 1992) although the use of traditional healers is common in both urban and rural areas: 'traditional faith healing has not at all decayed as people apparently believe and there is a rather strong undercurrent beneath the visible monopoly of western medicine, both of homeopathy and allopathy' (UBINIG, 1989).

The main reasons for low utilization of the government health services include dissatisfaction with the management of government hospitals and the costs involved with getting to them. If there is sufficient dissatisfaction with government services people will turn to those options which they consider to be cheap, convenient and effective. Chen (1986) notes clients will 'seek the best of all worlds - traditional and modern, private and public' if they feel the need. Most often utilization is out of convenience with traditional medicines being readily available, affordable and acceptable - although there is also a strong belief in the healing powers of the Kabiraj and Fakir (Ahmed and Wahed, 1995). If people are yet to be convinced about the benefits of immunization and if what they perceive to be a feasible alternative exists - one with which they are familiar and can relate to - it is no wonder they choose the cheaper more accessible option. If service quality is poor at government facilities (i.e. if hospital staff treat clients poorly and keep them waiting in uncomfortable conditions), it is not surprising they turn to alternate sources. People would rather pay for a quality service be it from a Fakir, Kabiraj or untrained doctor than queue for a free but inefficient one from the government.

Demand is also affected by customer taste - what some might term social and cultural norms or beliefs. To this end, the government, donor agencies, NGOs and EPI conducted extensive and effective campaigns of social mobilization during the late 1980s. These campaigns informed the people about immunization, about what it could do for them and where they could get it - creating a taste for it. State-endorsed messages accorded the EPI a legitimacy which reassured people about what was being given to them and allayed fears about rumours of secret government family planning schemes and programs. The result was an increase in national coverage rates from 2% in 1985 to around 70% by 1990 (Huq, 1991), although some have questioned whether this was as a result of a genuine increase in demand for EPI or a reflection of the initial efficiency of the

delivery systems. One possible answer lies in the fact that EPI is today experiencing problems of declining coverage, poorly motivated staff and uncertainty regarding future financing only a few years after the 'near miracle' was achieved. If EPI success to date is due to those social mobilization efforts then future sustainability will depend on continuing them, while simultaneously strengthening the wider national health services. The delivery of health services - not just EPI - to currently underserved populations (in slum and remote rural areas) needs to be improved.

Abed et al. (1991) provide a good account of the mobilization efforts which occurred between 1986 and 1990, and claims (with some degree of justification) that it was 'one of the most successful social communication programs in the history of Bangladesh'. In recent years however national mobilization efforts have been considerably less intense, limited to National Immunization Days (NIDs) each year. These began in 1995 and are evaluated annually by organizations like BRAC, BASICS and ICDDR,B.

Quaiyam et al. (1996) examined the impact of the first two NIDs on Polio-related knowledge of urban women in Bangladesh, and concluded that knowledge about Polio as a vaccine preventable disease had increased as a result of NIDs, although there remained a significant gap in knowledge between slum and non-slum women. The study also noted 'the challenge of establishing high coverage rates among all social groups is still not achieved'²⁰. Consumer taste is influenced best by continuous promotion of the service, not periodic reminders. NGOs have actively promoted immunization in their health and education programs, but to reach all social groups a more sustained, year round effort is necessary.

Consumer knowledge and expectations about immunization are important. Quaiyam et al. (1996) found 42% of women were 'not aware of (the) need' for immunization at the time of NID. This implies consumer demand is low due to a lack of information about the availability and importance of immunization. People were informed about immunization from a number of sources including the media (television and radio), HWs making house visits, mobile loudspeakers (miking), billboards and posters. A WIF study, conducted in 1988, mentions 'substantial numbers of people, including all groups of mothers, had had negative information about immunization, mainly about side effects and family planning rumours. Among mothers of non-immunized children, between a quarter and nearly half had heard bad reports' (WIF, 1988). Knowledge, however, does not guarantee uptake and strategies which motivate mothers to actually take themselves and their children for immunization are needed (Rahman and Bhuiyan, 1992).

Health workers and vaccinators are also affected by inaccurate information. Perry et al. (1996a) made an assessment of the quality of MCH and FP services (MCH-FP) provided by field workers (FW) in Dhaka, and concluded there were 'important gaps in field workers' knowledge'. In this instance FW's knowledge of doses and timing of immunization was sufficient but a number expressed ('spontaneously') an interest in additional training for immunization²¹. A lack of

²⁰A Watch Report produced by the Research Division of BRAC in March of 1997, evaluating coverage of the December 1996/January 1997 NIDs, found coverage rates were as low as 26.8% in the Kishoreganj region but as high as 88.6% in Moulvi Bazaar. Watch Report number 21 (December 1995) noted 'given a recent nationwide campaign for the promotion of Poliomyelitis vaccines, the data do not indicate that it has had an impact in the rural areas'.

²¹Areas of interest included training on the storage and transport of vaccines, times to administer and means to increase attendance.

knowledge about immunization may be one of the reasons why staff react badly when asked questions by clients, which affects client perception of service quality.

Client expectations about immunization are determined by the information they receive. Vague and general messages have been shown to be counterproductive and this point needs to be impressed upon those who inform people i.e. health workers, doctors and vaccinators.

Accessibility to and availability of the service are also important. Although the national EPI coverage evaluation survey for 1995 found 'accessibility of immunization (BCG coverage²²) very high and sustained throughout the last 5 years' after a slight rise of measles and fully immunized coverage by one year of age in 1994 it has fallen down almost to the level of previous years (EPI, 1995a).

Two questions need to be asked when discussing the accessibility and availability of EPI. Where can people go to receive immunizations and where do people choose to go? The answers to these questions are important since there is little point in channelling resources to sites which are unattended. EPI planners need to ensure there is no wasting of resources and vaccines at sites which are unpopular, unattended or inaccessible to people.

EPI services are provided from government hospitals, *Thana* health centres (THCs), MCH/FP clinics, outreach sites (in the villages and communities themselves), NGO health centres and private practitioners (Talukdar et al., 1991). Immunizations are performed by an army of field vaccinators (now designated Health Assistants - HAs), who work in cooperation with Family Welfare Assistants (FWAs). FWAs organize women and children in an area identifying those eligible for immunization or at risk from EPI diseases. Laston et al. (1993) asked mothers in Dhaka if they knew where they could receive immunizations. Over half mentioned NGOs, a third said the government hospital, and 20% believed the Dhaka Municipal Corporation. Most worrying was the fact 16% of mothers 'were unable to give the location of an immunization facility' (Laston et al., 1993). The ICDDR,B hospital provides the whole range of services associated with Combined Service Delivery²³ (CSD) daily, and continually attempts to immunize eligible women and children, reduce missed opportunities and improve clients' knowledge of immunization through health education sessions. Zeitlyn et al. (1992) examined reasons for non-compliance among women and children with DPT vaccinations at ICDDR,B. They concluded that 'preventive health care services such as immunization are appropriately offered, but compliance...varies with socioeconomic status and mothers' education'. Thus even though availability was not a problem,

²²BCG coverage is taken to be an indication of accessibility since it involves only a single contact with the vaccinator. It should not however be taken as an indication of fully immunized status achieved. If an indication of the numbers of children fully immunized is desired then figures for children immunized against Measles would be more appropriate. The Measles vaccine is given last, only after the DPT3/OPV3 courses have been completed. Only children who have received 3 doses of OPV/DPT, a dose of BCG and a dose of Measles are considered fully immunized. EPI 1995 found reported coverage rates for BCG and Measles were 101% and 99%. However its own survey found coverage rates for BCG and Measles at 94% and 54% respectively.

²³Combined Service Delivery (CSD) is a mix of important interventions intended to deal (cost-effectively) with the most pressing health problems of the population. Included in the CSD program are the following interventions which are (in theory) provided at every service point: ORS distribution; Vitamin A for infants and folic acid supplements for pregnant and lactating women; promotion of antenatal care, safe delivery practices, and breast feeding; treatment of acute respiratory infections; growth monitoring and health education to improve nutrition.

since immunization services were being supplied, demand still remained low. Is Accessibility therefore the key?

