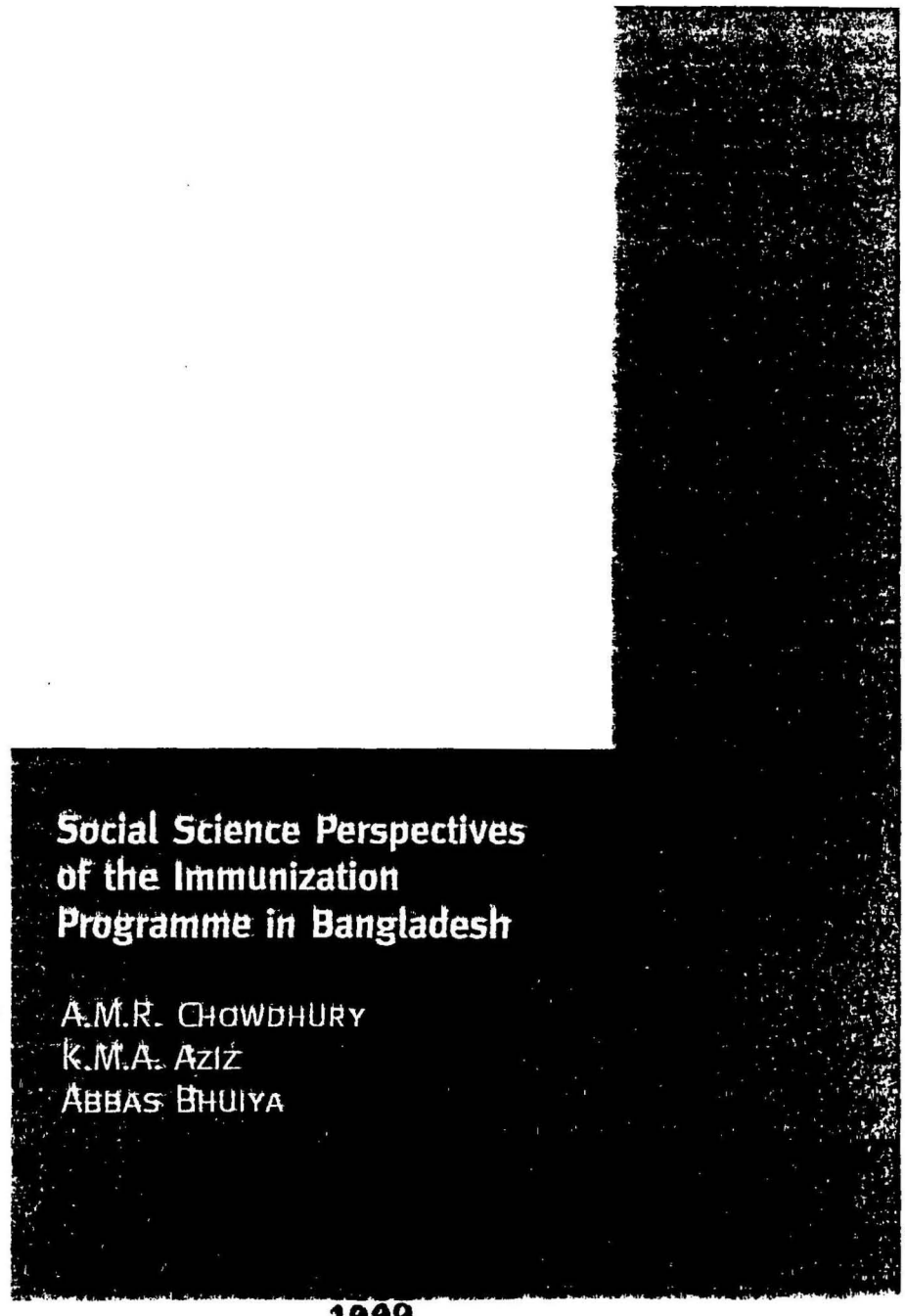
The 'Near Miracle' Revisited



CHAPTER 3

IMMUNIZATION IN BANGLADESH

Immunization has been used for many years Bangladesh. Greenough (1980) examined the transition from variolation to variolation-vaccination to intensified-vaccination. Variolation was widely spread, carried out by a category of professional inoculators (*tikadars*), who by experience learned how to minimize risks of negative side-effects. Smallpox has a long history on the subcontinent. As McNeill notes:

> 'smallpox ... was of considerable significance in Hindu India from time immemorial – however long that may be historically. Unfortunately, absence of records permits no account whatever of Indian encounters with infectious disease before 1200 (McNeill 1976: 144).'