Wright (1995) believes 'accessibility of immunization is always the largest determinant of success'. It is clear from the evidence of many studies that certain sites are more accessible than others. EPI (1995a) shows for both children and mothers outreach sites proved the most accessible, with 88% of children and 84% of women immunized (see table 2). One also has to be aware that different strategies will have to be employed to deal with the problems of poor access and poor utilization. Just because a site is available and accessible does not mean it will be utilized. Demand has to be stimulated and then sustained by providing clients with a service which is reliable and of a high enough quality to make them want to return.

Table 2: Preferred Sites of Immunization

Site	Mothers		Children	
	Urban	National	Urban	National
Outreach	37 %	84%	45%	88%
Hospital	9%	6%	9%	3%
Health Centre	26%	4%	25%	5%
Private Practitioners	14%	3%	2%	3%
NGOs	14%	3%	19%	1%

Source: National Coverage Evaluation Survey, (EPI, 1995a).

In rural areas outreach clinics provided a majority of immunizations although people also used health centres and NGOs. Hospitals and private practitioners were rarely visited but in some urban areas private practitioners are used primarily for receiving Tetanus Toxoid (Amin et al., 1989). EPI (1993) observed more than 10% of the target population in urban areas were vaccinated by private practitioners, but noted 'yet there is no control of the quality of private sector immunization, including sterilization procedures, and maintenance of the cold chain, and no working system for surveillance using private practitioners' (EPI, 1993). This is a point which should receive consideration.

There is concern about the fact outreach sites provide the primary means of access to immunization services. A dependence on such sites postpones the integration of EPI into the wider health infrastructure (Hall et al., 1990). The 1993 EPI review team discovered 'in a number of districts satellite clinics and outreach centres are working separately...efforts should be increased to merge all such centres with the aim of ensuring the most efficient use of both health and family planning resources in each administrative unit and the community' (EPI, 1993). The continued separation of sites has resulted in no set levels of service quality. The review team further noted considerable variations in both the number of interventions provided, and the way in which both preventive and curative services were implemented. Since outreach clinics are primarily where people choose to go steps must be taken to improve the quality of outreach services nation wide. If they continue to provide only some and not all EPI-Plus CSD interventions they assume the characteristics of a vertical system - one which does little to develop a more comprehensive system of health care.

There is much discussion as to whether the implementation of vertical programs like EPI enhance or hinder the development of more comprehensive PHC systems. 'Efforts to accelerate

immunization coverage during the 1980s may have precluded implementation of other priority components of PHC services, such as water and sanitation, mother child health, health education and family planning, given limited public health budgets' (Brenzel and Claquin, 1994). This paper only touches on the debate and will not go into further detail. For sources which cover the debate in greater detail see Banerjee, 1988 and 1990; Rifkin and Walt, 1986; Walsh and Warren, 1980; Seaman and Poore, 1987.²⁴

Section 2 - Political Sustainability

2.i - Commitment of Politicians, Donors and NGOs

The success and sustainability of EPI depends on the commitment made to it by everyone involved. Politicians have to be seen to be committed by supporting EPI in speeches and policies as well as releasing funds and resources - something which is problematic at the best of times in Bangladesh. The public has to be convinced about immunization before it can be committed to it so the commitment of those HWs and staff whose job it is to motivate the people is probably most vital. Without them to work with and motivate the people EPI stands no chance of sustained success.

It is only recently that governments in Bangladesh have had any semblance of stability. Their rapid rising and falling from power upsets the political and social stability of the nation and this instability undoubtedly affects the smooth running of EPI (and the wider development process). The government controls the resources necessary for EPI and to a certain extent it is the main factor which determines whether a program will be successful. In recent years governments have demonstrated their commitment to EPI by being seen to get involved (Talukdar et al., 1991). The social mobilization programs of the early 1990s involved different ministries and ministers collaborating with each other to promote EPI. Abed et al.(1991) discuss how political commitment to EPI in the early stages of the program helped raise the profile of EPI in Bangladesh. They also describe how NGOs, religious leaders, and the media showed their commitment to EPI which resulted in dramatic success, which EPI is today attempting to replicate.

Political instability disrupts the running not just of EPI but also other health and development activities. The calling of *hartals*, where all activity stops, means services are disrupted and clients are unable to travel to immunization and health centres. Bickering between national leaders and politicians and the ensuing unrest undermines whatever 'commitment' is made in political speeches. A recent article from the Daily Star newspaper (5/4/97 - 'Three IPH Vaccine Units Face Closure') noted that three units of the Institute of Public Health (IPH) which produce EPI vaccines²⁵ face closure due to a lack of regular funding. Staff at the vaccine production laboratories have not been paid for seven months despite the units making 'considerable profit in past years', and the government has yet to bring the units under the revenue budget. The article further notes 'almost all administrative formalities have been fulfilled to solve the problem, but

²⁴It should be noted the criticisms of vertical interventions are most often directed at immunization programs and the reader should be aware of them.

²⁵The article is not clear as to whether the DPT vaccine is in fact produced by the IPH. The EPI Project Proforma for 1995-96 to 2000 states DPT production has not yet begun in Bangladesh and that only one-third of the total TT vaccines required are manufactured locally. A personal interview with staff at the IPH vaccine production laboratory confirmed that there was in fact no production of the DPT vaccine.

every time, for one reason or another, the matter is buried'. Political commitment it appears does not run very deep or very long.

The Government's most recent Five Year Plan (for the period 1995 to 2000) contains a set of broad objectives for health development in Bangladesh. Included are improvements in the health status of the population, particularly children; the consolidation and strengthening of primary health care and support services; the delivery of improved family planning and welfare services; the prevention and control of the six EPI diseases (including the elimination of Polio by 2000); improving the nutritional status of children and mothers; and the adequate production, supply and distribution of essential drugs and vaccines²⁶. Importance will continue to be given to EPI, and 'all field level workers and their supervisory staff including doctors are to be fully involved, mobilized and made accountable for the efficient and effective implementation of EPI' (EPI, 1995b)²⁷.

To ensure the sustainability of EPI the government has to be committed to wider socio-economic development for the whole country. Immunizations may provide a cost-effective means to reducing the risks for children and pregnant mothers, but on their own they are no guarantee of good health. The only way the health of the nation can be assured is by improving socio-economic conditions. Poverty needs to be reduced and environmental changes - the provision of proper sanitation, housing and improvements in nutritional status - are necessary not only to eliminate the conditions in which diseases fester and spread but also to enable children to physically combat ill-health. To do this requires more than just shots in the arm, and is a task to which governments and politicians should be committed (Reid, 1989).

UNICEF (1995) provides an account of its involvement in Bangladesh and the role it played in EPI, by procuring vaccines and equipment for the cold chain. It details UNICEF's relationship with Bangladeshi NGOs like BRAC and the Grameen Bank, with whom it continues to work.

Rotary International committed itself at the start of EPI to providing funds for all Polio vaccines until 1993. It has extended this commitment by agreeing to partially fund the Polio eradication campaign until 1997, assisting with the costs of social mobilization activities. USAID and UNICEF will also continue to finance social mobilization and awareness-raising activities.

NGOs like BRAC and CARE have been involved in EPI from the outset, demonstrating a sustained commitment to the provision of all forms of health care. Streefland and Chowdhury (1990) examine the long term role of NGOs in health care in Bangladesh, and point out how they fill the considerable gap between the needs of the people and the low-quality care offered by the government. NGOs in Bangladesh train and involve local people in their programs who in turn inform others about effective, low-cost solutions to health problems²⁸. They have demonstrated their commitment in the way they work with people, and it is mainly due to the efforts of NGOs and

²⁶For an interesting account of Bangladesh's Essential Drugs Policy see Zafrullah Chowdhury (1996), *The Politics of Essential Drugs: The Makings of a Successful Health Strategy - Lessons From Bangladesh*, University Press Limited, Dhaka.

²⁷EPI Project Proforma 1995-96 to 2000 provides a breakdown of all estimated costs of EPI for Bangladesh, the contributions to be made from donor agencies, and the strategies to be followed by EPI over the next five years.

²⁸For a good account of one NGO's campaign to promote such an intervention see Chowdhury and Cash (1996), *'A Simple Solution: Teaching Millions to Treat Diarrhoea at Home'*, University Press Limited, Dhaka.

their health workers that people choose to attend immunization sessions, have access to health care and credit facilities, income generating opportunities and education.

CARE's 'Training Immunizers in the Community Approach' (TICA) is one example of collaboration between the government and an NGO to improve EPI. Initiated in 1986 TICA was designed to assist in implementing EPI more effectively through working closely with government personnel at all levels. In areas where TICA was implemented, better coverage and lower drop out rates than the national average were found. A 1995 review of CARE's TICA program noted:

'One important achievement of TICA is that it helped to create a sense of trust and confidence regarding the delivery of services by linking the worker with the community through regularization of the services at the outreach sites and through social mobilization efforts. This has stimulated people to have their children immunized and for women to accept TT vaccination' (CARE, 1995).

The commitment of NGOs to effective solutions has been demonstrated by their long term involvement with those they work and train. They attempt to deal with health problems using a multisectoral approach, encouraging communities to develop their own capacities to sustain projects and programs (Ritchie et al., 1995). In order for them to continue their success in the years to come it will be important for them to work with the government rather than trying to take its place.

There are many NGOs involved with EPI in Bangladesh. They include BASICS, CARE, BRAC and VHSS. BRAC's research division has documented its involvement with EPI immunization in various research reports which provide valuable information on the way programs are implemented, the problems faced, client attitudes to interventions and reasons for low coverage.

2.ii - Historical Perspectives of EPI in Bangladesh

EPI began in Bangladesh in 1979, but initial efforts were plagued with difficulties. EPI services were delivered primarily through fixed centres, and reached only a tiny fraction of the population. Between 1979 and 1985 'narrow-scale activities, limited man-power, insufficient vaccine supply, inadequate equipment, insufficient transport, limited finance and resources and inexperience resulted in only 2% achievement' (EPI, 1995b).

Phase Two of EPI occurred between 1985 and 1993. Efforts intensified after President Ershad announced to the United Nations General Assembly that Bangladesh would attempt to achieve universal child immunization (UCI) by 1990 (Bhuiya et al., 1995). Strong support and financial and technical assistance was pledged and provided by international donor agencies (including UNICEF, WHO, USAID, World Bank), national NGOs (like BRAC and Proshika), commercial enterprises and community volunteers (Jamil et al., 1996). EPI activities in Bangladesh underwent a dramatic change, as improvements to the delivery system were made, transport systems were redesigned, personnel trained and communities mobilized. Accelerated activities were initiated in 1986 with services being made available in more and more districts, closer to the people. An effective Cold Chain was established, operated and maintained (EPI, 1993). Health workers from the government and NGOs began to register those eligible for immunization and the disease surveillance system was improved to provide information of outbreaks of disease. Mass social

mobilization occurred as immunization was promoted nation-wide, with all levels of society involved: newspapers, TV, radio, religious leaders, and movie and sports stars (Abed et al., 1991).

On the programmatic side, 460 thanas and 88 municipalities were involved in EPI by 1990 (EPI, 1995b). Immunization sessions were held in all hospitals at district and thana levels. The number of outreach sites providing CSD services - not just immunization - to rural areas increased and the results were reflected in rising coverage rates nationwide: between 1984 and 1994, TT acceptance increased from 6% to 67% and full immunization status among children 12-23 months old increased from 2% to almost 60% (Jamil et al., 1996).

The third phase of EPI (1993-1995) built on the successes of the second with project activities being extended. New strategies were designed to raise coverage in a short period of time - the National Immunization Days (NIDs) - and implemented successfully. Problems identified during the second phase such as a lack of community involvement in EPI, underutilization of NGOs and the private sector, poor communication between ministries were all tackled.

During the fourth phase (1996-2000) the issue of sustainability has gained importance since it is clear donor funds will not be available forever. Planners have also had to face falling levels of coverage and efforts are being made to halt the decline. The Institute of Public Health (IPH) has begun to produce the TT vaccine but only in small quantities which are not sufficient to meet domestic need. A sizable proportion of the TT requirement is still imported. Ways to involve the private sector more in the delivery of services are also being considered in an effort to reduce dependency on the donors.

Huc (1991) provides the most detailed account of EPI efforts in Bangladesh. It discusses the financing and implementation of EPI during the second phase, when efforts were at their most intense. It also deals with the question of sustainability, and makes the bold claim that 'even if all external funding were curtailed, the programme could be absorbed within the present health allocation albeit at the expense of other budgeted activities' (Noto et al., 1991).

Section 3 - Programmatic Sustainability

3.i - Coverage Achieved

The levels of immunization coverage are monitored regularly by WHO/EPI and the government. Statistics on coverage, on sites utilized, on disease reduction etc. are all available from EPI who conduct coverage evaluation surveys annually. The following tables are from the 1995 EPI coverage evaluation survey:

Table 3: Coverage By One Year (0-11 months), 1995

Antigen	National	Urban	Chittagong	Dhaka	Khulna	Barisal	Rajshahi
BCG	94	94	93	94	99	96	93
DPT3/OPV3	73	80	70	71	84	82	71
Measles	61	68	61	56	74	76	58
Fully immunized	54	64	53	47	66	65	55

Source: EPI 1995 Coverage Evaluation Survey

Table 4: Coverage By 12-23 Months, 1995

Antigen	National	Urban	Chittagong	Dhaka	Khuina	Barisal	Rajshahi
BCG	95	94	94	94	99	97	94
DPT3/OPV3	84	91	85	82	94	94	79
Measles	78	85	81	73	87	88	71
Fully immunized	76	85	80	72	85	86	70

Source: EPI 1995 Coverage Evaluation Survey

Table 5: Dropout Rates, 1995

Antigen	National	Urban	Chittagong	Dhaka	Khuina	Barisal	Rajshahi
DPT1- Measles	18	10	14	21	12	9	24
DPT1-DPT3	11	4	10	12	4	2	16
TT1-TT2	7	5	4	8	4	5	12

Source: EPI 1995 Coverage Evaluation Survey

Table 6: Percentage of Infants Born Protected From Tetanus, 1995

National	Urban	Chittagong	Dhaka	Khuina	Barisal	Rajshahi
78	84	84	72	86	85	74

Source: EPI 1995 Coverage Evaluation Survey

As the tables show coverage rates have reached impressive levels. Access to EPI (indicated by the percentage of children who receive at least one injection, usually BCG) is high although this gives no indication as to whether or not it is because of EPI that mortality and morbidity rates have been reduced. EPI relies on the completion of a course of injections and the high dropout rates and missed opportunities observed will limit its contribution to lowering mortality and morbidity rates. EPI sought to reduce infant mortality rates (IMR) by 20% and maternal mortality rates (MMR) by 30% (EPI 1995b). It also intended to reduce the incidence of disability (particularly Polio related) and decrease child deaths (age 0-5 years) by one third. The reduction of IMR and MMR through EPI would result in an increased acceptance of immunization and other interventions like family planning thereby contributing to 'effective population control'. However since health and mortality are determined by a range of factors (including sanitation, the availability of clean water, housing, education, nutrition, sex, access to health facilities, income etc.) one has to be careful when claiming that EPI is responsible for reduced mortality or improved health.

Koenig et al. (1991) assessed the impact of immunization on mortality reduction in Bangladesh. They doubt the 'magnitude of improvements in child survival' immunization programs can effect and point out that reductions in disease-specific mortality do not necessarily translate into overall child survival. Children who are fully immunized will continue to be at risk from a range of other non-immunizable but equally preventable causes. Prevention in this case would be in the form of clean water, proper nutrition and safe housing. The study concluded with the well worn recommendation that immunization programs implemented in isolation from other health interventions are 'unlikely to produce radical improvements in child survival given the complex, multi-causal nature of childhood in impoverished settings like Bangladesh'.