It seems that inoculation was known and used in the middle of the eighteenth century in and around the region that is now known as Bangladesh. Vaccinators were known as '*tikadar*'. The *tikadars* charged a fee for their services, and evidence suggests that they earned between 80 to 90 *rupees* a month during the inoculation season. Smallpox usually struck in the months of February to April (Arnold 1993). Holwell reports on the activities of *tikadars* by saying that the inoculators worked in the style of a campaign.

> 'Inoculation is performed in Indostan by a particular tribe of Brahmins, ... they plan their traveling circuits in such a way as to arrive at ... their respective destinations some weeks before the expected return of the disease; they arrive in common Bengal provinces early in February. The inhabitants of Bengal, knowing the usual time when the inoculating Brahmins annually return, strictly observe the regimen. The operator takes his fee ... Then he goes to another door ... And is thus employed from morning till night, inoculating sometimes 8 to 10 in a house. (Holwell 1767: 23).'

The noun *tika* in Bangla means vaccination but also pock scar. It is said that *tika* comes from the word *gutika*, meaning small bead. *Gutika* comes from the word *guti*, having the same meaning but for a the larger bead. According to Nicholas, the Bangla word *tika* is derived from the Sanskrit *vatika* which means a small lump or globule. This term was later used to refer to the act of vaccination:

'It was based on the idea that smallpox was produced from a seed (bija) mixed with the blood of a person, implying a theory of infection not contained in the Ayurvedic humoral explanation of the disease (Nicholas 1981: 28).'

Mass vaccination and the colonial state

Harish Naraindas makes an interesting point about *tika*, that *tika* introduced by the state interfered with the privacy of the person's body. In 1850, every vaccinated child was given a 'Note and Ticket', as kind of a recognition for the *tika*. By then, the pock had become an externally visible symbol. It was not only a symbol of the internal state, but of the State (Naraindas 1997: 11). It indicated that the vaccinated person had not only had the disease and was protected, but that they were also branded with external marks.

The introduction of the Jenner vaccine started in 1798 in England. It took four years for the vaccine to make its way to Bengal. From 1802 to 1865, both immunization systems, variolation and vaccination, ran side by side. During the 19th century in British India, the colonial state gradually imposed vaccination on the entire society, repressing variolation in the process. This was not a smooth development, but was characterized by confrontation and resistance (Naraindas et al. 1997).

In the spring of 1849, half a century after the advent of vaccination in Bengal, Calcutta was ravaged by an epidemic of smallpox. To find the root cause of the dreadful disease, the British government set up a commission to inquire into its causes and method of spreading, and suggested measures to ameliorate it. The commissioners submitted their reports in July 1850. There was a widespread belief, among the Bangali population, that vaccination no longer worked, but the commissioners believed otherwise. They were convinced that inoculation was the devil. The only way to solve the problem was to stop inoculation by 'public enactment and penalties' (Report 1850: 57). In 1880 the compulsory National Vaccination Act was passed. However, the colonial regime hesitated to enforce it, being nervous about resistance (Arnold 1993: 155).

Vaccination after Independence

When Pakistan came into being in August 1947 it had to face immense difficulties in organizing the health services. Two of the main provinces of India, Bengal and Punjab had been partitioned, resulting in the dislocation of

the health services. This was felt the most in East Bengal (now Bangladesh), because Calcutta the centre and capital of Bengal, and to cut off Calcutta meant total dislocation of all services and service personnel. The lack of efficient manpower was one of the serious problems in East Bengal. The medical and technical staff were mostly composed of Hindus, and after the partition most of them left East Bengal for the new India, leaving the medical institutions ill equipped and ill staffed. The following statement of Moulana Akram Khan, the then leader of ruling East Pakistan Muslim League, aptly summarizes the situation:

> 'East Bengal, neglected in every way during the period of her dependence, had been a hot-bed of malaria, kala-azar, tuberculosis, etc. With all their might, the Bengal Government has now commenced a fight against all those maladies ... Dacca, which was notorious for filth, refuse, polluted water and the mosquito pests has now got rid of mosquitoes. It is certainly delightful and glorious to say so ... Along with malaria an attempt will be made to make the anti-tuberculosis and anti-cholera schemes successful. Large scale TB vaccine will soon be given. Like the smallpox vaccination, the BCG inoculation is also an antidote against tuberculosis (The Pakistan Observer September 1, 1949).'