Reductions in the incidence of EPI diseases are being observed in Bangladesh (Jamil et al., 1996; Clemens et al., 1988). However the reliability of surveillance and reporting systems has been questioned since less than 5% of Polio, Neonatal Tetanus and Measles cases are actually reported (EPI, 1993; BASICS 1996a). Without an accurate reporting, surveillance and monitoring

system the true contribution of immunization to reducing IMR and MMR can only be estimated. Improvements have been made by training HWs, involving communities in surveillance, and integrating EPI into the national health structure. Provided these continue immunization should continue to be one of the contributing factors to lowering IMR and MMR.

3.ii - Attitudes of Providers

Staff attitudes to their jobs and clients are important since their behaviour and attitude plays a large part in how clients perceive the service. A good reflection of staff attitudes towards EPI can be gauged from what clients say about how they were treated by staff (see section 1.iii, above). Some studies have looked specifically at what staff themselves feel about the EPI and the health services in which they work.

Perry et al. (1996b) assessed providers' knowledge of immunization schedules and doses in Zone 3 of Dhaka city. They looked at the training provided to vaccinators and found knowledge levels high although some providers expressed an interest in additional training. Staff sought more feedback from supervisors, praise for good work, suggestions for improvements and notification of unsatisfactory work.

An earlier study by Perry et al. (1996a) examined the attitudes of field workers (FWs) in mother-child health and family planning (MCH/FP) programs. FWs were reluctant to warn clients about side-effects associated with contraception because they were concerned fear would lead to non-acceptance. This is also true for EPI staff and it is important for them to realize that by not warning clients of possible side-effects, they run the same risk. Clients unaware of potential side-effects are likely to blame them on the FW so damaging their credibility. The only way to avoid this is for the FW to provide accurate information in a way which will be fully understood by the client. For this to happen they need to be well informed themselves.

WIF (1988) surveyed health assistants (HAs), FWAs, and other service providers as 'secondary respondents'. Most were in favour of EPI and viewed immunizations as 'good for the community'. The staff believed side-effects, religious and familial objections, and 'general ignorance' about immunization were the main reasons for non-acceptance of EPI. A few were in favour of house-to-house visits to reduce missed opportunities and catch dropouts.

Ahmad (1997) is an interesting examination into the general state of health services in Bangladesh. It looks at the attitudes of staff at district and Thana level health and family planning centres and hospitals, with regards to job satisfaction, promotion prospects, quality of equipment, availability of drugs etc. and found high levels of dissatisfaction. The paper noted 'a serious lacunae seems to exist in their knowledge of primary health care and its approach to realize PHC targets'. Staff saw the problem of ill-health as resting with the patients and that poverty, illiteracy, a lack of awareness and poor communication between staff and patients all constrained the effectiveness of primary health care in Bangladesh. Another interesting finding was that dropout rates for staff and village health volunteers were very high²⁹.

²⁹A recent study by Khan et al. (1997), from BRAC's Research and Evaluation Division discusses the reasons for dropouts among BRAC's Shasthaya Shebikas. The study may have implications for other volunteer-based health programs.

The SSI pilot study (Islam, 1996) interviewed some providers about their involvement in EPI. All of them 'informed that their training was inadequate', that they had faced financial problems with running the EPI sessions, and that they were in favour of cost-recovery from the people. The main problems they faced included the non-availability of rooms or space for coordinating activities; inadequate spaces for meetings with staff; shortage of vaccines (particularly measles) and other materials; and the overlapping of activities of health and family planning workers on days set aside for EPI.

3.iii - Role of Private Practitioners

Private practitioners have a tendency to be underutilized in EPI (Wright, 1995) and this is very much the case in Bangladesh. A recent survey (EPI, 1995a) found only 1% of children and 3% of mothers received immunizations from private practitioners nationally. In urban areas the proportion was not much better with 3% of children and 14% of mothers being immunized from private sources. Given the problems EPI faces in Bangladesh (shortages of trained personnel and rapid turnover of staff etc.) private practitioners have potential for assisting in EPI.

The private health sector in Bangladesh is extensive and consists of physicians, pharmacists, clinics, health centres, hospitals, NGOs and traditional healers. Amin et al. (1989) looked at the utilization of health providers between 1976 and 1986 and discovered the utilization of formally trained modern providers of health care in a rural area of Bangladesh was almost twice as high in 1976 than it was in 1987³⁰.

Apart from being a reservoir of trained personnel private practitioners can also act as important points of surveillance, disseminate information and health education to clients, provide storage areas for EPI vaccines and equipment, and assist with the registration of eligible women and children. Kirsch and Harvey (1994) examine how private practitioners can contribute to Polio surveillance and suggest ways for the non-medical private sector to participate. They provide the example of Rotary International and discuss its contribution to the global Polio eradication campaign.

Atkinson and Cheyne (1994) in their study of urban immunization strategies recommend greater involvement of the private sector. Participation can be encouraged by offering inducements to doctors (subscriptions to medical journals, for example) and 'providing private practitioners with vaccines, syringes and cold chain refrigerators in exchange for data on the numbers of doses given and disease episodes has proved successful in a number of countries, and is being proposed in Bangladesh'.

The most common reason for non-immunization is a lack of information. People are unaware of the need for immunization, when to get immunized and of the importance of completing a course. They are aware, however, of the location and hours of private clinics, of the costs involved and of the quality of service they will receive. Rahman et al. (1992) found 40% of urban respondents and

³⁰Although an explanation for this could be the health facility in question had begun reducing the number of services offered in 1985. A decline in the quality of care subsequently followed which may have driven clients to use alternative services.

30% of rural respondents used private practitioners. This indicates that private practitioners are utilized more than the 1-3% suggested by EPI (1995b) and that people know where to go for health services. The reasons why people use private sources included dissatisfaction with the quality of government facilities, staff attitudes towards them and unexpected fees they were asked to pay.

Blanchet (1989) looked at some private clinics in Dhaka city (run by NGOs) which provided immunization as well other MCH services. 'Missed opportunities' were minimized by staff asking every woman attending the clinics about their immunization status. Mothers were charged a fee for immunization cards which entitled them and their children to medicines and health care and were given information on immunization. Despite limited resources, the clinics were able to run a door-to-door immunization service which proved popular. Blanchet goes as far as to say that one of the clinics she observed was 'the most successful of all centres in Dhaka' with regards to the numbers of mothers and children fully immunized.

Governments can use more than just their ministries of health when implementing EPI. Abed et al. (1991) show how different ministries worked together in the early 1990s, and Foege (1989) gives the example of the strategy followed in the USA. He notes social norms changed over a decade to the point where even thinking about anything less than universal coverage was 'a breach of social etiquette'. Over the coming years coverage and sustainability will depend more improved delivery systems and better socio-economic conditions than the development of new vaccines. Private practitioners can help with improvements to service delivery since people associate them with curative care and are more likely to respond to advice on preventive measures from a doctor than from a HW. For this reason it is important how practitioners handle the topic of immunization with their clients.

Stefanini (1995) looks at the role of NGOs in the sustainability of health development programs. He notes the best way to proceed is for NGOs to work with governments rather than attempt to substitute the functions of the State. This is applicable to Bangladesh where NGOs like BRAC and Grameen are providing a range of welfare services (not just health), filling the gap created by the government's inability and failure to meet the needs of the people.

While it is important to involve the private sector it is equally important to ensure that strict quality controls are maintained. EPI (1993) makes this point regarding the use of vaccines by private sources. Problems could arise if doctors use vaccines with low potency and clients (especially if they are paying for the service) find their children unprotected. Controls can be implemented and enforced but only if the will exists in those whose duty it is to enforce them.

3.iv - Single EPI versus EPI Plus

At present EPI services in Bangladesh are delivered from hospitals, clinics and health centres ('Static' or 'Fixed' locations), outreach sites (where service providers go to the community), and through mass campaigns like National Immunization Days (NIDs) and Vitamin A weeks. Each has its advantages and disadvantages and planners have to decide which is most appropriate. Further improvements will require the implementation of a cost-effective mix of fixed, outreach and mobile service delivery strategies, which take into account both when and where clients can reach the service.