Out of the 29 municipalities of the undivided Bengal, nine became part of East Bengal, now Bangladesh. Out of these, only four municipalities undertook the work of the medical inspection of school children. This was the beginning of the immunization programme in the schools. The students were given cholera vaccines and later on BCG.

After independence in 1947, immunizable diseases such as smallpox and TB, claimed many lives. The number of deaths from smallpox rose from 926 in 1947 to 8,216 in 1950 and 30,640 in 1951 in the geo-political area of East Bengal. In 1950 the districts of Faridpur, Bakerganj and Tipperah each recorded over 1,000 deaths, and the Dhaka district over 1,400. In 1951 there was another epidemic of the disease, due to the incoming refugees from Calcutta, where the disease was still raging. Pabna recorded 5,281 deaths, the highest in the province, as opposed to 174 in the previous year. The districts of Dhaka, Faridpur, Bakerganj and Bogra were also affected, with the total number of deaths ranging from 2,305 to 3,554 in these districts.

Tuberculosis was regarded as the second most serious problem in East Bengal, after malaria. Up until November 1949, when the BCG vaccination campaign was started, nothing noteworthy was done to combat the disease. There were only two TB clinics in the whole Province, one at Barisal and the other at Rajshahi, both without any TB expert or necessary equipment and apparatus.

The Mymensingh district had the highest recorded number of deaths from TB each year, while the Chittagong Hill Tracts recorded the lowest.

In 1950 the BCG vaccination campaign was continued in Dhaka City and extended to Bogra, Chittagong, Comilla and Mymensingh districts. The campaign was continued and the BCG vaccination of children was carried out in most of the districts and sub-divisional towns. To publicize the usefulness of the BCG vaccination, posters and pamphlets were liberally distributed among the local administrative bodies. With support from WHO and UNICEF a TB control and Training Centre was established in Karachi (West Pakistan), although the majority of the Pakistani population lived in East Bengal.

The Expanded Programme on Immunization

In line with the 1978 WHO initiated Global Strategy for Primary Health Care, which set the objectives of immunizing 80% of world's children by 1990, and reducing infant mortality from the preventable diseases, the Government of Bangladesh (GOB) launched the Expanded Programme on Immunization (EPI) on April 7, 1979, the World Health Day. The project was initially housed in the old smallpox building at Mohakhali, Dhaka and staffed with personnel working for smallpox eradication.

The government announced its immunization policy in December 1985. It consisted essentially of strategies for implementing an intensified programme. The specific objectives to achieve the global immunization goals for Bangladesh included:

- Elimination of poliomyelitis (that is, zero cases) from the country by the year 1995 and the eradication of polio by 2000.
- Elimination of neonatal tetanus by 1995.
- A 90% reduction in measles cases and a 95% reduction of measles' deaths by 1995.
- Achievement and maintenance of at least 85% immunization coverage of one-year old children and universal tetanus immunization for women in the childbearing years.

Major activities envisaged to achieve the objectives included:

- Integration of the EPI with diarrhoeal disease control and birth control operations in the 3rd Five Year Plan. From now on, field workers of both the family planning and health wings of the ministry, would conduct the vaccination programme.

- Attempts made to ensure people's participation as a move towards social mobilization.
- Vacant positions at field level should be filled up to ensure at least one Health Assistant and a Family Welfare Assistant in each ward.
- Extensive training for officers and field staff at national and local levels by 1986 and 1987 respectively.
- Increasing efforts to involve NGOs and other organizations, including Grameen Bank.
- Creating new MCH committees at national, district and upazilla levels to ensure proper implementation of the steps undertaken, countrywide monitoring and co-ordination activities.
- The continuation of the current system of distributing cold-chain and other equipment from the central store to the district and from there to primary centres in boxes. It will be strengthened in such a way that by 1988-89 all the 560 primary and 13,530 rural centres, including 120 in the 4 metropolitan cities, will receive the services without problems.
- Production of vaccines by the Institute of Public Health by 1987-1988.

Implementation of EPI

The programme has changed its implementation strategy at different points of time. Until 1984, immunization was carried out by specially engaged EPI technicians, and was only delivered through fixed health centres. From 1983 to 1986, TT vaccination campaigns were conducted during the winter months in one *thana* (sub-district) of each of 21 greater districts. The HAs and Family Welfare Assistants (FWAs) jointly organized vaccination sessions in each *hamlet/para*. Some donor agencies objected to the FWA's association with the immunization programme. They feared that it would create a detraction from their main task in family planning. Field experience had also shown that holding vaccination sessions at selected homes was more effective than going door to door.

In 1985, during his speech at the UN General Assembly session, the President of Bangladesh reiterated his country's commitment towards Universal Child Immunization by 1990. The Health Secretary and the Director of EPI visited Turkey to observe the successful Turkish system. UNICEF's Executive Director, James P. Grant's visit to Bangladesh in the same year reinforced the national commitment (see Chapter 5).

When the accelerated EPI programme was initiated in 1986, the latest cold chain equipment and vaccination materials including sterilisers, syringes,

needles, refrigerators, freezers and cold boxes were procured. Portable steam sterilisers facilitated the use of separate syringes and needles in each case.

During the first three years, the progress in coverage enhancement was still not up to the mark. At that point, the Ministry gave some flexibility in the vertical structure of the EPI programme. Issues pertaining to the National Mobilization Plan, chalked out initially but not been taken up, were now initiated. Other government agencies like the Cabinet Division, the Ministries of Education, Social Welfare, Local Government and Co-operatives, Women Affairs, Information and Communication were involved. New strategies of delivery, which brought services to the people, were introduced. New staff at field level were recruited and storage facilities were decentralized. New techniques of communication and mobilization were introduced.

The intensive immunization scheme was gradually introduced in all the 460 *thana*s and 88 municipalities (see Table 3.1).

Table 3.1 Progress Intensive Immunization Scheme

Stages	*Year*	*No. of thana*	*No. of municipalities*
1	1985-86	8	10
2	1986-87	62	20
3	1987-88	120	34
4	1988-89	270	24
Total		460	88

Currently, the EPI has one cold-chain technician in each of 64 districts and one EPI technician in each of the 460 *thana*s financed from the revenue budget. Eighteen medical officers, 43 assistant store keepers, 10 cold chain technicians at 10 cold-chain workshops and eight drivers are on the development budget. There are also 950 'runners' on a contingency basis. By 1988, the EPI had trained 1,060 managers, 11,700 health inspectors/supervisors, 19,600 technical assistants and 22,200 vaccinators. UNICEF assigned a full-time officer, from each of it's seven zonal offices, to support the EPI programme and WHO stationed a representative at the EPI Headquarters in Dhaka.

Organization of EPI at thana Level

In rural areas, EPI activities are co-ordinated by the EPI Co-ordination Committees (CC) at *thana*, union and ward levels.[1] The *thana* CC is headed by the Thana Health and Family Planning Officers (THFPO), the Union CC by the local Chairman and ward CC by the union council Member. In the *thana*, the THFPO, Medical Officer-EPI (MO-EPI), Thana Family Planning Officer

(THFPO), MO-Maternal and Child Health (MO-MCH), EPI Technician, and Health and Sanitary Inspectors (HI and SI) undertake *thana* level planning, programming, co-ordination, training, and supervision of EPI service delivery. At the union level, the Assistant Health Inspector (AHI) and Family Planning Inspector (FPI) are responsible for overseeing that community level activities are being carried out by the Health Assistants (HAS) and Family Welfare Assistants (FWAS). While the HAS and FWAS organize, implement and manage the vaccination activities at community level.