In an examination of different strategies for immunization delivery Dick (1985) looked at the strengths and weakness of different strategies. Delivery from static/fixed sites have the advantages of linking immunization to other services (Islam et al., 1992), making record collection easier and avoiding travel costs for staff. The major weakness of such strategies is that success depends on a community's willingness and ability to use the services provided, which in Bangladesh is known to be problematic. Also coverage from a fixed site is likely to be low until infrastructure developments have taken place.

Bangladesh began holding NIDs in 1995 and successfully provided over 80% of target children with OPV and Vitamin A supplements to prevent Polio and Night Blindness (EPI, 1995a; Quaiyum et al., 1996). However, the effectiveness of pre-event promotional activities is questionable since the main reason for non-attendance was a lack of awareness about the need for further visits (BASICS, 1996a; Watch Report number 21, December 1996).

The advantage of outreach services over fixed sites is that they take services to communities and by doing so are able to cover an area more thoroughly. HWs get to know clients on an informal basis outside the hospital environment, which makes people more receptive to new ideas and information. Almost every study reviewed found outreach services provided the main source of immunization in Bangladesh although the cost effectiveness of such sites is questioned (see section 4.ii). Disadvantages of such strategies include high travel and transport costs for staff and equipment, problems with supervision, vaccine wastage and time spent travelling to and from location.

Some strategies are described as 'vertical' since they involve services being supplied to communities whose role it is to act as recipients. Mass campaigns may raise coverage in a short space of time 'provided there is good planning and promotion, national commitment, inter-sectoral co-operation and community participation' (Dick, 1985) but they are very expensive and cannot be conducted regularly. A vertical program when added to an already strong health infrastructure can reinforce and benefit from it. However if added to an already weak and underdeveloped health system, a vertical program may affect services adversely as staff reallocate their time for new 'priority services', so neglecting other routine but important services (Cairncross et al., 1997).

In Bangladesh the early EPI campaigns involved all of the strategies described above, although in recent years the lack of promotional activities is noticeable. 'Moni' logos and EPI flags, messages and stickers are displayed sporadically - mostly at hospitals and NGO offices - and EPI advertisements have almost completely disappeared from advertising boards. NID promotional efforts are still failing to convey the message about EPI, since people claim they are unaware of the need to attend both NID sessions. Dick (1985) lists a number of problems associated with mass campaigns including their disruption of regular health services, problems with securing and sustaining political and popular interest and enthusiasm for the campaigns, and maintaining inter-sectoral cooperation between different ministries, donors and bureaucrats.

Quaiyum et al. (1996) explain why only OPV and Vitamin A were provided to children during NIDs: other EPI vaccines were not included in the campaign because additional trained personnel and resources would be required to deliver injections'. This means innumerable opportunities to give

the other EPI vaccines were missed because of a lack of properly trained staff. The study recommended the inclusion of other services (information on other health and family planning issues, for example) with EPI delivery particularly in areas of low coverage.

Planners in Bangladesh have recognized the importance of delivering a range of services when possible to the community rather than single interventions. EPI outreach sites currently provide a range of CSD interventions. This 'EPI Plus' strategy adds essential services to EPI to give populations access to services they would otherwise have to travel to a hospital to receive. Mendis et al. (1991) discusses six 'do-able' interventions which have been added to EPI in recent years. They include Vitamin A supplements, the promotion of breast feeding, ORS distribution, family and safe motherhood services, the identification of 'at-risk' pregnancies and Iron folate distribution. These low-cost, do-able services and transfer of knowledge would not only have a direct positive impact on maternal and infant mortality but would also help increase the utilization of primary health services' (ibid.)

Dix (1986) notes immunization is no substitute for general improvements to socio-economic conditions as a means of improving public health and preventing disease. Single interventions attempting to work the miracle of the magic bullet are unlikely to be effective, affordable or sustainable in the long run. They require constant political and resource commitment, and involvement from the community in implementation and organization. These as shown are problematic at the best of times.

Chen (1986) argues the provision of primary health care is a 'complex and cumbersome' process, although it is preferable to a single-disease approach which 'excludes consideration of measures that operate against multiple causes/agents through different mechanisms'. Other non-medical interventions (such as the education of women, improvements in household incomes etc.) which contribute to lower child mortality should also be incorporated as part of a health strategy, to help people deal with those socioeconomic factors which injections do not protect against.

It is logical in conditions of scarcity to integrate curative and preventive services which communities can access at minimal cost. EPI (1993) found 'considerable potential' for combining health and family planning services at the community level. Outreach services allowed for as many as 15 million programmed contacts between mothers and HWs. However it was noted not all CSD services were provided at every site, and the promotion of breast feeding, Iron/Folic acid supplements, treatment of acute respiratory infections and provision of growth monitoring and nutrition advice was irregular. Quality of service varied between sites and no set standards were specified³¹.

Strategies which offer a range of interventions (EPI Plus) extend access of important health services to the community whilst a more comprehensive national health infrastructure is developed. Such strategies are relatively inexpensive and cost-effective, and develop a relationship between the client and provider which in turn may lead to communities being more

³¹Of great concern was the finding that 'the dose of vitamin A supplement being given to infants under the age of six months (50,000 IU) is two times in excess of the dose of 25,000 IU being considered by a WHO/IVACG consultation' (EPI, 1993).

willing to contribute their own resources to the upkeep of services. Chowdhury et al. (1995) show how delivery of a range of essential health services to a target population occurred through its Health and Population Development Program. Strøefland and Chowdhury (1990) examine how NGOs in Bangladesh are already involved with providing health services to populations where government facilities are lacking, as well as organizing and mobilizing demand creation activities.

3.v - Reducing Missed Opportunities and Dropouts

Efforts to increase and sustain EPI coverage in Bangladesh will need to address the problems of high dropout rates and 'missed opportunities'³² (see table 5, above). Reasons for missed opportunities and dropouts will vary but a major one is the failure of staff to inquire about the immunization status of every woman and child attending the health facility (Clements, 1996; Heggenhougen, 1995). This failure to screen leads to people being missed by the routine surveillance and immunization system (Wright, 1995). As a result clients are unaware they need to return to complete the course of injections so contributing to high dropout rates.

One example of dealing with the problem is from China (Grant, 1992), which has coverage rates of over 95%. Missed opportunities and dropouts were minimized by the national registration of every birth. Local doctors notified parents individually every time an infant was due for vaccination. The individual notification system means that dropout rates have been reduced to less than 2%. In addition to this an 'immunization contract' was introduced where parents paid a one-time fee when a child was born which guaranteed the provision of all EPI injections. If the child then contracted any of the EPI diseases the family received compensation from the government. This system in a country as large, populous and poor³³ as China could have potential in Bangladesh.

The severity of the dropout problem in Bangladesh is reflected in (EPI, 1995a) which found rates of dropout for DPT1-Measles to be 18% and DPT1-DPT3 11%. There were significant regional variations with Rajshahi's dropout rate for DPT1-Measles 24% and Dhaka's 21%, well above the 'accepted rate' of 10% (EPI, 1995a). Perry et al. (1996b) in their study of immunization in Dhaka city note 'a conservative estimate of the rate of missed opportunities at the MCH-FP clinics for the promotion of immunization is 43% for children....for women the rate of missed opportunity for maternal TT immunization was 87%....'. Another study by Perry et al. (1997) conducted in the same location found dropout rates of between 3-11% for TT1-TT2, and between 70-82% for TT1-TT5, depending on the group of women. Similar high rates of dropout and missed opportunity are noted in Kofoed et al. (1990), Islam et al. (1992) and Rahman and Islam (1993), all of which provide good accounts of the steps being taken by staff at the ICDDR,B hospital in Dhaka to reduce missed opportunities and dropout rates. Islam et al. (1992) in particular note the system appears to have had some success but replicability will depend on the will and commitment of senior management and staff and the mobilization of human and financial resources. Sustainability will depend on the institution of a monitoring and feedback system by the staff involved.

³²Missed opportunities occur when women or children eligible for immunization attend a health care facility but leave without being immunized. Dropouts are when a woman or child begins a course of TT/EPI injections but fails to complete it.

³³China's GNP/capita in 1989 was \$350 - not much greater than that of Bangladesh (\$180) or India (\$340). Source: Grant (1992).

Clements (1996) provides five ways to reduce missed opportunities. They include screening women and children at every contact with the health system; administering all required vaccines to eligible children ('the vaccines currently used in EPI can all be given simultaneously'); clarification of true contraindications and avoidance of false ones; regular training of staff on ways to screen and register clients; and the opening of multi-dose vials when needed³⁴.

'Pockets of low coverage' in the slum areas of urban Bangladesh will require special attention from policy makers. BASICS (1996a) notes the 'floating population' of Dhaka - who are poorer and more mobile than even slum populations - are difficult to locate and will contribute to dropout rates and missed opportunities. They need to be targeted not just by EPI but by other health services to ensure that they too are covered against the EPI diseases. At present they are missed because no-one knows exactly who or where they are.

If the proportion of fully-immunized children is to increase, EPI in Bangladesh has to do more than just achieving a single contact with children and mothers. Success will rely on at least four contacts being made. The continued missing of opportunities to immunize should be focused on as a major problem and solutions, such as those suggested above, be implemented.

3.vi - Monitoring and Surveillance Systems for EPI

An accurate and efficient monitoring and surveillance system is essential to any program of immunization. Progress is measured by coverage rates but a more important measure, that of effectiveness, also has to be made. The effectiveness of an immunization program is reflected by the reduction in the incidence of target diseases (Abeyesundere, 1991). Surveillance systems help identify outbreaks of disease quickly and allow for rapid intervention. Monitoring systems provide up to date information as to whether or not target reductions are being achieved.

There is already a surveillance and monitoring infrastructure in place in Bangladesh. The staff, standardized reporting forms for EPI diseases, case definitions etc. are all established at national, district and thana levels (EPI, 1993) and contribute to identifying areas of high and low coverage. The system has thus far indicated declining rates of incidence of the target diseases in recent years (but more recently has begun to show falling coverage rates for all antigens). Costs of surveillance in Bangladesh until the year 2000 have been estimated to be Taka 600 lakh, to be financed by UNICEF [440 lakh], USAID [110 lakh] and the World Bank [50 lakh] (EPI 1995b).

EPI progress is monitored by supervisory visits, coverage evaluation surveys and periodic reviews of field data (Abeyesundere, 1991). Records of vaccination sessions are kept using tally sheets at EPI sites, which municipal authorities then compile into a monthly report. Disease reporting is done using sentinel surveillance sites - infectious disease hospitals, departments of pediatrics and medical college hospitals (EPI, 1993). Information on MCH and family planning collected by FWAs and HAs is now being used as part of the surveillance system.

³⁴One of the main reasons for missed opportunities has been the reluctance of staff to open multi-dose vials for a single child.

There are a number of problems with the surveillance and monitoring system in Bangladesh. EPI (1993) found 'the present system reports less than 5% of the estimated true incidence of Polio, Neonatal Tetanus and Measles'. Information and statistics on disease collected by the Health Information Unit (HIU) of the Director General of Health Services (DGHS) is regularly not passed (or passed late) to the EPI office, which affects the monitoring and evaluation of the program.

Problems were also found with the sentinel reporting system. The 1993 EPI review team concluded that it was 'not yet a reliable system either for the detection of trends or to serve as a basis for corrective action'. The collection and compilation of information was considered 'passive', with poorly trained staff unaware of the importance of surveillance and its relationship to service delivery. There was rarely any active searching for cases of target disease by FWAs and HAs and private practitioners did not report cases since EPI had failed to involve them. Solutions recommended by EPI (1993) included better training for staff with emphasis on case definition, outbreak control measures and the importance of surveillance/coverage links. The sharing of information between health and family planning workers and between the HIU and EPI was also encouraged.

Ahmad (1997) in his analysis of government health centres and hospitals noted 'the management of medical records in district hospitals has been a casual affair and are thus not properly maintained. This indicates that no medical history of a patient can be recorded and no institutional memory retained in these hospitals whereby new staff arrivals can maintain continuity in a hospital's relations with its patients'.

A recent study by Khuda, Kane and Phillips (1997) examined the information and record-keeping systems of FWAs and HAs. They evaluated the design and implementation of a client-oriented longitudinal record-keeping system, which has been in operation in Bangladesh since 1989. A 'second-generation' of the system was introduced and adopted in 1993 as part of the national program.

BRAC has been involved with the development of a Community Based Disease Surveillance System (CBDS) for its health and population program (BRAC, 1996). It recognized a number of problems with the existing system, such as inadequate training of HAs and government health workers to recognize symptoms of disease, incorrect reporting of diseases by the community and field staff, a fear of accountability in the event of case identification etc. The system BRAC is trying to establish involves using members of the community as points of information about the health of a community. Volunteers are selected according to their status in the community (like respected elders and teachers who are socially acceptable to others), their mobility (social and physical), their education, and their willingness and ability to work as volunteers.

BRAC has a second system of surveillance which deserves mention - the *Watch* system. Begun in 1986, this 'nationally representative intensive monitoring system' (*Watch Report* number 23, December 1996) collects demographic and socioeconomic data from 70 villages in 10 districts all over Bangladesh which is constantly updated. The aim of the system is to assess the changes precipitated by a range of development programs, including health, education, income generation and women-specific projects. Data and findings are published in a series of *Watch Reports*.

Kirsch and Harvey (1994) discuss the importance of surveillance systems for the eradication of Polio and suggest surveillance can be strengthened by the inclusion of the private medical and non-medical sectors. NGOs in Bangladesh use HWs who work in villages and areas where government facilities do not reach. They can act as valuable sources of information and should be utilized as such. Kirsch and Harvey (1994) also point out that ordinary people, if shown how, can recognize symptoms of disease in their communities and report them. By training communities in disease surveillance and encouraging them to report outbreaks, EPI might create a more active sense of participation in both rural and urban areas (BASICS, 1996a). This could in time lead to communities being more interested and more involved in broader health issues.

Section 4 - Financial Sustainability

4.i - Financing EPI in Bangladesh

The costs of EPI in Bangladesh over the next five years are laid down in the EPI Project Proforma 1995-96 to 2000 (EPI, 1995b). It sets out the strategy to be followed and details which costs will be borne by the government and donors. Between 1996 and 2000 EPI will cost an estimated³⁵ Taka 41035.85 lakh - or \$98,881,566³⁶ The Government of Bangladesh (GOB) is expected to provide Taka 17514.98 lakh (\$42,204,771), or 43% of the total cost. Foreign assistance will account for the remaining 57%, and will be in the form of project aid and grants from UNICEF, USAID, WHO, Japan and the World Bank. The World Bank will provide additional funds in the form of loans.

Three areas of expenditure constitute over 75% of the total cost for EPI. They include the cost of importing vaccines (\$55,308,891 - 55.9%), customs duty and VAT (\$13,734,939 - 13.9%) and the payment of staff salaries (\$6,040,457 - 6.1%). The government will cover costs for salaries, building construction/upgrade and maintenance, vehicle costs, customs duty, VAT and part of the vaccine procurement. Donor funds will be used for training staff, cold chain upgrade and maintenance, vaccine procurement, technical equipment and social mobilization.

If EPI in Bangladesh is to be sustained it is imperative ways be found to reduce the costs of vaccine procurement. This can be done either by producing them locally or working with other countries in the region (possibly SAARC?). Bangladesh currently produces the Tetanus Toxoid (TT) vaccine, however its quality and potency have been questioned by WHO and others (Hlady et al., 1992)³⁷. There is also concern about the lack of an independent national control authority to monitor standards (WHO, 1994). The quantity of TT produced is not sufficient to cover local needs and it is still procured from abroad to meet domestic demand.

If the production of EPI vaccines on a local or regional basis is not feasible there are other steps which can be taken to lower costs. These include the reduction of vaccine wastage³⁸ and better matching of vaccine vial size to session numbers (EPI, 1993). The technology and resources

³⁵Estimates were made in March 1995.

³⁶Using an exchange rate of \$1=Tk. 41.5, as specified in the report.

³⁷Hlady et al. (1992) found the potency of Bangladeshi produced TT vaccine to be ineffective and 'a WHO reference laboratory reported no potency in three consecutive lots of tetanus vaccine from the production lab in Bangladesh'.