The HAS and FWAS select vaccination centres at convenient places, in consultation with the village leaders. These centres may include schools, or private houses. Every month, eight vaccination centres are organized per Ward, and 24 per Union. Each vaccination session is conducted jointly by a HA and an FWA and they usually conduct two sessions a week. Many of the EPI centres have been transformed into a community level combined health and family planning service delivery post. The HAS and FWAS impart education about vaccination through individual contacts and group meetings. This is mainly done during their routine household visits and vaccination sessions. Special strategies are planned and implemented for the 'hard-to-reach areas'.

In the rural areas the EPI authority, at the *thana* level, does not play any role in setting targets: these are imposed from the top level. Targets are calculated on a percentage basis of the population. The target population in EPI includes children less than 1 year of age and women in reproductive ages (15-45 years), especially pregnant women. Children 1-2 years of age who attend the vaccination sessions, are also immunized.

At most THCS, there is an EPI store room with required cold-chain equipment (chest freezer, cold box, vaccine carrier, ice in refrigerator and thermometer). The *thana* EPI technician is responsible for the maintainence of the cold-chain. All staff, including the vaccinators, have written instructions on cold-chain maintenance. The THC receives supplies from the District Civil Surgeon office. The THC authority make routine requests for materials to the Civil Surgeon office using a standard format. The porters/runners carry the supplies to a certain point, where they are received by the HAS/FWAS and taken to the vaccination sessions. At the end of day's work, the unused vaccines are returned to the THC for storage in the cold-room.

The HAS fill up tally sheets during vaccination sessions and send those to the AHI. The AHI consolidates the data each month and sends them on to the EPI technician. He consolidates the data unionwise and submits those to the MO-EPI and THFPO. The THFPO reports to the Civil Surgeon at district level.

In urban areas, the municipalities implement the EPI programme. EPI services are rendered through fixed and outreach centres, which are run either by

the municipal authority itself or by NGOs. The municipalities have their own vaccinators, though sometimes FWAs are deputed to help in urban areas. NGOs carry out the EPI activities under the guidance of their own supervisors. Both the municipalities and NGOs receive vaccines, and other materials from the EHC.

Communication in EPI

One of the first communication tasks for the intensified EPI was the search for a popular logo. Since 'moni' is a term of endearment for children of both sexes, a character was drawn to suit the meaning of the term. The logo symbolized the six immunizable diseases and the ring of protection. Moni was placed everywhere to raise awareness about child vaccination (Huq 1991).

During the first phase of the programme, the Government Health Education Bureau produced and distributed the following materials (Talukder & Rahman 1986). In 1983 20,000 posters; in 1984 100,000 leaflets; in 1985 30,000 disease recognition posters; 50,000 disease recognition folders; 400,000 vaccination cards and 10,000 posters on TT. In addition, advertisements in newspapers, radio talk shows and TV spots were used.

Production and procurement of vaccines and other accessories

At present, the Government of Bangladesh imports BCG, OPV, DPT, measles and TT vaccines, and diluents for BCG and measles vaccines. These are imported from various manufacturing countries, at the market rate negotiated by UNICEF. UNICEF, on behalf of the government, procures vaccines and vaccine related accessories. The UN procurement mechanisms, which can forecast vaccine needs for developing countries and purchase vaccines in very large quantities, make vaccines available at very low costs. According to newspaper reports, Bangladesh annually imports vaccines worth about Tk. 140 million (The Daily Janakantha, June 4 1998). In 1996, UNICEF's Annual Progress Report on health, reported that Bangladesh covered 84% of its costs for vaccination from its own resources.

The government has no policy guidelines for vaccine development, production and marketing. It produces and distributes only TT vaccines covering about one-fourth of the total requirements of the country. The Institute of Public Health (IPH) is the only unit that has been producing the vaccine since 1983. The IPH stopped TT vaccine production in 1991 due to doubts regarding its vaccine. During December 1990, the EPI Bangladesh reported TT vaccine failures in some pregnant women immunized with TT manufactured at IPH. It was found that three batches of TT, tested externally in WHO approved laboratories, had unacceptable low potencies (Harshavardhan 1994). An evaluation, jointly organized by WHO and UNICEF, inspected the Tetanus Vaccine