³⁸The pilot study for the SSI project found in four of the outreach immunization centres that 'wastage of vaccine doses was 80% for BCG, 60.7% for OPV, 52.5% for Measles, 38.9% for DPT and 30.2% for Tetanus Toxoid' (Islam, 1996).

already exist to improve the cold chain, and care should be taken to maintain them since replacement will be high.

Noto et al. (1991) examined the cost effectiveness of EPI in Bangladesh just after the 'near miracle' had been achieved. Foreign assistance counted for 68% of total cost, with the government financing the remaining 32%³⁹. At the time the authors were optimistic about the prospects for immunization in Bangladesh: 'given that the country produces its own TT vaccines, and has plans to expand into other antigens, it is reasonable to conclude that EPI will continue indefinitely'. The production of other EPI vaccines has in fact not begun in Bangladesh, and 'without adequate supplies of vaccine, it is clear that the whole program will be brought to a halt, or at least slowed down' (EPI, 1993). While this last comment may be a bit extreme it nonetheless emphasizes the problem of continued dependence on donors for vaccine supply. By not finding alternative sources for vaccines (domestic or regional) efforts at sustainability will be continue to be hamstrung.

The GOB implements EPI in partnership with international donors and national NGOs. It has thus far not harnessed the considerable resources and contributions of the private sector. Costs of maintaining the cold chain and transporting staff and equipment might be lower if private sector companies, with already have trained staff and resources, were brought on board (EPI, 1993) - as long as quality controls are maintained and enforced.

Khuda, Kane and Phillips (1997) raise the issue of community financing, since resource constraints will require ways to improve cost recovery and the efficiency of resource use in the public sector. The principle of 'User-Pays' has apparently 'gained wide acceptance in private sector health care' (amongst those who are able to pay), and the wider introduction of health service charges (based on 'ability to pay') is forecast. It is interesting to note that USAID will be one of the main donors to the National Integrated Population and Health Program (NIPHP), to be implemented between 1997 and 2004. NIPHP will focus on the problems of EPI and family planning dropouts, improving service delivery to the underserved, and reaching 'non-users' of the health system (Khuda, Kane and Phillips, 1997).

In 1991, EPI formed less than 4% of the national health and family planning budget (which was 5.6% of the total budget). It would be interesting to see what percentage of the health and family planning budget EPI secures over the coming years. What will also be interesting to observe is the NIPHP, and its effect on the development of national health infrastructure.

4. ii - Cost Effectiveness of Strategies

The EPI in Bangladesh is currently implemented through three main strategies: fixed facilities, outreach clinics and national campaigns. The cost and cost-effectiveness of each strategy will differ and to be financially sustainable is important to use the most effective and cost-efficient combination of strategies. What is also important to consider (especially when considering the issue of community demand) is the cost effectiveness from the point of view of the client. Most cost-effectiveness studies 'focus on the cost of *providing* EPI rather than the cost to families of seeking immunization services' (Brenzel and Claquin, 1994).

³⁹The government's share of EPI costs had risen to 43% by 1995 (EPI, 1995).

Brenzel and Claquin (1994) conducted a series of cost-effectiveness studies on immunization strategies from different Developing Countries. Although they do not look at Bangladesh specifically⁴⁰, their findings have important implications for the program here. By comparing the strategies used and results achieved, planners in Bangladesh will know what problems to look out for. Comparing the cost effectiveness of strategies which seek the same outcome (i.e. fully immunizing as many eligible children and mothers) will enable planners to choose the best combination to reach the target population, given fixed (and scarce) resources (Brenzel, 1990).

A cost effective strategy is one which maximizes the number of fully immunized children (FIC) using as few resources as possible. Immunization is regarded as a cost effective means to lowering child mortality since the unit cost of a vaccine is lower than the cost of treating the actual disease. This is a somewhat artificial way to reason things since the total cost of a vaccination campaign is never only the combined cost of vaccines supplied. Total costs will include staff salaries, costs of running and maintaining transport systems, the cold chain and buildings as well as costs incurred by the client. Add to this the cost of social mobilization and awareness-building programs and the total is often a great deal higher. It is a governments' willingness and (more importantly) ability to bear these additional and recurring costs over an indefinite period which will determine the sustainability of a program.

Vaccine procurement costs account for a significant proportion of the total cost of EPI in Bangladesh. If EPI is to be sustained it is important to strengthen the government's ability to meet these costs as donor contributions decline. The choice of strategy will affect the cost of the program especially since there can be as much as a threefold difference in the cost of vaccine depending on the strategy used - i.e. from fixed sites, outreach sites or through national campaigns, e.g. NIDs (Feilden, 1990).

Cost effectiveness is affected by a number of factors. Most important is the level of output, or number of children and mothers covered. Economies of scale should lower costs as more children and mothers are immunized and EPI becomes better known to the population. In Bangladesh however due to the relaxing of social mobilization efforts, people are still unaware of the importance of immunizations which means costs will continue to be high given high dropout rates and missed opportunities. With falling coverage across the board for all antigens EPI is facing serious problems in Bangladesh.

Worker productivity (determined by the training and support services available to staff) affects cost effectiveness of a program as do the technologies used. Brenzel and Claquin (1994) observed the use of inappropriate equipment in parts of Africa which were difficult to maintain and expensive to replace. EPI (1993) noted parts of the cold chain in Bangladesh were soon to be out of date and would require replacing over the next five to ten years. This is likely to be costly if not planned for properly.

Brenzel and Claquin (1994) show that fixed facilities fully immunize more children than either the outreach or campaign strategies. They were found to be the most cost effective with 'forty times

⁴⁰The countries studied were Tanzania, Mauritania, Turkey, Burkina Faso, Senegal, Cameroon, and the Philippines.

more children fully immunized by routine services in fixed facilities, than by mobile teams' (Brenzel, 1990). A wider range of services was also provided at fixed facilities, where clients received MCH care, family planning and nutritional advice.

Single-intervention campaigns (NIDs which only provide OPV for example) were considered least cost effective, although the high cost per child may have been outweighed by the rapid increase in coverage rates. The NIDs in Bangladesh only provide OPV and Vitamin A so their effectiveness in reducing Measles and other EPI diseases will be limited. While campaign approaches may increase coverage rapidly they have been criticized for being costly and unsustainable. The 'vertical' nature of the strategy does not contribute to the development of a health infrastructure and 'in some countries EPI activity fell back to earlier levels after a mass campaign, raising questions about the sustainability of these strategies' (Brenzel, 1990). Planners in Bangladesh should take note.

Financial sustainability will depend on the extent to which the foreign exchange requiring components (vaccine procurement, cold chain equipment etc.) can be met by the government. Countries with higher GNPs per capita will be better able to finance costs, therefore 'EPI program and financial sustainability may depend to a greater extent on national economic development' (Brenzel and Claquin, 1994). The GOB has increased its share of total costs from 31% in 1991 to 43% in 1996 (Noto et al. 1991; EPI, 1995b).

Cost patterns for each strategy need to be examined by planners. Salaries and wages will be a sizable category for all strategies. Fixed facility strategies will have high cost for buildings, whereas campaign and outreach strategies will entail higher vehicle, transport and vaccine costs, due to higher quantities of vaccine wastage.

Summary and Conclusion

This paper set out to review the literature on immunization and EPI in Bangladesh. It intended to lay out what is already known about immunization and EPI in Bangladesh and the problems which are likely to be faced. This final section reviews some of the main findings and discuss where EPI in Bangladesh may be heading.

What is clear from the literature is that planners already know about the problems the EPI faces and their possible solutions. This may lead one to question the necessity of the Social Science and Immunization (SSI) study, since there are numerous studies which seem to have done what the SSI study is currently doing. The main justification is that those studies which take an in-depth look at the perceptions of peoples' knowledge, attitudes and practices with regard to immunization were all conducted at least a decade ago. The BRAC-ICDDR,B study will allow us to see whether or not perceptions and practices have changed. The study will enable planners to see if those 'possible solutions' are workable in existing conditions and help them to redesign their program. One important point of the study is that it will confirm whether or not community demand for EPI has in fact been increased by social mobilization and awareness raising activities. Given coverage is falling nationally the study will help clarify whether this fall is as a result of declining demand or a faltering delivery system.

It emerged from the literature there is a variety of local names and terms for the six EPI diseases. Some are descriptive of the symptoms of the disease, while others are linked to the perceived causes of the disease - namely evil spirits or 'bad wind'.

Awareness about EPI and immunization varies for a number of reasons (more effective promotion by one health worker, for example) but knowledge of specifics (doses, which vaccines deal with which diseases etc.) was poor. People were also unclear when children should receive their injections.

Demand for immunization will be affected by a series of factors involving the accessibility, availability, acceptability and affordability of EPI to the client. Supply and demand factors both affect EPI as they do the utilization of the health system as a whole.

Client attitudes to staff and service delivery were on the whole favourable although there were many instances where staff attitude to the client was poor. Clients often complained about being shouted at by staff. Staff-client relations not just for EPI but in the health system as a whole need to be improved and this is one area where planners should focus on for the future.

Low coverage (and recently falling coverage) can be accounted for in part because of certain barriers to immunization. These barriers prevent clients from receiving or wanting to receive immunizations and exist in a number of forms. They include economic (cost of travelling to the EPI site, losses in income, cost of vaccination cards etc.), social (the restricted mobility of women and children, the belief in alternatives to immunization, the education - or lack of it - of parents etc.), geographic (hard to reach rural areas and traditionally neglected slum areas in cities) and systematic (problematic delivery of vaccines and vaccinators, unmotivated and untrained staff etc.) factors. To raise coverage and keep it raised planners will have to acknowledge each of these barriers and deal with them.

Much of the literature focused on those factors which affect immunization status; they examined the characteristics of communities and areas which accounted for either higher or lower than average coverage. Each noted to differing degrees that place of residence, family income, level of education (particularly of mothers), distance between EPI site and house, contact and frequency of contact with field and health workers, family size, birth order and sex of the children affected immunization status.

Gender discrimination was seen to exist for immunization status just as it does for other areas of life in Bangladesh. The disparity in fully immunized status between girls and boys was found to exist, with female children consistently less likely to immunized than male children. Initial findings from the BRAC-ICDDR,B study currently being conducted support this.

Community participation in EPI in the form of community volunteers being involved in surveillance and registration activities, and health workers informing and motivating mothers to get immunized has continued. While there has been a scaling down of mass mobilization efforts, NGO and government health workers continue to involve 'the community' as best they can. Participation continues to take different forms with involving people more actively than others.

For EPI to be a success it needs to achieve and maintain a high level of coverage. According to many of the sources reviewed coverage rates in Bangladesh took a downturn in 1996 and are falling. This downturn, according to some, may have occurred as early as 1994. If this is the case then one way to halt the fall might be to start up the mass mobilization activities. As mentioned in the main review the best way to sustain demand for EPI (and therefore coverage) is to promote it constantly and actively. At present all that occurs are periodic reminders in the form of National Immunization Days.

The potential for involving the private sector (medical and non-medical) in EPI in Bangladesh has been discussed. The most important issue involves quality control and if private practitioners are to be involved with the delivery of vaccines then there has to be some form of monitoring and ensuring that the quality and potency of vaccines is maintained.

It is clear the EPI in Bangladesh has begun to run into trouble. To blame the withdrawal of donor funds as the cause seems as if blame (and responsibility) is being passed on. The decline of donor contributions to EPI will undoubtedly affect the sustainability of the program but planners (both national and international) should and could have foreseen that donor money would not be available indefinitely. Sustainability should have been planned for from Day One and to start planning for a program's sustainability only when it begins to run into trouble is poor management and design. We may not be able to see into the future but in many instances we can anticipate it.

What direction should EPI take in Bangladesh? From the evidence and histories of other EPI programs, one would suggest the program revamp its promotional activities to raise awareness (and demand) once again. Training for staff has already begun, with government workers being instructed by NGOs on how to improve interpersonal skills. Incentives (better pay?) for good performance by health workers and vaccinators might improve individuals' motivation and then performance. Politicians might (and this is difficult for them) attempt to be less rhetorical in their speeches, and act more. The fact that staff at the Institute of Public Health vaccine production laboratory have not received their salaries for seven months and are having to resort to petitioning the Prime Minister in person demonstrates that bureaucratic and administrative red tape and inertia account for some disruption to the running of the program. To suggest changes to this system is nothing new and one is fully aware that effecting change is a great deal more difficult than suggesting it.

The EPI aims to reduce and eradicate certain diseases using immunization as the tool. It is not an inexpensive process and success is dependent on important complimentary investments being made by the government to improve wider socioeconomic conditions. Public health improvements in Bangladesh will not be sustained if EPI continues to rely on outreach sites, annual campaigns, donor funds and magic bullets. Wondering about the sustainability of any development program - including the EPI - while poverty and the conditions which go with it remain untackled is merely wishful thinking. To rest on the laurels of the 'Near Miracle' is no longer sufficient.

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every time, for one reason or another, the matter is buried'. Political commitment it appears does not run very deep or very long.

The Government's most recent Five Year Plan (for the period 1995 to 2000) contains a set of broad objectives for health development in Bangladesh. Included are improvements in the health status of the population, particularly children; the consolidation and strengthening of primary health care and support services; the delivery of improved family planning and welfare services; the prevention and control of the six EPI diseases (including the elimination of Polio by 2000); improving the nutritional status of children and mothers; and the adequate production, supply and distribution of essential drugs and vaccines²⁶. Importance will continue to be given to EPI, and 'all field level workers and their supervisory staff including doctors are to be fully involved, mobilized and made accountable for the efficient and effective implementation of EPI' (EPI, 1995b)²⁷.

To ensure the sustainability of EPI the government has to be committed to wider socio-economic development for the whole country. Immunizations may provide a cost-effective means to reducing the risks for children and pregnant mothers, but on their own they are no guarantee of good health. The only way the health of the nation can be assured is by improving socio-economic conditions. Poverty needs to be reduced and environmental changes - the provision of proper sanitation, housing and improvements in nutritional status - are necessary not only to eliminate the conditions in which diseases fester and spread but also to enable children to physically combat ill-health. To do this requires more than just shots in the arm, and is a task to which governments and politicians should be committed (Reid, 1989).

UNICEF (1995) provides an account of its involvement in Bangladesh and the role it played in EPI, by procuring vaccines and equipment for the cold chain. It details UNICEF's relationship with Bangladeshi NGOs like BRAC and the Grameen Bank, with whom it continues to work.

Rotary International committed itself at the start of EPI to providing funds for all Polio vaccines until 1993. It has extended this commitment by agreeing to partially fund the Polio eradication campaign until 1997, assisting with the costs of social mobilization activities. USAID and UNICEF will also continue to finance social mobilization and awareness-raising activities.

NGOs like BRAC and CARE have been involved in EPI from the outset, demonstrating a sustained commitment to the provision of all forms of health care. Streefland and Chowdhury (1990) examine the long term role of NGOs in health care in Bangladesh, and point out how they fill the considerable gap between the needs of the people and the low-quality care offered by the government. NGOs in Bangladesh train and involve local people in their programs who in turn inform others about effective, low-cost solutions to health problems²⁸. They have demonstrated their commitment in the way they work with people, and it is mainly due to the efforts of NGOs and

²⁶For an interesting account of Bangladesh's Essential Drugs Policy see Zafrullah Chowdhury (1996), The Politics of Essential Drugs: The Makings of a Successful Health Strategy - Lessons From Bangladesh, University Press Limited, Dhaka.

²⁷EPI Project Proforma 1995-96 to 2000 provides a breakdown of all estimated costs of EPI for Bangladesh, the contributions to be made from donor agencies, and the strategies to be followed by EPI over the next five years.

²⁸For a good account of one NGO's campaign to promote such an intervention see Chowdhury and Cash (1998), 'A Simple Solution: Teaching Millions to Treat Diarrhoea at Home', University Press Limited, Dhaka.

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